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8.0 MITIGATION MEASURES/PROPOSED SECTION 61 FINDINGS

8.1 Description of Mitigation Measures

Table 8-1 provides a summary of the Project's mitigation measures.

Table 8-1 Summary of Project Impacts and Mitigation

Subject	Impact	Mitigation	Schedule
Transportation	The Project will result in an increase in vehicle, pedestrian, and transit trip generation. However, the incremental impact is lessened substantially by the presence of the existing surface parking spaces. While some intersections operate poorly under Existing and Mid-term No-Build Conditions, Seaport Square itself contributes relatively less traffic to these intersections than other area developments. With mitigation improvements, composed primarily of signal timing phasing changes and travel lane use changes, only three of the 33 study intersections during the a.m. peak hour, two of the 33 study intersections during the p.m. peak hour, and one of the 33 study intersections during both the a.m. and p.m. peak hours will experience a relevant change in level of service between Mid-Term No-Build conditions and Seaport Square Build with Mitigation conditions.	Transportation mitigation items are detailed in Section 3.3.3, are included in the Seaport Square Build with Mitigation condition and include: An aggressive Transportation Demand Management Plan; provision of a new, freestanding headhouse for Courthouse Station on the Silver Line; enhancements to the pedestrian environment adjacent to its buildings; provision of a new waterfront way along the City-owned Old Sleeper Street to provide a pedestrian connection linking to the existing Harborwalk segments between the Children's Museum and the Federal Courthouse; provision of secure, sheltered bicycle racks and sidewalk-level public bicycle racks; continuation of the existing low-cost bicycle rental program; construction of a new street ("Harbor Street") to provide a direct pedestrian/bicycle connection from Summer Street down to the waterfront; intersection improvements along the Old Northern Avenue, Seaport Boulevard, Summer Street, and Congress Street corridors, including modifications to lane use, pavement markings, and signal phasings/timings.	During design or operation.

Table 8-1 Summary of Project Impacts and Mitigation (Continued)

Subject	Impact	Mitigation	Schedule
Wind	Generally, the wind conditions improved or stayed the same with the proposed Project in place. Of the 156 locations studied for annual wind conditions, 145 or approximately 93% of the locations had wind conditions which improved or remained the same from the Existing configuration to the Build with Mitigation configuration.	Based on the results of the wind tunnel tests, it is anticipated that the potential mitigation measures or other mitigation measures will be implemented in order to eliminate dangerous pedestrian comfort conditions that exist today as well as with the proposed Seaport Square Project. These measures consist of massing changes, canopies, wind screens and landscaping. The specific design or nature of these measures will be determined during the design review process, provided the effectiveness in wind reduction is similar to or better than the mitigation provided by the measures studied.	During design
Shadow	Since much of the Project Site is predominantly vacant (used as surface parking), redevelopment will increase the amount of shadow cast from the Project when compared with existing conditions.	The Project is expected to result in shadows typical of densely-built urban areas. However, existing open spaces will generally be unaffected by new shadow, and much of the new shadow falls onto adjacent streets and the Project Site itself. As the design of buildings moves forward, and the massing is refined, it is anticipated that new shadow impacts will be reduced.	During design.
Daylight	None.	Daylight obstruction from the Project is within the range of surrounding buildings.	During design.
Air Quality	The air quality analysis results show that CO, NOx, PM-10, PM-2.5, and SO_2 concentrations at all receptors studied are well below the NAAQS.	The Proponent will implement a transportation demand management program to reduce vehicle trips and related emissions. These mitigation measures have been accounted for in the air quality analysis. The Project will also implement signal changes and lane configurations that will reduce delays at intersections and increase the speed of vehicles through the area, and therefore reduce emissions.	During construction and operation.

Table 8-1 Summary of Project Impacts and Mitigation (Continued)

Subject	Impact	Mitigation	Schedule
Greenhouse Gas Emissions	The Project will generate greenhouse gas emissions from both stationary and transportation sources. The Proponent has committed to numerous Project design elements to substantially mitigate those emissions.	At this time, the Proponent is anticipating the following design elements for the Project: ♦ High performance building envelope as indicated in Table 4.6-1 ♦ High efficiency mechanical equipment, as indicated in Table 4.6-1. ♦ Green roof/podium areas in selected locations and high-albedo / reflective roofs in a majority of other non-MEP/skylight areas. ♦ Low resistance circuiting ♦ Radiant heat in ground-floor lobbies ♦ Heat recovery in block ventilation exhausts ♦ Natural ventilation in combination with forced ventilation wherever practical ♦ Variable kitchen exhaust fans in condominium, education facility, hotel and commercial cooking facilities. ♦ Room occupancy sensors in hotel spaces ♦ Energy management systems in each block ♦ Energy-Star appliances in hotels and apartments ♦ Residential and hotel Blocks will be Solar Thermal Hot Water -ready ♦ All Blocks will be constructed to be PV-ready ♦ Rainwater harvest, groundwater recharge ♦ Low-flow and water-efficient plumbing fixtures ♦ Drought-tolerant landscaping ♦ Recycling collection areas ♦ Construction waste recycling > 50% ♦ Recycled content materials for construction ♦ Locally-TDM measures as described in Chapter 3 ♦ Post-construction traffic signal reoptimization The Proponent remains committed to a level of GHG emissions reduction and energy savings, but must retain an amount of design flexibility to allow for changes that will inevitably occur as individual Block design progresses.	During design, construction and operation

Table 8-1 Summary of Project Impacts and Mitigation (Continued)

Subject	Impact	Mitigation	Schedule
Noise	Predicted noise levels from the Project's mechanical equipment will be well below the most stringent City of Boston Zoning District Noise Standards for nighttime and daytime residential zones, and below existing measured baseline noise levels in the area.	Most of the mechanical equipment for the buildings will be housed within a mechanical penthouse on the roof. It is expected that any noise from equipment within the penthouses, such as boilers, will be attenuated considerably.	During design and operation.
Chapter 91 / Tidelands	All of Block A and small portions of Blocks B, G, H, and M1 are within Chapter 91 jurisdiction and require a Chapter 91 license. Construction on these Blocks is consistent with the South Boston Municipal Harbor Plan. No negative impacts are anticipated.	The Project will provide numerous benefits to the public including provision of a new waterfront way along the City-owned Old Sleeper Street to provide a pedestrian connection linking to the existing Harborwalk segments between the Children's Museum and the Federal Courthouse. Seaport Square green, a 1.25 acre open space is planned adjacent to Fan Pier Park and will be activated to encourage public use and enjoyment. In addition open space enhancements for Parcel E at the Children's Museum will be provided. A Cultural Corridor is planned connecting the ICA to the Boston Convention and Exhibition Center. A series of cultural venues, including outdoor sculpture gardens, public art and performance venues and exhibit spaces will activate the site and provide year-round use. The Project will activate ground level pedestrian activities by providing facilities of public accommodation on all of the ground floors on most all of the buildings within the Project (beyond Chapter 91 jurisdiction), surpassing the requirements of the Chapter 91 regulatory provisions for the activation of Commonwealth Tidelands. In addition, Facilities of pubic accommodation will also occupy second floors in many of the Blocks.	During Construction.

Table 8-1 Summary of Project Impacts and Mitigation (Continued)

Subject	Impact	Mitigation	Schedule
Geotechnical / Groundwater	The Project area is underlain by a thick layer of impervious marine clay. The presence of the clay soils are ideal conditions for constructing permanent groundwater cut-off walls around basement areas, and the impervious properties limit groundwater seepage rates. These conditions are also considered favorable for temporary construction dewatering. During excavation required for basement construction, dewatering will be undertaken within impervious earth support systems maintaining groundwater levels outside the excavation. Impacts to groundwater are anticipated to be negligible considering the site conditions and methods to be used as described.	The Project will utilize specific design criteria and construction methodology which protects groundwater. Many of the older existing buildings located south of Seaport Boulevard are supported on wood piles. The proximity and potential impacts to wood pile-supported buildings will be evaluated in developing specific criteria for each Block depending on planned basement depths. The design criteria established Project-wide will be implemented to ensure that groundwater will not be lowered. No permanent, active dewatering systems, or perimeter drains below groundwater levels, will be allowed. No permanent groundwater treatment or remedial systems due to contaminated groundwater are required so there is no need for groundwater pumping for remediation.	During construction.
Hazardous Materials	Chemical test results on soil samples indicate the presence of contaminants typical of urban fill materials.	Excavation at each Block will be conducted in accordance with a Soil Management Plan developed Project wide and included as part of the Construction Documents. The Soil Management Plan will describe procedures for identification management and off-site transport of any contaminated soils. Off-site disposition of excavated material will be in accordance with applicable regulations. Site history research and known environmental conditions indicate that no long-term remedial systems are expected for the Project.	During construction.

Table 8-1 Summary of Project Impacts and Mitigation (Continued)

Subject	Impact	Mitigation	Schedule
Solid Waste	The Project will generate solid waste typical of residential and mixed-use projects.	A loading area provided on the ground flow of the residential and hotel components. For the residential component of the Project, recycling and trash chutes will be provided on each floor. Trash will be collected in a dedicated area in a ground floor loading area until pick up by licensed contractor. Solid waste and recycling from the retail and restaurant components will be stored in dedicated areas of the ground floor loading area. A private trash collector will pick-up trash as needed. The Proponent will investigate the possibility of siting centralized collection bins for batteries and/or fluorescent light bulbs (including CFL's) as a part of the LEED-ND program.	During operation.
Construction	The Project may result in temporary construction impacts to the pedestrian and vehicle environments as well as temporary noise and air quality impacts.	Secure fencing and barricades will be used to isolate construction areas from pedestrian traffic adjacent to the site. In addition, sidewalk areas and walkways near construction activities will be well marked and lighted to protect pedestrians and ensure their safety. Public safety for pedestrians on abutting sidewalks will also include covered pedestrian walkways when appropriate and, if required, the suspension of the use of certain sidewalks during the most hazardous periods of overhead work activity during the construction of each superstructure. If required by BTD and the Boston Police Department, police details will be provided to facilitate traffic flow. All construction procedures will be designed to meet all Occupational Safety and Health Administration (OSHA) safety standards for specific site construction activities.	During construction.

Table 8-1 Summary of Project Impacts and Mitigation (Continued)

Subject	Impact	Mitigation	Schedule
Sustainable Design	Individual Blocks will pursue LEED certification under the LEED-NC, LEED-CS, or LEED-Schools rating systems as published by the USGBC. The Seaport Square Project as a whole will attempt certification under the LEED-ND rating system when that new rating system is released to the general public.	The Project will be targeting, at a minimum, the Silver level certification which requires numerous mitigation measures. Proposed mitigation measures relate to water conservation, water efficient landscaping, energy efficiency, transportation demand management, reduction of the heat island effect, public transportation access, and construction and operational waste management.	During design.
Open Space	The Project will introduce a new resident and non-resident population to the city that will utilize the existing and future open spaces adjacent to and in the vicinity of the Project Site, as well as regional open space resources. The Project will include creation of new open space.	Approximately 34% of the Project Site will be devoted to open space including green space, sidewalks, pedestrian ways and streets. Excluding the streets, approximately 25% of the Project Site will be open space. The two largest open spaces are Seaport Square Green and Seaport Hill, at approximately 1.25 and 0.75 acres respectively, which will appropriate for active uses: Seaport Square Green and Seaport Hill. The Proponent is also improving open spaces in the vicinity of the Project Site, including Parcel E and Old Sleeper Street. The Proponent will also work with the South Boston community to identify an off-site athletic field that can be utilized for athletic events related to the educational facility. As part of this arrangement, the Proponent will fund capital upgrades to the field(s) and fund a portion of the ongoing maintenance.	During design and construction
Historic Resources	The Project will include the demolition of the 1952 Chapel of Our Lady of Good Voyage, 65 Northern Avenue, a property included in the MHC Inventory. While currently not listed in the State or National Registers, MHC staff has determined the building is eligible for inclusion in the National Register.	The Proponent has initiated consultations with MHC and BLC in an effort to identify appropriate means to mitigate the proposed demolition of the 1952 Chapel. Approximately 2,000 sf of public open space will be provided on a prominent corner on Block H.	During Article 80 and MEPA review

Table 8-1 Summary of Project Impacts and Mitigation (Continued)

Subject	Impact	Mitigation	Schedule
Wastewater	Based on wastewater generation rates, the Project will generate approximately 770,000 gallons of wastewater per day.	Although adequate capacity exists for the flows projected, all relocations and connections will be closely coordinated with BWSC throughout the design process to ensure flows are distributed in a manner consistent with the needs and available capacity of the system.	During design, construction and operation.
Water Supply	Based on wastewater generation rates, the Project will require approximately 847,000 gallons of domestic water per day.	The Project is committed to implementing all practical measures to reduce its demand on the public water supply. The building program will include the latest technology in low-flow fixtures and other water conservation measures. The Project is currently investigating ways of offsetting its irrigation water demands through the capture and reuse of roof runoff which has the added benefit of further reducing the burden on the drainage system.	During design, construction and operation.
Water Quality/ Stormwater	Potential impacts are expected to be minor and limited to active construction-period operations.	The Proponent will provide a detailed Stormwater Management Plan (SMP) to the Boston Water and Sewer Commission's Engineering Design Division. The SMP will detail erosion control measures to be implemented during construction to prevent the discharge of sediment and contaminated groundwater or stormwater runoff into the City's drainage system or harbor waters.	During construction.

8.2 Proposed Section 61 Findings

8.2.1 Introduction

The Secretary's Certificate on the ENF requires that Section 61 Findings be prepared for all required state permits. M.G.L. c. 30, s. 61 requires that "[a]ll authorities of the commonwealth ... review, evaluate, and determine the impact on the natural environment of all works, projects or activities conducted by them and ... use all practicable means and measures to minimize [their] damage to the environment. ... Any determination made by an agency of the commonwealth shall include a finding describing the environmental impact, if any, of the project and a finding that all feasible measures have been taken to avoid or minimize said impact." The finding required by Section 61 "shall be limited to those matters which are within the scope of the environmental impact report, if any, required ... [on a project]." M.G.L. c. 30, s. 62A.

MEPA Regulations provide (301 CMR 11.07(10)) that the Secretary may require that an EIR present a proposed Section 61 Finding. The Secretary has so required for this Project.

The following state permits are required for the proposed Project.

Anticipated State Permits

Agency Name	Permit
Department of Environmental Protection, Division of Wetlands and Waterways	Chapter 91 License
Department of Environmental Protection, Division of Water Pollution Control	Sewer Connection and Extension Permit
Department of Environmental Protection, Division of Air Quality Control	Air Plan Approval, if required
Massachusetts Water Resources Authority	Sewer Use Discharge Permit
Massachusetts Highway Department	Change of Access Designation, Access Permit
Massachusetts Bay Transportation Authority	Approvals related to Silver Line facility connections
Executive Office of Energy and Environmental Affairs	Landlocked Tidelands Public Benefit Determination

The MEPA Certificate requests that the Draft EIR identify the individual costs of the proposed mitigation, the parties responsible and a schedule for their implementation. The Proponent will be responsible for implementing all of the mitigation measures. Individual costs have not yet been determined.

The schedule for the implementation of mitigation measures will generally fall into either the design, construction, or operational phase of the Project, depending on the nature of the specific mitigation measure.

Proposed Section 61 findings for the use of the state agencies issuing permits for the Project are provided below to assist the agencies in meeting their obligations. The proposed Section 61 Findings incorporate the proposed mitigation measures described above in Section 8.1.

8.2.2 Department of Environmental Protection

Department of Environmental Protection Seaport Square (EEA #14255)

These findings for the Seaport Square Project (EEA #14255) have been prepared in accordance with the provisions of M.G.L. c. 30, Section 61 and 301 CMR 11.00. On *[insert date]* the Secretary of Energy and Environmental Affairs issued a Certificate stating that the Project's Final Environmental Impact Report (FEIR) dated *[insert date]* adequately and properly complied with the MEPA statute and regulations.

Gale International, Morgan Stanley and W/S Development Associates, LLC (collectively the Proponent) is proposing to construct Seaport Square (the Project), a mixed-use, transit-oriented development consisting of approximately 6.5 million square feet on 23 acres in South Boston. The specific uses proposed for the Project include approximately 2.8 million square feet of residential (approximately 2,500 units), approximately 1.3 million square feet of office and research, approximately 1.3 million square feet of retail, approximately 600,000 square feet of educational, and cultural uses and approximately 500,000 square feet of hotel (approximately 550 rooms). Approximately 6,500 parking spaces are planned in below-grade parking garages throughout the site. The Project will also include almost six acres of publicly accessible open space, included two new green spaces.

As this Project is currently described, it requires a Chapter 91 License, Sewer Connection Permit and Air Plan Approval from the MassDEP.

Proposed mitigation measures related to the MassDEP's permit programs are described below.

MassDEP Division of Wetlands and Waterways, Chapter 91 License

The Project is consistent with Chapter 91 regulations as amended by the South Boston Municipal Harbor Plan (SBMHP) as approved by the Secretary of Energy and Environmental Affairs dated December 6, 2000. The Project will replace existing parking lots and result in a highly activated, pedestrian oriented waterfront and new neighborhood. New facilities of public accommodation will be created. The Project does not result in negative impacts to the pedestrian realm and will benefit the public and greatly expand access to both the South Boston waterfront and Fort Point Channel.

The Project will include a substantial amount of open space, more than what is required under the SBMHP, that will help create a continuous public realm. More than one-third of the Project Site will be unbuilt area, including new streets, green spaces, sidewalks, and

pedestrian ways connecting the surrounding communities and area attractions. Approximately six acres or approximately 25% of the site will be publicly accessible open space other than streets, including green space, sidewalks, and pedestrian ways. The two main open spaces are Seaport Square Green and Seaport Hill, at 1.25 and 0.75 acres respectively, as well as the open space at Courthouse Square, while improvements to the Seaport Boulevard median and sidewalks will provide an aesthetically pleasing connection through the Project to the Financial District and to other areas of the South Boston waterfront and Fort Point Channel.

A new waterfront way will be created along the City-owned Old Sleeper Street to provide a pedestrian connection linking the existing Harborwalk segments at the Children's Museum and the Federal Courthouse. Restaurants and outdoor seating will enliven the area during day and evening hours.

The Project includes the commitment to work with community groups and institutions in providing year-round event and exhibit programming in the new and existing open spaces and facilities of public accommodation associated with the Project. The Project intends to coordinate open space activation efforts with the already existing artist community in the Fort Point Channel area and with the adjacent Children's Museum.

Created by a physical link from Summer Street to Seaport Boulevard via Harbor Street, a new Cultural Corridor will connect the Institute of Contemporary Art and the Boston Convention and Exhibition Center. With these two buildings, there will be a new cultural destination in the City that will include sculpture gardens on Seaport Hill, a performing arts and education complex on Blocks P and N, exhibit and gallery spaces at Blocks L1 and G, public art and performance venues on Seaport Square Green, and a branch library at Block D. The Cultural Corridor will build on the arts identity of the neighboring Fort Point Channel District, and create a strong cultural component that will activate and provide year-round use of Seaport Square.

The Project will activate ground level pedestrian activities by providing facilities of public accommodation on all of the ground floors on buildings within Chapter 91 jurisdiction, surpassing the requirements of the SBMHP. In addition, Facilities of Pubic Accommodation will also occupy second floors in many of the Blocks.

MassDEP Division of Water Pollution Control, Sewer Connection/Extension Permit

Using wastewater generation rates from Title V of the Massachusetts State Environmental Code (Title V), the Project is estimated to generate approximately 770,000 gallons per day (gpd) of wastewater. Title V generation rates typically provide for conservative estimates and can be as much as twice actual rates. Peak daily flows from the Project area were estimated by applying a peaking factor of three to the average daily flows calculated using

Title V generation rates. Given the size of the proposed Project and its mixed-use development program, the resulting peak daily flows should provide a realistic yet conservative estimate of downstream impacts.

In order to minimize sewage generation, the project will meet all applicable code requirements including installation of low-flow toilets, flow-restricting shower heads and faucets, and BWSC-approved grease traps in restaurants.

New sewers will be constructed throughout the development to convey wastewater to available collection points in the existing BWSC system.

The Project will meet Massachusetts Department of Environmental Protection (DEP) policy of I/I reduction. The Project is committed to working with BWSC to identify areas of concern and develop appropriate courses of action. Given the size of the proposed development, specific I/I mitigation commitments will be determined cooperatively with BWSC on a Block-by-Block basis as part of the completion of individual General Services Agreements with BWSC.

MassDEP Division of Air Quality Control, Air Plan Approval

If a project results in the installation of a heating plant, emergency generator or other fossil-fuel-burning equipment exceeding source-specific thresholds, approval is required from the Division of Air Quality Control of MassDEP. MassDEP has implemented a streamlined permitting process for smaller units conforming to predetermined specifications. This program, named the Environmental Results Program (ERP), was designed to alleviate the burden of the permitting process on both the applicants and the regulatory agency.

Individual Boilers with heating capacities between 10 million and 40 million Btu per hour heat input are subject to the requirements of the ERP for boilers. Such boilers must be fired with natural gas and/or ultra-low sulfur diesel and meet the emission rates outlined in 310 CMR 7.26(33). Stacks must be designed as to not cause or contribute to a condition of air pollution. The required notification must be made to MassDEP prior to installation and appropriate records must be kept thereafter.

Emergency generators greater than 37 kilowatts are subject to the requirements of the ERP for emergency engines (310 CMR 7.26(42)). Engines must meet appropriate emissions standards applicable to its size and fuel, have a stack constructed as to not cause or contribute to a condition of air pollution, must not cause adverse noise impacts, and must only be operated due to a power outage and for no more than 300 hours per year. The required notification must be made to MassDEP within 60 days after installation and appropriate records must be kept thereafter.

The ERP registration does not provide relief from any other applicable State and Federal air quality regulations. Units of larger size than the ERP limits must obtain an air plan approval from MassDEP. If MassDEP approval is required, the Project will comply with the relevant design and engineering requirements.

The Department has reviewed and commented on the Final Environmental Impact Report (FEIR), EEA #14255, prepared for the Project. Pursuant to M.G.L. c. 30, Section 61, the Department finds that the environmental impacts of the Project are as set forth in the FEIR, and that, as documented in the FEIR, all feasible means and measures have been utilized to minimize impacts on the environment.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

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BY DATE

8.2.3 Massachusetts Water Resources Authority

Massachusetts Water Resources Authority Seaport Square (EEA #14255)

These findings for the Seaport Square Project (EEA #14255) have been prepared in accordance with the provisions of M.G.L. c. 30, Section 61 and 301 CMR 11.00. On *[insert date]* the Secretary of Energy and Environmental Affairs issued a Certificate stating that the Project's Final Environmental Impact Report (FEIR) dated *[insert date]* adequately and properly complied with the MEPA statute and regulations.

Gale International, Morgan Stanley and W/S Development Associates, LLC (collectively the Proponent) is proposing to construct Seaport Square (the Project), a mixed-use, transit-oriented development consisting of approximately 6.5 million square feet on 23 acres in South Boston. The specific uses proposed for the Project include approximately 2.8 million square feet of residential (approximately 2,500 units), approximately 1.3 million square feet of office and research, approximately 1.3 million square feet of retail, approximately 600,000 square feet of educational, and cultural uses and approximately 500,000 square feet of hotel (approximately 550 rooms). Approximately 6,500 parking spaces are planned in below-grade parking garages throughout the site. The Project will also include almost six acres of publicly accessible open space, included two new green spaces.

As this Project is currently described, potential occupants may conduct activities requiring a Sewer Use Discharge Permit from the MWRA.

Proposed mitigation measures related to the MWRA's permit programs are described below.

MWRA, Sewer Use Discharge Permit

In the event any Project facility is occupied by a tenant or owner whose activities trigger the need for a Sewer Use Discharge Permit, the tenant/owner will be required to obtain the applicable permit and comply with all related permit requirements. The Permit must be obtained on a discharge-by-discharge basis. As such, no other specific mitigation measures are identifiable at this time.

The Authority has reviewed and commented on the Final Environmental Impact Report (FEIR), EEA #14255, prepared for the Project. Pursuant to M.G.L. c. 30, Section 61, the Authority finds that the environmental impacts of the Project are as set forth in the FEIR, and that, as documented in the FEIR, all feasible means and measures have been utilized to minimize impacts on the environment.

MASSACHUSETTS WATER RESOURCES AUTHORITY

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BY DATE

8.2.4 Massachusetts Highway Department

Massachusetts Highway Department Seaport Square (EEA #14255)

These findings for the Seaport Square Project (EEA #14255) have been prepared in accordance with the provisions of M.G.L. c. 30, Section 61 and 301 CMR 11.00. On *[insert date]* the Secretary of Energy and Environmental Affairs issued a Certificate stating that the Project's Final Environmental Impact Report (FEIR) dated *[insert date]* adequately and properly complied with the MEPA statute and regulations.

Gale International, Morgan Stanley and W/S Development Associates, LLC (collectively the Proponent) is proposing to construct Seaport Square (the Project), a mixed-use, transit-oriented development consisting of approximately 6.5 million square feet on 23 acres in South Boston. The specific uses proposed for the Project include approximately 2.8 million square feet of residential (approximately 2,500 units), approximately 1.3 million square feet of office and research, approximately 1.3 million square feet of retail, approximately 600,000 square feet of educational, and cultural uses and approximately 500,000 square feet of hotel (approximately 550 rooms). Approximately 6,500 parking spaces are planned in below-grade parking garages throughout the site. The Project will also include almost six acres of publicly accessible open space, included two new green spaces.

As this Project is currently described, it requires a change in designation of the "no access" area, as well as a Vehicular Access Permit, for a proposed Congress Street curb cut. As part of this request, the Proponent will submit a site plan, a curb cut plan, and a traffic study to MHD. The Project will work with MHD to meet the safety and traffic flow requirements necessary to receive such access permits. Proposed mitigation measures related to MassHighway's permit programs are described below.

New Harbor Street to Link Summer Street and Congress Street

The *South Boston Transportation Study* conducted in 2000 for BTD recommended a "New Ramp Street to connect Summer Street and New Northern Avenue [Seaport Boulevard] in the vicinity of East Service Road". Seaport Square proposes to build this new "Harbor Street" connection as part of Phases 5–7. The intention is to provide a direct connection from Summer Street to the Seaport Square Green on Seaport Boulevard for pedestrians and cyclists. For vehicles, Harbor Street will end short of Seaport Boulevard at a new parallel street, "Autumn Lane," that will allow vehicles to turn to East Service Road or Boston Wharf Road. This will allow Harbor Street to provide local access to the L Blocks while discouraging through-traffic.

Traffic Volume Monitoring

Given the longer-term time frame over which all projects in the 1,000 Acres area will be developed, continued monitoring of traffic conditions along the Seaport Boulevard, Congress Street, and Summer Street corridors will be important. The Proponent will work with the City to develop an appropriate traffic monitoring program for the Seaport Project, perhaps under the aegis of the Seaport TMA.

Seaport Boulevard/East Service Road/Old Northern Avenue

A marked improvement in operations at this location can be achieved with the following measures:

- Eliminate the Seaport Boulevard eastbound lead phase, which is no longer required.
- Install signage to prohibit right turns on red (RTOR) at Seaport Boulevard westbound.
- Incorporate a protected and overlap phase for Seaport Boulevard westbound via the creation of a new 75-foot, designated right-turn lane. This would allow the existing two lanes to be dedicated to through-traffic only.

The Proponent will work with the City and Massport to further investigate implementing these changes.

Seaport Boulevard/B Street

Re-stripe the eastbound Seaport Boulevard exclusive right-turn lane as a shared through/right-turn lane. The Proponent will work with the City and Massport to further investigate implementing this change.

Seaport Boulevard/Northern Avenue/D Street (southbound)/Fish Pier Street and Northern Avenue/D Street (northbound)

Add one westbound through lane on the Northern Avenue approach. The Proponent will work with the City and Massport to further investigate designating two travel lanes on Northern Avenue east of D Street.

Congress Street/A Street/Thomson Place

Eliminate the exclusive pedestrian phase and implement concurrent pedestrian phasing. The Proponent will work with the City on implementing these proposed signal phasing changes.

Congress Street/West Service Road/Boston Wharf Road

Restrict peak-hour curbside use on the eastbound Congress Street approach allowing for two through travel lanes and one exclusive right lane and provide a westbound lead for Congress Street traffic. The Proponent will work with the City on implementing these lane use and signal phasing changes.

Congress Street/D Street

Re-stripe the D Street northbound approach to allow an exclusive left-turn lane, one shared left-turn/through lane, and one through/right-turn lane.

Transit Measures

Seaport Square will provide a new Silver Line entrance to the existing Courthouse Station. This new headhouse kiosk will be located in Seaport Square Green along Seaport Boulevard and will be easily accessible with a direct connection to Logan International Airport and to the South Station commuter rail and Red Line services. The new station kiosk will also provide a convenient location for both leisurely waterfront pleasure seekers and daily office and business workers.

Pedestrian Measures

As the various blocks within the site area are developed, Seaport Square will enhance the pedestrian environment adjacent to its buildings along the major east–west corridors of Old Northern Avenue, Seaport Boulevard, and Congress Street, as well as along the north–south streets of Sleeper Street, Fan Pier Boulevard, Pier Street, Boston Wharf Road, new Harbor Street/Autumn Lane, East Service Road, and B Street.

The Project will also provide a pedestrian connection between existing segments of the Harborwalk between the Children's Museum and the Federal Courthouse via a new waterfront way that will be created along the City-owned Old Sleeper Street.

Bicycle Measures

Bicycle enhancements include the Harborwalk connection between the Children's Museum and the Federal Courthouse, as described above; provision of secure, sheltered bicycle racks and sidewalk-level public bicycle racks; continuation of the existing low-cost bicycle rental program; and investigation into the feasibility of launching a shared-bike program similar to SmartBike at an appropriate location within the Project area.

Transportation Demand Management ("TDM") Measures

The Proponent is committed to implementing a TDM program that supports the City's efforts to reduce dependency on the automobile by encouraging travelers to use alternatives to driving alone, especially during peak periods. TDM will be facilitated by the mixed-use nature of the Project as well as its location adjacent to the Downtown, the Financial District, and to other offices, transit, and shopping in South Boston. The Proponent will commit to implementing this TDM program for Phase 1 of the Project as well as for the full build-out of the Project.

The proposed TDM measures will include:

- *Continued TMA Participation:* Currently a member of the Seaport Transportation Management Association (TMA), the Proponent will continue to support the TMA. Management will work with the other members of the TMA to disseminate ride share/ car pool information. The TMA members also provide "guaranteed ride home" service, publish a newsletter, and coordinate a "Transportation Day."

- *Car-Sharing Service:* The Proponent will provide spaces in one or more of its garages for car-sharing services. The Proponent is exploring providing 100 or more spaces in at least one garage, a hub for a car-sharing vehicle service.

- *Car Pool/Van Pool Parking:* The Proponent will provide preferential parking spaces in its non-residential garages for employee/tenant car pools and van pools.

- *Transit Passes:* The Proponent will participate in a transit pass program for tenants' employees and residents through the TMA. The Proponent will encourage commercial tenants to subsidize transit passes for their employees.

- *Commuter Tax Benefit Program:* The Proponent will encourage tenants to treat employee payments for transit passes as a pre-tax deduction from paychecks.

- *Orientation Packets:* The Proponent will provide orientation packets to new residents containing information on available transportation choices, including transit routes and schedules. On-site management will work with new residents and commercial tenants as they move in to help facilitate transportation for new arrivals.

- *Transportation Coordinator:* The Proponent will designate a Transportation Coordinator to oversee loading and service activities, and provide alternative transportation materials to residents. Individual loading dock managers will be stationed at commercial building loading docks to oversee deliveries on-site.

- ***Bicycle Amenities:*** The Proponent will provide bicycle racks in secure, sheltered areas for residents and tenants' employees. Additional bicycle parking will be provided on the sidewalks within Seaport Square proximate to main building entrances. The Proponent currently operates a low-cost bicycle rental program from the site. This program will continue upon completion of Seaport Square.

- ***Shared Bike Program:*** The Proponent will investigate launching a shared-bike program similar to SmartBike at an appropriate location within the Project area. This will involve providing a docking station for retrieving and returning bicycles, making prospective tenants and residents aware of the program in selling or leasing space, assisting tenants and residents in registering for the program, and cooperating with the Seaport TMA and its members in promoting shared bike use to residents, tenants, and tourists.

- ***Web Site:*** The Proponent will design and implement a Project Web site that will include public transportation information for residents and visitors.

- ***Parking Management and Pricing:*** The Proponent will charge market-rate public parking rates in the garages as a disincentive to single-occupancy vehicle use and will manage the use of parking spaces to achieve the greatest benefit from shared parking among user groups.

The Proponent will finalize the TDM commitments with the City.

Conclusion

The Department has reviewed and commented on the Final Environmental Impact Report (FEIR), EEA #14255, prepared for the Project. Pursuant to M.G.L. c. 30, Section 61, the Department finds that the environmental impacts of the Project are as set forth in the FEIR, and that, as documented in the FEIR, all feasible means and measures have been utilized to minimize impacts on the environment.

MASSACHUSETTS HIGHWAY DEPARTMENT

_____ _____

BY DATE

8.2.5 Massachusetts Bay Transportation Authority

Massachusetts Bay Transportation Authority Seaport Square (EEA #14255)

These findings for the Seaport Square Project (EEA #14255) have been prepared in accordance with the provisions of M.G.L. c. 30, Section 61 and 301 CMR 11.00. On *[insert date]* the Secretary of Energy and Environmental Affairs issued a Certificate stating that the Project's Final Environmental Impact Report (FEIR) dated *[insert date]* adequately and properly complied with the MEPA statute and regulations.

Gale International, Morgan Stanley and W/S Development Associates, LLC (collectively the Proponent) is proposing to construct Seaport Square (the Project), a mixed-use, transit-oriented development consisting of approximately 6.5 million square feet on 23 acres in South Boston. The specific uses proposed for the Project include approximately 2.8 million square feet of residential (approximately 2,500 units), approximately 1.3 million square feet of office and research, approximately 1.3 million square feet of retail, approximately 600,000 square feet of educational, and cultural uses and approximately 500,000 square feet of hotel (approximately 550 rooms). Approximately 6,500 parking spaces are planned in below-grade parking garages throughout the site. The Project will also include almost six acres of publicly accessible open space, included two new green spaces.

As this Project is currently described, it requires design review and a license of entry from the MBTA for a new Silver Line entrance. The Project will work with the MBTA to develop a plan to mitigate construction period impacts.

Proposed mitigation measures related to the MBTA's permit programs are described below.

New Silver Line Entrance

Seaport Square is envisioned as a transit-oriented development that will provide significant improvements to the public realm, including a new Silver Line entrance to the existing Courthouse Station. This new freestanding headhouse kiosk will be located in Seaport Square Green along Seaport Boulevard and will be easily accessible with a direct connection to Logan International Airport and to the South Station commuter rail and Red Line services. The new station kiosk will also provide a convenient location for both leisurely waterfront pleasure seekers and daily office and business workers.

The Authority has reviewed and commented on the Final Environmental Impact Report (FEIR), EEA #14255, prepared for the Project. Pursuant to M.G.L. c. 30, Section 61, the Authority finds that the environmental impacts of the Project are as set forth in the FEIR, and that, as documented in the FEIR, all feasible means and measures have been utilized to minimize impacts on the environment.

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

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BY DATE

8.2.6 Executive Office of Energy and Environmental Affairs

Executive Office of Energy and Environmental Affairs Seaport Square (EEA #14255)

These findings for the Seaport Square Project (EEA #14255) have been prepared in accordance with the provisions of M.G.L. c. 30, Section 61 and 301 CMR 11.00. On *[insert date]* the Secretary of Energy and Environmental Affairs issued a Certificate stating that the Project's Final Environmental Impact Report (FEIR) dated *[insert date]* adequately and properly complied with the MEPA statute and regulations.

Gale International, Morgan Stanley and W/S Development Associates, LLC (collectively the Proponent) is proposing to construct Seaport Square (the Project), a mixed-use, transit-oriented development consisting of approximately 6.5 million square feet on 23 acres in South Boston. The specific uses proposed for the Project include approximately 2.8 million square feet of residential (approximately 2,500 units), approximately 1.3 million square feet of office and research, approximately 1.3 million square feet of retail, approximately 600,000 square feet of educational, and cultural uses and approximately 500,000 square feet of hotel (approximately 550 rooms). Approximately 6,500 parking spaces are planned in below-grade parking garages throughout the site. The Project will also include almost six acres of publicly accessible open space, included two new green spaces.

As this Project is located on filled former tidelands, it requires a Public Benefit Determination from EEA.

Proposed mitigation measures related to the Public Benefit Determination are described below.

EEA Public Benefit Determination

Seaport Square will create a new neighborhood and provide year-round activation of filled former Commonwealth tidelands by creating a locus of activity along with public amenities. The streetscape improvements and open space activation will draw many residents and visitors to the site and provide a safe and enjoyable route to the waterfront. Ground floors will be activated to promote use and enjoyment of the site.

The Project will provide civic and public uses and create a sense of place along the South Boston waterfront. Where asphalt streets and parking lots currently exist, the Project will provide 23 well-designed and sustainable buildings, creating a new neighborhood with wide sidewalks, and landscaped areas, and generous and welcoming open space for pedestrians and families, office workers and visitors alike.

The development of additional residential units in this area is a priority of the surrounding Fort Point and South Boston community as evidenced at Seaport Square community meetings. The Project directly supports this goal by providing 2,500 units of housing.

Fifteen percent of this housing will be affordable housing, along with another 15% set aside for workforce housing. In addition, proposed buildings are in scale with adjacent development.

The Proponent will ensure that construction activities or development activities will affect water-dependent uses to the minimum extent possible. Existing functions for these businesses will be maintained or improved through the proposed Project elements. The Proponent will ensure that existing service functions for the adjacent Barking Crab Restaurant and Neptune Marine Services are maintained or improved during both the construction period and post-construction.

The Project will include a substantial amount of open space that will help create a continuous public realm. More than one-third of the Project Site will be unbuilt area, including new streets, green spaces, sidewalks, and pedestrian ways connecting the surrounding communities and area attractions. Approximately six acres or approximately 25% of the site will be publicly accessible open space other than streets, including green space, sidewalks, and pedestrian ways. The two main open spaces are Seaport Square Green and Seaport Hill, at 1.25 and 0.75 acres respectively, as well as the open space at Courthouse Square, while improvements to the Seaport Boulevard median and sidewalks will provide an aesthetically pleasing connection through the Project to the Financial District and to other areas of the South Boston waterfront and Fort Point Channel.

A new waterfront way will be created along the City-owned Old Sleeper Street to provide a pedestrian connection linking the existing Harborwalk segments at the Children's Museum and the Federal Courthouse. Restaurants and outdoor seating will enliven the area during day and evening hours.

The Project includes the commitment to work with community groups and institutions in providing year-round event and exhibit programming in the new and existing open spaces and facilities of public accommodation associated with the Project. The Project intends to coordinate open space activation efforts with the already existing artist community in the Fort Point Channel area and with the adjacent Children's Museum.

Created by a physical link from Summer Street to Seaport Boulevard via Harbor Street, a new Cultural Corridor will connect the Institute of Contemporary Art and the Boston Convention and Exhibition Center. With these two buildings, there will be a new cultural destination in the City that will include sculpture gardens on Seaport Hill, a performing arts and education complex on Blocks P and N, exhibit and gallery spaces at Blocks L1 and G, public art and performance venues on Seaport Square Green, and a branch library at Block D. The Cultural Corridor will build on the arts identity of the neighboring Fort Point Channel District, and create a strong cultural component that will activate and provide year-round use of Seaport Square.

The Project will activate ground level pedestrian activities by providing facilities of public accommodation on all of the ground floors on most all of the buildings within the Project (jurisdiction), surpassing the requirements of the SBMHP for the activation of Commonwealth Tidelands. In addition, Facilities of pubic accommodation will also occupy second floors in many of the Blocks.

EEA has reviewed and commented on the Final Environmental Impact Report (FEIR), EEA #14255, prepared for the Project. Pursuant to M.G.L. c. 30, Section 61, the Authority finds that the environmental impacts of the Project are as set forth in the FEIR, and that, as documented in the FEIR, all feasible means and measures have been utilized to minimize impacts on the environment.

EXECUTIVE OFFICE OF ENERGY AND ENVIRONMENTAL AFFAIRS

_____ _____

BY DATE

7.0 INFRASTRUCTURE

7.1 Wastewater

7.1.1 Existing Wastewater System

The local wastewater collection system is owned and operated by the Boston Water and Sewer Commission (BWSC). The system conveys wastewater to the Massachusetts Water Resources Authority (MWRA) system which flows to the MWRA Deer Island Wastewater Treatment Plant.

Several existing gravity sewers serve the Project area. A 15-inch sewer in Northern Avenue runs in an easterly direction and connects to a gravity collection system in Seaport Boulevard. The system flows past the World Trade Center area and eventually to the BWSC Trilling Way pump station where wastewater flows are pumped in a southerly direction to a gravity sewer in E Street just south of Summer Street. The E Street sewer flows southerly to a connection with the North Branch of the South Boston Interceptor at West First Street.

A 10-inch sewer in Seaport Boulevard flows in a westerly direction in Seaport Boulevard to a gravity sewer in Sleeper Street. An additional 12-inch sewer was installed in Seaport Boulevard as part of the MBTA Silver Line Tunnel construction to allow a gravity connection from the Project area across the Tunnel to a sewer in Farnsworth Street. Both sewers flow by gravity to a 24-inch sewer in A Street and eventually connect to the North Branch of the South Boston Interceptor (NBSBI) at West First Street. Figure 7-1 shows the existing wastewater collection system.

7.1.2 Proposed Wastewater Generation

Using wastewater generation rates from Title V of the Massachusetts State Environmental Code (Title V), the Project at full build-out is estimated to generate approximately 770,000 gallons per day (gpd) of wastewater. Title V generation rates typically provide for conservative estimates and can be as much as twice actual rates. Peak daily flows from the Project area were estimated by applying a peaking factor of three to the average daily flows calculated using Title V generation rates to consider normal daily demand fluctuations and mechanical system discharges.

Planning level analysis has been performed to estimate the anticipated volume of wastewater that will be contributed to the system from cooling tower blow down. The analysis indicates that the "peak" wastewater discharge from cooling tower blow down will be approximately 250,000 gpd with an annual "average daily" discharge of 160,000 gpd. These projections represent conservative estimates based on planning level information and are likely to be reduced as design advances and planned water re-use strategies are further developed.

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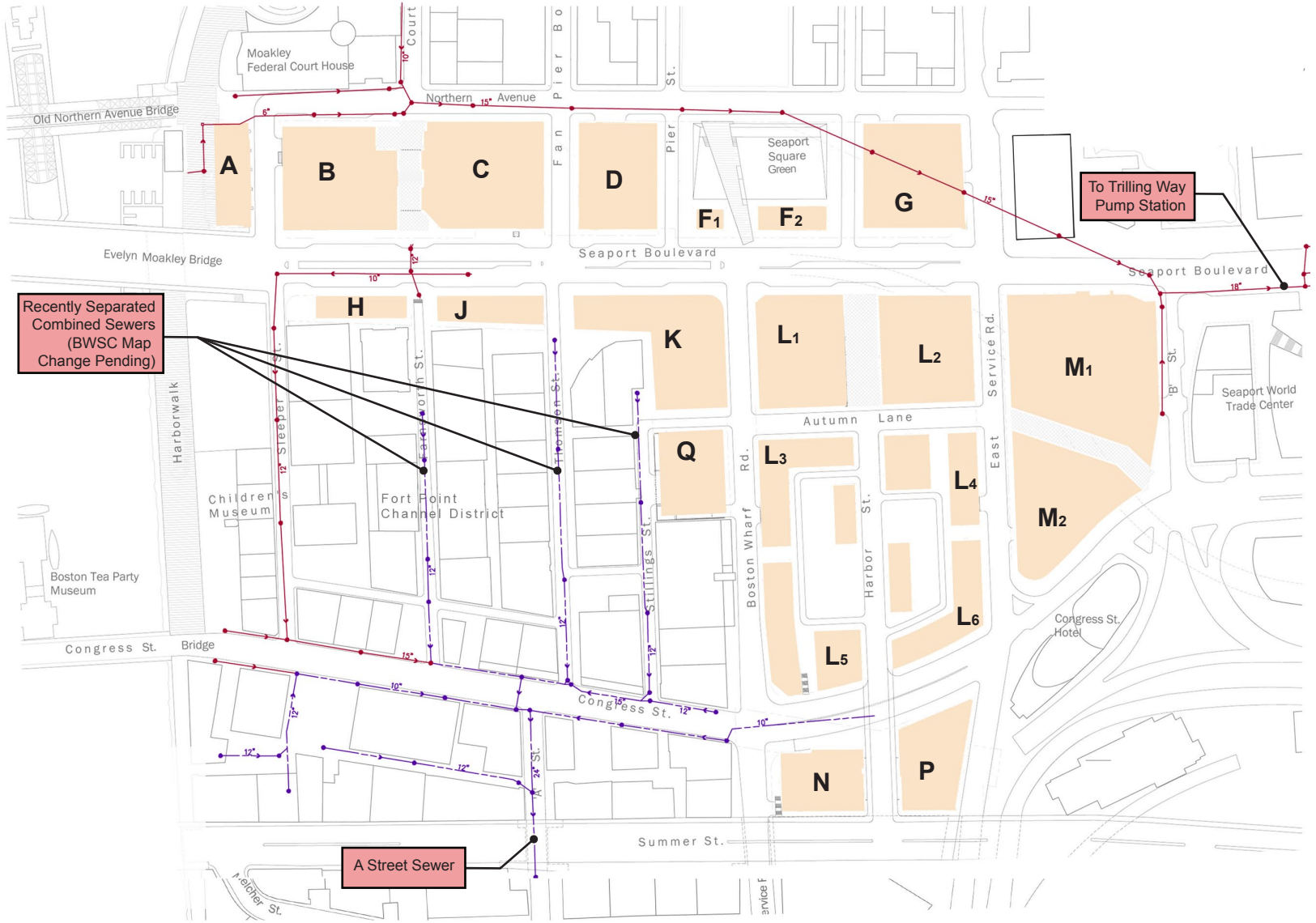

SEAPORT SQUARE
IN SOUTH BOSTON

Figure 7-1

Existing Wastewater Collection System

Notes:
1. The Existing Utility Information on this plan was compiled from Boston Water and Sewer Commission (BWSC) 100 scale sewer system maps.

GALE INTERNATIONAL

Morgan Stanley

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Given the size of the proposed Project and its mixed-use development program, the resulting Title V and Cooling Tower peak daily flows should provide a realistic yet conservative estimate of downstream impacts.

As identified in earlier sections, numerous projects of varying sizes are proposed in the vicinity of the proposed Seaport Square Project. Although these projects will add significant volume to the wastewater collection system as a whole, most of the projects will not utilize the same local sewers (A Street), and as such, should not impact the Seaport Square Project. Projects in close proximity to Seaport Square, such as Fan Pier and Waterside Place, as well as other projects in the Seaport will primarily utilize the Trilling Way Pump Station. The proposed Project contribution to the Trilling Way pump station is minimal, and is not expected to impact the operational ability of the station.

The Channel Center project, and the balance of projects comprising the 100 Acres Master Plan, has the potential to impact capacity availability in the A Street sewer for the Seaport Square Project. In consideration of this, the BWSC has requested a study of the current operation of the A Street sewer be performed to update current data prior to performing additional capacity analyses. The Seaport Square Project intends to perform the requested studies and perform the detailed capacity analysis as part of the BWSC Site Plan Review Process and application for a General Services Agreement. If the studies and subsequent capacity analysis indicate upgrades are required to portions of the A Street sewer in order to safely accommodate the Project, the Proponent will participate as appropriate on the design and construction of those improvements.

7.1.2.1 Consistency with Model Assumptions

The MWRA's System-Wide InfoWorks (2006 condition) sewer model and the BWSC's City-Wide (2008 Condition) sewer model were reviewed in an effort to determine if the Project's proposed flows fall within those anticipated in the models. Although neither model appears to include the dry weather flows anticipated from the proposed Seaport Square development, increases in dry weather flow typically have a negligible impact on combined sewer models due to their relatively small flows in comparison to those generated from stormwater inflow.

While neither model appears to include any Project-generated dry weather flow, each model includes an inflow/infiltration volume that is more than 10 times the projected peak wastewater flow from the Project. Completion of the Seaport Square Project will include the complete reconstruction of sewer and drainage infrastructure within the Project Blocks resulting in the elimination of most inflow and infiltration (I/I) from the area. Correspondingly, the net resulting flows from the Project area to the sewer system will be significantly reduced from those flows currently anticipated in each sewer model. Additionally, BWSC has recently completed sewer separation projects in the area between Seaport Boulevard and Congress Street that will further reduce the inflow burden on the sewer system.

Given the relatively large I/I considerations in the models, the proposed wastewater flows from the Project are not expected to negatively impact model forecasts, particularly given recent system improvements and those proposed as part of the Project.

7.1.3 Sanitary Flow Routes

The Proponent has corresponded with representatives from BWSC to discuss existing wastewater infrastructure. Because of the minimal operation and maintenance involved, BWSC prefers gravity sewers to pumped systems. As such, they have asked that all efforts be made to utilize the A Street gravity sewer to handle wastewater flows from the Project area rather than using the Trilling Way pump station and the E Street sewer which currently handle the majority of the flow from the South Boston Seaport area.

Flow to Trilling Way Station

The Proponent anticipates being able to substantially accomplish this goal by limiting Project flow to the Trilling Way Station to that coming from Blocks G and F which are effectively cut off from southern wastewater pathways by the Silver Line tunnel and its supporting infrastructure. Combined, the Blocks are estimated to contribute approximately 59,000 gpd, or less than eight percent of total Project flow which represents a small fraction (less than 0.1%) of the capacity available at the Trilling Way Station.

Development of Block G anticipates the "squaring off" of the intersection of Northern Avenue and East Service Road which will require the relocation of an existing 15-inch gravity sewer. Wastewater from Blocks G and F will discharge to the relocated sewer via new service connections and flow east in Seaport Boulevard and eventually to the Trilling Way pump station. The proposed improvements and relocations are shown on Figure 7-2.

Although adequate capacity exists for the flows projected, all relocations and connections will be closely coordinated with BWSC throughout the design process to ensure flows are distributed in a manner consistent with the needs and available capacity of the system.

Flow to A Street Sewer

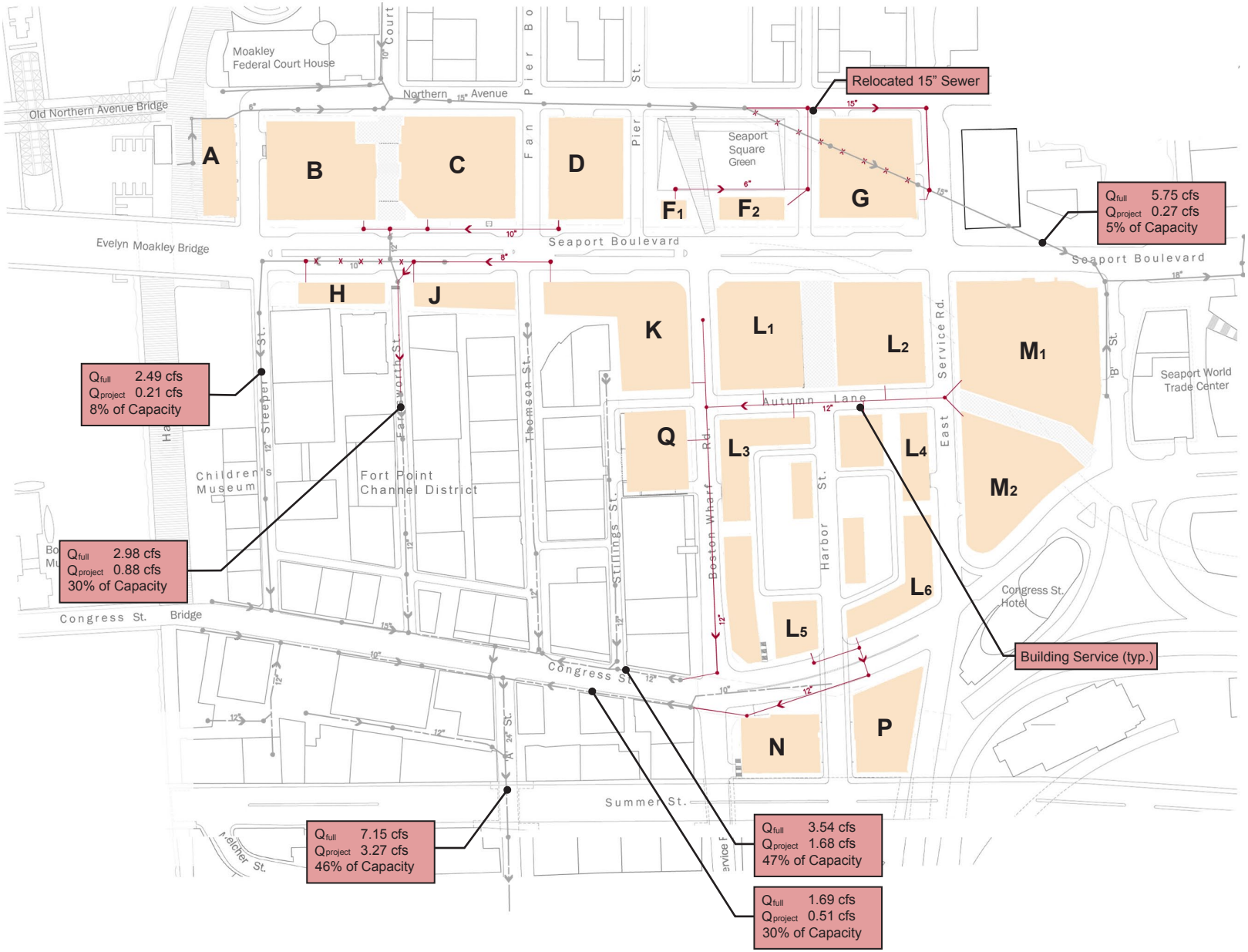
The balance of the Project wastewater flows (710,000 gpd) will be directed to the 24-inch sewer in A Street via local sewers in Sleeper Street, Farnsworth Street and Summer Street and new wastewater infrastructure being proposed as part of the Project.

New sewers will be constructed throughout the development to convey wastewater to available collection points in the existing BWSC system (see Figure 7-2). The following table summarizes findings related to the anticipated Project flows at each collection point and their corresponding percentage of the system capacity.

127-26628\figure_7-2_proposed_wastewater

LEGEND

- Proposed Sewer
- Existing Combined Sewer (CS)
- Existing Sewer
- Sewer Line to be Removed
- Proposed Buidling
- $Q_{project}$ Peak Estimated Flow from Project Site
- Q_{full} Estimated Capacity of Existing Infrastructure



SEAPORT SQUARE
IN SOUTH BOSTON

Figure 7-2

Proposed Wastewater Collection System

Notes:

1. The Existing Utility Information on this plan was compiled from Boston Water and Sewer Commission (BWSC) 100 scale sewer system maps.

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Table 7-1 Summary of Wastewater Capacity Impacts

Location	Size	Slope	Sewer Capacity	Peak Flow From Site	Percent (%) of Capacity
Sleeper Street	10-inch	0.013	2.49 cfs	0.21 cfs	8.4%
Farnsworth Street	12-inch	0.007	2.98 cfs	0.88 cfs	29.5%
Congress Street (north side)	15-inch	0.003	3.54 cfs	1.68 cfs	47.5%
Congress Street (south side)	10-inch	0.006	1.69 cfs	0.51 cfs	30.2%
A Street	24-inch	0.001	7.15 cfs	3.27 cfs	45.7%

Generally, the Project offers multiple options for distributing wastewater to the local collection system. The distribution shown represents what the Proponent believes to be the best allocation given the available system capacities and specific direction provided by BWSC. Project flows will be introduced to the system over a period of several years. As specific elements of the Project develop, the Proponent will work closely with BWSC to understand potential impacts of other planned projects, as well as better define the existing flow conditions at the time of development. The Project is committed to providing BWSC the information it needs and necessary infrastructure upgrades in order to approve the requested connections as part of the General Services Agreement process.

The Project may include industrial tenants or owners that will require Industrial Use Discharge Permits from the MWRA. As specific development plans advance, the Proponent will coordinate closely with the MWRA to evaluate specific permitting needs on a case-by-case basis.

7.1.4 Infiltration/Inflow

The Project will be served completely by separate sanitary and storm drain systems. As mentioned in previous sections, the Project will be constructing new wastewater infrastructure throughout the development. Additionally, much of the existing wastewater infrastructure scheduled to remain has been installed as part of recent projects such as the Central/Artery Tunnel and MBTA Silver Line Tunnel, or has been recently upgraded by BWSC and should be in relatively good working order.

The BWSC has recently completed projects that have provided separated sanitary sewers and storm drains in Farnsworth, Thompson, and Stillings Streets, areas previously served by combined sewers. Collectively, these system improvements free up significant capacity that was previously required to handle stormwater flows.

As a result of the proposed improvements, I/I contribution from the post-development Project area should be minimal. However the Project is committed to working with BWSC to identify areas of concern and develop appropriate courses of action. Given the size of the proposed development, specific I/I mitigation commitments will be determined cooperatively with BWSC on a Block-by-Block basis as part of the completion of individual General Services Agreements with BWSC.

7.2 Water Supply

7.2.1 Existing Water Supply System

Potable water is supplied to the Project area by a series of low- and high-pressure distribution and transmission mains owned and operated by BWSC. Water is supplied to BWSC system by the MWRA.

Water systems are available along all sides of the Project area. Low-pressure service mains, typically used for domestic water supply, and high-pressure distribution mains, typically used for fire protection systems, are available in the roads surrounding the Project, including Northern Avenue, Seaport Boulevard, Sleeper Street Extension, East and West Service Roads, Boston Wharf Road, Farnsworth Street, Thomson Place, Congress Street, and Stillings Street. The local distribution mains are fed from a 30-inch cast iron transmission main in Sleeper Street and Northern Avenue. Hydrants for fire fighting are located along the streets throughout the Project. Available fire flow test data indicate that the pressures and flows in the high service system are adequate for fire fighting. Figure 7-3 shows the existing water distribution system.

7.2.2 Proposed Water Supply System

Water consumption can be estimated as a function of the anticipated wastewater generation rates calculated in earlier sections. Typically, water consumption can be estimated as wastewater generation plus a factor of ten percent to account for non-consumptive use. The Project's water demand is estimated at 847,000 gpd. As with the wastewater generation figures, domestic water use is based on values established in Title V, which provides a conservative estimate of actual usage.

Planning level analysis has been performed to estimate the anticipated water volume required to meet project cooling tower demands. The analysis indicates that the "peak" water demand will be 610,000 gpd with an annual "average daily" demand of 380,000 gpd. As with wastewater projections, these projections represent conservative estimates based on planning level information and are likely to be reduced as design advances and planned water re-use strategies are further developed.

127-26628/figure_7-3-existing_water

SEAPORT SQUARE
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Figure 7-3

Existing Water Distribution System

Notes:
1. The Utility Information on this Plan was compiled from Boston Water and Sewer Commision (BWSC) 100 Scale Water Maps.

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Assuming a typical irrigation water application rate of one inch per week during the summer months, the Project estimates a peak water demand for irrigation of 15,000 gpd for the proposed four acres of landscaping and green roofs. The Project is actively pursuing creative ways to both limit need for irrigation through use of drought-tolerant species, as well as offset demand through the temporary storage and reuse of rain water. However, these programs lack the specific detail at this point in the development to adjust estimates accordingly.

The Proponent has met with BWSC representatives and found that there are no known capacity issues with either the local water distribution system or the transmission main. As such, the distribution system should have sufficient capacity to supply all phases of the Project, as well as those other projects currently planned within the area including but not limited to projects at Fan Pier, Pier 4, Russia Wharf, Summer Street, Melcher Street, Waterside Place, Congress Street and within the 100 Acre Plan. It is envisioned that building fire protection systems for high rise buildings will require internal pump systems to maintain adequate pressure for the building's fire protection system. The realignment of Northern Avenue will require relocating two water mains: a 16-inch main and a 30-inch transmission main. Relocating these water mains will require coordination with BWSC. In order to provide better service to the proposed buildings of Block L, a new 12-inch water main is proposed in Autumn Lane connecting the low and high service mains in East Service Road and Boston Wharf Road. The proposed connection and proposed building services are shown on Figure 7-4.

7.2.3 Water Conservation

The Project is committed to implementing all practical measures to reduce its demand on the public water supply. The building program will include the latest technology in low-flow fixtures and other water conservation measures. The Project is currently investigating ways of offsetting its irrigation water demands through the capture and reuse of roof runoff which has the added benefit of further reducing the burden on the drainage system.

7.3 Stormwater Management

7.3.1 Existing Conditions

The storm drainage system serving the Project area is substantially owned and operated by BWSC. Private outfalls currently serve large portions of Project Blocks situated between Seaport Boulevard and Northern Avenue. The system is comprised of drainage infrastructure constructed by private landowners over the course of parcel history and several infrastructure improvements that have been made as part of recent projects such as the Federal Courthouse, the construction of Seaport Boulevard, the Central Artery/Tunnel project and the MBTA Transitway Tunnel project. Figure 7-5 shows the existing stormwater collection system.

127-26628\figure_7-4-proposed_water

LEGEND

Proposed Water Line		Water Line to be Removed		SL	Low Pressure Service
Existing Water Line		SH	High Pressure Service		Proposed Building

SEAPORT SQUARE
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Figure 7-4

Proposed Water Distribution System

Notes:
1. The Utility Information on this Plan was compiled from Boston Water and Sewer Commision (BWSC) 100 Scale Water Maps.

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127-26628\figure_7-5-existing-stormwater

SEAPORT SQUARE
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Figure 7-5

Existing Stormwater Collection System

Notes:

1. The Existing Utility Information on this plan was compiled from Boston Water and Sewer Commission (BWSC) 100 scale sewer system maps.

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The Project area is served by several storm drain outfalls which discharge runoff to the harbor.

A storm drain outfall at the end of Courthouse Road (SDO Courthouse) was installed as part of the construction of the Federal Courthouse. Further improvements to this part of the system have been designed for the City of Boston as part of the Fort Point Channel Streets-Phase I Roadway Reconstruction Project. Portions of this improvement are to be constructed as part of the development of the Fan Pier.

A 42-inch storm drain outfall, located near the east abutment of the Seaport Boulevard Bridge (SDO 196), handles stormwater flows from western portions of Seaport Boulevard and portions of the Project area.

A 30-inch storm drain located in Seaport Boulevard carries stormwater from eastern portions of Seaport Boulevard and the Project area east to an outfall near the World Trade Center (SDO 195).

The southern portion of the Project is served by storm water collection systems located in Boston Wharf Road, Congress Street, West Service Road, and B Street. A 48-inch storm drain in Congress Street carries stormwater flows from smaller lines located in Boston Wharf Road, West Service Road, and the southwestern Project areas to an outfall located near the abutment of Congress Street bridge (SDO 075). Additionally, a 36-inch storm drain in B Street carries stormwater from East Service Road, portions of Congress Street, and southeastern Project areas to a second outfall near the World Trade Center (SDO 202).

Existing stormwater treatment systems vary broadly across the Project Area and include new catch basins and storm drains installed in the public roadways as part of recent transportation infrastructure projects and a mixture of systems across the private development parcels. Treatment systems within the existing development Blocks are limited mostly to older catchbasins. Catchbasins are supplemented by grit separating chambers on Block L and by a small at-grade detention basin on Block M. It is anticipated that much of this infrastructure will be removed as part of the construction process. The storm drain infrastructure within the public right of ways appears to be adequate to accommodate the proposed Project.

It is anticipated that much of this infrastructure will be removed as part of the construction process. The storm drain infrastructure within the public right of ways appears to be adequate to accommodate the proposed Project.

It should be noted that there is a proposed storm drain, to be installed by others, within Courthouse Way that would convey flows from a proposed storm drain in the northeast section of Northern Avenue to an existing 36-inch storm drain outfall.

7.3.2 Proposed Conditions

Due to the inclusion of large open spaces, green roofs and site landscape improvements, the Project will result in an approximately 20% reduction in the amount of impervious coverage on the site, significantly reducing the peak runoff rates from the site. In developing the proposed drainage system, the Project has tried to direct stormwater flows to outfalls owned and operated by BWSC and away from private outfalls. In most cases the resulting increase in drainage area to the public outfall is substantially offset by the proposed increased site pervious coverage. The specifics of this approach will be developed cooperatively with BWSC and other potentially impacted outfall owners.

Significant infrastructure improvements will be required to connect the proposed buildings to the modified public drainage infrastructure. These improvements and the necessary modifications to the existing system are shown on Figure 7-6.

The realignment of Northern Avenue will require the relocation of a (private) 24-inch storm drain and at least two catchbasins located within the current street alignment. According to the proposed storm drain infrastructure plan for the Fan Pier project, the existing private 30-inch outfall on private property and the 24-inch storm drain will be removed and new private storm drain piping and four (private) outfalls will be built to replace the existing system. In addition, a proposed public storm drain system within the proposed realigned section of Northern Avenue is to be installed by others.

The Proponent has coordinated with BWSC regarding the status of the existing stormwater outfalls. Since the Project is reducing runoff generated from the Project, the Proponent does not anticipate significant stormwater infrastructure capacity issues. Future coordination will determine if improvements are required as part of this Project for the connection to the outfall in Courthouse Road.

Details for the on-site stormwater collection system will be designed in accordance with BWSC and MassDEP requirements and regulations.

Table 7-2 provides a summary of the post-development runoff characteristics. The results are presented by outfall to allow a more detailed comparison and as a total Project to illustrate the total net impact of the proposed improvements.

127-26628/figure_7-6-proposed-stormwater

SEAPORT SQUARE
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Figure 7-6

Proposed Stormwater Collection System

Notes:

1. The Existing Utility Information on this plan was compiled from Boston Water and Sewer Commission (BWSC) 100 scale sewer system maps.

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Table 7-2 Summary of Post-Development Runoff Characteristics

Outfall		Impervious Coverage	Area	Peak Runoff Rate (cfs)			
			Acres	2-Year	10-Year	25-Year	100-Year
SDO 075	PRE	98%	8.1	26.8	38.9	46.4	56.0
	POST	77%	8.3	19.6	29.6	36.0	43.7
	NET		0.2	-7.2	-9.3	-10.6	-12.3
SDO 195	PRE	98%	7.3	23.4	33.8	40.5	48.7
	POST	74%	10.9	25.9	39.1	47.5	57.8
	NET		3.6	2.5	5.3	7.0	9.1
SDO 196	PRE	89%	1.5	4.8	7.0	8.4	10.1
	POST	89%	2.5	6.4	9.5	11.4	13.8
	NET		1.0	1.6	2.5	3.0	3.7
SDO Court House	PRE	74%	2.9	9.0	13.1	15.8	19.0
	POST	62%	1.5	3.4	5.3	6.5	7.9
	NET		-1.4	-5.6	-7.8	-9.3	-11.1
SDO 015	PRE	99%	3.5	11.6	16.8	20.2	24.2
	POST	NA	0.0	0.0	0.0	0.0	0.0
	NET		-3.5	-11.6	-16.8	-20.2	-24.2
Project Total	PRE	95%	23	75.6	109.6	131.5	158.0
	POST	76%	23	55.3	83.5	101.4	123.2
	NET		0.0	-20.3	-26.1	-30.1	-34.8

7.3.3 Low Impact Design

Because of the Project's urban location opportunities for Low Impact Development (LID) measures are limited. However, the Project is committed to the general principles and will look to measures such as green roofs, rain gardens and water reuse to offset Project impacts.

Green roofs are an effective LID technique that is beneficial to the environment. They reduce stormwater runoff volumes through rainwater storage and evapotranspiration, in addition to reducing peak runoff discharge rates. The reduction in impervious coverage also reduces the heat island effect which improves local air quality. Green roofs also may provide long-term cost savings to the facility owner. The up-front construction costs are generally more expensive, however they have a longer life span than conventional roofs and the added insulation reduces heating and cooling costs. Green roofs will be considered on several of the buildings in the proposed development.

Rain gardens are also an effective LID technique that provides groundwater recharge in addition to the environmental benefits provided by green roofs. Typically they are less costly to install and maintain than conventional stormwater treatment technologies and they provide the added benefit of enhancing the landscape. Rain gardens will be considered in the proposed areas of open space throughout the proposed development.

As a subset of Low Impact Design we have investigated the likely impacts associated with the potential rise in sea levels that may result from a continued rise in global temperatures. Current FEMA mapping indicates a 100-year flood plain elevation of 10.0 NGVD in the area of the site. Finish grade of the site generally ranges between elevation 15.0 and 17.0, several feet above the flood plain elevation. Although the buildings are expected to be substantially above the current flood plain, and therefore protected from potential rises in sea level, entrances to below-grade parking will be reviewed closely so as to provide an additional one foot clearance above current requirements.

7.3.4 On-site Stormwater Retention

The Project will result in a significant reduction in peak rates of runoff from the Project area. As such, retention is not required to offset any increased rates. As part of the Project's commitment to water saving measures, systems are being considered that will store runoff for irrigation use or reduce potable water consumption in other areas. However, these systems are not being designed for the purposes of retaining stormwater to mitigate peak runoff rates.

7.3.5 Compliance with MassDEP's Stormwater Management Policy Standards

The Project will comply with MassDEP's current Stormwater Management Policy Standards. The Project is located entirely within the BWSC service area and will have to prove compliance with MassDEP Stormwater Regulations during the BWSC Site Plan Review process.

The proposed stormwater management system will be designed using the revised MassDEP Stormwater Handbook as a guideline. The standards have been recently revised to promote increased stormwater recharge, the treatment of more runoff from polluting land uses, Low Impact Development techniques, pollution prevention, the removal of illicit discharges to stormwater management systems, and improved operation and maintenance of stormwater best management practices (BMPs). The following is a summary of the ten Stormwater Management Standards and the mitigation measures that will be included as part of the proposed stormwater management system to ensure compliance.

Standard #1: Untreated Stormwater. No point discharges of untreated stormwater to regulated resource areas are proposed. Stormwater quality controls for the Project will include street sweeping, deep sump/hooded catch basins, particle separators, and LID techniques such as rain gardens and green roofs wherever possible.

Standard #2: Post-Development Peak Discharge Rates. As a result of the decrease in net impervious area from existing to proposed conditions, peak flow attenuation BMPs will not be incorporated into the drainage design to mitigate the peak discharge rates for the 2, 10, 25 and 100-year, 24-hour storm events.

Standard #3: Recharge to Groundwater. The Project Site is located on Urban Fill, which is considered a Hydrologic Soil Group (HSG) "D" classified soil. Per the Stormwater Handbook, sites comprised solely of "D" classified soils are required to infiltrate the required recharge volume only to the maximum extent practical. In addition, the Project is considered a redevelopment which also requires this standard be met only to the maximum extent practical. The Project will incorporate rain gardens within the proposed open space to infiltrate the required recharge volume to the maximum extent practical.

Standard #4: TSS Removal. Based on the proposed stormwater management system design, BMPs will remove in excess of 80% of the Total Suspended Solids (TSS) from the stormwater runoff discharging from the site. This will be achieved through the use of BMPs that are sized to capture and treat the required water quality volume. The site design will achieve this result through the use of street sweeping, deep sump/hooded catch basins, particle separators, and possibly rain gardens.

Standard #5: Higher Potential Pollutant Loads. A portion of the Project Site, specifically the high intensity-use parking lots, will be treated as potentially contributing higher pollutant loads based on the estimated vehicle trips per day exceeding 1,000. Stormwater discharges from areas with higher potential pollutant loads typically require the use of specific stormwater management BMPs, and at least 44 percent TSS removal prior to discharging to an infiltration device. This standard will be met by the incorporation of BMPs including deep sump catch basins and particle separators.

Standard #6: Protection of Critical Areas. The Project Site is not located in or near to a critical area. Therefore, Standard #6 is not applicable to this Project.

Standard #7: Redevelopment. The proposed Project is considered a redevelopment because it is comprised of a previously developed site and will result in no net increase in impervious area. As such, it is required to meet Standard #2, Standard #3, and the pretreatment and structural stormwater best management practice requirements of Standards #4, #5, and #6 only to the maximum extent practical.

Standard #8: Erosion/Sediment Control. Erosion and sediment controls will be incorporated into the Project design to prevent erosion, control sediment movement, and stabilize exposed soils during construction. During construction, control measures such as the placement of hay bale barriers, silt fencing, sedimentation basins, and the implementation of soil stabilization practices will be utilized. These control measures will be periodically checked and maintained as necessary throughout the duration of construction.

Standard #9: Operation and Maintenance Plan. An Operation and Maintenance Plan will be prepared for the site that complies with federal NPDES stormwater permit requirements.

Standard #10: Illicit Discharges to Drainage System. There will be no illicit discharges to the proposed stormwater management system.

7.3.6 Consistency with NPDES General Permit

In accordance with EPA CGP, effective June 30, 2008, construction activities that result in a total land disturbance of equal to or greater than one acre, where those discharges enter surface waters of the U.S. are subject to the conditions of the EPA CGP. Coverage under the EPA CGP requires the preparation of a Stormwater Pollution Prevention Plan (SWPPP). Since the Project will result in the disturbance of approximately 23 acres of land and stormwater runoff discharges to Boston Harbor, coverage under the CGP will be required. A Project specific SWPPP will be prepared and a Notice of Intent will be filed with the EPA to obtain authorization to discharge under the CGP.

7.3.7 Stormwater Management Plans

Stormwater Management Plans will be required for submissions to the City of Boston Conservation Commission and the BWSC, and are also required for compliance with NPDES Permit Requirements.

A comprehensive stormwater management plan will be developed which identifies the best management practices for controlling erosion and preventing the discharge of sediment to the BWSC's drainage system. The plan will be required by the BWSC and must be in compliance with the requirements of the ten MassDEP Stormwater Management Standards as mentioned above, and will detail the operation and required maintenance of the proposed stormwater BMP's to ensure long term environmental compliance of the drainage system.

Section 4.6.1.2 discusses the use of rainwater for groundwater recharge and irrigation.

7.4 Anticipated Energy Needs

7.4.1 Natural Gas Service

The gas infrastructure in the Project area is adequate for the proposed development. It may be necessary to extend existing gas lines further down Boston Wharf Road in order to provide tie-in points for Block Q and portions of Block L. An extension of the distribution system in Congress Street to Boston Wharf Road may also be required in order to supply Block N. Other Blocks have gas lines in immediately adjacent streets and will require typical connections from each building and/or Block. Correspondence with National Grid has yielded that they would need to install connections and loop the existing distribution

infrastructure to accommodate the proposed Fan Pier project. The preferred conceptual alignment would be within the realigned section of Northern Avenue. Further coordination with National Grid is ongoing.

7.4.2 Electrical Service

The electric infrastructure in the Project area is adequate for the proposed development. The Blocks in the proposed development should be able to access an existing electrical conduit, although portions of Block L may require extended connections to the electric lines because no electrical conduit exists in East Service Road. Recent coordination with NSTAR was undertaken and they are currently evaluating the projected loads for the Project.

As part of the Northern Avenue realignment, it will be necessary to move the 115-kV transmission line located within the right of way. Meetings have been held with NSTAR regarding this work and they have indicated that moving a transmission line requires a minimum of 18-24 months lead-time. Further coordination with NSTAR is ongoing regarding this work.

Based on conversations with the Boston Water and Sewer Commission (BWSC), National Grid, NSTAR Electric, etc., there will be a need to upgrade distribution in the immediate area to serve the needs of the new neighborhood and other currently planned projects listed in earlier sections. Currently it is anticipated that some of this infrastructure will be funded by the Proponent and some will be funded by the utility company. Also, a feasibility study is underway to explore the viability of various types of co-generation and central energy plant alternatives. Final determination on energy systems and distribution methods will be developed as potential solutions are refined.

7.4.3 Telecommunications

Local improvements will be required to connect individual Blocks within the proposed development to the existing telecommunications infrastructure serving the Project area. The Proponent has not identified any critical capacity issues related to the ability to meet the development's general telecommunications needs. However, further detail will be developed as design advances allowing more thorough coordination with available service providers.

7.5 Protection of Utilities

All work proposed as part of the Project will be closely coordinated with the local utility companies and BWSC, and all work within public rights-of-way will be coordinated through the City of Boston Public Improvements Commission. The Project and its contractors will take all necessary measures to avoid impacts to existing utility infrastructure and to minimize potential disruptions of service.

7.6 Sustainable Design/Energy Conservation

The Project will address issues of sustainable design and energy conservation in the infrastructure by minimizing the additional burdens placed on existing and new infrastructure service.

Green roofs and vegetated areas within the Project will reduce stormwater runoff, resulting in a decreased stress on storm sewers during rain events. Buildings will be designed to operate in an energy-efficient manner year-round, reducing anticipated peak electrical demand and reducing overall stress on the electrical grid compared to a "baseline" build-out.

More information about sustainable design and energy conservation can be found in Sections 4.6 and 4.13.

7.7 Conclusion

Due to the sites urban location and recent major infrastructure investments in the area as part of the Central Artery/Tunnel and Silver Line Tunnel, the area is generally well served by public and private utility infrastructure. As with any project this size, there are challenges to meeting the specific needs of the Project, but those challenges are relatively modest and manageable. Continued coordination with the City of Boston, BWSC, private utility companies and other Project stakeholders is required and anticipated.

6.0 HISTORIC AND ARCHAEOLOGICAL RESOURCES

6.1 Historic Resources

6.1.1 Historic Resources on the Project Site

The Project Site generally consists of large, vacant surface parking lots, devoid of any buildings or structures. The only building currently located on the Project Site is the Chapel of Our Lady of Good Voyage at 65 Northern Avenue, located on Block D. While included in the Massachusetts Historical Commission's (MHC) Inventory of Historic and Archaeological Assets of the Commonwealth, the Chapel is not listed in either the State or National Registers of Historic Places.

Chapel of Our Lady of Good Voyage, 65 Northern Avenue

Block D contains the Chapel of Our Lady of Good Voyage, located at 65 Northern Avenue. Designed by Boston architect John A. McPherson, the Chapel of Our Lady of Good Voyage was constructed in 1952 on land donated by Frederick G. Dumaine, Jr., President of the New Haven Railroad. The one-story, flat roofed, brick building has little ornamentation. What ornamentation exists is largely limited to the façade and includes three wood entry doors set within a cast stone entablature surrounded with Modern-style pilasters between the doors. Centered above the three entrance doors is a eight-pointed star stained glass window set within a cast stone surround. Flanking the star window are two square cast stone decorative panels. Window openings consist of brick lintels and cast stone sills. The existing wood frame stained glass windows, which depict spiritual symbols connected to the sea, were added sometime after the construction of the building; originally the building featured clear glass windows. The two narrow windows flanking the front entrance doors retain their original clear glass.

The Chapel of Our Lady of Good Voyage was established by the Boston Archdiocese for use of seamen and waterfront workers, including workers at the Commonwealth Pier and area warehouses. Also known as the "Fish Pier Chapel" or the "Waterfront Chapel," the Chapel of Our Lady of Good Voyage was one of several "workers' chapels" established by Cardinal Cushing during his tenure as Archbishop. As a mission Chapel of Saint Vincent de Paul in South Boston, the seaport ministry serves the crews of the approximately 1,000 merchant ships that dock each year in Boston.

The Chapel of Our Lady of Good Voyage is included in the MHC's Inventory of Historic and Archaeological Assets of the Commonwealth. The Chapel was documented as part of a 2003 effort to survey properties owned by the Boston Archdiocese. The building is not listed on the State or National Registers of Historic Places and is not within the boundaries of the Fort Point Channel National Register or landmark districts.

6.1.2 Historic Resources within the Vicinity

There are several properties listed on the State and National Registers of Historic Places located within the Project vicinity. Most notable is the Fort Point Channel Historic District, listed in the National Register of Historic Places; the generally co-extensive Fort Point Channel Landmark District; and the State and National Register listed Northern Avenue Bridge, spanning the Fort Point Channel. These historic resources and others are discussed and identified below.

Fort Point Channel National Register Historic District

Located south of the Project Site, and east of the Fort Point Channel, the Fort Point Channel Historic District was listed in the National Register in 2004. The district is largely comprised of land created by the Boston Wharf Company during an ongoing campaign of land filling which began in 1836 and continued until 1882. The Boston Wharf Company was also responsible for the design and construction of nearly all of the approximately 108 buildings within the district. These buildings were constructed for use as general manufacturing, warehouse, and commercial space, and as shipping and receiving uses for Boston's wool trade. During the nineteenth and early twentieth centuries, Boston developed into the principal marketplace in the United States for wool for apparel and fabrics.

The district is characterized by well-preserved late nineteenth and early twentieth century masonry buildings with an average height from five to six stories, and represent a variety of architectural styles including Romanesque Revival, Renaissance Revival, Classical Revival, Queen Anne, Italianate, and Industrial styles. During the period of 1893 to 1917, the Boston Wharf Company employed Morton D. Stafford as staff architect responsible for the designs of the majority of the Boston Wharf Company buildings. Howard Prescott succeeded Stafford as staff architect for the Boston Wharf Company from 1917 to 1939.

Fort Point Channel Landmark District

With similar but slightly different boundaries than the National Register district, the Fort Point Channel Landmark District was adopted as a City of Boston landmark district in December 2008. The Fort Point Channel Landmark District Commission is charged with reviewing proposed exterior alterations to properties within the landmark district to ensure consistency with the design guidelines established as part of the landmark designation process.

As part of the landmark designation, two "Protection Areas" were also adopted: the Seaport Boulevard/Boston Wharf Road Protection Area, and the A Street Protection Area. Blocks H, J, K and Q of the Project Site are located within the Seaport Boulevard/Boston Wharf Road Protection Area. The goals of the Seaport Boulevard/Boston Wharf Road Protection Area is to protect view corridors into and out of the adjacent landmark district and to ensure that

the massing, land coverage, and height of new construction on adjacent lots is compatible with that of the landmark district.

Northern Avenue Bridge

One of the more notable historic resources within the Project's vicinity is the Northern Avenue Bridge. Spanning the Fort Point Channel, the Northern Avenue Bridge was constructed in 1908 and is one of only three surviving swing bridges built by the City of Boston in the late 19th and early 20th century. The bridge is 80 feet in width and features four sets of pin connected trusses. The bridge carries two sidewalks, two roadways and a center lane originally reserved for a double-track freight railroad. The bridge's swing span is 283 feet in length. The rim bearing swing span is carried by a 40 foot diameter drum, in turn supported by 56 steel wheels running on a track along the rim of the granite island pier. In 1976, the National Park Service determined the Northern Avenue Bridge eligible for the National Register of Historic Places. In 2004, the bridge was listed on the National Register as a contributing resource within the Fort Point Channel Historic District.

Other Historic Resources within the Project Vicinity

State and National Register-listed properties, and properties included in MHC's Inventory of Historic and Archaeological Assets of the Commonwealth, within a quarter-mile radius of the Project Site, are listed in Table 6-1 and their locations depicted on Figure 6-1.

Table 6-1 Historic Resources

Map No.	Name	Address	Designation
1	Fort Point Channel Historic District	Bounded by Fort Point channel seawalls, Northern Ave. bridge, Seaport Blvd, Stillings, Midway and A Sts and Necco Ct	State and National Register-listed
2	Northern Avenue Bridge	Northern Avenue over the Fort Point Channel	State and National Register-listed
3	Congress Street Fire Station	344 Congress Street	State and National Register-listed
4	Russia Wharf	Russia Wharf, Atlantic Avenue	State and National Register-listed
5	Commonwealth Pier Five	165 Northern Avenue	State and National Register-listed
6	South Boston Fish Pier	Northern Avenue	MHC Inventory
7	Chapel of Our Lady of Good Voyage	65 Northern Avenue	MHC Inventory
8	Stone and Webster Building	245 Summer Street	MHC Inventory

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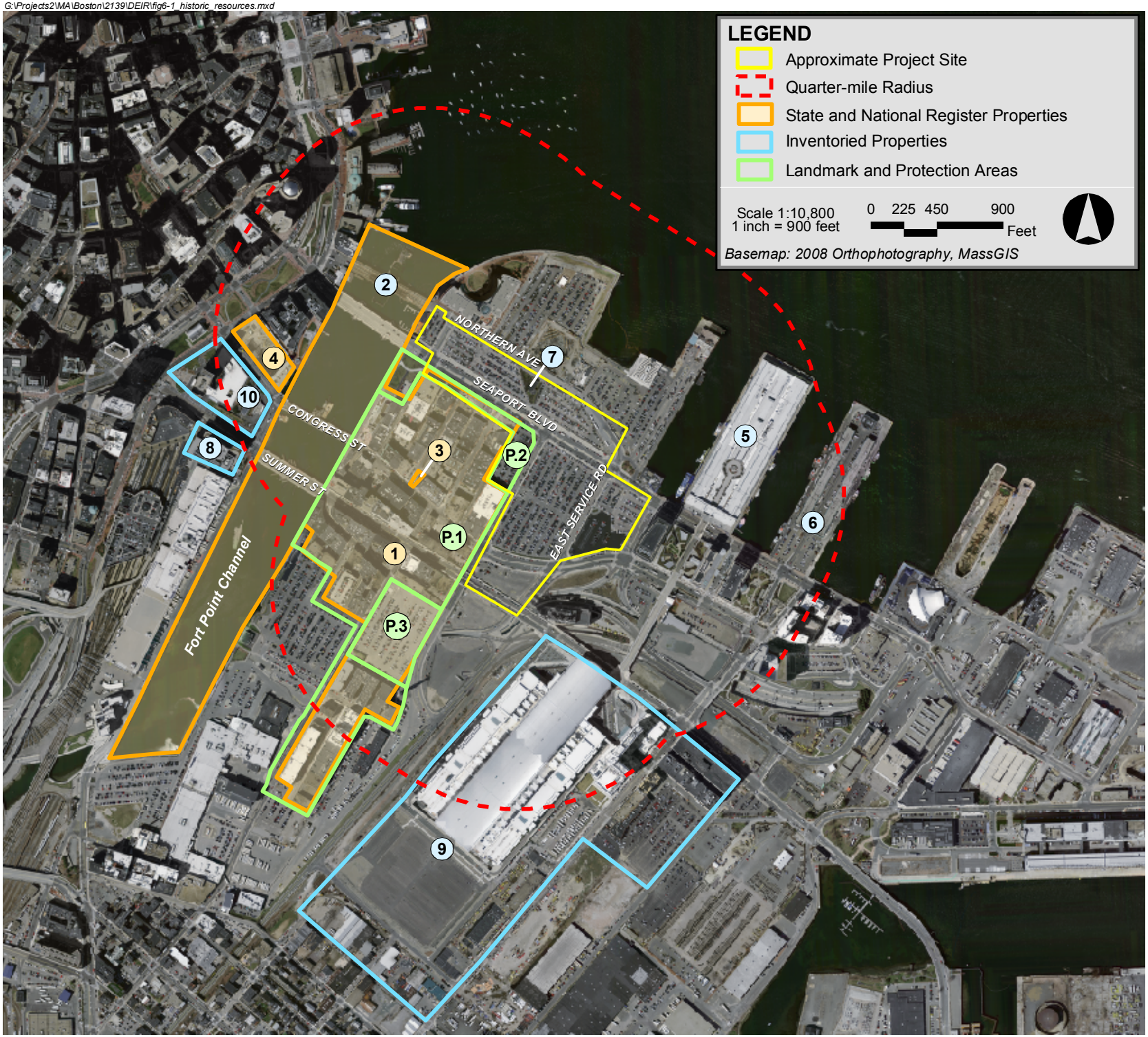


SEAPORT SQUARE
IN SOUTH BOSTON

Figure 6-1

Historic Resources

GALE INTERNATIONAL

Morgan Stanley

WS DEVELOPMENT

prepared by:
Epsilon Associates, Inc.

Table 6-1 Historic Resources (Continued)

Map No.	Name	Address	Designation
9	C Street Area	-	MHC Inventory
10	Federal Reserve Bank of Boston	556-624 Atlantic Avenue	MHC Inventory
P1	Fort Point Channel Landmark District	Bounded by Fort Point Channel seawalls, Seaport Blvd, Stillings, Midway and A Sts and Necco Ct	State Register listed, Boston Landmark
P2	Seaport Boulevard/Boston Wharf Road Protection Area	Seaport Boulevard/Boston Wharf Road	Landmark Protection Area
P3	A Street Protection Area	A Street, Wormwood, Melcher Street and West Service Road	Landmark Protection Area

6.2 Archaeological Resources

The proposed Project is located on filled land which has been previously disturbed by the construction of warehouses and parking lots. No previously identified archaeological resources are located within the Project Site or immediate vicinity. No impacts to archaeological resources are anticipated.

6.3 Impacts to Historic Resources

The Project will include the demolition of the 1952 Chapel of Our Lady of Good Voyage, 65 Northern Avenue, a property included in the MHC Inventory. While currently not listed in the State or National Registers, MHC staff has determined the building eligible for inclusion in the National Register. The Proponent has initiated consultations with MHC and BLC in an effort to identify appropriate means to mitigate the proposed demolition of the 1952 Chapel.

6.3.1 Design and Visual Impacts

The proposed Project consists of constructing new retail, commercial, residential and institutional buildings on large, surface parking lots. Similar to the variety of buildings found in the nearby Fort Point Channel District, the Project's proposed new construction will vary in scale, materials, use, and character across the Project Site. In addition to modern building materials such as aluminum curtainwalls and insulated glass which will take advantage of the views of downtown Boston and the harbor, the Project will also utilize a wide range of traditional masonry building materials consistent with those found throughout the Fort Point Channel District, including stone, glass, brick, precast concrete, and terra cotta.

The sensitive design of the new construction will complement the adjacent historic district. The scale of the new construction will further assist in providing a transition between the landmark district, which predominately consists of five and six story buildings as well as some immediately adjacent taller buildings, and the larger new construction proposed for the Blocks on the north side of Seaport Boulevard and on the east side of Boston Wharf Road.

Blocks H, J, K and Q of the Project Site are located within the Seaport Boulevard/Boston Wharf Road Protection Area. The goals of the Protection Area are to protect view corridors into and out of the landmark district and to provide an appropriate transition of building scale and materials between the district and surrounding parcels. A design review process with the BLC, and the newly appointed Fort Point Channel Landmark District Commission, will ensure that the massing, land coverage, and height of new construction on adjacent lots will be compatible with that of the landmark district.

6.3.2 Shadow Impacts

Shadow impacts on historic resources resulting from new construction will be limited due to the height of existing buildings, the density of the neighborhood and the location of many of the Project's development Blocks north of the Fort Point Channel District. As discussed in greater detail in Chapter 4, shadow studies were conducted to investigate impacts from the Project.

As illustrated in the shadow study diagrams in Chapter 4, development Blocks north of the Fort Point Channel District, including Blocks A, B, C, D, F, G, H, J, K, L1, L2 and M1, will cast shadows on areas outside of the district, and therefore, will have no adverse impacts to the district.

Given their locations east of the district, developments proposed for Blocks Q, L3, L4, L5, L6, M2, N and P have the potential to cast shadows on the district at isolated time periods. However, due to the density of the district, many of the shadow impacts will be limited to the roofs of buildings, and not their elevations. In cases where the shadows extend beyond roofs to the building elevations, many of the shadows will be cast on secondary elevations and not the primary building façades.

As noted above, Blocks H, J, K and Q of the Project Site are located within the Seaport Boulevard/Boston Wharf Road Protection Area. The Seaport Boulevard/Boston Wharf Road Protection Area's design review process will further ensure that the landmark district is not unduly impacted by shadows cast by the Project's new construction.

Despite its location northwest of the Project Site, the Northern Avenue Bridge will only minimally impacted by shadows. During 21 of the 25 time periods studied, no new shadow will be cast onto the bridge. Shadow impacts from the Project beyond the as-of-right alternative will be minimal.

6.4 Status of Project Reviews with Historical Agencies

The Proponent has met with members of the Boston Redevelopment Authority design staff, as well as staff of the BLC to review, to discuss and seek input on the Project's evolving design. The Proponent will file for an Article 85 application for the Chapel as part of the Phase 1 portion of the Project.

When building designs for Blocks H, J, K and Q have developed sufficiently, the Proponent will file the necessary design review applications with the Fort Point Channel Landmark District Commission, given their locations within the Seaport Boulevard/Boston Wharf Road Protection Area.

The Proponent has had extensive discussions with both the BRA and the Archdiocese about the relocation and building of a new Our Lady of Good Voyage Chapel on Block H. The Proponent has requested a meeting with the MHC in an effort to identify appropriate means to mitigate the proposed demolition of the Chapel of Our Lady of Good Voyage. The Proponent is committed to working with MHC and BLC staff, and other interested parties, as the Project design advances.

5.0 URBAN DESIGN

5.1 Urban Planning and Design of Seaport Square

Consistent with the City of Boston's Seaport Public Realm Plan (February 1999), the Seaport Square Project is committed to making the South Boston waterfront the City's next great neighborhood. The revitalization of 23 acres of underutilized parking lots into a mixed-use neighborhood in South Boston's waterfront represents a unique opportunity that will shape the way people live, work, shop and play in the City for the next century and beyond.

Currently the Project Site is occupied by parking lots, fencing, and the Chapel of Our Lady of Good Voyage. The Project will provide civic and public uses and create a sense of place along the South Boston waterfront. Where asphalt streets and parking lots now exist, the Project will provide 23 well-designed, sustainable buildings, creating a new neighborhood with wide sidewalks adjacent to new retail establishments, landscaped areas, and welcoming open spaces for residents, office workers and visitors alike.

The Seaport Square Project compliments the City's built heritage, while fostering environmentally responsible growth. Seaport Square enhances the public realm through its creation of a truly vibrant 24-hour/7-day a week urban waterfront neighborhood with open space and civic uses that infuse the waterfront with urban life. Well designed public spaces invite people to connect with each other in meaningful ways. The open spaces of Seaport Square are carefully planned in order to engage people day and night by providing new places to live, work, relax and recreate.

Unique to Seaport Square are its cultural facilities along the newly created cultural corridor, linking the Boston Convention and Exhibition Center (BCEC) and Summer Street to the Institute of Contemporary Art and the waterfront.

The Project's integrated street network ties the buildings from the Fort Point Channel District to the views and openness of the waterfront, extending the fabric of the existing historic neighborhood with complimentary yet vibrant contemporary architecture. Its lively pedestrian friendly streetscapes, green spaces, public access, view corridors, ground floor public uses and significant retail space, convenient access to public transportation and creation of new streets and connections, will make it a premier destination waterfront neighborhood.

5.2 Area Planning: - Relationship to Existing Planning Initiatives

The following sections are a recitation, summary or description of area planning studies.

Boston Seaport Developments

Master planning by the Massachusetts Port Authority (Massport) and the City of Boston in the 1990s established a framework for mixed-use development in the South Boston waterfront, while still preserving the needs of the working port. Mixed-use development in the area began with the development of the World Trade Center (WTC) complex. The addition of the Seaport Hotel, West Office Building and East Office Building in the late-1990s expanded the mix of uses in the area. The Moakley Federal Courthouse anchors the western end of the South Boston peninsula. More recent development includes the John Hancock (formerly Manulife) office building which was completed in 2003 and the Park Lane Seaport Apartments, one of the largest apartment projects constructed in Boston in 20 years.

The Boston Convention and Exhibition Center, among the largest convention centers in the nation, is one of the South Boston waterfront's newest and most prominent developments in the district. The BCEC is located southeast of the Project Site and opened in 2004. The opening of the Institute of Contemporary Art further diversified the mix of uses in the area by adding an important cultural component. Fan Pier, which is currently under construction, will add a mix of uses to the area, as well as new open spaces for future residents, workers, and visitors to enjoy. Additional projects, including the Congress Street Hotel, 49-63 Melcher Street, and Waterside Place have been approved by the BRA

Also, in 2006, the BRA created the Fort Point District 100 Acres Master Plan, which encourages a mix of uses and open spaces to the area adjacent to the east side of the Fort Point Channel. The Seaport Square Project recognizes the importance of linking the development of the 100 Acre plan with the development of Seaport Square and the waterfront. Incorporating Boston Wharf Road as a north-south axis strengthens its role by creating a well defined street section with Seaport Square Green situated at its end. Seaport Square Green alignment with the Fan Pier Park forms a larger continuous public green space which responds to both the Harborwalk and the 100 Acre plan by providing a strong link between them.

In addition to the planning that has been done in the area and new construction over the past several years, the state and city have also made substantial investments in public infrastructure to improve the transportation infrastructure and public amenities in the area. These improvements are fundamental to the long-term build-out of the area, and help define the development densities and types of development suitable in the South Boston waterfront. Transportation improvements to highway infrastructure are the result of careful planning and coordination between Massport, the Central Artery/Tunnel project and the City of Boston. The resulting series of highway on- and off-ramps provide direct vehicular access to I-90 and I-93 in all directions. In 2004, Massport opened the South Boston Maritime Park which celebrates Boston's rich maritime history in a waterfront setting. The

Massachusetts Bay Transportation Authority's (MBTA) Silver Line, a rapid transit line opened in 2005, provides quick and convenient access to the South Boston waterfront area from South Station.

In the center of the existing development, new development and planned development lies Seaport Square, a property that has the greatest potential to link the disparate pieces together into the seamless, vibrant, mixed-use neighborhood envisioned by the BRA in several planning initiatives. The location provides the opportunity to connect the shorter, older buildings in the Fort Point Channel District to the taller, newer buildings that have been built over the past decade, or are planned but not yet built. The height and density are planned such that they increase as one moves east from the Fort Point Channel, and south from Boston Harbor starting at Fan Pier. The height also connects the Project Site to the BCEC, which is at a higher elevation along Summer Street. The types and uses of proposed development will connect all of the pieces - existing, under construction, and proposed - through a mixed-use program that ties together the convention uses, artist community, commercial and office employees, visitors, and residents of the South Boston waterfront.

The Seaport Public Realm Plan, 1999

In 1999, the Boston Redevelopment Authority issued a public realm plan for the South Boston waterfront called "The Seaport Public Realm Plan." This Plan established a set of principles that became the waterfront's planning framework, which was in turn the basis for the South Boston Municipal Harbor Plan as well as the Seaport Square Project. These principles include:

- Promote access to Boston Harbor as a shared natural resource to connect people, land, and water.

- Preserve and enhance the industrial port, and balance the growth of mixed-use and recreational activities along Boston Harbor with the needs of maritime commerce.

- Plan the district as a vital mixed-use neighborhood that expands the city's residential communities and provides a lively mix of open space, civic and cultural, water-transit, and commercial uses, and offers job opportunities that are mutually supportive and bring activity to the waterfront.

- Develop the district as an integral part of Boston's economy, enhancing the city's manufacturing, hotel, commercial office, retail, and visitor industries, and securing its position as an economic catalyst for the region.

- Ensure potential impacts of development on the South Boston residential community and all neighborhoods of the city are limited and that the communities share in the benefits of private investment.

The South Boston waterfront Public Realm Plan emphasizes three major strategies. The first is that the waterfront can be defined into three subareas, each of which relates to a body of water with its own unique character. These subareas include the Fort Point Channel District, the Piers District, and the Reserved Channel District.

Seaport Square falls within the Fort Point Channel Subdistrict. The Plan addresses the unique opportunities specifically associated with Fort Point Channel and its importance as a great public space between the Downtown and the South Boston waterfront. This Plan envisions the Fort Point Channel as an intimately-scaled, narrow channel, similar to a riverfront in the heart of an historic European city, with active edges, small boats, and an abundance of water activities, with multiple bridge crossings. The land area along the eastern edge of the Fort Point Channel is envisioned as hosting the most diverse mix of uses in the entire planning area, with public, civic, residential, retail, hotel, commercial, industrial, manufacturing, warehouse, research and development, and office uses.

The second strategy, which the Seaport Square Project follows, is to strengthen street connections that link new and existing developments to the water. The two connecting orientations include the east-west connection to downtown and the north-south connections to the South Boston community and the Harbor. These connections will be strengthened through improvements to new streets and existing streets, open space, and pedestrian links.

The third element is ensuring mixed-use neighborhoods with strong residential components throughout the waterfront area. The Plan's recommendation is not to create another downtown district dominated by office and other commercial uses that go dark after 6 o'clock in the afternoon and on the weekends. Rather, the Plan advocates an appropriate mix of retail, office, manufacturing, warehouse, research and development, hotel, residential, open space, and community facilities that will bring life to the waterfront and create an active and rich 24-hour district. The Seaport Square Project supports fully and strives to enhance this third element.

South Boston Municipal Harbor Plan, 2000

Municipal Harbor Plans allow municipalities to tailor the Waterways Regulations to the unique circumstances of that city, its economy and its harbor. In order to implement the Public Realm Plan, and to achieve a public realm more in keeping with Boston's urban character and mixed-use economy than would have resulted under the strict application of the State's Waterways Regulations, the BRA elected to develop a Municipal Harbor Plan for the South Boston waterfront. A series of substitute use and dimensional requirements was presented with corresponding offset provisions that, when implemented, will create an inviting and active public waterfront environment. All of Seaport Square Block A, and small slivers of Blocks B, G, H and M1 are within Chapter 91 jurisdiction and are compatible with and promote the goals of the South Boston MHP.

The principles on which the South Boston Municipal Harbor Plan was based include:

- Enhance and activate open space;
- Avoid privatization of the shoreline;
- Minimize adverse effects of wind and shadow;
- Identify substitutions and quantifiable offsets;
- Promote offsets that are valued by the public; and
- Ensure that development is carried out in a manner that protects public rights in tidelands

Fort Point Channel Watersheet Activation Plan, 2002

During the development of the South Boston Municipal Harbor Plan, a group of interested individuals began to focus on the Fort Point Channel, ultimately recommending that a more detailed planning effort be undertaken for this important city resource. Out of these discussions came the proposal to develop a Watersheet Activation Plan for the Fort Point Channel. This planning effort represents the collaborative efforts of the BRA, the Fort Point Channel Abutters Group, and the Fort Point Channel Working Group.

The Watersheet Activation Plan contemplates a number of public amenities designed to activate the Fort Point Channel. Among those is the construction of public access along the Channel's edges.

The Plan further contemplates certain public uses in the so-called "Seawall Basin" south of Summer Street, including rowing, canoeing, racing, water taxiing, youth programs, water festivals, lantern festivals, paddle boats, kayaks, floating islands, floating art, floating horticultural displays, an art barge, model boat racing, light festivals and displays, a floating park, fountains, an interpretive water trail, and tidal art.

These public uses will benefit from a number of improvements such as the lighting of existing bridges, a floating pavilion, a public boating facility, a landside support facility, an art barge, and fountains, as well as a pedestrian bridge designed to link the 100 acres more closely to the existing and future transit facilities (subways, trains, buses) in the vicinity of South Station. The Seaport Square Project will strengthen these goals and further activate the area through enhanced and activated open space at Old Sleeper Street immediately adjacent to proposed construction on Block A.

100 Acres Master Plan, 2006

The continuation of public realm planning in the South Boston waterfront includes the recently completed 100 Acres Master Planning process for the Fort Point District. The goal was to create a public realm plan that would guide future development of the existing surface parking lots around the Proctor & Gamble/Gillette ("P&G/Gillette") plant, the USPS facility, and Fort Point historic structures. The Master Plan provides the framework for growth in the 100 Acres area for the next 40 years.

The Plan calls for a vibrant 24-hour, mixed-use neighborhood anchored by over 11 acres of new public open space and almost 5.9 million square feet of development. The Plan defines land use, building heights, and densities while preserving the existing industrial context. Other critical elements include the extension of the Harborwalk and the use of open space as a connection from Haul Road to the Fort Point Channel.

The overall approach for distributing land uses is based on three general principles:

- Existing industrial uses will be protected and their expansion accommodated and encouraged. Offices, research and development facilities, and artist live/work spaces as well as thoughtful physical design of roadways and landscaping will provide a good transition to the industrial use.

- Commercial uses along Summer Street will be maintained.

- New residential uses should be located near and around the Channel and around open spaces, such as the proposed open space corridors.

The overall vision of the 100 Acres Master Plan is to create an active mixed-use neighborhood that retains and encourages expansion of appropriate existing industrial uses and employment but also builds on the residential base that will support a greater diversity of uses and population. The plan calls for a 24-hour community that incorporates a variety of land uses.

Fan Pier Master Plan, 2007

Fan Pier spans nine city blocks developed by The Fallon Company and will include three million square feet of LEED Certified office space, residences, a hotel, and a six-acre marina enhanced by a public transportation dock and moorings. Fan Pier, when completed, will include 2.9 million SF of mixed-uses. The Phase one office building (Parcel F) is currently under construction, totaling 18 stories and 493,000sf. The adjacent Institute of Contemporary Art was completed in 2006.

Harborwalk

One of the most important components of the City's waterfront revitalization program is the Harborwalk, a continuous public walkway along the water's edge that is, in effect, a re-established shoreline. The Harborwalk system connects the City's neighborhoods to its Harbor, leading recreational, cultural and historic attractions, and direct connections to public transit including water transportation facilities. When completed, the Harborwalk will stretch over 47 miles linking Dorchester to East Boston.

The Harborwalk program is being achieved through collaborative efforts among the BRA, other city and state agencies, private developers, residents and harbor advocacy groups such as The Boston Harbor Association. Harborwalk is constructed in segments by developers of waterfront properties pursuant to City zoning regulations that require that new development be set back from the edge of the water a certain distance and that the setback area be improved as a pedestrian path open to the public.

Harborwalk has a changing character as it winds through the City's different neighborhoods and downtown districts, stretching along the East Boston, Charlestown, North End, Downtown, South Boston and Dorchester neighborhoods from Chelsea Creek to the Neponset River. Part of the richness of Harborwalk is its variety, reflecting the various activities and urban texture of adjacent land.

South Boston Waterfront Gateways Study, 2005

With the completion of the Rose Kennedy Greenway, the major east-west streets that connect historic Downtown Boston to the emerging South Boston waterfront presents a wonderful urban design opportunity in the city. Currently, these streets - Old Northern Avenue, Seaport Boulevard, Congress and Summer Streets – represent a divide in the continuous and vital urban fabric of Boston. With appropriate improvements and future development, old Boston and new Boston can be merged into a single seamless urban environment. If the full potential of these streets is to be realized, public agencies and the abutting property owners must come together to craft a shared vision.

To this end, abutters within the study area collaborated in a series of visioning sessions in an effort to ascertain the scale and character of the various streets and their role within a redefined district. Members of the BRA's Greenway Crossroads Initiative team also participated in ongoing discussions as the streetscape design preferences unfolded. In addition, the Boston Convention Center Authority, which had already undertaken to research improvements to Summer Street, agreed to fold their own efforts into that of the South Boston Waterfront Gateways Study, completing the project mission of addressing all of the South Boston access corridors spanning the Fort Point Channel.

Improvements to the public realm in Boston rarely occur without some collaboration between public and private entities. The South Boston waterfront Gateways Study final report represents, on the one hand, a consensus between City and State agencies and participating private property owners and institutions about the qualities of the future public realm in the area. More importantly, the study serves not just as a plan for those future improvements, but as a catalyst for the multi-tiered partnerships that are needed to make them happen.

Visions for the new South Boston abound: The Fort Point Channel Watersheet Activation Plan, the Fort Point Downtown Municipal Harbor Plan Phase 2, the South Boston Waterfront Municipal Harbor Plan, the 100 Acre Plan, and the Commonwealth Flats Development Area, to list a few. Among the many plans, only the South Boston Waterfront Public Realm Plan, completed in 1999, overlaps the entire focus area of this study.

Despite its proximity to the Financial District to the west, Fort Point to the South and the newly establish Commonwealth Flats developments to the east, the area remains relatively untouched by the development activity surrounding it. On the one hand, the district contains many important institutions, including the Moakley Federal Courthouse, the new Institute of Contemporary Art, the Boston Children's Museum, the Boston Fire Museum as well as several successful smaller destinations such as restaurants, retail establishments, and galleries. In addition, the district is rich with landscaped waterfront access, to both the Fort Point Channel and Boston Harbor. On the other hand, these assets are in many instances disconnected by unimproved streetscapes, inactive uses, abrupt changes in grade and a lack of north-south through streets. It is against this backdrop of unfulfilled potential that this planning initiative was conceived.

Beyond the obvious need to simply plan for improvements to the area, the study represents a unique opportunity to envision the urban realm in advance of individual development projects. The potential for those developments is great. By crafting a clear set of criteria for the vision of the public realm, these large and imminent developments will be considered in the context of a continuous streetscape rather than as stand-alone projects.

Crossroads Initiative, 2005

In early 2004, Mayor Thomas M. Menino launched the Crossroads Initiative, a comprehensive planning program that leverages the massive infrastructure investment of the Central Artery/Tunnel Project to shape and define downtown Boston following the Big Dig. The ultimate goal of Crossroads is to re-knit the fabric of Boston, reconnecting neighborhoods to the Harbor and to each other with the Rose Fitzgerald Kennedy Greenway as the centerpiece.

The Boston Redevelopment Authority, working with various City departments and outside consultants, has explored the opportunities and challenges of this endeavor. The Crossroads Initiative focuses on six miles of key streets that connect neighborhoods and destinations

along the Greenway. Twelve streets have been identified that, with the creation of the Greenway, have the potential to form these vital connections between residential and business districts long separated by the elevated Central Artery. The initiative also aims to establish modern, functional and attractive connections to and from Boston Harbor, the Greenway, and downtown neighborhoods. Crossroads are intended to be Great Streets - streets of exceptional quality and vitality, with 21st Century amenities that will strengthen Boston as a world-class city. Construction of the Crossroads will mean improved pedestrian environments, enhanced elements for way finding, increased activity along sidewalks, better traffic flow, and new opportunities for art and performance. The goal is to create a convenient, comfortable, information- and activity rich environment that attracts and supports Boston residents, businesses and visitors. It will facilitate their travel - largely as pedestrians - and will promote their enjoyment of and appreciation for our downtown's many wonderful neighborhoods and abundance of historic, cultural and retail destinations.

5.3 Urban Design Principles

The overall principles of the Seaport Square Project are:

- Extending the existing urban fabric;
    - Urban connections and circulation;
    - New Urban Places; Open Space Network and Public Spaces
- Public art /cultural corridor
- 24/7 mix of uses
- Vibrant public space -- activating the street level (ground floor plan)
- Massing variety and design diversity
- Sustainable design: green strategies

One of Seaport Square's many attributes is the fact that the proposed Project will enliven Seaport Boulevard, a primary artery in the South Boston waterfront district and the district's most important link to the Financial District and Downtown Boston. By shaping the physical environment that defines this street and its connections, Seaport Square will realize Seaport Boulevard's potential as a world class promenade full of activity.

Another goal of the Seaport Public Realm Plan was to "make the Silver Line MBTA stop the nucleus of high density development with visual connections inbound to development and outbound to the water". The massing and proposed heights of Blocks B, C, D, G, H, J, K and L 1 and L2 are consistent with this vision.

Seaport Square also balances density sufficiently to create a vibrant sense of place with the Project's own unique 21st century identity, while at the same time seamlessly interconnecting to the late 19th and early 20th century architectural vocabulary. Seaport Boulevard's streetwalls are designed to mediate these two distinct urban fabrics: the northern side of the boulevard proposes a series of higher buildings, matching the block size and height of the adjacent Fan Pier buildings; while the southern side of the boulevard continues the scale, massing and height of the industrial brick warehouse fabric of the Fort Point Channel District. The transition in scale and massing of these two distinct urban edges will be further articulated in the buildings' architecture.

Seaport Square not only fills an urban void, but also links together separate clusters of diverse activity and urban fabric. The plan establishes a series of connections between the downtown Financial District, the waterfront area, the existing Boston Wharf buildings and the Fan Pier project. These connections stitch together isolated entities such as the ICA, the Seaport World Trade Center, the BCEC, and the planned future development of Waterside Place.

5.3.1 Extending the Existing Urban Fabrics

The Seaport Square Project mediates between distinct and currently isolated urban fabrics surrounding it; Fan Pier to the north, Fort Point Channel District to the west, and a collection of individual large scale modern structures to the south-east. Each of these areas has a particular character defined by scale, material, street width, and use, which are related to the dimensions of their blocks as well as to their period of construction.

The Fan Pier development is characterized by a grid pattern with blocks of approximately 200 by 200 feet with dense build out that transitions from higher (approximately 20 stories) to lower buildings (approximately 12 stories) toward the water's edge.

The Fort Point Channel Landmark District has a cohesive and recognizable identity due to its use of materials, continuous streetwalls, massing and alignment. This area is characterized by ornamental brick warehouse buildings of similar height (generally six to eight stories), rhythm of window openings, and architectural language. As part of the landmark designation of Fort Point Channel Landmark District, two "Protection Areas" werealso adopted: the Seaport Boulevard/Boston Wharf Road Protection Area, and the A Street Protection Area. Blocks H, J, K and Q of the Project Site are located within the Seaport Boulevard/Boston Wharf Road Protection Area. The goals of the Seaport Boulevard/Boston Wharf Road Protection Area is to protect view corridors into and out of the adjacent landmark district and to ensure that the massing, land coverage, and height of new construction on adjacent lots is compatible with that of the landmark district.

The area between the BCEC, the adjacent hotel, the Seaport World Trade Center, the Central Artery Vent Structure, and newly created off-ramps and tunnels to Logan International Airport includes buildings of varied programs, heights, architectural style and materials, which create larger blocks, and less friendly pedestrian streets and connections.

The massing strategy of the Project responds to these different fabrics by extending, intersecting and combining them, at times separated by an urban space and at times overlaid one on top of or within the other. Figures 5-1 and 5-2 provide views indicating how the Project will extend adjacent urban fabric into the Project Site. The strategy accomplishes two very important objectives: 1) It links the Seaport Square development to the scale and grain of its neighbors at all the edges where they meet, and 2) It produces a mixture of block sizes within the Project, which in turn supports a diverse mix of programs and massing options.

5.3.2 Urban Connections and Circulation

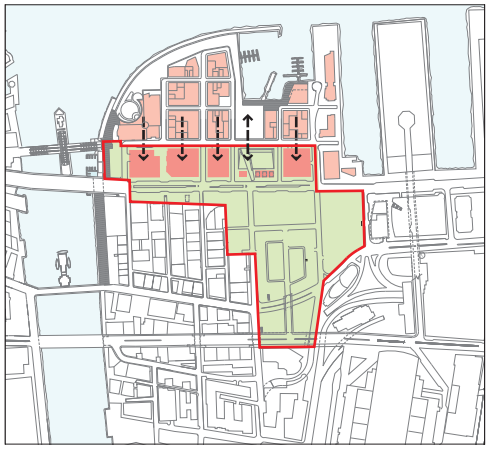
Seaport Square serves as a crossroads between Boston's central business district and the redeveloping Seaport District. This Project connects vital commercial, cultural, and civic activities by establishing critical nodes and links between them. Figure 5-3 shows urban connections and street character. The integrated network of streets and open spaces is made up of two street systems: the east-west connectors which are the main urban streets connecting the Seaport District to Downtown Boston, and the local smaller north-south streets that lead to the waterfront. Of the north-south streets, the new Harbor Street is the vital new link which not only operates on the local neighborhood scale but also fulfills a larger urban function as a connector between the elevated Summer Street and the waterfront.

5.3.2.1 The Public Nature of Major East-West Arterial City Scale Streets

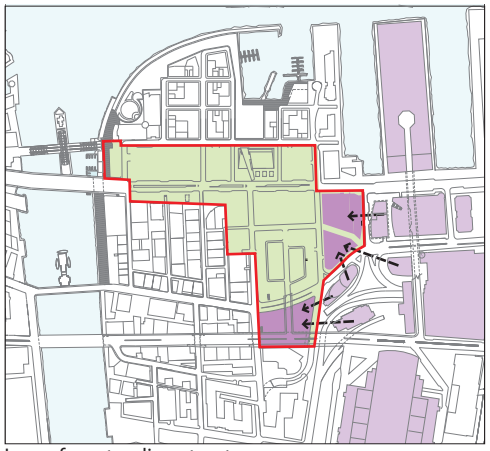
Consistent with the Seaport Public Realm Plan, the Project takes into consideration the urban role of four critical east-west streets and one pedestrian bridge which connects the Project area and Downtown Boston.

Three main streets tie the Seaport to downtown and the rest of the city-Seaport Boulevard, Summer Street, and Congress Street.

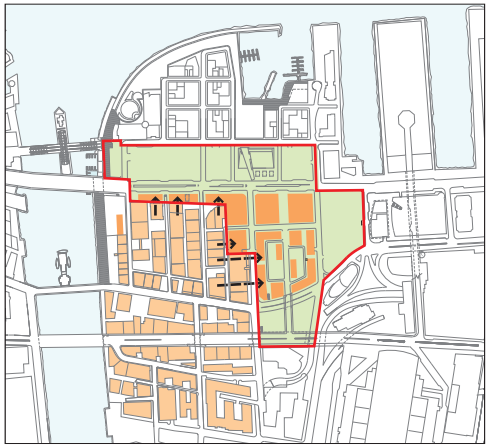
Seaport Boulevard is the easternmost extension of a network of streets that begins in Charlestown, comes along Atlantic Avenue, crosses over Fort Point Channel and concludes near the industrial port/ Fish Pier subdistrict. The challenge is to develop strategies to connect Seaport Boulevard as much as possible to the water. Summer Street is the Seaport's front door and address, the main civic street for the City, which starts at the Boston Common, passes through the Seaport and South Boston, ending at the L Street Beach. An additional challenge is to connect the elevated Summer Street to other nearby streets and to the water as well. Congress Street is the in-between street, coming from the Fleet Center, behind City Hall, through Post Office Square and across Fort Point Channel through the Boston Wharf District. It is a narrow, winding pedestrian –oriented street for most of its length, but in the Seaport becomes part of the tunnel and highway access network and takes on a major change of scale and character.



Grid of new Fan Pier development.

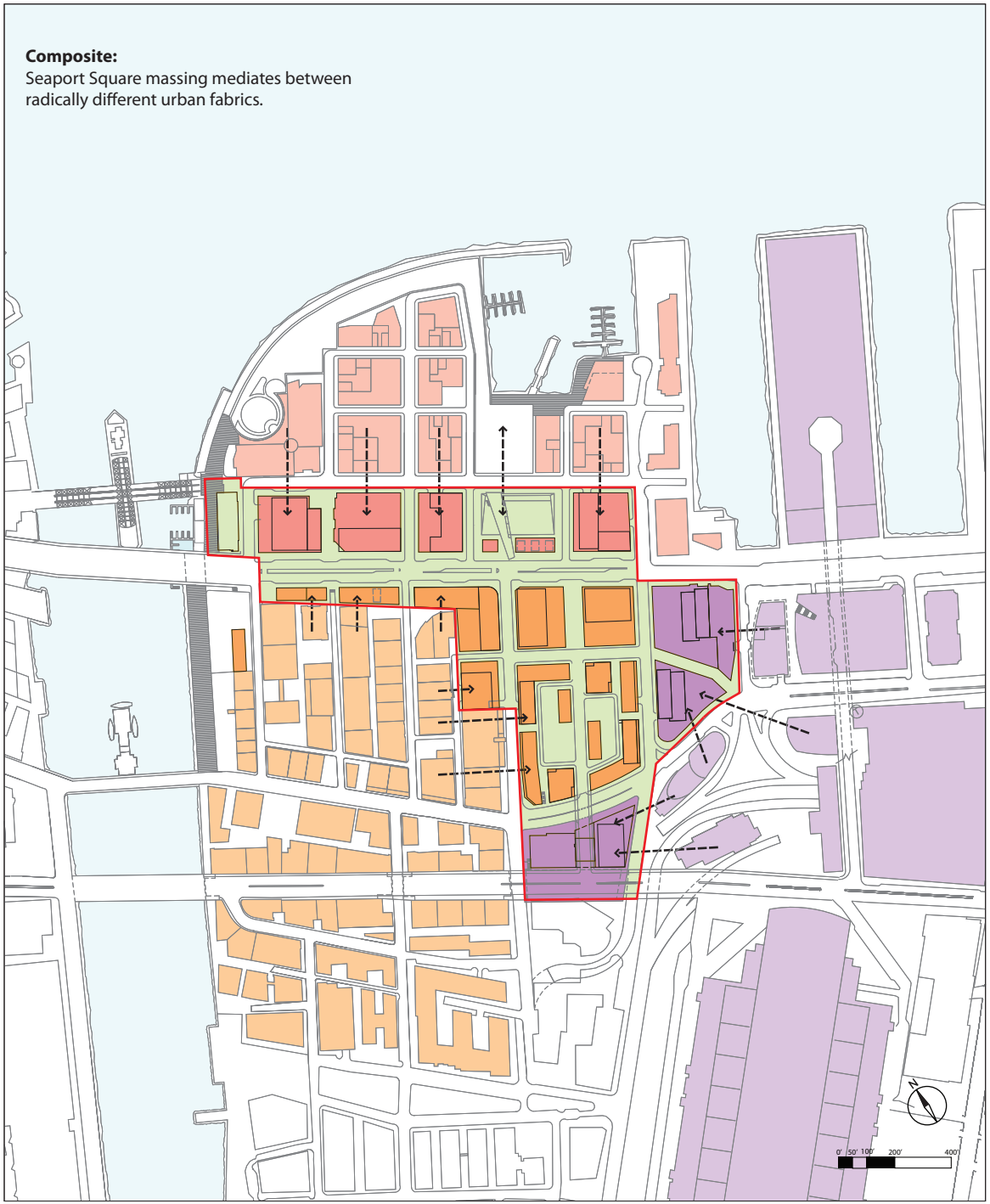


Large free standing structures.



Continuous street wall and historic warehouse urban fabric of Boston Wharf District.

Composite:
Seaport Square massing mediates between radically different urban fabrics.



SEAPORT SQUARE
IN SOUTH BOSTON

Figure 5-1

Extending Adjacent Urban Fabrics

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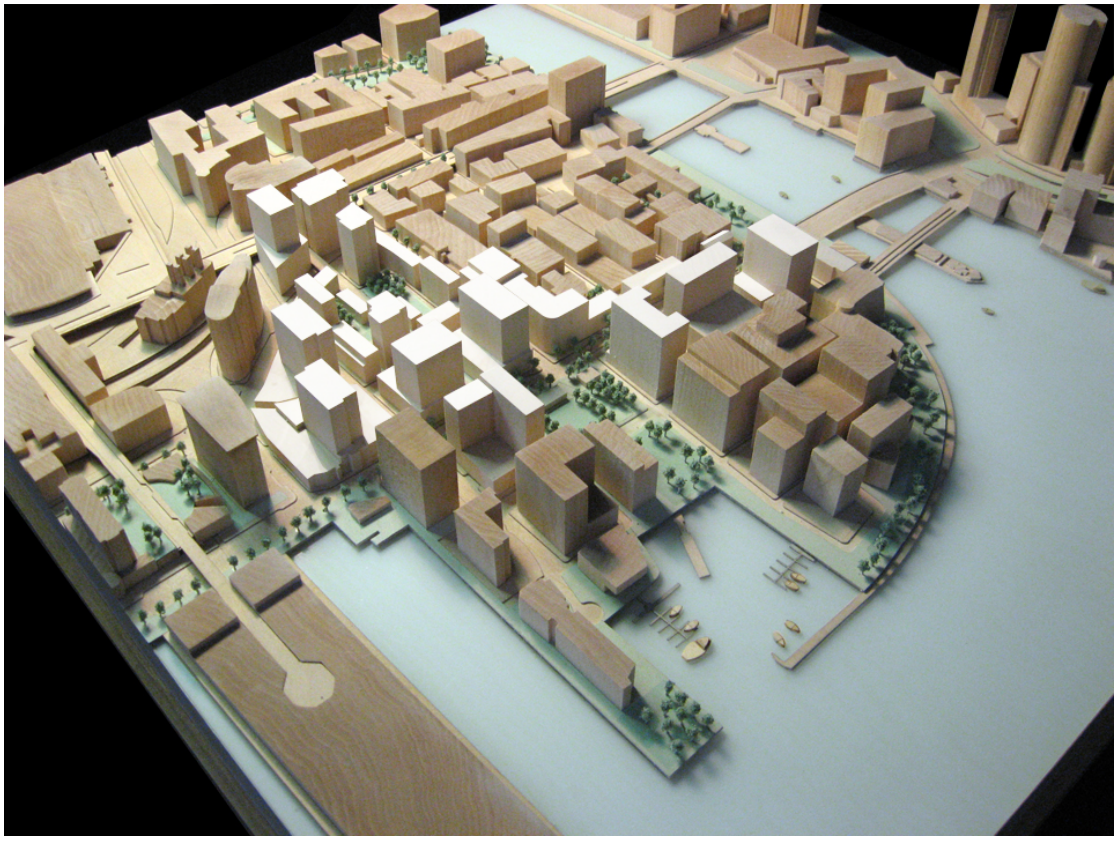
View from East



View from West

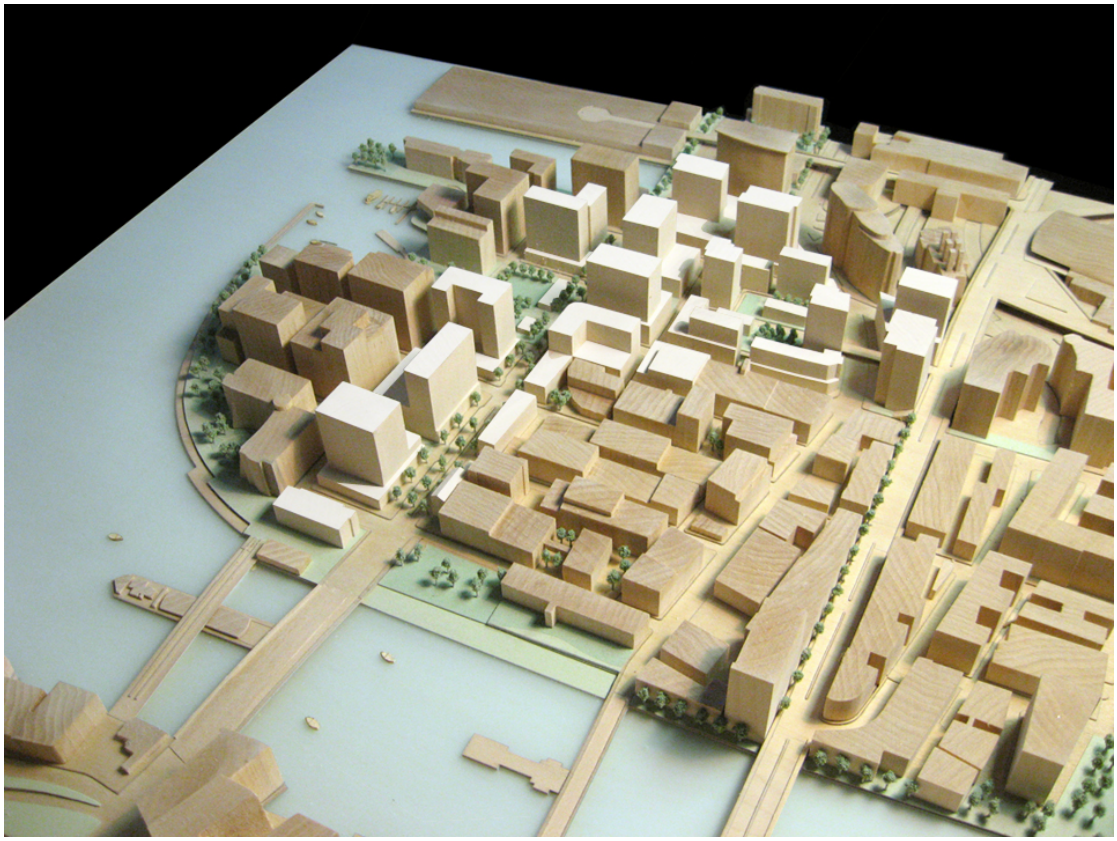


Figure 5 -2
Massing Model

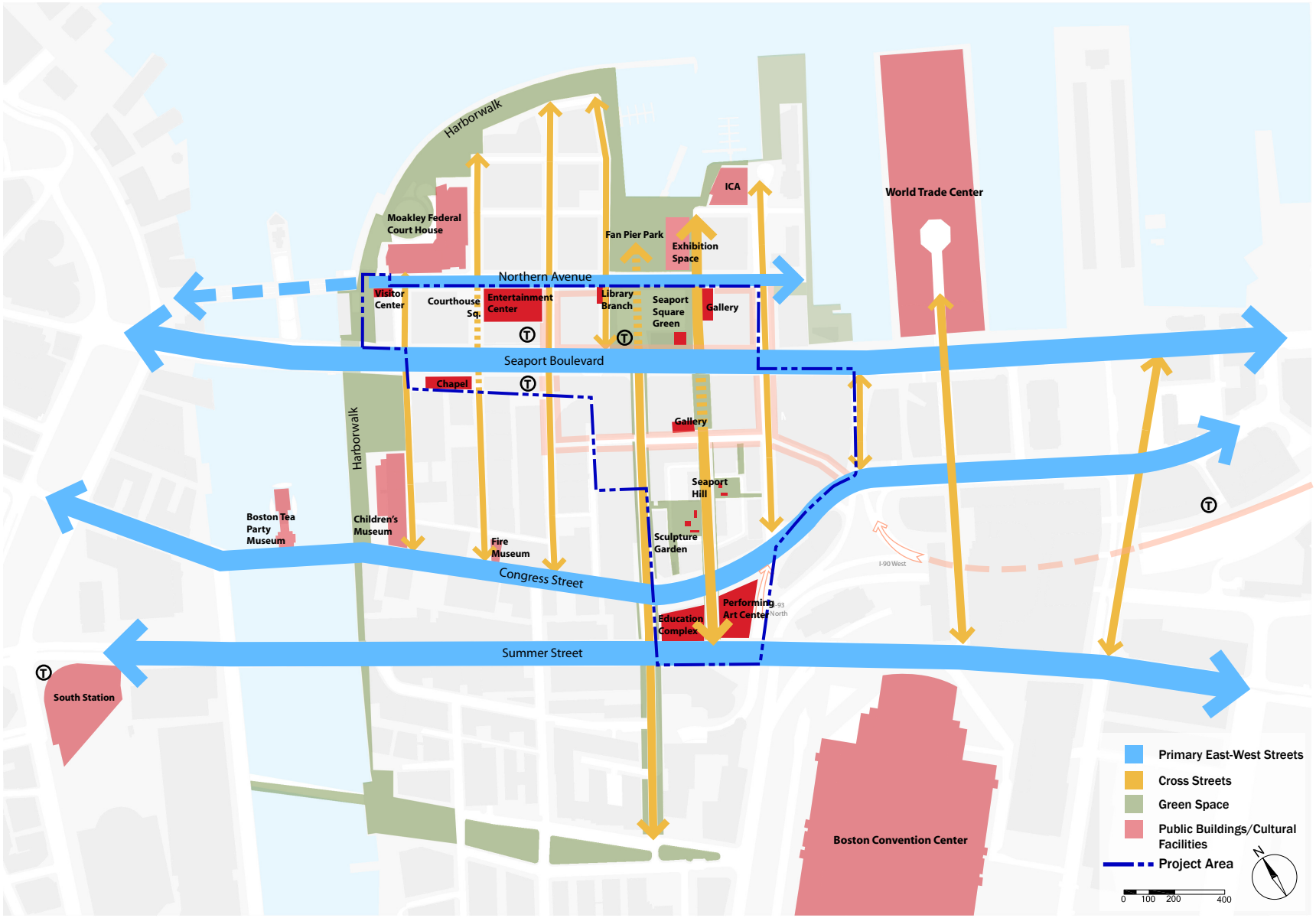


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Figure 5-3

Urban Connection & Street Character

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For the most part, the existing street pattern has little to do with the waterfront setting, nor is it comparable to the street grid of a typical Boston neighborhood: the blocks are too big, the north-south streets are discontinuous, and most do not reach the water. The area could benefit from being subdivided into smaller chunks organized around a finer grain of street blocks. The Seaport Square Project seeks to do just that.

Seaport Boulevard (Figures 5-4 – 5-6)

Seaport Boulevard is the main urban axis of the Seaport District. It is the new gateway to the South Boston waterfront from Downtown via the Evelyn Moakley Bridge, and provides a welcoming entrance into the city. It is designed as a more formal, grand boulevard, landscaped with trees in its median and along its wide sidewalks. This vibrant urban connection celebrates and focuses attention on the City's skyline with a grand entrance framed by the proposed Project.

This Boulevard will be the premier retail promenade of Seaport Square, favoring the pedestrian experience, but also including bicycle, vehicular and truck circulation. With access over the Moakley Bridge or from the Harborwalk along the Fort Point Channel, it will provide a pronounced entrance into the South Boston waterfront. In the tradition of urban boulevards, it establishes a presence as a destination in itself. Sidewalks on Seaport Boulevard have been increased to 35 feet on the northern side and 25 feet on the southern side. The northern side of the street widens to increase space for winter sun (coming from the south). Destination shops and restaurants will engage pedestrians day and night. Seaport Boulevard will provide numerous opportunities for people to sit, relax, meet friends, people watch, or enjoy the waterfront.

Congress Street (Figures 5-7 – 5-11)

Congress Street, a crossroad through Downtown Boston, is a meandering street which connects several important urban spaces. Its curved form creates segmented views when moving or walking along it, and gives a distinct visual experience. Much different than a straight street which highlights a static one–point perspective view, moving along Congress Street creates a changing focal point which corresponds to its curvilinear nature. Every turn highlights a building situated at the end of the established view corridor and gives prominence to that building as an urban reference for the street's continued path.

Congress Street is read as a series of amenities and destinations, from its important presence in Downtown; connecting Government Center, Faneuil Hall, Post Office Square, Boston Tea Party Museum, the Children's Museum, to its future role in the Seaport District.

The intent is to preserve Congress Street's unique character of continuity while highlighting its 'end of corridor view' buildings, which city planner Kevin Lynch would dub "urban landmarks". In keeping with the context of Congress Street, the proposed buildings on

Green Spaces

Public Buildings

Pedestrian Paths

Street Space Container

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Figure 5-4

Streets Diagrams:
Seaport Boulevard

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Figure 5-5

Seaport Boulevard

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Figure 5-6

Seaport Boulevard

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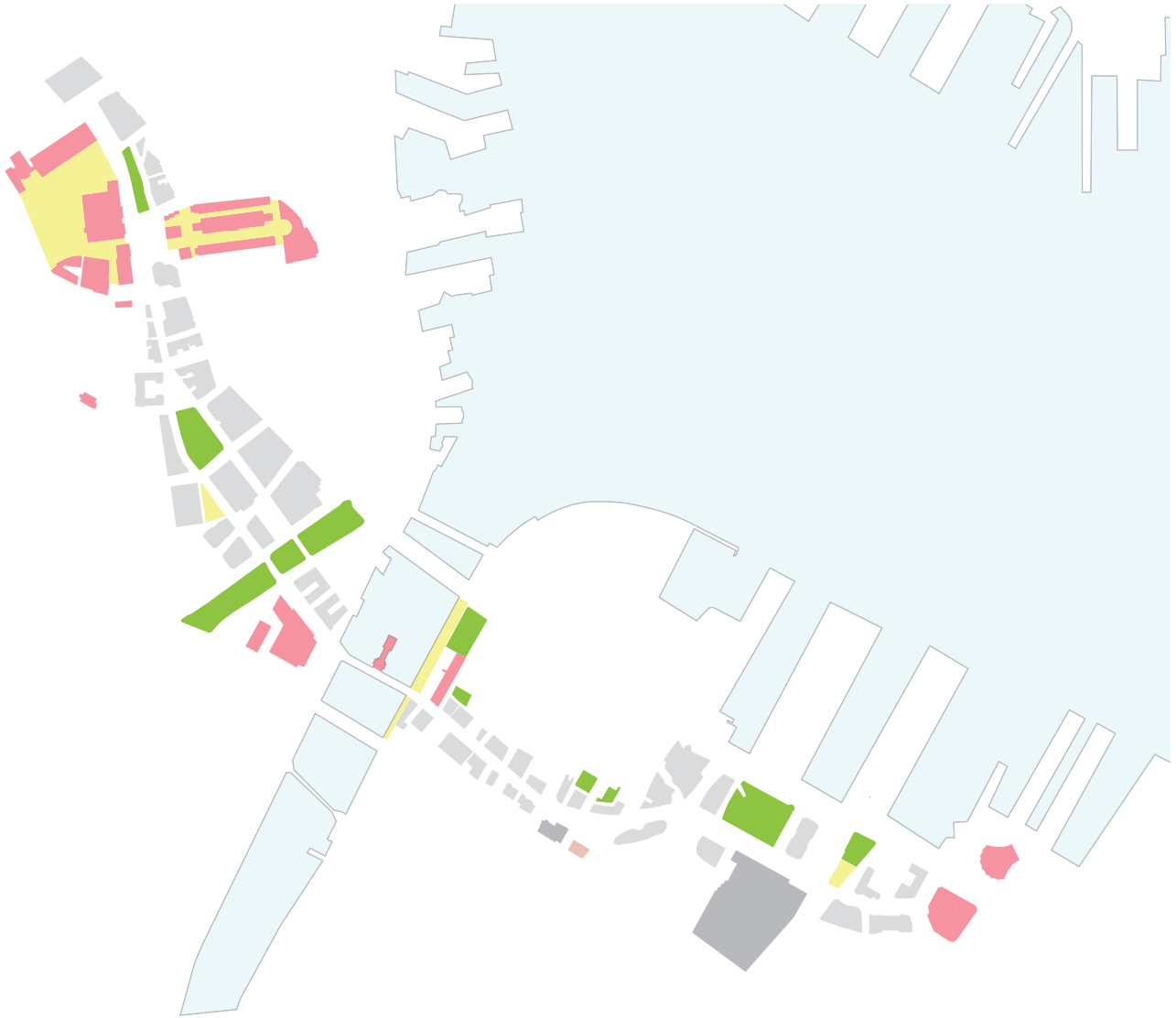

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Figure 5-7

Streets Diagrams: Congress Street

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Figure 5-8

Congress Street

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Figure 5-9

Congress Street

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Figure 5-10

Congress Street

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Figure 5-11

Congress Street

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Blocks N and P are located similarly on the curved segments. People approaching from Downtown Boston along Congress Street, will encounter these two "urban landmarks" buildings at the end of their view corridor; a focus as they arrive in Seaport Square. Buildings on Blocks N and P will be prominent not only as urban landmarks along Congress Street but also as architecture which strategically engages Congress Street as part of the new entrance to the Seaport Square neighborhood. Respecting the historical and material context of Congress Street, the intention is to extend the presence of masonry. The use of brick will strengthen this sense of continuity with the Fort Point Channel District.

Summer Street (Figures 5-12 – 5-15)

Summer Street, at the southern edge of the Project Site, is an important connector for the Seaport Square Project as it provides the main east-west access to South Station and the major connection between Downtown and South Boston. Its elevated condition, which was a result of bridging over the historic railways, created a disconnect between movement along Summer Street and the waterfront. Even though Summer Street crosses through the Fort Point Channel District it does not connect to any of the District streets (with the exception of Melcher Street right off the Summer Street bridge).

As a spatial experience, Summer Street presents two extreme conditions where it meets the N and P Blocks. Within the Fort Point Channel Landmark District, Summer Street is defined by a pedestrian-scale continuous streetwall of the uniform brick facades of the warehouse buildings. On the eastern edge, the elevated highway and pedestrian zone with vast vacant space meets with larger structures such as the Central Artery ventilation building, the BCEC, and proposed Waterside Place shopping area.

Blocks N and P are situated at the meeting of these two distinct experiences. With the creation of Harbor Street between Blocks N and P connecting Summer Street to the waterfront, the new buildings will now define an urban edge, creating both a continuation of the streetwall, and a new gateway condition. This public realm benefit knits the neighborhood together along Harbor Street and provides a pedestrian friendly and natural transition between the Fort Point Channel District and the BCEC.

Northern Avenue (Figures 5-16 – 5-18)

Northern Avenue is currently a street between parking lots serving the Moakley Federal Courthouse and the ICA. Constrained by water on either edge, it is the only localized east-west street within the site, and provides a smaller scaled, neighborhood atmosphere. On its western edge along the Fort Point Channel, Northern Avenue extends into Old Northern Avenue Bridge, a pedestrian bridge linking the Fort Point District to Downtown, while on its eastern edge it currently bends away from the Harbor and is absorbed into Seaport Boulevard.

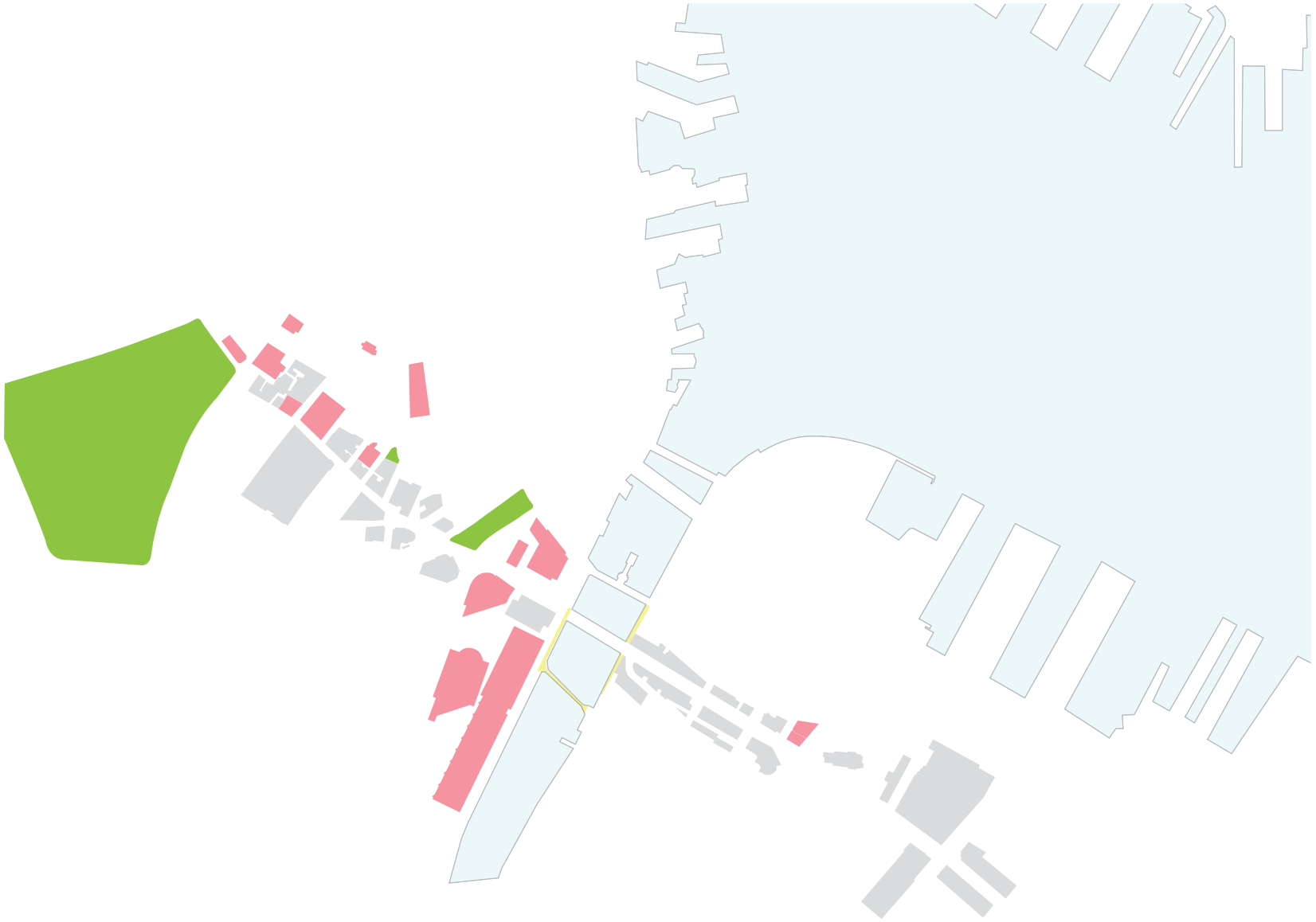

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Figure 5-12

Streets Diagrams: Summer Street

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Figure 5-13

Summer Street

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Figure 5-14

Summer Street

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SEAPORT SQUARE
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Figure 5-15

Summer Street

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Public Buildings

Pedestrian Paths

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Figure 5-16

Streets Diagrams: Northern Avenue

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Figure 5-17

Northern Avenue

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Figure 5-18

Northern Avenue

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Northern Avenue will connect the Northern Avenue Bridge into the Seaport District, and by its adjacencies, to exhibition space, entertainment uses, and the public open space of Courthouse Square. Northern Avenue will also be a vital and important pedestrian-friendly street linked with a sequence of amenities and public spaces, including Fan Pier Park and the Seaport Square Green. Northern Avenue will be a distinctly active and lively pedestrian street with waterfront views parallel to the grand promenade of Seaport Boulevard. New streetscape elements, trees and plantings, public art, and signage will convey the street's unique personality. On its eastern end Northern Avenue meets the waterfront as a pedestrian connection. .On its western end Northern Avenue continues across the Old Northern Avenue Bridge across Fort Point Channel connecting to the Rose Kennedy Greenway.

5.3.2.2 North-South Local Streets (Figures 5-19 – 5-21)

In the north-south direction, connections are established by extending pedestrian Farnsworth Streets and vehicular Thomson Place across Seaport Boulevard from the Fort Point Channel District to Northern Avenue, creating small scaled, walkable city streets. Boston Wharf Road and East Service Road also participate in this north-south movement but are more active and wider streets. They run through the site providing links between the residents of Seaport Square and the Harbor. The pedestrian character and predominance of the north-south local street is further enforced by three pedestrian only open spaces created as continuations of existing and proposed streets. These spaces include: Courthouse Way between Blocks B and C, an extension of Farnsworth Street that provides a connection to Courthouse Way and the Harborwalk; Harbor Way, a wide pedestrian passage between Blocks L1 and L2, extends Harbor Street and allows vistas to the water; and M Way, between Blocks M1 and M2, connects the Congress Street and B Street intersection with Autumn Lane which moves towards the water front.

5.3.2.3 Harbor Street

A striking aspect of the Seaport Square Project is the construction of Harbor Street. Harbor Street, sloping up to Seaport Hill, creates a vital new connection for pedestrians to walk from South Station, BCEC and Summer Street down toward Seaport Boulevard and the waterfront. Harbor Street connects to Summer Street through a 'gateway' condition (Harbor Way open space at the base) and slopes towards the waterfront, crossing through the residential Seaport Hill green space and connecting to both Boston Wharf Road and East Service Street. Figure 5-22 shows Harbor Street as an important design element for the Seaport Square Project and a crucial improvement to the public realm.

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Figure 5-19

Fort Point

Farnsworth Street
Looking North

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Figure 5-20

Fort Point

A Street Looking South Toward Summer Street

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Figure 5-21

Fort Point Neighborhood

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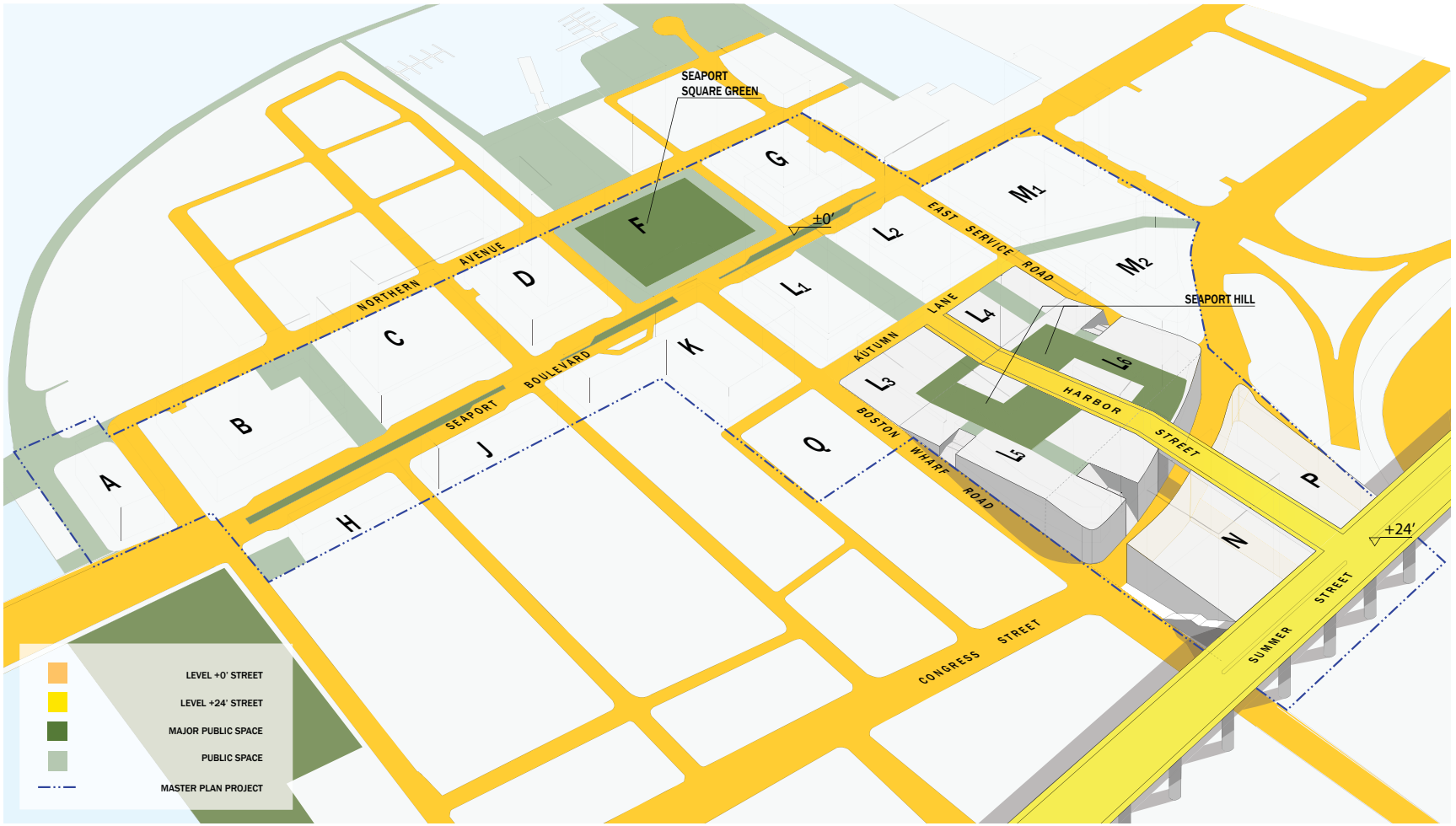

Height differences exaggerated for diagram purposes.

Figure 5-22

Street Levels

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5.3.2.4 Site Circulation and Street Hierarchy – Figure 5-23

Pedestrian Network and Strategies

Pedestrian amenities and accessibility have been built into all streets in Seaport Square: the boulevards, local streets, connectors, and pedestrian ways (see Figure 5-24). Four pedestrian ways are planned, including:

- Enhancement along Old Sleeper Street between the Barking Crab and Block A, creating a pedestrian link to existing Harborwalk segments.
- Courthouse Way (as an extension of Farnsworth Street) between Block B and Block C (Courthouse Square);
- Harbor Way between Block L1 and Block L2 as a continuation of Harbor Street,
- Autumn Lane between Block M1 and Block M2. (M Way)

These connections will enhance pedestrian travel between Seaport Square and other important destinations such as the Courthouse, the Children's Museum, the ICA, South Station, and the waterfront. They will also serve as "traffic-calming" measures that discourage through-trips.

Major corridors such as Seaport Boulevard, Congress Street, and Summer Street will be designed to provide gracious sidewalks and medians. Sidewalks will be designed to enhance the retail environment and will be wide enough to accommodate outdoor seating and sidewalk entertainment.

Bicycle Routes (Figure 5-25)

Seaport Square is well served by the bicycle routes through South Boston. Summer Street, Congress Street, and Seaport Boulevard are all designated as east–west bicycle connections. A Street, D Street, and L Street are all designated as prime north–south connections. The new Harbor Street/Autumn Lane connections to be provided by Seaport Square will enable cyclists to negotiate the grade change between Summer Street and Congress Street more easily.

Street Sections (Figure 5-26 Street Sections Key Plan and Figures 5-27 – 5-38 for Street Sections)

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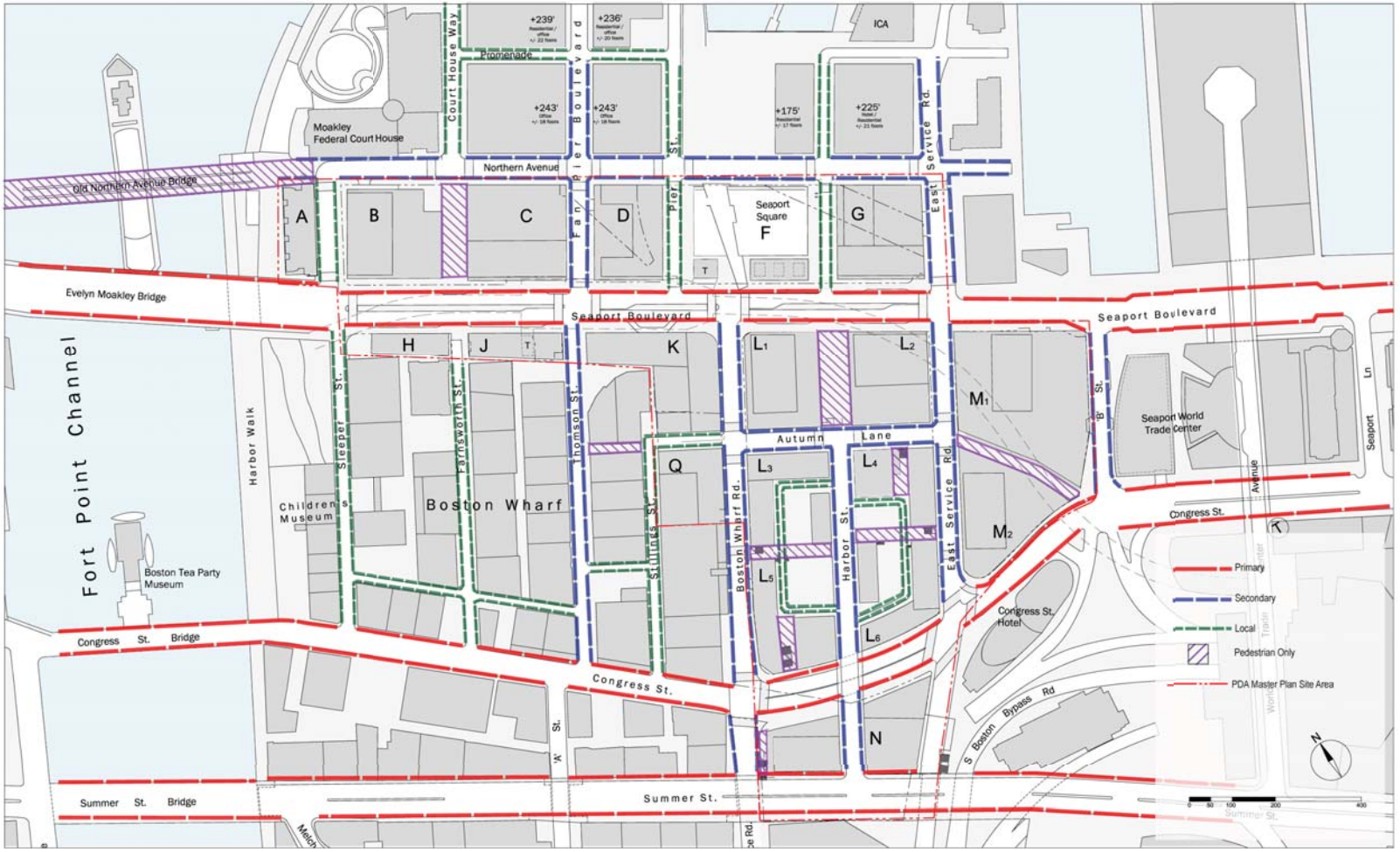

Figure 5-23

Street Hierarchy

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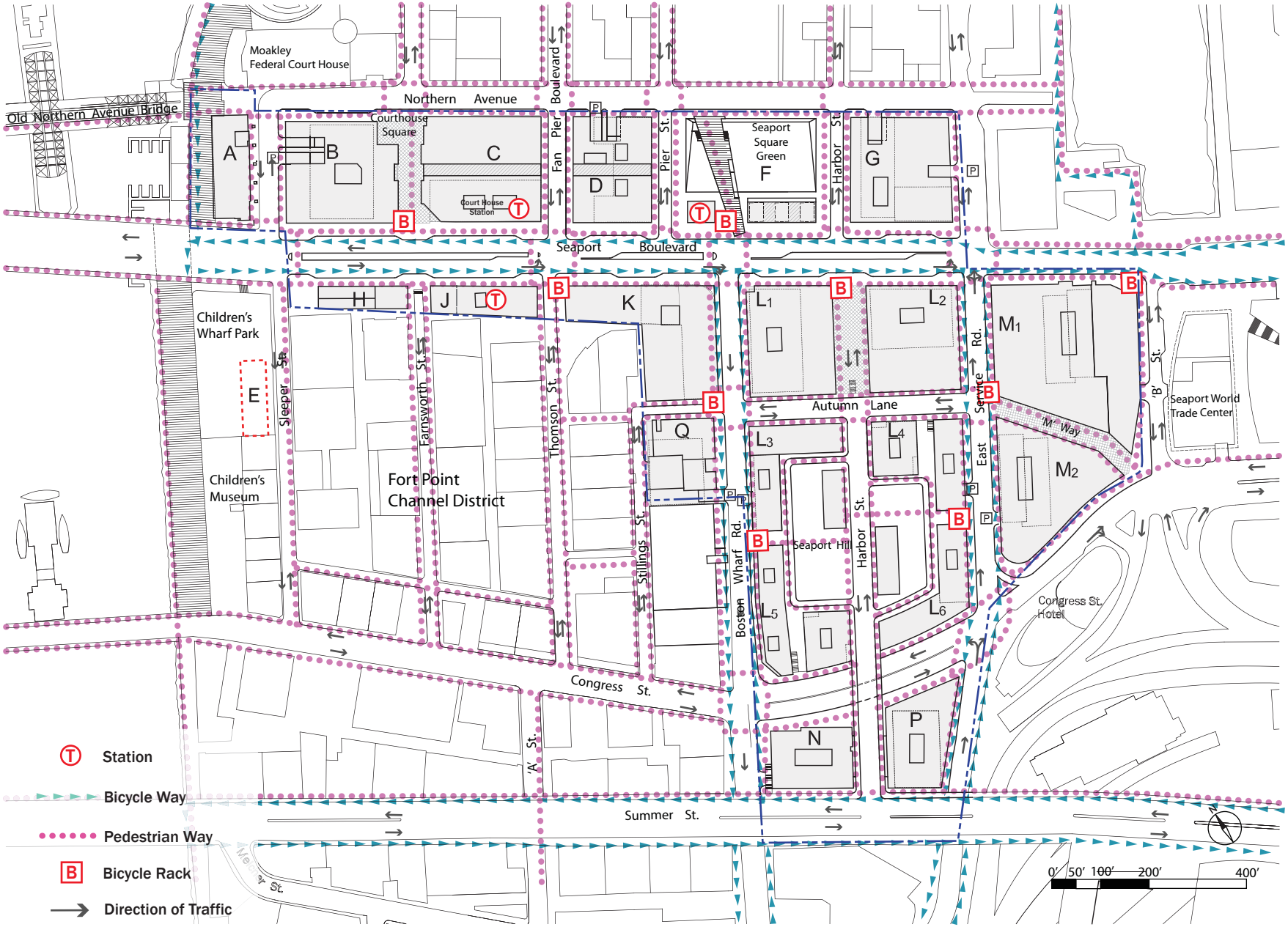

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Figure 5-24

Pedestrian Networks

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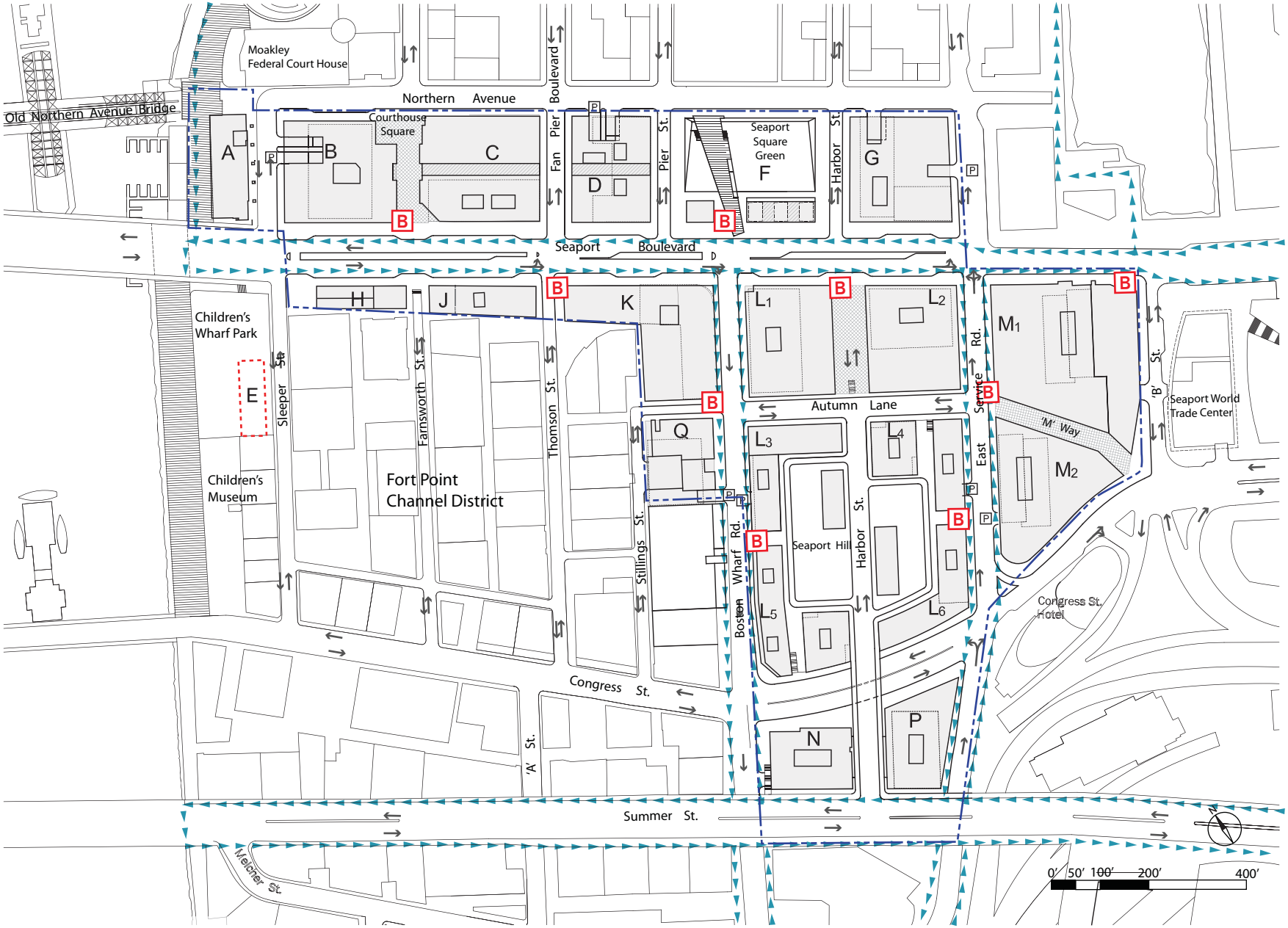

Bicycle Way

B Bicycle Rack

Direction of Traffic

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Figure 5-25

Bicycle Routes

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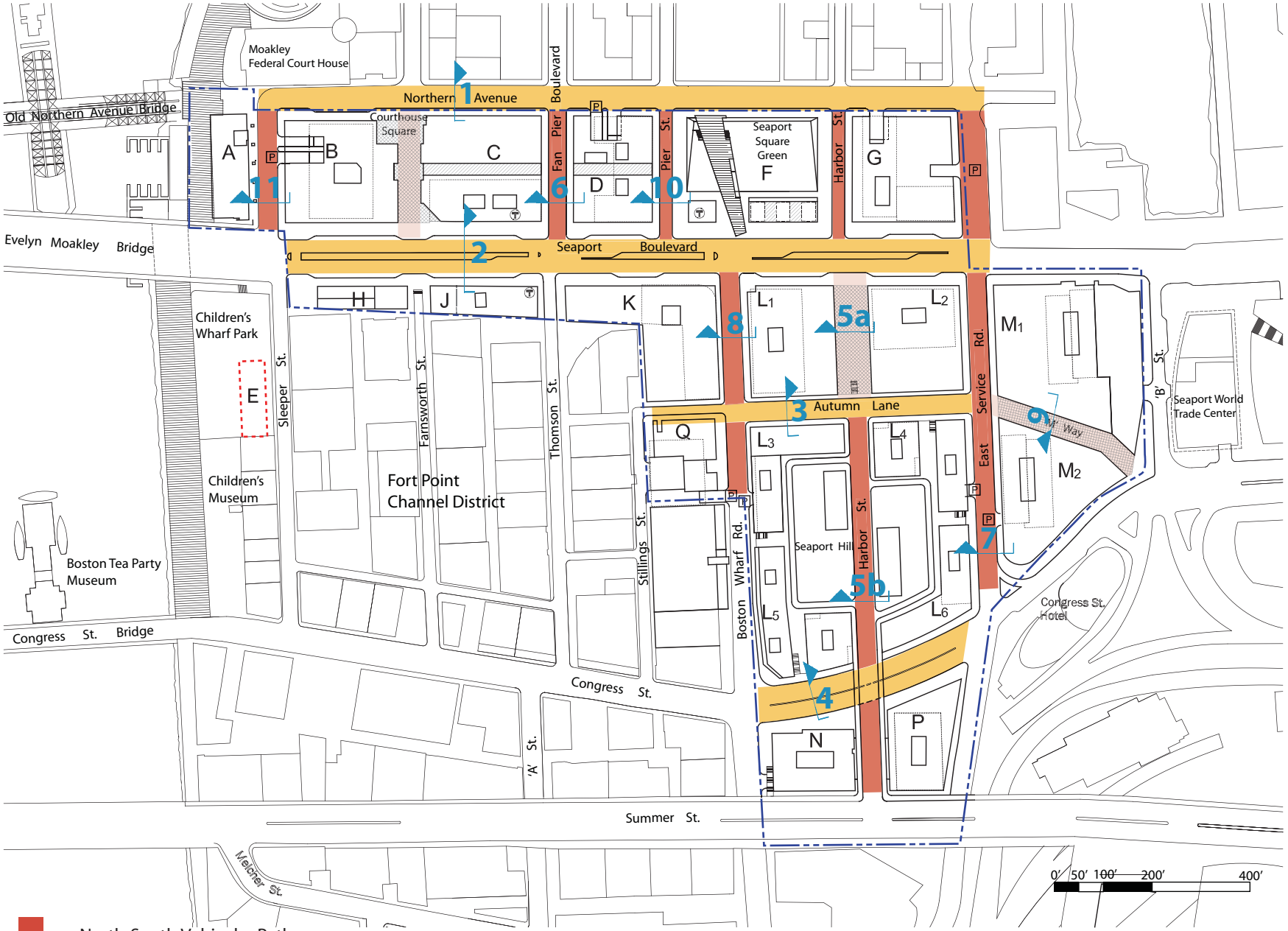

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Figure 5-26

Street Section Key Plan

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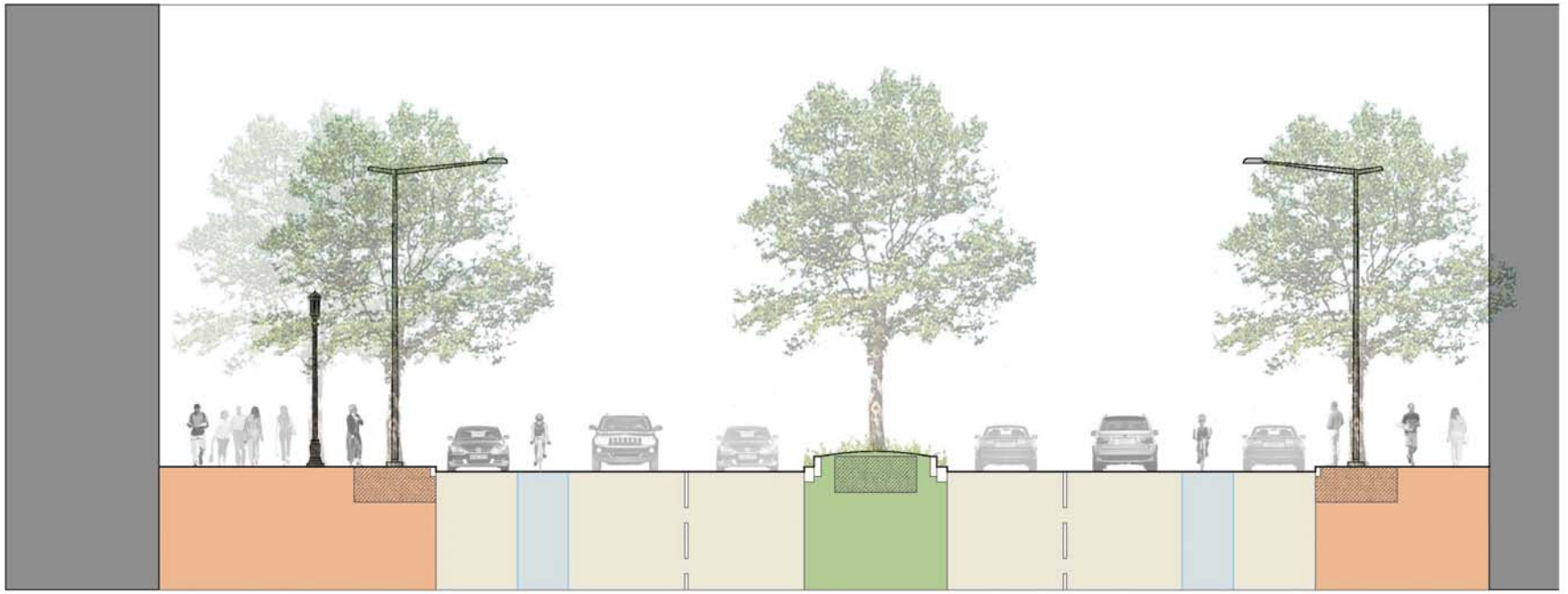
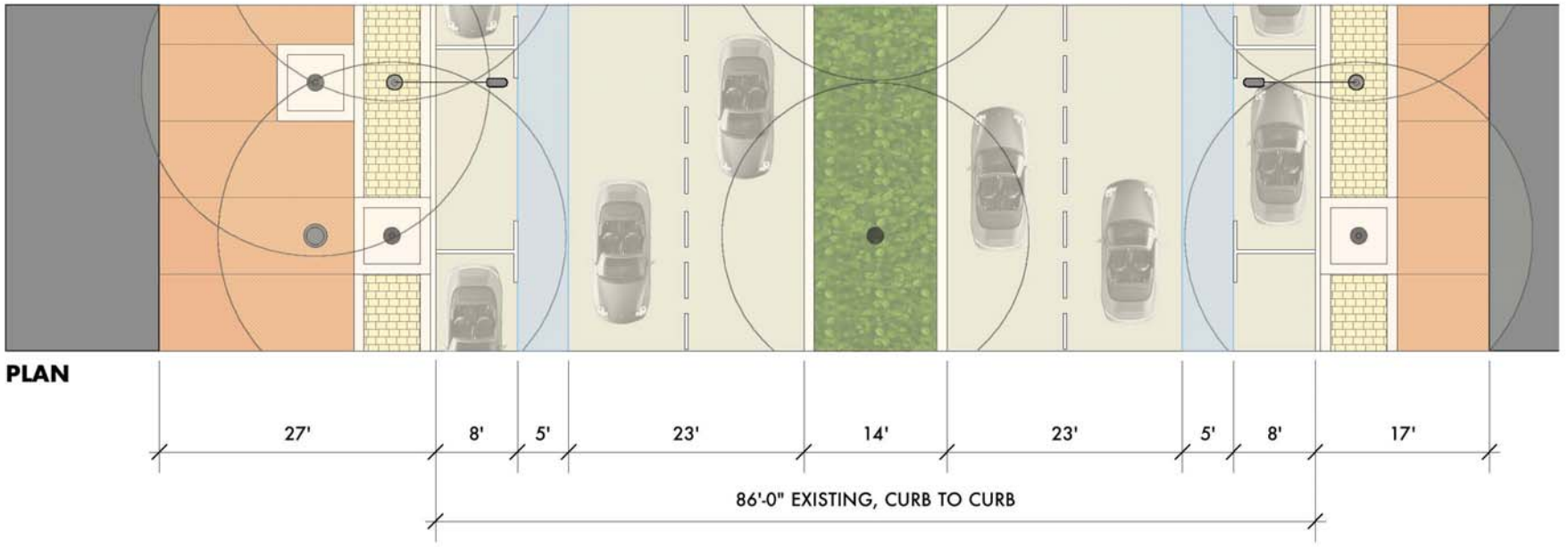


SECTION

SEAPORT



PLAN

SEAPORT SQUARE
IN SOUTH BOSTON

Figure 5-27

Street Section
Seaport Boulevard

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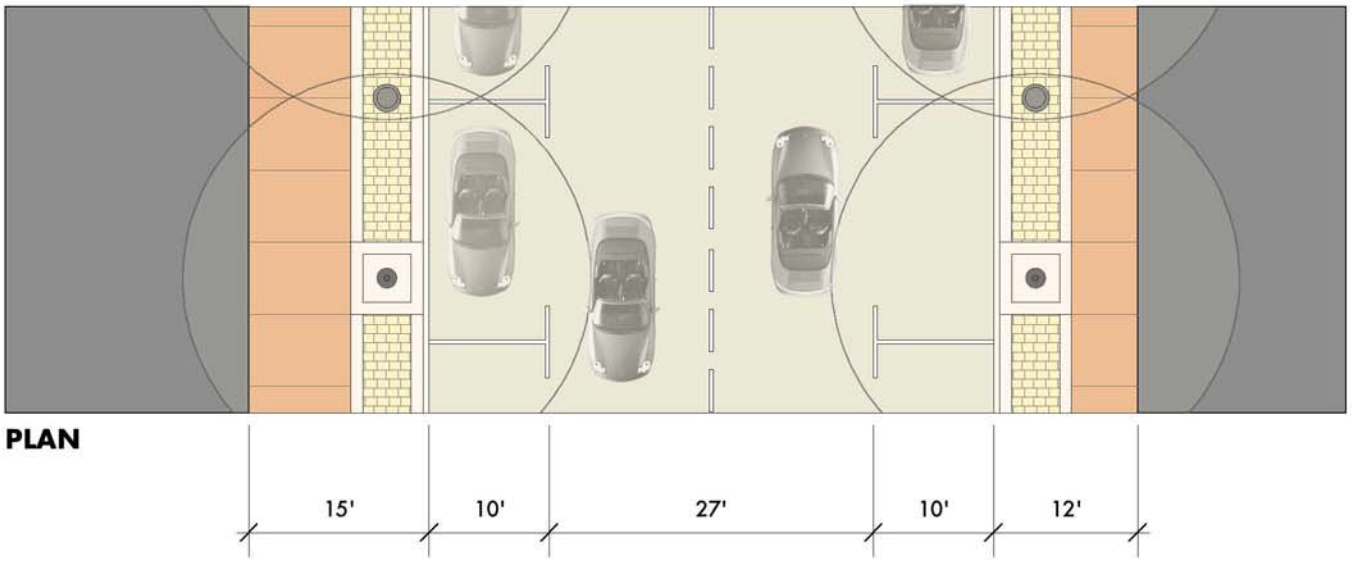
SECTION NORTHERN AVE.



PLAN

SEAPORT SQUARE
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Figure 5-28

Street Section
Northern Avenue

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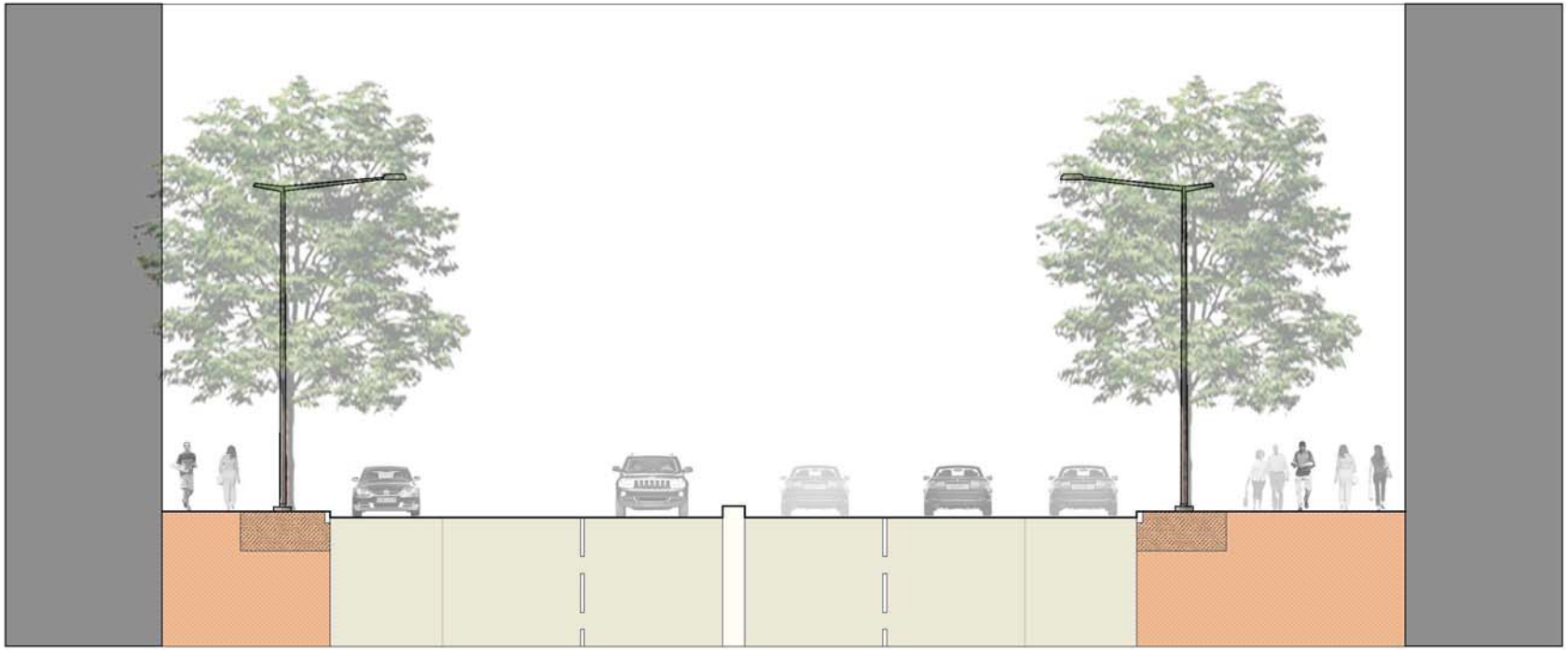
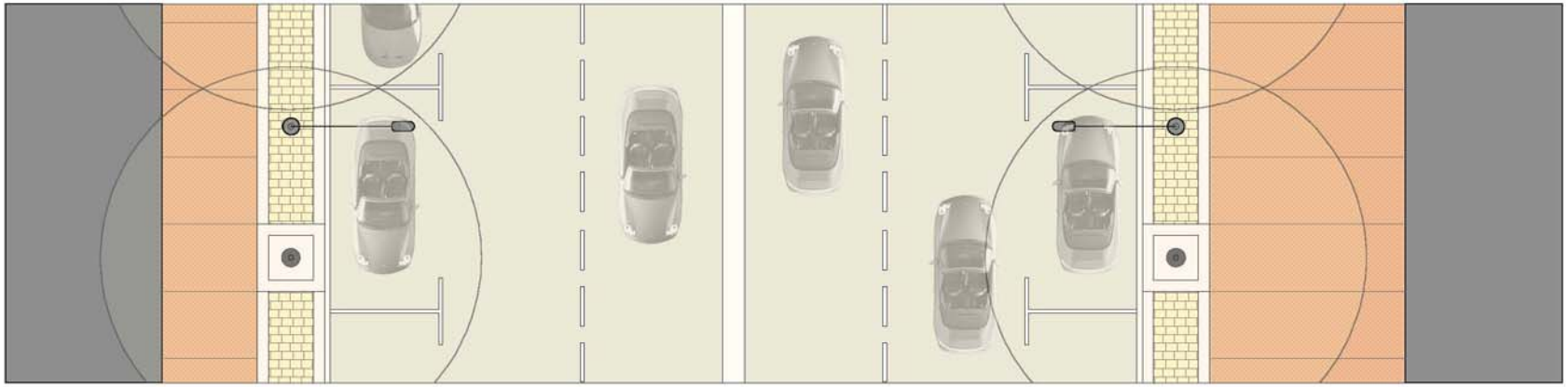


SECTION

CONGRESS ST.



PLAN

SEAPORT SQUARE
IN SOUTH BOSTON

Figure 5-29

Street Section
Congress Street

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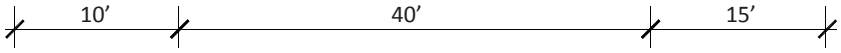
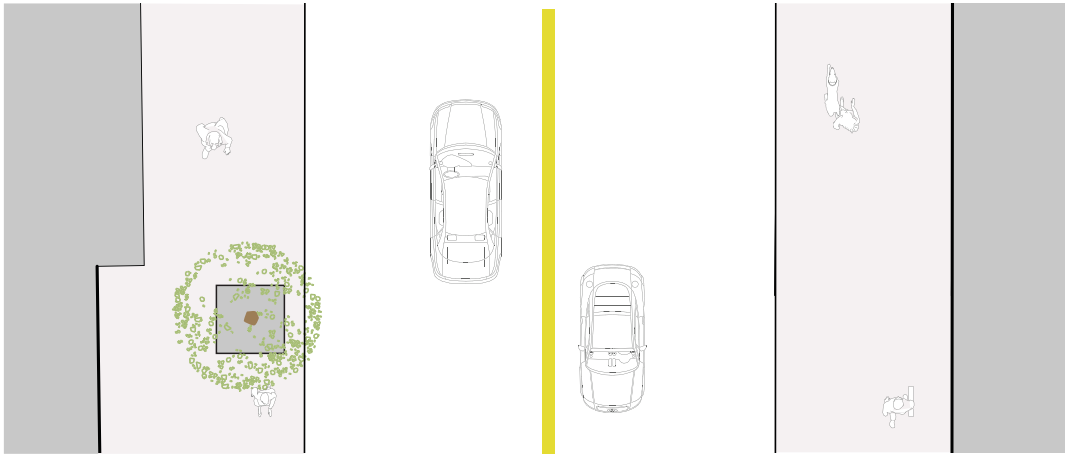
SLEEPER ST.





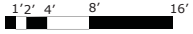


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Figure 5-30

Street Plan/Section
Sleeper Street

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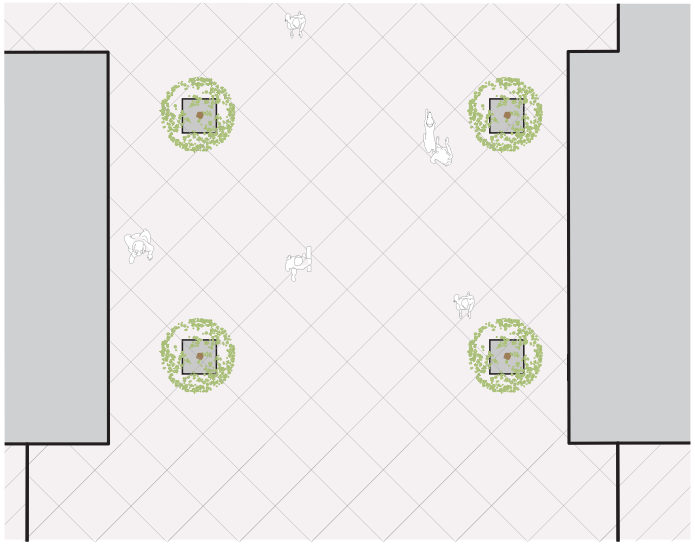
Morgan Stanley

WS DEVELOPMENT

prepared by:
KPF
REED HILDERBRAND

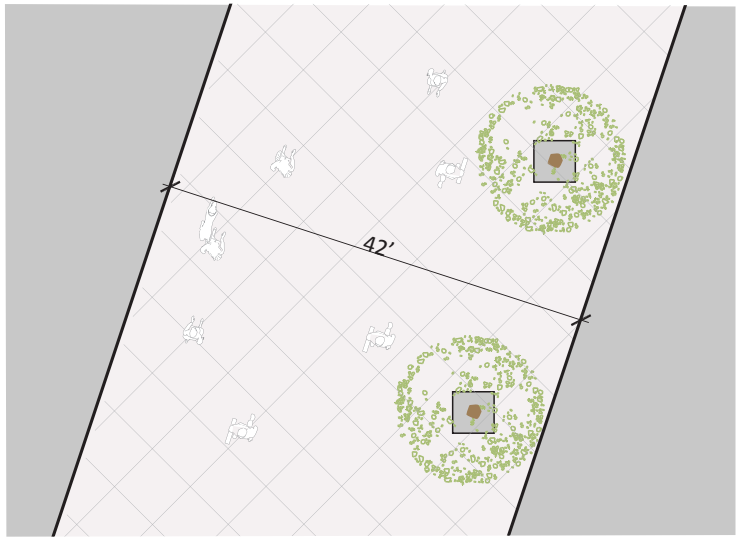
COURTHOUSE SQ.

47’



‘M’ WAY

42’



1’ 2’ 4’ 8’ 16’

SEAPORT SQUARE
IN SOUTH BOSTON

Figure 5-31

Street Plan/Section
Courthouse Square

GALE INTERNATIONAL

Morgan Stanley

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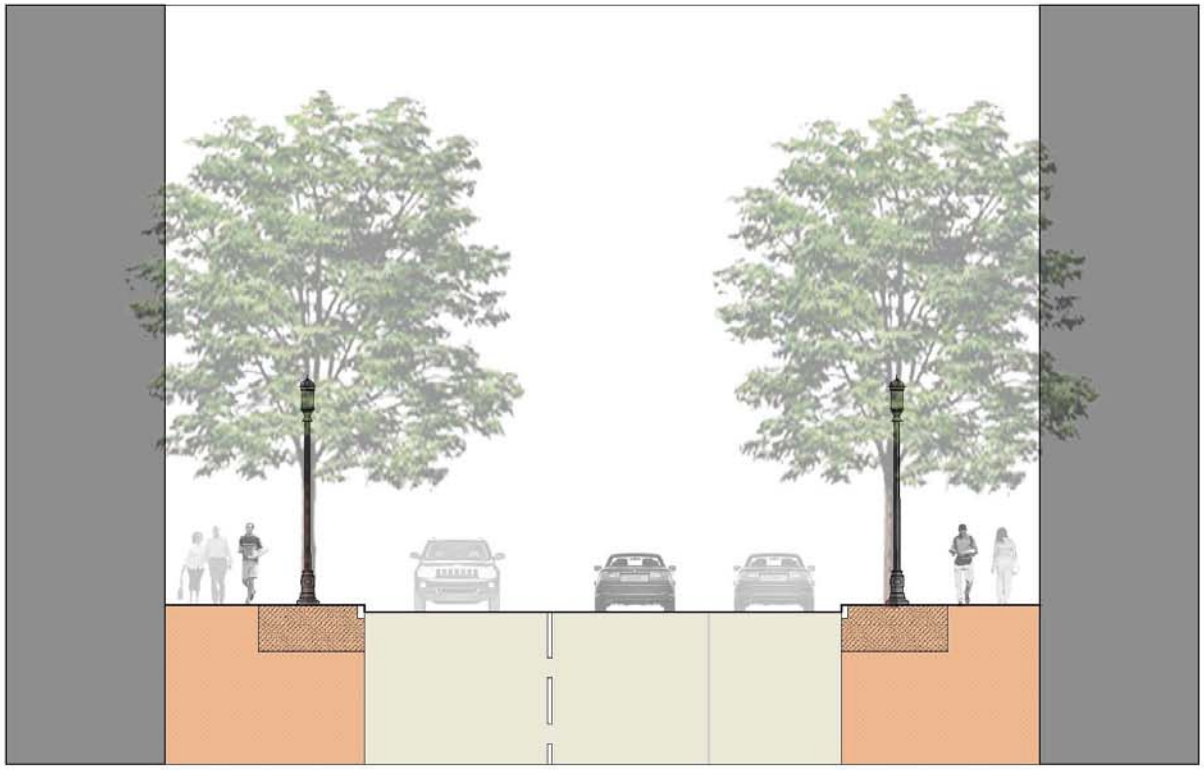
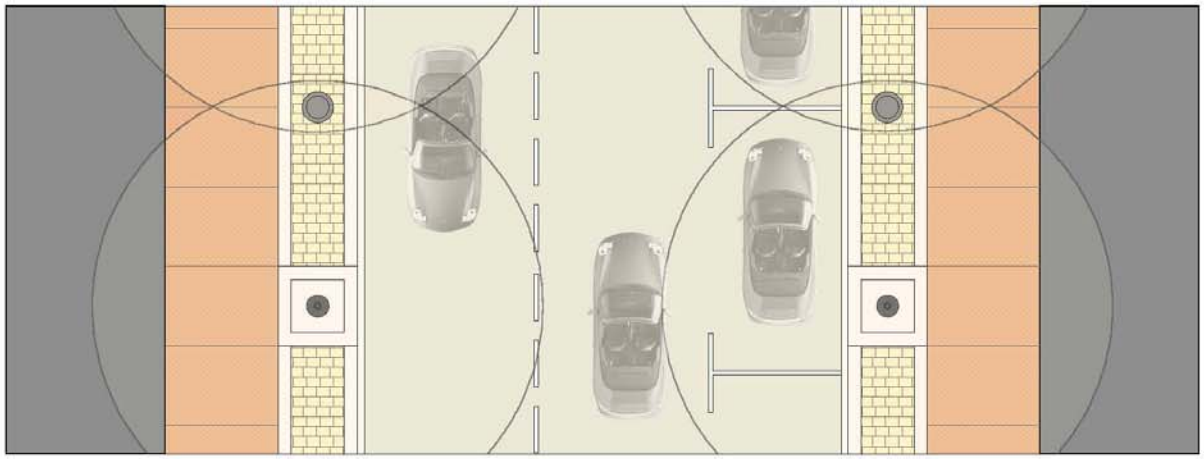
REED HILDERBRAND



SECTION **FAN PIER BLVD.**



PLAN

SEAPORT SQUARE
IN SOUTH BOSTON

Figure 5-32

Street Plan/Section
Fan Pier Boulevard

GALE INTERNATIONAL

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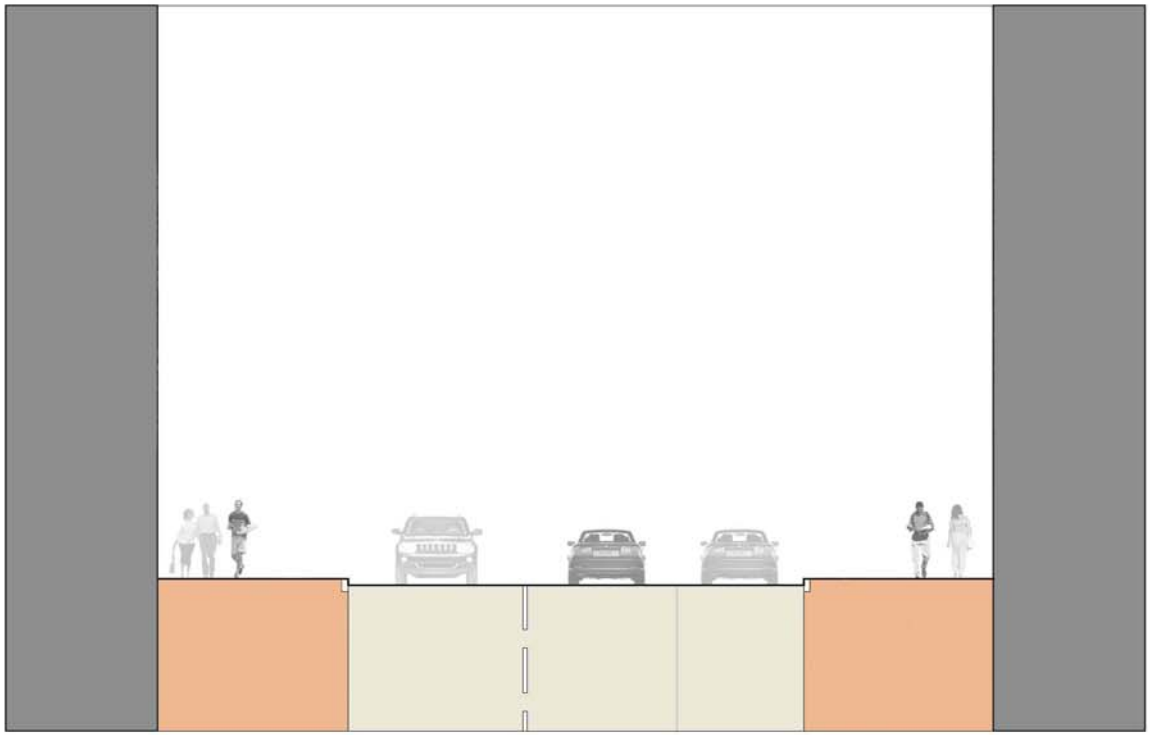
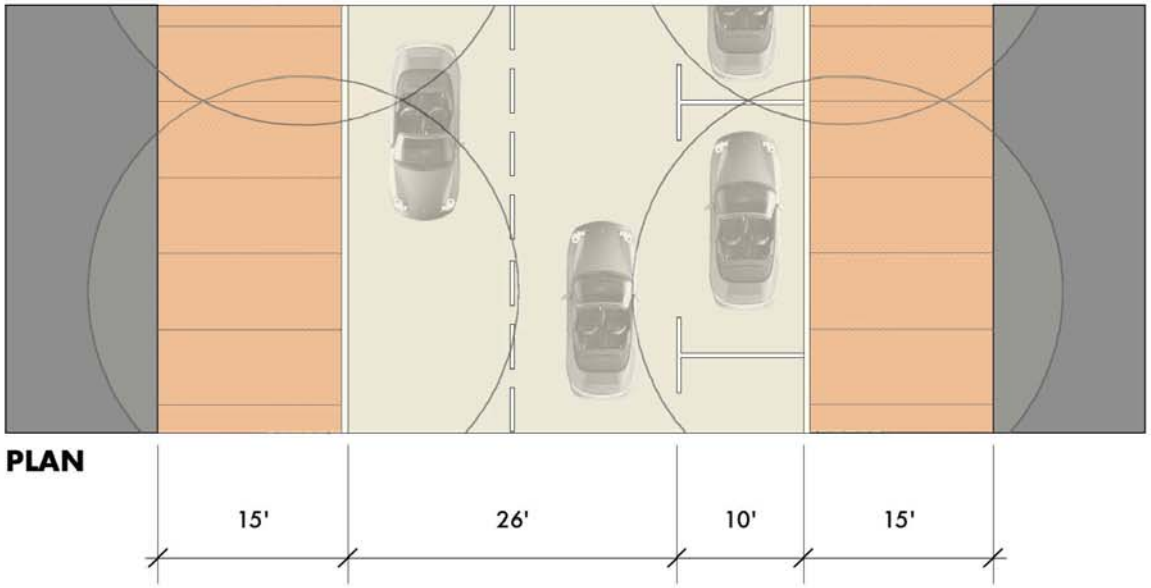


SECTION FAN PIER BLVD.



PLAN

SEAPORT SQUARE
IN SOUTH BOSTON

Figure 5-33

Street Plan/Section
Fan Pier Boulevard

GALE INTERNATIONAL

Morgan Stanley

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prepared by:
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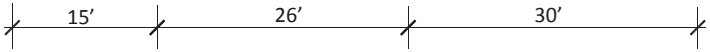
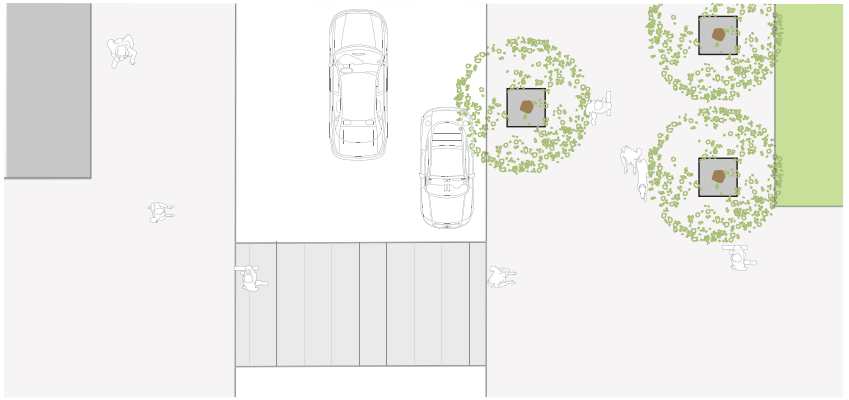
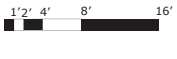
PIER ST.







SEAPORT SQUARE
IN SOUTH BOSTON

Figure 5-34

Street Plan/Section
Pier Street

GALE INTERNATIONAL

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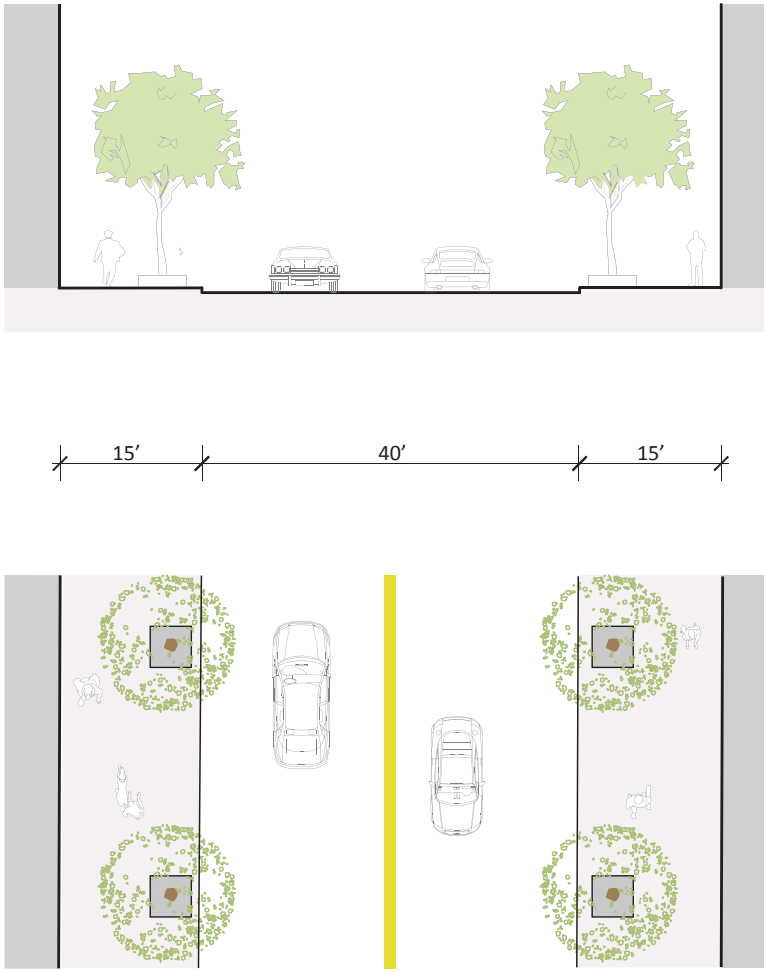
BOSTON WHARF RD.



SEAPORT SQUARE
IN SOUTH BOSTON

Figure 5-35

Street Plan/Section
Boston Wharf Road

GALE INTERNATIONAL

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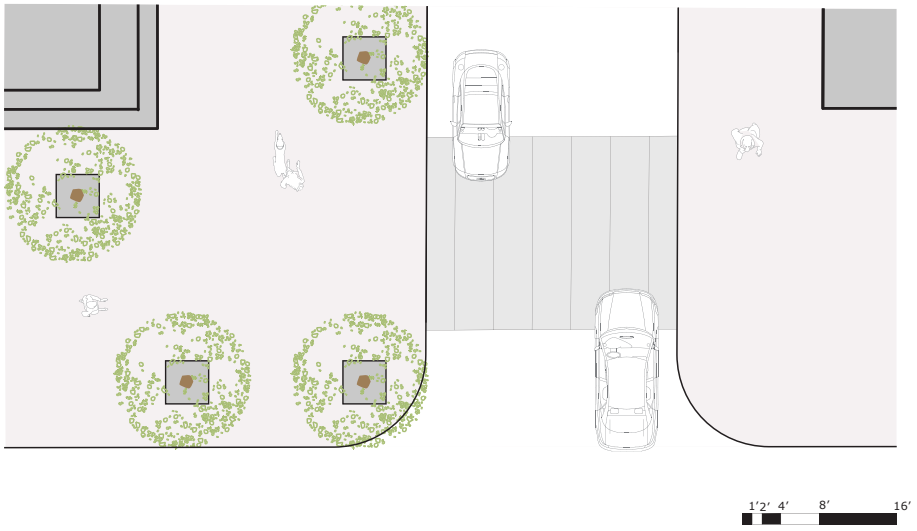
HARBOR ST.



SEAPORT SQUARE
IN SOUTH BOSTON

Figure 5-36

Street Plan/Section
Harbor Street

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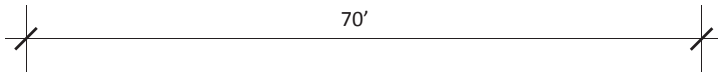
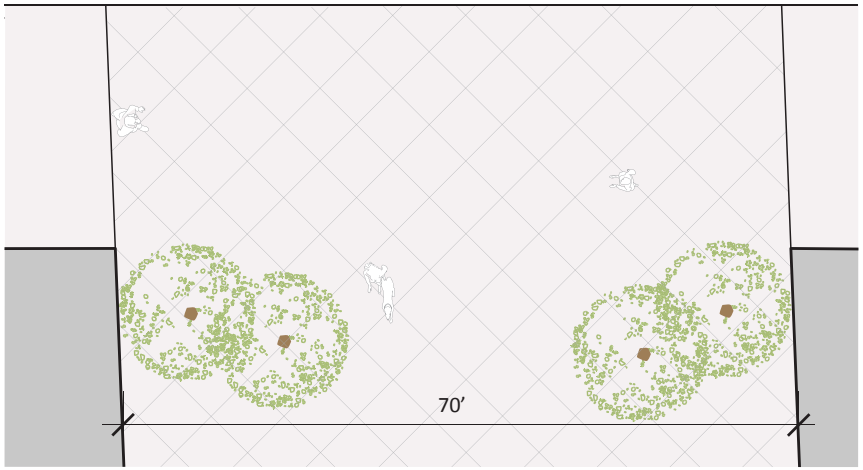
HARBOR WAY





SEAPORT SQUARE
IN SOUTH BOSTON

Figure 5-37

Street Plan/Section
Harbor Way

GALE INTERNATIONAL

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SEAPORT SQUARE
IN SOUTH BOSTON

EAST SERVICE RD.

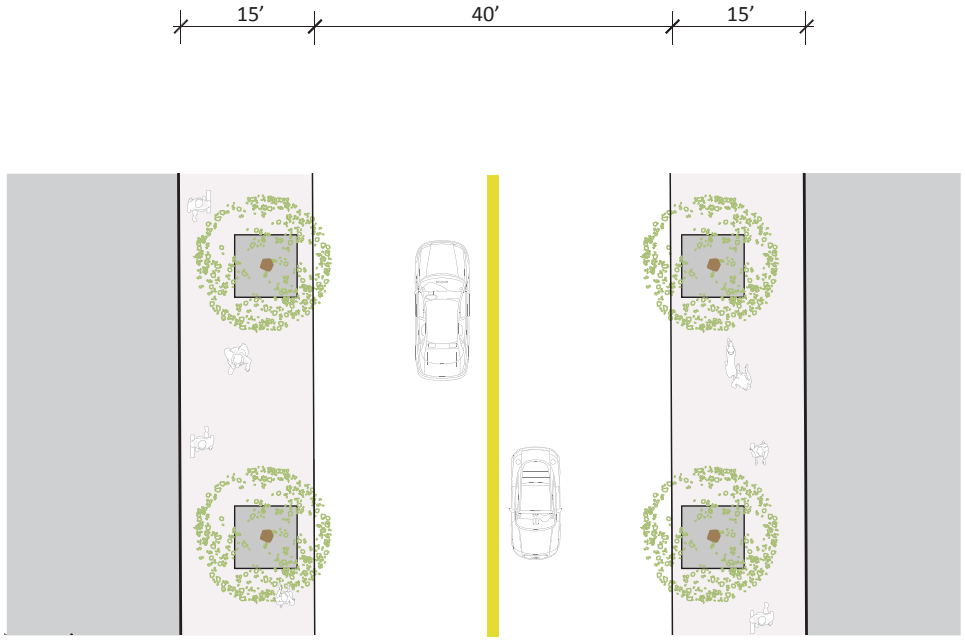

Figure 5-38

Street Plan/Section
East Service Road
South

GALE INTERNATIONAL

Morgan Stanley

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KPF
REED HILDERBRAND

5.3.3 New Urban Places: Open Space Network and Public Spaces

5.3.3.1 Open Space Network

The network of streets and open spaces created by the plan are shown in Figures 5-39.

Benefits of Tree-Lined Streets

Tree-lined streets contribute in many ways to the quality of life in an urban setting. Aside from providing shaded places for people to socialize, trees filter harmful pollutants produced by vehicular traffic, bring a human scale element to the sidewalk and streetscape and to enhance the pedestrian experience. They also help to protect the environment by reducing stormwater runoff and the "heat island" effect.

Benefits of Urban Open Spaces

Urban open spaces provide a range of tangible benefits to the community; they provide opportunities for relaxation and recreation and are perceived as areas of calm that foster cohesive community activities. As such they can be seen to attract businesses to the area, stimulate economic growth, and enhance property values. As part of a broader urban plan, investing in open space can serve as an anchor for revitalizing neighborhoods and building healthy communities.

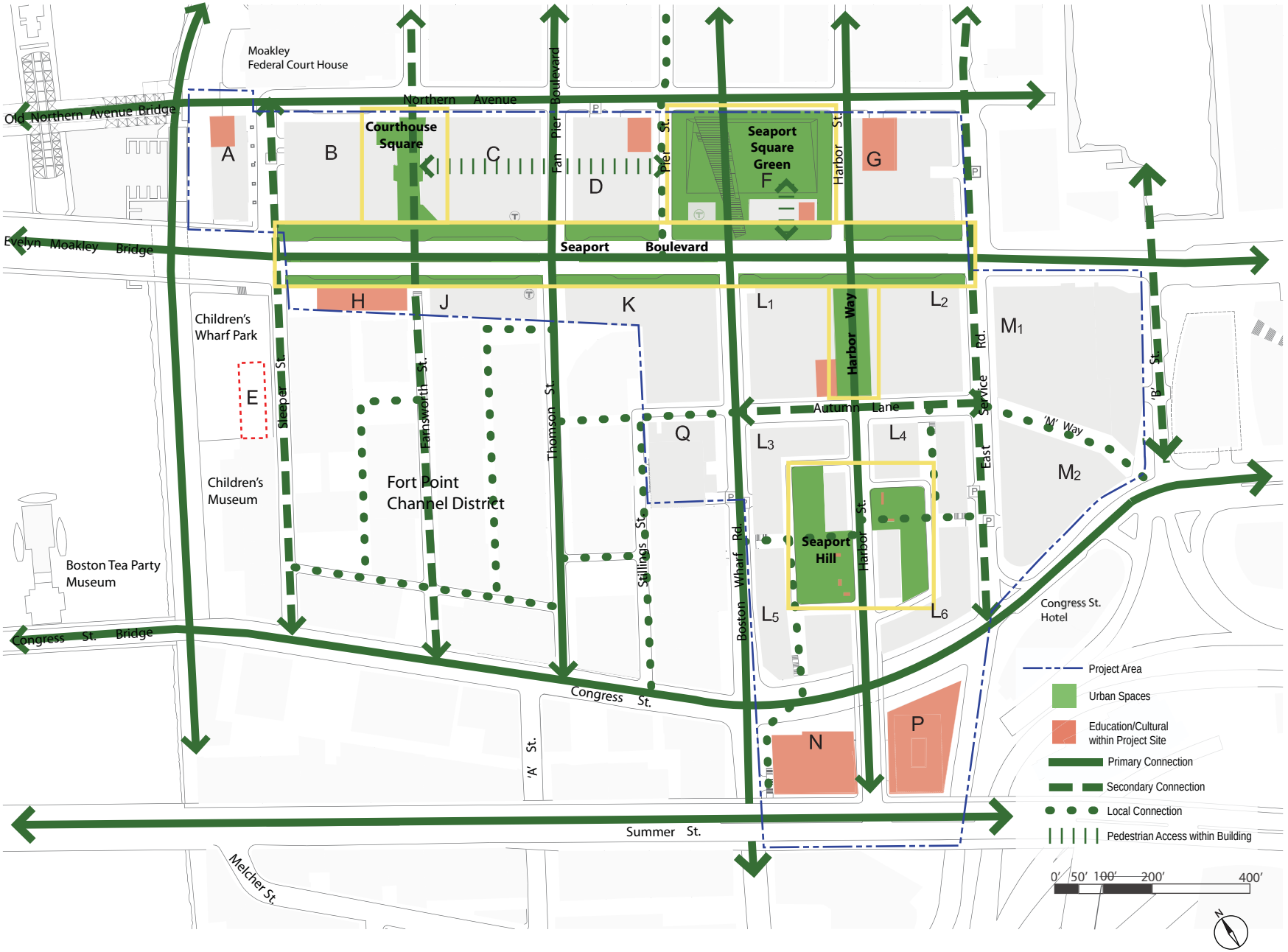
Open Space as an Armature

The Seaport Square Project consists of four major interconnected open spaces, as shown in Figure 5-6, which act both as connectors and as urban destinations in themselves: Seaport Square Green, an urban open space that both anchors the Project to the site and connects it to the larger-scale public space network; Seaport Hill, a residential neighborhood along the newly created Harbor Street that sits in close proximity to numerous amenities of urban living, including the waterfront, Downtown Boston, and the new Seaport Hill open space; Seaport Boulevard, the major artery designed to accommodate and invite urban commerce of every scale; and Courthouse Square, which connects Seaport Boulevard to Northern Avenue between Blocks B and C.

5.3.3.2 Public Spaces

Seaport Square Green (Figures 5-40 – 5-44)

At approximately 1.25 acre, Seaport Square Green is a multi-functional urban open space, similar in size to Boston's famous Copley Square. It stands at the intersection of the major urban axes of the area and acts as a focal point to adjacent developments. Parallel to Seaport Boulevard on one side, it connects to the Fan Pier Park on its other side, creating a continuous public space that reaches the waterfront and connects to the Harborwalk.



SEAPORT SQUARE
IN SOUTH BOSTON

Figure 5-39

Urban Open Spaces

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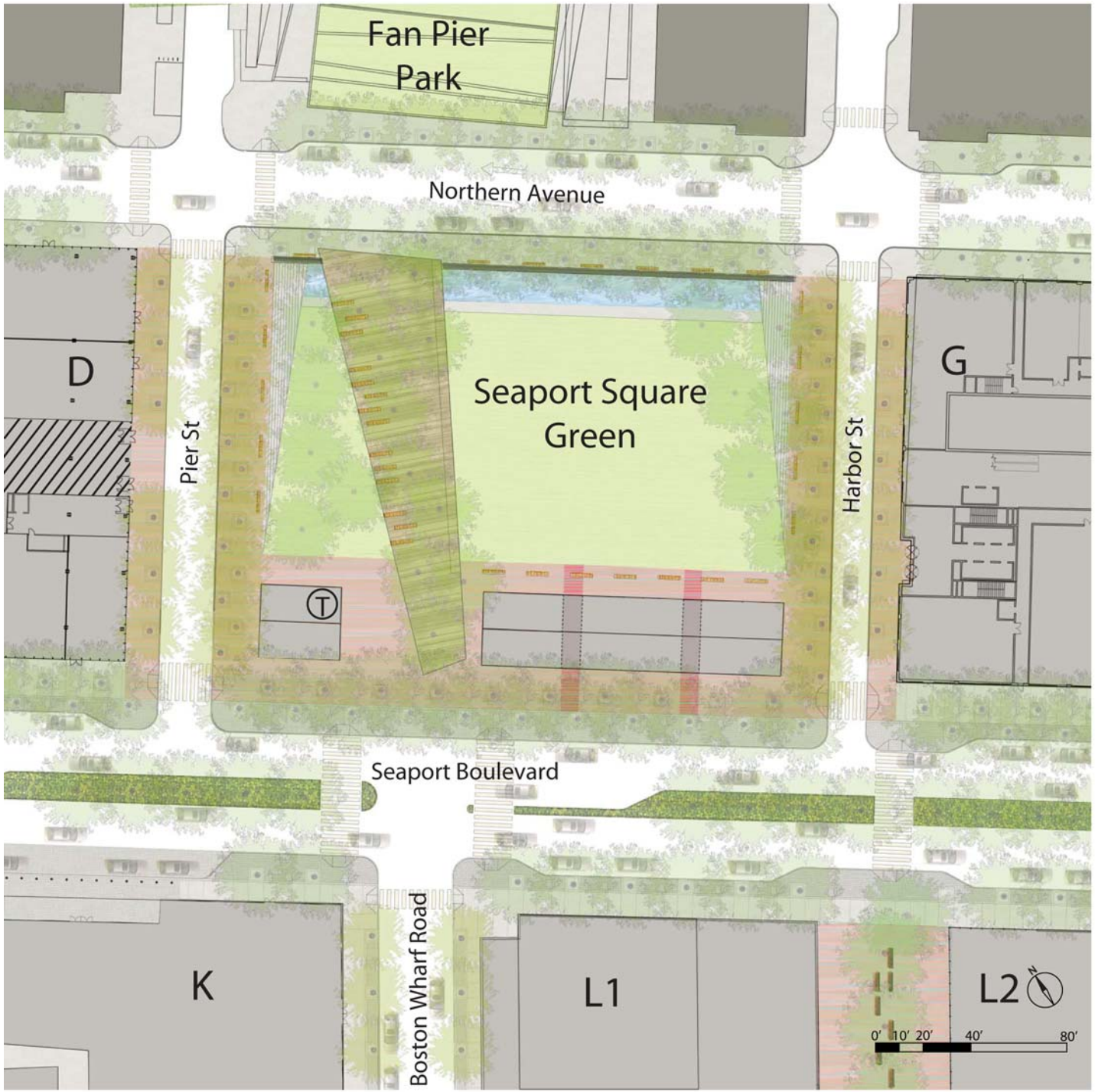
KPF



SEAPORT SQUARE
IN SOUTH BOSTON

Figure 5-40

Seaport Square Green: Plan

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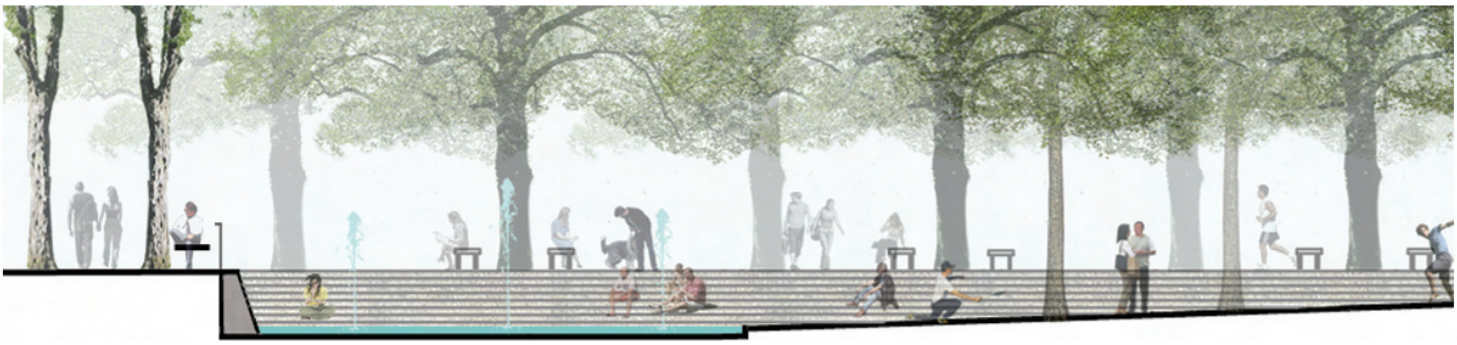

Section Looking East (North Side)

Section Looking East

Section Looking East (South Side)

Seaport Square Green Sketch

GALE INTERNATIONAL

Morgan Stanley

WS DEVELOPMENT

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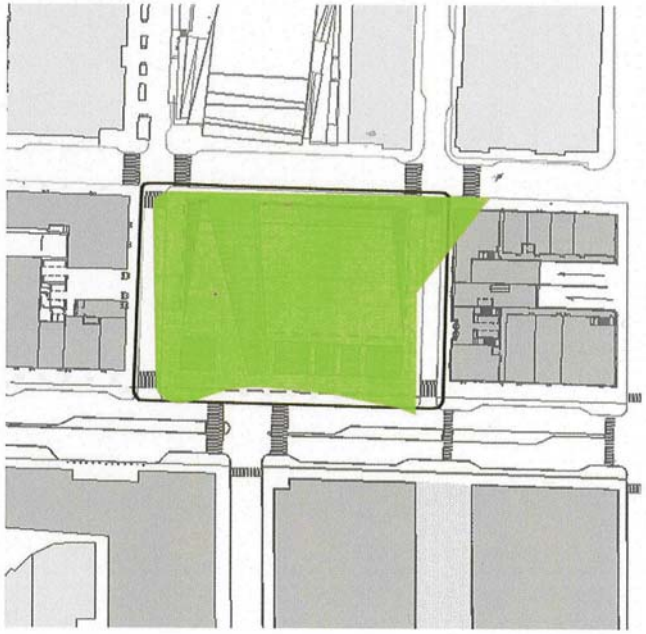
SEAPORT SQUARE
IN SOUTH BOSTON

Figure 5-41

Seaport Square Green Sections & Perspective

Copley Square

Post Office Square



Seaport Square Green

Seaport Square Green

SEAPORT SQUARE
IN SOUTH BOSTON

Figure 5-42

Seaport Square Green: scale study

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SEAPORT SQUARE
IN SOUTH BOSTON

Figure 5-43

Seaport Square Green

Scale Reference: Copley Square Green

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SEAPORT SQUARE
IN SOUTH BOSTON

Figure 5-44

Seaport Square Green: Scale Reference

Post Office Square, Boston

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This open space is designed to host a range of activities in each of the four seasons, such as spring art shows, summer theater, fall farmer's markets, and winter displays such as ice sculptures and holiday lights. Envisioned as a grand civic lawn large enough to support active recreation and concerts, the Green is gently sloping toward the waterfront. Steps cascade down the eastern and western sides of the Green, and a paved pedestrian pathway crosses the Square under a bower of shade trees, connecting the crosswalk at Boston Wharf Road with Fan Pier Park.

At the edge of the lawn along Northern Avenue, a reflecting pool and water feature is proposed. A retail pavilion and a new Silver Line MBTA headhouse activate the southern side of the Square, resulting in a constant flow of pedestrian traffic, and adding separation between the green space and Seaport Boulevard. Surrounded by commercial, hotel, entertainment, retail, and residential uses, as well as cultural uses in adjacent buildings, Seaport Square Green has active edges that provide life to the open space.

Seaport Square Green offers a space for relaxation and recreation, fosters cohesive community activities, and will attract businesses, visitors and residents to the South Boston waterfront.

Harbor Way and Seaport Hill (Figures 5-45 – 5-51)

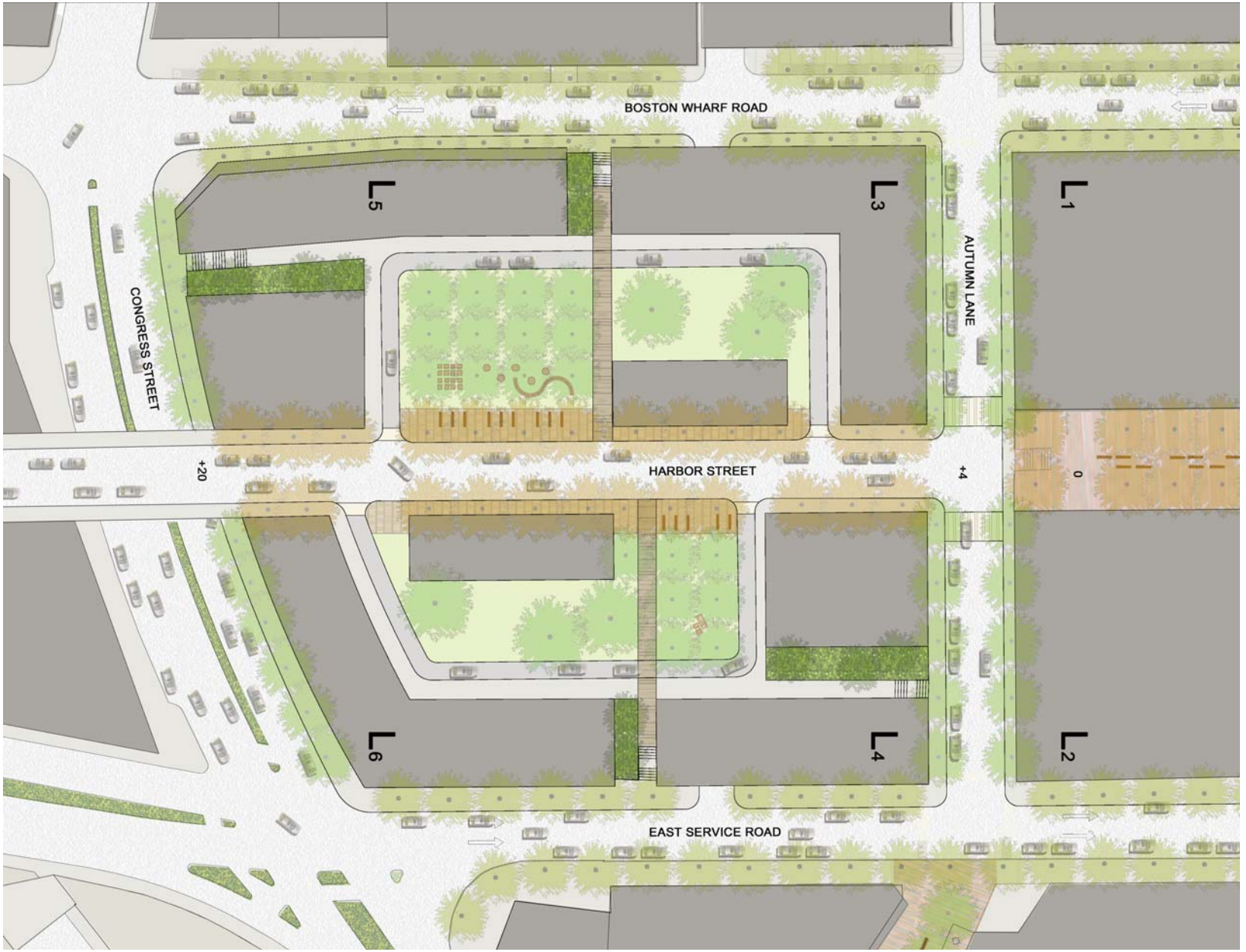
Seaport Hill forms the center of a diverse new residential neighborhood. As in many of Boston's most beloved neighborhoods, housing will be the predominant use. Atop Seaport Hill will be a new open space of approximately 0.75 acres surrounded by residential buildings with active ground floor retail shops. The open space features an expansive green lawn bordered by trees, benches, flower beds, public art, a dog park and a children's playground. At the far edges of the open space, landscaped areas provide a buffer for the ground floor residential units at the sidewalk.

Seaport Hill is also an important part of a linked series of spaces connecting the elevated Summer Street down to Seaport Boulevard and the waterfront area via the new Harbor Street. Harbor Street links Summer Street to the neighborhood with pedestrian connections at Seaport Hill to both Boston Wharf Road and East Service Road.

Harbor Way, located at the base of Seaport Hill, provides an approximately 15,500 sf open space area welcoming pedestrians into the site from Seaport Boulevard, and creating a sense of place and contemplation in an urban setting.

Courthouse Square (Figures 5-52 – 5-55)

Courthouse Square is an outdoor public space along Northern Avenue and across from the Moakley Federal Courthouse. It also includes a public pedestrian passage connecting Seaport Boulevard and Northern Avenue between Blocks B and C, culminating with the Square at its northern end.



SEAPORT SQUARE
IN SOUTH BOSTON

Figure 5-45

Seaport Hill: Plan

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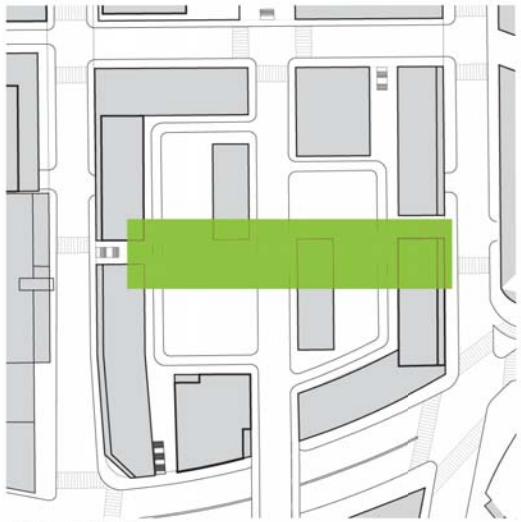
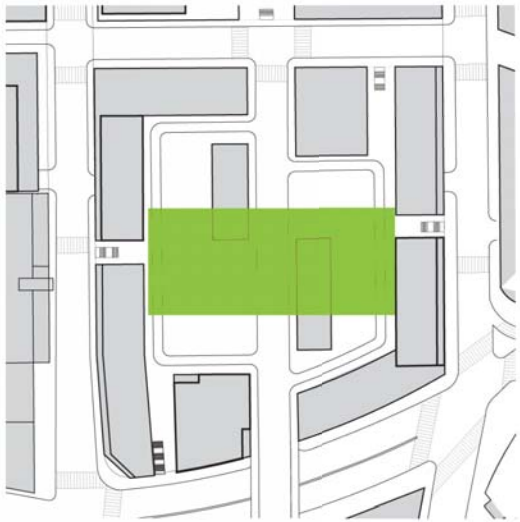
Union Park

Worcester Square



Seaport Hill



Seaport Hill

Union Park

Worcester Square

SEAPORT SQUARE
IN SOUTH BOSTON

Figure 5-46

Seaport Hill:
Scale Comparisons

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KPF

SEAPORT SQUARE
IN SOUTH BOSTON

Figure 5-47

Seaport Hill: Sketch

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SEAPORT SQUARE
IN SOUTH BOSTON

Figure 5-48

Harbor Way Reference:

Funf Hofe, Munich

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SEAPORT SQUARE
IN SOUTH BOSTON

Figure 5-49

Harbor Way Reference:

Rockerfeller Center, New York

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SEAPORT SQUARE
IN SOUTH BOSTON

Figure 5-50

Harbor Way Reference:

Duke of York Square, London

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SEAPORT SQUARE
IN SOUTH BOSTON

Figure 5-51

Harbor Way:
L Passage

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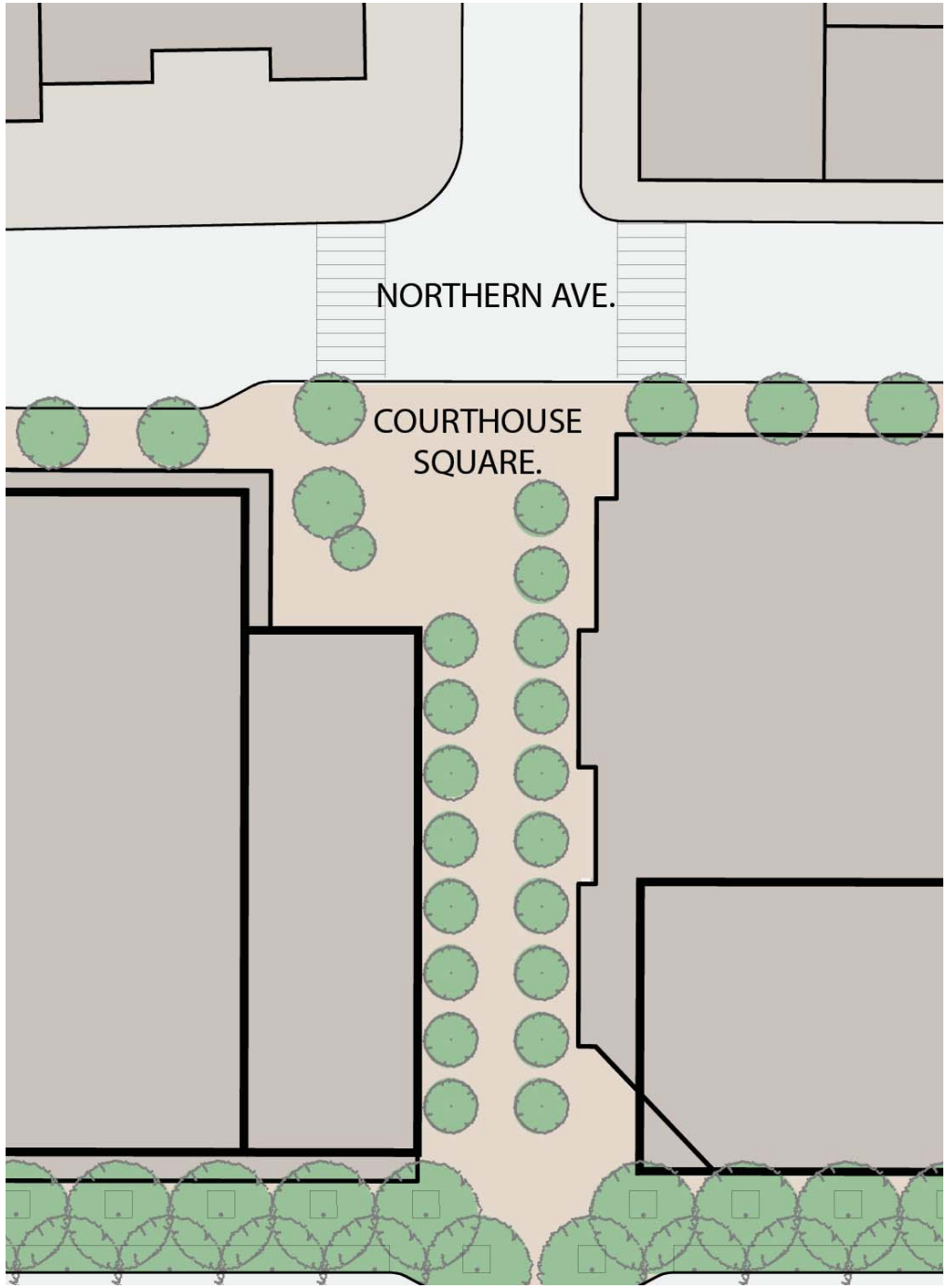

SEAPORT SQUARE
IN SOUTH BOSTON

Figure 5-52

Courthouse Square: Plan

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SEAPORT SQUARE
IN SOUTH BOSTON

Figure 5-53
Courthouse Square

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SEAPORT SQUARE
IN SOUTH BOSTON

Figure 5-54

Courthouse Square Reference:

Pemberton Square, Boston

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SEAPORT SQUARE
IN SOUTH BOSTON

Figure 5-55

Courthouse Square Reference:

Rockerfeller Center, New York

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In the everyday, Courthouse Square will serve as a small gathering place for dining and sitting outdoors; an urban space of repose, a place to pause in between different walking routes. On occasions this space could also be used for public gatherings, in the tradition of democratic societies of which courthouse and other public buildings are complemented by an exterior open space to highlight their public presence and role. Courthouse Square will function in that manner for the Federal Courthouse across the street. It therefore will serve both visitors and users of the Courthouse, the adjacent office buildings and the local neighborhood residents. The Square will act as an urban room for the neighborhood, lined with retail spaces, including restaurants and cafes, and surrounded by a mix of uses. Its continuation through the whole block, connecting Northern Avenue and Seaport Boulevard, will allow greater visual and physical connectivity between the historic Fort Point Channel District and the waterfront.

Seaport Boulevard (See Figures 5-56 – 5-60)

Unifying the different urban fabrics to its north and south, Seaport Boulevard is the main axis connecting the Seaport District to Downtown Boston. This link will encourage future urban development eastward and provide a clear urban edge for the office towers of Fan Pier on one side and the historic buildings of the Fort Point Channel District on the other.

The office towers proposed for sites along the boulevard are situated on a multistory podium, occupied by shops, restaurants, small courtyards, and offices. The location of these spaces are coordinated with the commercial and recreational uses (entertainment venues, museums, and open spaces) being created within the adjacent Fan Pier development. Seaport Boulevard acts as a connector to Seaport Square Green, other parts of the waterfront and the Financial District, and as a destination, activated by ground level retail, civic programs and a variety of uses (office, residential, hospitality). The Boulevard's streetwalls are designed to mediate two distinct urban fabrics: the northern side of the Boulevard is defined by a series of higher buildings, matching the height of the Fan Pier buildings and providing a clear urban edge to Fan Pier, while the southern side of the Boulevard continues the scale, massing and height of the industrial brick warehouse fabric of the Fort Point Channel District.

5.3.4 Public Art and Cultural Corridor

5.3.4.1 Cultural Corridor (Figures 5-61 – 5-65)

Throughout Boston, cultural institutions contribute to the rich tapestry of urban life and serve as important centers of the neighborhood in which they reside. For residents and visitors alike, the Museum of Fine Arts, Symphony Hall, Boston Center for the Arts, and the Theater District are familiar destinations, integral to civic life and vital to the economic well-being of the city.

SEAPORT SQUARE
IN SOUTH BOSTON

Figure 5-56

Seaport Boulevard: Section

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SEAPORT SQUARE
IN SOUTH BOSTON

Figure 5-57

Seaport Boulevard

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SEAPORT SQUARE
IN SOUTH BOSTON

Figure 5-58

Seaport Boulevard Reference:

Boulevard Sebastopol, Paris

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SEAPORT SQUARE
IN SOUTH BOSTON

Figure 5-59

Seaport Boulevard Reference:

Michigan Avenue, Chicago

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SEAPORT SQUARE
IN SOUTH BOSTON

Figure 5-60

Seaport Boulevard Reference:

Omotesando Avenue, Tokyo

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SEAPORT SQUARE
IN SOUTH BOSTON

Figure 5-61

Cultural Corridor Diagram

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KPF

SEAPORT SQUARE
IN SOUTH BOSTON

Figure 5-62

Boston Convention and Exhibition Center

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SEAPORT SQUARE
IN SOUTH BOSTON

Figure 5-63

Hirshhorn Museum Sculpture Garden

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Morgan Stanley

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prepared by:
KPF

SEAPORT SQUARE
IN SOUTH BOSTON

Figure 5-64

Kamloops Art Gallery

GALE INTERNATIONAL

Morgan Stanley

WS DEVELOPMENT

prepared by:
KPF

SEAPORT SQUARE
IN SOUTH BOSTON

Figure 5-65

Boston

GALE
INTERNATIONAL

Morgan Stanley

WS DEVELOPMENT

prepared by:
KPF

With this in mind, the physical link created from Summer Street to Seaport Boulevard by Harbor Street, a critical component of the Seaport Square Project, is conceived as a "Cultural Corridor" connecting the Institute of Contemporary Art to the BCEC. The intent of this corridor is to imbue Seaport Square with arts and culture, establishing the district as a new cultural destination for the city, activating the South Boston waterfront and contributing to its economic success.

Anchoring the waterfront end of this corridor is the ICA's visionary new building, a globally recognized icon of contemporary culture and catalyst for the arts in Boston. Garnering worldwide acclaim, the physically isolated ICA will soon be tied into the fabric of the city by Seaport Square and Fan Pier developments.

At the opposite end of this corridor, where Harbor Street meets the elevated Summer Street, a new landmark performing arts and education complex will occupy Blocks P and N. Poised to further stimulate the cultural life of the city, the performing arts center will build on the arts identity of the neighboring Fort Point Channel District and leverage its proximity to the ICA and the waterfront, the Boston Convention and Exhibition Center, and the numerous adjacent hotels.

The Project further designates sites along Harbor Street for a series of cultural venues. These include the outdoor sculpture gardens within the open space at Seaport Hill, exhibit and gallery spaces at Blocks L1 and G, public art and performance venues on Seaport Square Green, and a branch library or similar public use at Block D. Together these will create a strong cultural component for the area and will activate and provide year-round use to the Project.

This Cultural Corridor is a key organizing principle for Seaport Square, and by creating and promoting its identity as a cultural destination, the economic vitality of the new neighborhood's mix of residential, office, and retail uses is further enhanced. Seaport Square's physical connection to the South Boston waterfront and to the city at large is reinforced by developing this Cultural Corridor to contribute to the evolution of civic, cultural, and economic life in Boston.

5.3.5 24-Hour /7-Day a Week Fully Activated Site

Seaport Square, a mixed-use development, will fully activate its site year-round. The new neighborhood will provide a variety of activity throughout the day and night, with multiple uses such as restaurants, retail and cultural attractions that will draw people to the site. Residential, retail, office, hotel and cultural uses are planned throughout Seaport Square, as further detailed below. The percentages of square footages per use are approximations.

Residential – Approximately 42%

Like many of Boston's best-known neighborhoods, housing will be the primary use in Seaport Square. A diverse selection of housing will be available in several types of buildings, with rental and ownership opportunities as well as a mix of affordable, workforce, and market-rate housing totaling approximately 2.8 million square feet. Workforce housing is intended for people who do not qualify for standard affordable housing units, but who are often priced out of the housing market, such as fire fighters, police officers, teachers, and the like. Residents will be able to choose from low-rise garden to high-rise city views in a range of sizes. Residential uses are concentrated around Seaport Hill which is designed as a neighborhood combining three different housing types: 21-story towers, 8- to 10-story buildings, and four-story townhouses arranged around a central open space. The organization and combination of these typologies relates to the varied urban fabrics surrounding the site, differing in height, density, views, sun exposure, street division, and massing. The mix of housing types also accommodates residents from a range of socio-economic conditions and diverse family structures, promoting a more heterogeneous urban community.

Office and Research – Approximately 20%

The office buildings of Seaport Square are located on Blocks B, L1, L2, and Q. Buildings on B, L1, and L2 which have the largest office areas (between approximately 340,000 and 420,000 sf) are located along Seaport Boulevard.. Having these office buildings face Seaport Boulevard takes advantage of their scale and multi-use function to activate the street. These three buildings also include podium and street level retail at their base and direct access to a pedestrian way and public open space. Block Q is an office building (150,000 sf) similar in height and character to the adjacent building in the Fort Point Channel District.

Retail/Entertainment – Approximately 20%

Storefront retail, entertainment and restaurant use is proposed at ground level for all of Seaport Square (except the Chapel and portions of Blocks L, N and P), activating the streets and pedestrian areas. Some buildings will also have second and third story retail/entertainment uses. Retail will include local and regional stores and boutiques mixed with larger national retailers.

Civic and Educational Uses – Approximately 10%

Seaport Square includes a great diversity of civic functions, strategically located along a larger civic trail: Boston's Harborwalk. Roughly 600,000 square feet of civic uses, will include exhibition space in proximity to Seaport Square Green, a public library branch, new Visitor's Center, and the new building for the Chapel of Our Lady of Good Voyage. These spaces are located as natural extensions of Boston's public realm.

A privately funded Pre-K -1 public pilot educational facility for 200 children will be located within the Project. A second educational facility, a new K-12 educational facility, will provide substantial annual scholarships for City residents. After school hours, this space may be used for adult education programs or other continuing education programs to meet the needs of City residents.

Hospitality – Approximately 8%

Two hotels are proposed overlooking Seaport Square with immediate access to and views of the waterfront. A third hotel is proposed at the southern end of the site to be more conveniently located to the BCEC. These hotels, totaling an area of 500,000 sf, will support conference and ballroom functions as well as retail, restaurants, a health club and spas.

Parking

Six new underground parking garages will be constructed as part of the full build out of Seaport Square. The Project will provide approximately 6,500 underground parking spaces when complete; approximately 4,000 will be commercial public for fee spaces and 2,500 will be residential. The Proponent currently has Air Pollution Control Commission permits for 3,647 commercial spaces. The Project will maintain these public for-fee spaces and will request another approximately 353 commercial spaces from the South Boston Parking Freeze bank. A car sharing hub will be located on the Project site to reduce parking demand and car ownership on the site. Car sharing will provide those working, living, or visiting Seaport Square with an alternative to car ownership. The Proponent will also continue a low-cost bicycle rental program; and investigate the feasibility of launching a shared-bike program similar to Smartbike at an appropriate location within the Project area.

5.3.6 Vibrant Public Space – Activating the Street Level

Vibrant Public Realm

Unique to Seaport Square are its cultural facilities, and the newly created cultural corridor with an integrated street network which ties the City and buildings from the Fort Point Channel to the views and openness of the waterfront. In addition, Seaport Square truly reknits the fabric of the existing neighborhood with its complimentary yet contemporary vibrant architecture. Its lively pedestrian friendly streetscapes, green spaces, public access, view corridors, ground floor public uses, convenient access to public transportation and creation of new streets and connections, will make it a premier destination waterfront neighborhood.

Boston is one of the most pedestrian-friendly cities in America. As such, the urban open spaces and tree-lined shopping streets of Seaport Square marry it to the tradition of Boston's 'Main Streets' and green squares, creating a vibrant, ever-changing pedestrian experience

for all seasons. The Seaport Square open space plan fills the gaps between the existing pedestrian paths of the Harborwalk, as well as linking the entire site to the larger open space networks of the City of Boston.

The goals of Seaport Square's public realm are defined at three scales:

- at the City Scale - to join Boston's collection of identifiable neighborhoods;
- at the Neighborhood Scale - to connect surrounding areas to each other and to the waterfront; and
- at the Pedestrian Scale - to create an active, attractive, well-lit, comfortable, accessible, and varied experience for all who live in, work, and visit Seaport Square.

The public realm is developed using six strategies:

1. Sensitive, Collaborative Design – The Seaport Square District has been the subject of many BRA plans (see Section 1.6 as well as 5.1 above). These plans have been reviewed and referenced in order to begin the implementation of street types, sidewalk design, medians, watersheet activation, and bicycle routes. Seaport Square seeks to incorporate these initiatives as well as continue to learn from ongoing planning.
2. Ample Open Space – Building footprints cover approximately 46% of the Project Area (as defined in Section 1.4) leaving the remaining 34% open for streets, sidewalks, pedestrian ways, and green space. Open space (excluding streets) accounts for over 25% of the total Proponent owned Project Site, including the 1.25 acre Seaport Square, and the 0.75 acre Seaport Hill, and 15,000 sf Courthouse Square. (See Figure 1-6 in Chapter 1.
3. Active Ground and Second Floor Uses – On the first floor, storefront retail, cultural uses, and lobbies for the residential, office and research, and hotel uses energize the street with display windows, doorways, canopies, signage, and sidewalk seating.
4. Pedestrian-Friendly Scale Buildings – As mentioned earlier in the section on Massing Diversity, the buildings' massing and façade design create a pedestrian scale.
5. Descent to the Waterfront – A striking aspect of Seaport Square is the construction of the sloping Harbor Street and Seaport Hill, which creates a new way for pedestrians to walk from South Station, the BCEC, and Summer Street down toward Seaport Boulevard and the waterfront. Streets, sidewalks, open spaces, and pedestrian ways are designed to facilitate that movement to and through this new public realm.
6. Sustainable Design - The project will become a world-class example of a sustainably designed, mixed use urban infill development, as evidenced by its commitment to pursuing LEED-Silver certification on all major buildings as well as

LEED-ND Silver or higher for the entire project site. Energy-efficient buildings, pedestrian-oriented activation of the streetscape and utilization of alternative transportation modes to facilitate a lifestyle that is less dependent on automobile-based transportation are fundamental to the design of the Project. Guidance will be provided both to design and construction teams as well as future office tenants and residents to minimize energy consumption, reduce waste generation, and optimize sustainable property management practices. More information on the Project's sustainability efforts can be found in Section 4.13.

5.3.7 Massing Variety and Design Diversity

Because of Seaport Square's combination of block sizes and shapes, mix of uses and open space, and commitment to a rich pedestrian–scaled experience, the Project provides a great deal of variety in building massing.

The Project will provide two and three story retail bases and mid- and high-rise elements interwoven throughout the Project Site. The lower and mid-rise portions help to relate the new development to the scale of the Fort Point Channel neighborhood, the ICA, the Boston Convention and Exhibition Center, and the Seaport World Trade Center. The high-rise portions, while providing urban density and city views, complement the existing towers of the Seaport World Trade Center and the proposed Fan Pier buildings.

The Proponent is committed to varying the scale, material, use, and character of buildings and landscapes throughout the Seaport Square plan. Buildings will undergo future design development and review as the Project progresses.

The Seaport Square plan incorporates and anticipates the work of a large team of local and national landscape and architectural firms, providing for different stylistic approaches to the build-out of the Seaport Square neighborhood. The goal is to achieve an appropriate balance of neighborhood cohesion and design diversity that is imperative to the successful development of a site this size.

5.3.8 Sustainable Design: Green Strategies

The project will become a world-class example of a sustainably designed, mixed use urban infill development, as evidenced by its commitment to pursuing LEED-Silver certification on all major buildings as well as LEED-ND Silver or higher for the entire project site. Energy-efficient buildings, pedestrian-oriented activation of the streetscape and utilization of alternative transportation modes to facilitate a lifestyle that is less dependent on automobile-based transportation are fundamental to the design of the Project. Guidance will be provided both to design and construction teams as well as future office tenants and residents to minimize energy consumption, reduce waste generation, and optimize sustainable property management practices.

4.0 ENVIRONMENTAL PROTECTION COMPONENT

4.1 Wind

4.1.1 Introduction

A pedestrian wind study was conducted on the proposed Seaport Square Project located in Boston, Massachusetts. The objective of the study was to assess the effect of the proposed Project on local wind conditions in pedestrian areas around the study site and provide recommendations for minimizing adverse effects.

The study involved wind simulations on a 1:500 scale model of the proposed Project and surroundings. These simulations were then conducted in a boundary-layer wind tunnel for the purpose of quantifying local wind speed conditions and comparing to appropriate criteria for gauging wind comfort in pedestrian areas. The criteria typically recommended by the Boston Redevelopment Authority were used in this study.

Wind tunnel tests were performed for Existing, Build, and Build with Mitigation configurations.

A summary of potential impacts for Existing, Build and Build with Mitigation configurations is as follows:

- Generally, the wind conditions improved or stayed the same with the proposed Project in place. Of the 156 locations studied for annual wind conditions, 145 or approximately 93% of the locations had wind conditions which improved or remained the same from the Existing configuration to the Build with Mitigation configuration.

- Based on the results of the wind tunnel tests described, it is anticipated that the potential mitigation measures described in Section 4.1.5.3 or other mitigation measures will be implemented in order to eliminate dangerous pedestrian comfort conditions that exist today as well as with the proposed Seaport Square Project.

- In general, uncomfortable pedestrian wind comfort conditions were measured in various areas of the proposed development site in the Existing configuration, particularly north of Seaport Boulevard. Conditions remain uncomfortable in a number of these areas in the Build configuration. These conditions are primarily caused by the open exposure of the site to Boston Harbor and strong annual northeasterly winds, as well as the open expanses of Fan Pier Park and Seaport Square Green. Thus, uncomfortable pedestrian wind comfort conditions in these areas of the Project Area and surroundings are to be expected. In order to provide an expansive open space area, and as directed by the South Boston Municipal

Harbor Plan, Seaport Square Green was planned immediately adjacent to Fan Pier Park. The resultant wind conditions will be mitigated to ensure the open space areas may be used and enjoyed by residents and visitors alike.

- For all test configurations, wind conditions are generally improved in the summer and fall seasons when wind conditions are more favorable and open space areas are generally more active.

- Potential mitigation measures to improve pedestrian wind comfort conditions have been identified and verified through wind tunnel testing. These measures consist of massing changes, canopies, wind screens and landscaping. The specific design or nature of these measures will be determined during the design review process, provided the effectiveness in wind reduction is similar to or better than the mitigation measures described below.

With respect to the as-of-right alternative, the primary difference from the proposed Project is the reduction in height of many of the buildings, while the majority if not all of the lower 60 foot to 65 foot podiums have remained unchanged. It is expected that the changes to the building height will have little influence on the pedestrian wind conditions which will be similar to those described for the Proposed Project. The fact that some of the taller portions of the larger buildings have been slightly reduced in the As-of-Right condition ensures that the down-washing of wind from the upper towers to grade will be similar to the conditions described for the proposed Project. In addition, any other slight modifications to the buildings will be captured during the detailed wind tunnel testing set to occur for each separate block.

4.1.2 Overview

Major buildings, especially those that protrude above their surroundings, often cause increased local wind speeds at the pedestrian level. Typically, wind speeds increase with elevation above the ground surface, and taller buildings intercept these faster winds and deflect them down to the pedestrian level. The funneling of wind through gaps between buildings and the acceleration of wind around corners of buildings may also cause increases in wind speed. Conversely, if a building is surrounded by others of equivalent height, it may be protected from the prevailing upper level winds, resulting in no significant changes to the local pedestrian level wind environment.

The consideration of wind in planning outdoor activity areas is important since high winds in an area tend to deter pedestrian use. For example, winds should be light or relatively light in areas where people would be sitting, such as outdoor cafes or playgrounds. For bus stops and other locations where people would be standing, somewhat higher winds can be tolerated. For frequently used sidewalks, where people are primarily walking, stronger winds are acceptable. For infrequently used areas, the wind comfort criteria can be relaxed

even further. The actual effects of wind can range from pedestrian inconvenience, due to the blowing of dust and other loose material in a moderate breeze, to severe difficulty with walking due to the wind forces on the pedestrian.

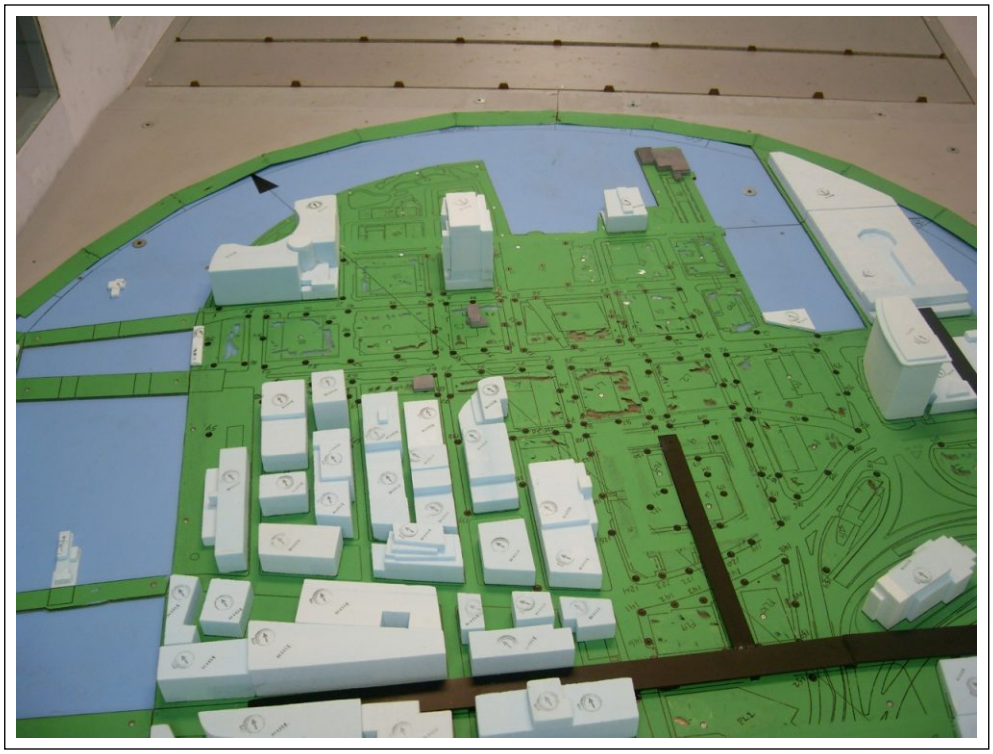
4.1.3 Methodology

Information concerning the site and surroundings was derived from: site photographs; information on existing and future surrounding buildings and terrain; and 3D massing models of the proposed Project. The following configurations were simulated:

- Existing Configuration: All existing and under construction surrounding buildings;
- Build Configuration: The proposed Seaport Square Project, all existing and under construction surroundings, and future surrounding development including Fan Pier;
- Build with Mitigation Configuration: The Build configuration plus mitigation measures.

As shown in Figures 4.1-1 through 4.1-3, the wind tunnel model included the proposed development and all relevant surrounding buildings and topography within a 2,000 foot radius of the study site. The mean speed profile and turbulence of the natural wind approaching the modeled area were also simulated in the boundary layer wind tunnel. The scale model was equipped with 156 specially designed wind speed sensors that were connected to the wind tunnel's data acquisition system to record the mean and fluctuating components of wind speed at a full scale height of five feet above grade in pedestrian areas throughout the study site. Wind speeds were measured for 36 wind directions, in 10 degree increments, starting from true north. The measurements at each sensor location were recorded in the form of ratios of local mean and gust speeds to the reference wind speed in the free stream above the model. The results were then combined with long term meteorological data, recorded during the years 1945 to 1998 at Boston's Logan International Airport, in order to predict full scale wind conditions. The analysis was performed separately for each of the four seasons and for the entire year.

Figures 4.1-4, 4.1-5 and 4.1-6 present "wind roses" summarizing the annual and seasonal wind climates in the Boston area, based on the data from Logan International Airport. The left-hand wind roses in Figures 4.1-4 and 4.1-5 are based on all observed wind readings for the given season, and the right-hand wind roses are based on strong winds that exceed a given threshold speed of 30 mph. For example, the upper wind roses in Figure 4.1-4 summarize the spring (March, April, and May) wind data. In general, the prevailing winds at this time of year are from the west-northwest, northwest, west, southwest and east. In the case of strong winds, however, the most common wind directions are northeast and west.



Wind Tunnel Study Model **Configuration - Existing** Seaport Square - Boston, Massachusetts	Project #0940216	Figure: 4.1-1 Date: July 14, 2009	RWDI

Wind Tunnel Study Model **Configuration - Build** Seaport Square - Boston, Massachusetts	Project #0940216	Figure: 4.1-2 Date: July 14, 2009	RWDI

Wind Tunnel Study Model
Configuration - Build with Mitigation

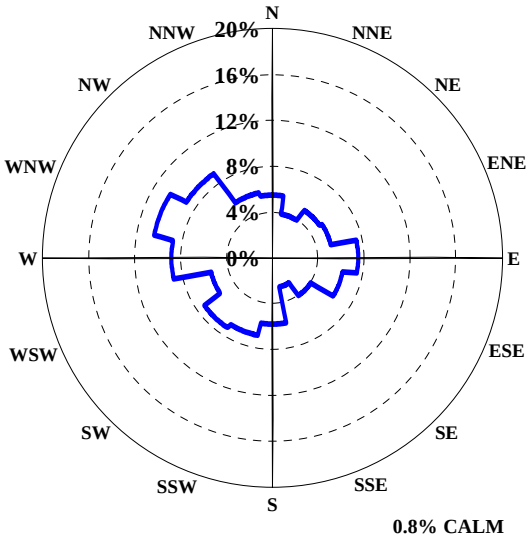
Seaport Square - Boston, Massachusetts

Project #0940216

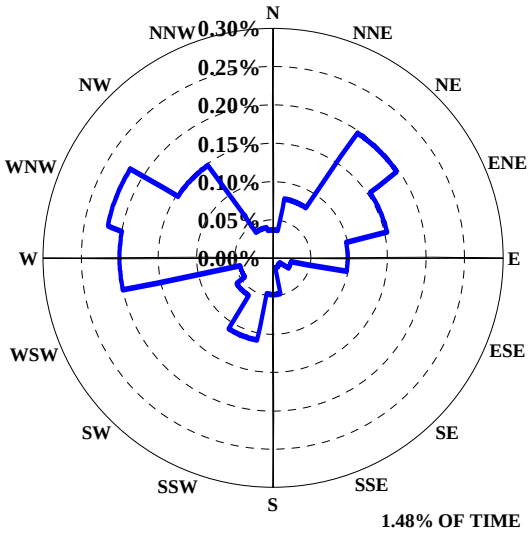
Figure: 4.1-3

Date: July 14, 2009

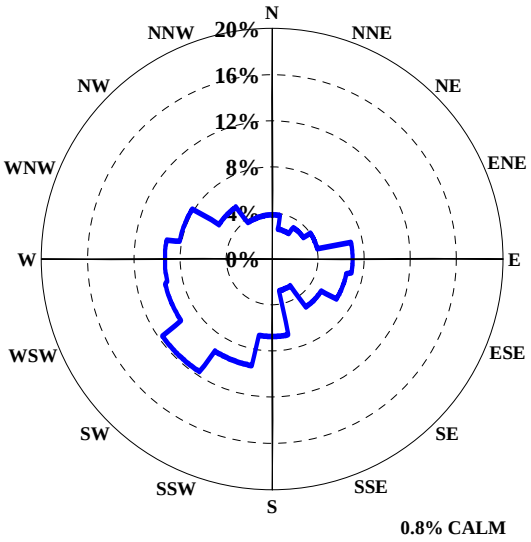
RWDI



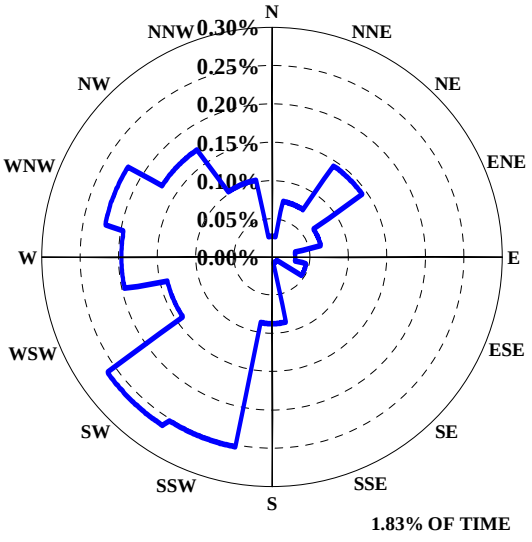
ALL SPRING WINDS



SPRING WINDS EXCEEDING 30 mph

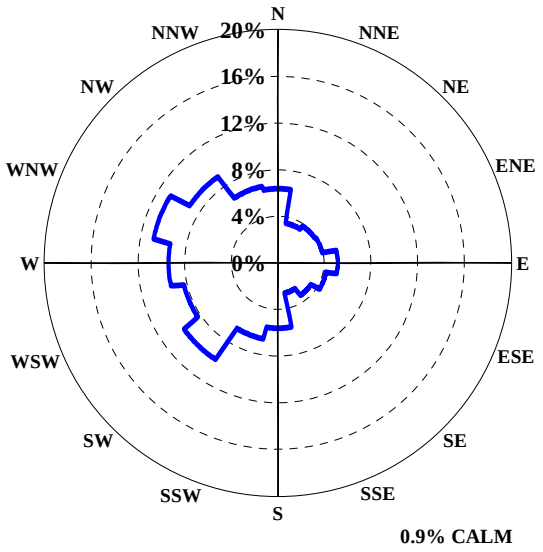


ALL SUMMER WINDS

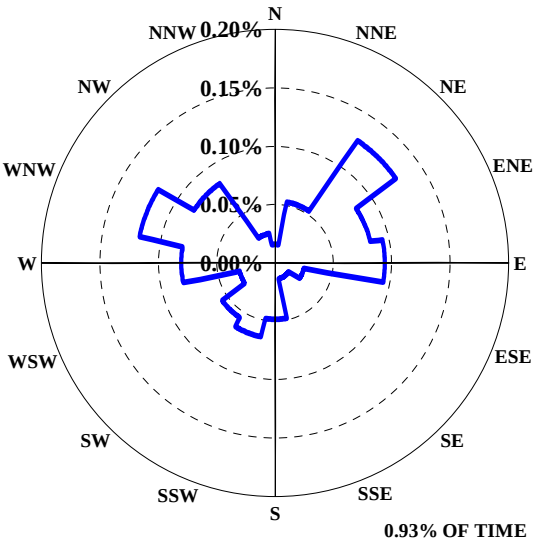


SUMMER WINDS EXCEEDING 25 mph

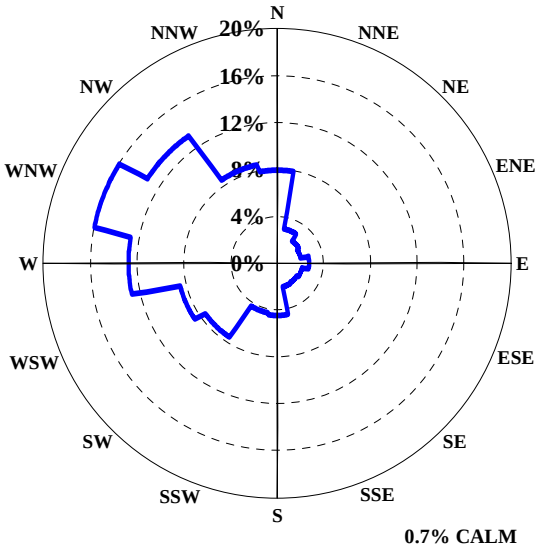
Directional Distribution (%) of Winds (Blowing From) **Station: Boston Logan International Airport, MA (1945 - 2004)** Seaport Square - Boston, Massachusetts Project #: 0940216	Figure No. **4.1-4** Date: July 14, 2009	RWDI



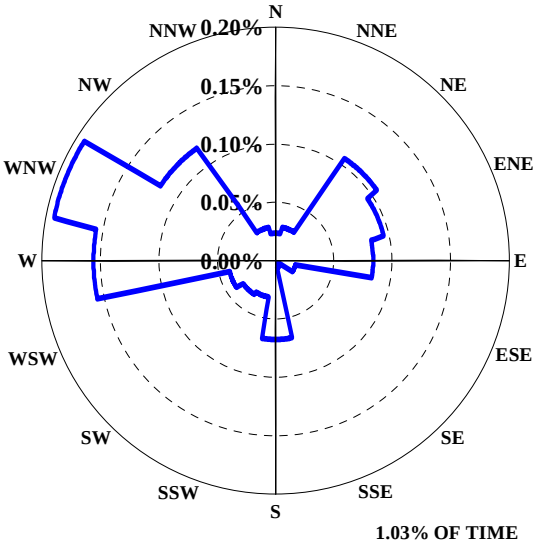
ALL FALL WINDS



FALL WINDS EXCEEDING 30 mph



ALL WINTER WINDS



WINTER WINDS EXCEEDING 35 mph

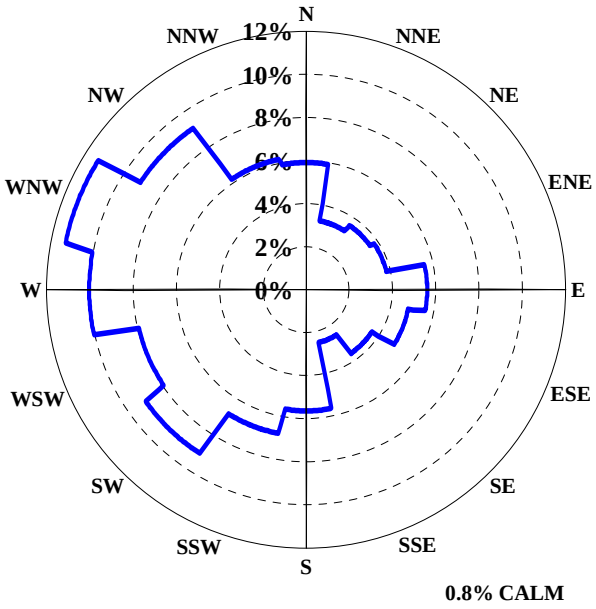
Directional Distribution (%) of Winds (Blowing From)
Station: Boston Logan International Airport, MA (1945 - 2004)

Seaport Square - Boston, Massachusetts Project #: 0940216

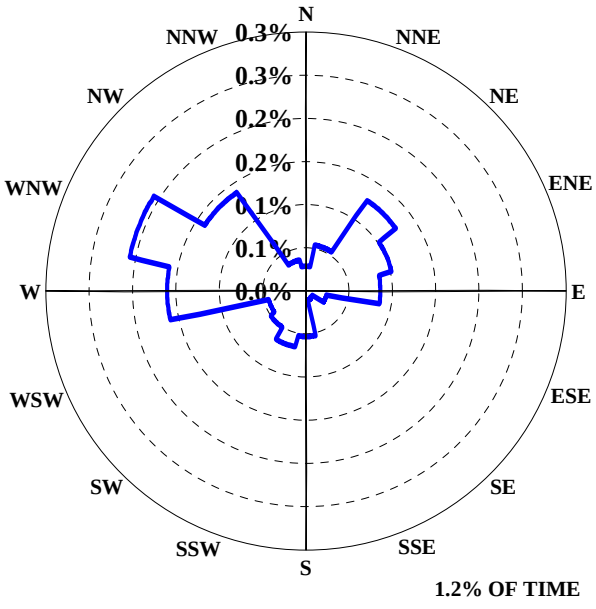
Figure No. **4.1-5**

Date: July 14, 2009

RWDI



ALL ANNUAL WINDS



STRONG ANNUAL WINDS

Directional Distribution (%) of Winds (Blowing From) **Station: Boston Logan International Airport, MA (1945 - 2004)** Seaport Square - Boston, Massachusetts Project #: 0940216	Figure No. **4.1.6** Date: July 14, 2009	RWDI

On an annual basis (Figure 4.1-6), the most common wind directions are those between the southwest and northwest. Winds from the east and east-southeast are also relatively common. In the case of strong winds, northeast and west-northwest are the dominant wind directions. While the heavily built-up downtown Financial District tends to shield the proposed development area from strong annual west-northwest winds, the proposed development site is exposed to strong annual northeasterly winds.

This study involved state of the art measurement and analysis techniques to predict wind conditions at the study site. Nevertheless, some uncertainty remains in predicting wind comfort, and this must be kept in mind. For example, the sensation of comfort among individuals can be quite variable. Variations in age, individual health, clothing, and other human factors can change a particular response of an individual. The comfort limits used in this Section represent an average for the total population. Also, unforeseen changes in the Project area, such as the construction or removal of buildings, can affect the conditions experienced at the site. Finally, the prediction of wind speeds is necessarily a statistical procedure. The wind speeds reported are for the frequency of occurrence stated. Higher wind speeds will occur but on a less frequent basis.

4.1.4 Pedestrian Wind Comfort Criteria

The BRA has adopted two standards for assessing the relative wind comfort of pedestrians. First, the BRA wind design guidance criterion states that an effective gust velocity (hourly mean wind speed +1.5 times the root mean square wind speed) of 31 mph should not be exceeded more than one percent of the time. The second set of criteria used by the BRA to determine the acceptability of specific locations is based on the work of Melbourne[1]. This set of criteria is used to determine the relative level of pedestrian wind comfort for activities such as sitting, standing, or walking. The criteria are expressed in terms of benchmarks for the one-hour mean wind speed exceeded 1% of the time (i.e., the 99-percentile mean wind speed), and are presented below in Table 4.1-1.

Table 4.1-1 BRA Mean Wind Criteria*

Dangerous	> 27 mph
Uncomfortable for Walking	> 19 and ≤ 27 mph
Comfortable for Walking	> 15 and ≤ 19 mph
Comfortable for Standing	> 12 and ≤ 15 mph
Comfortable for Sitting	< 12 mph

* Applicable to the hourly mean wind speed exceeded 1% of the time.

[1] Melbourne, W.H., 1978, "Criteria for Environmental Wind Conditions", Journal of Industrial Aerodynamics, 3 (1978) 241 - 249.

The wind climate found in a typical downtown location in Boston is generally comfortable for the pedestrian use of sidewalks and thoroughfares and meets the BRA effective gust velocity criterion of 31 mph. However, without any mitigation measures, this wind climate is likely to be frequently uncomfortable for more passive activities such as sitting.

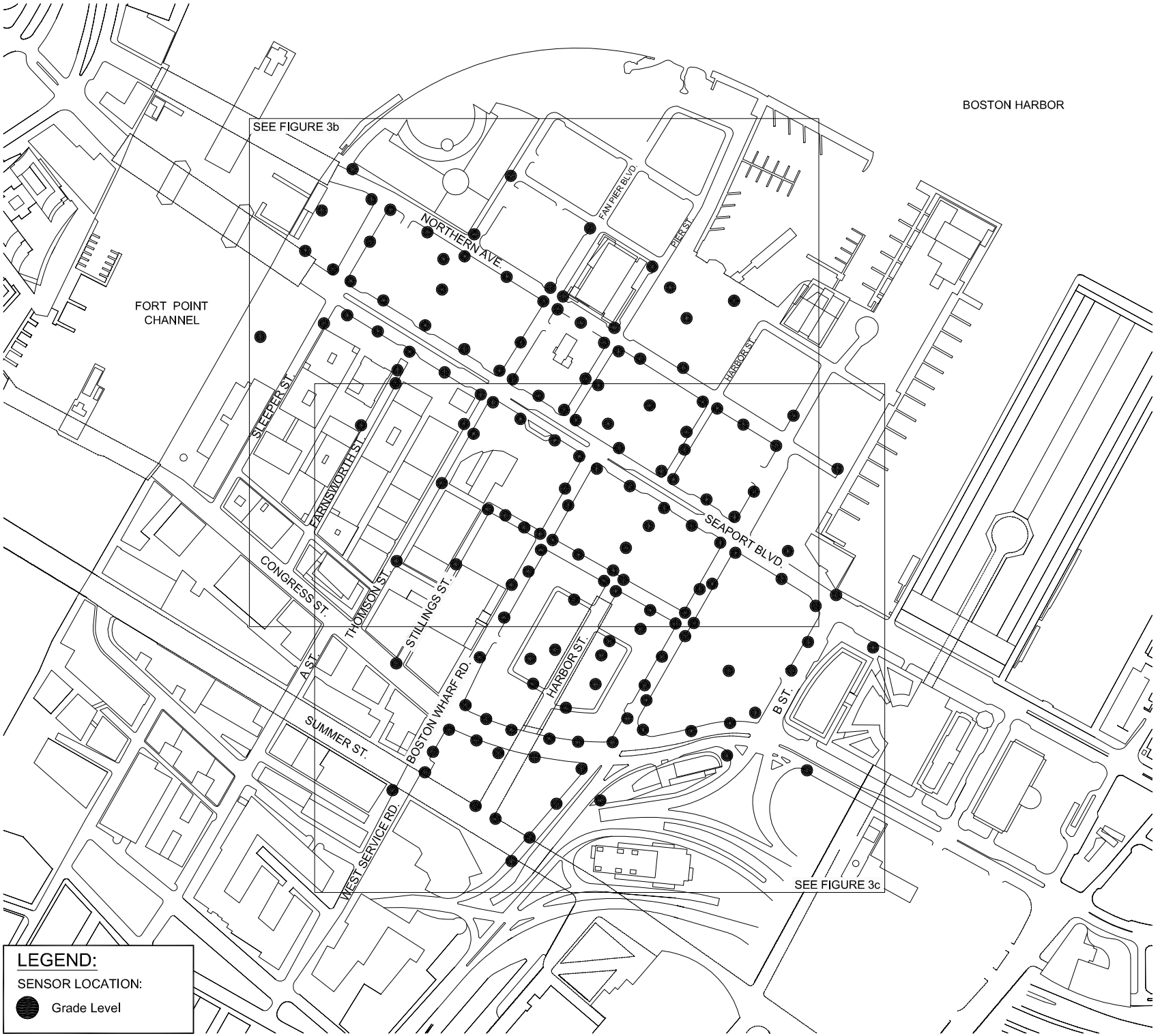
4.1.5 Test Results

Appendix E includes a table showing the mean and effective gust wind speeds for each season as well as annually, for all test configurations. Figures 4.1-7, 4.1-10 and 4.1-13 illustrate the extents of the site, the development and the potential mitigation measures utilized. Figures 4.1-8, 4.1-9, 4.1-11, 4.1-12, 4.1-14 and 4.1-15 graphically depict the wind comfort conditions at each wind measurement location based on the annual winds corresponding to the Existing, Build and Build with Mitigation configurations, respectively.

Typically the summer and fall winds tend to be more comfortable than the annual winds, while the winter and spring winds are less comfortable than the annual winds. A wind comfort categorization of walking is considered appropriate for sidewalks. Lower wind speeds conducive to standing are preferred at building entrances. A wind comfort categorization of sitting is considered appropriate for parks or passive activity areas where pedestrians are apt to linger for longer periods of time, particularly in the summer season. The following summary of pedestrian wind comfort is based on the annual winds for each configuration tested, except where noted below in the text.

4.1.5.1 Existing Configuration

In general, high annual wind speeds were measured at exposed locations adjacent to the open water of Boston Harbor to the northeast, particularly north of Seaport Boulevard and east of Harbor Street, as included in Appendix E and Figures 4.1-8 and 4.1-9. These wind conditions are primarily due to the open exposure of the Project site to Boston Harbor, combined with strong annual winds from the northeast (see Figure 4.1-6). Generally, uncomfortable wind conditions occurred north of Northern Avenue, as the area is exposed. The exceptions were on Courthouse Way (Location 2) and Fan Pier Boulevard (Location 4), where dangerous wind conditions were measured and the effective gust criterion exceeded. These dangerous wind speeds were primarily due to the acceleration of northeasterly winds around the southeast corner of the Courthouse Building (Location 2) and the northwest corner of the One Pier Street office building (Location 4) directly west of Fan Pier Park. On East Service Road, wind speeds were slightly calmer, suitable for walking (Location 13). The effective gust criterion was also exceeded at these two locations, as well as along Pier Street (Locations 6, 7, 25 and 36), in Fan Pier Park (Locations 11 and 12) and on Fan Pier Boulevard (Location 5).



SEAPORT SQUARE
IN SOUTH BOSTON

Figure 4.1-7

Key Plan - Existing

Scale: 1"=400'

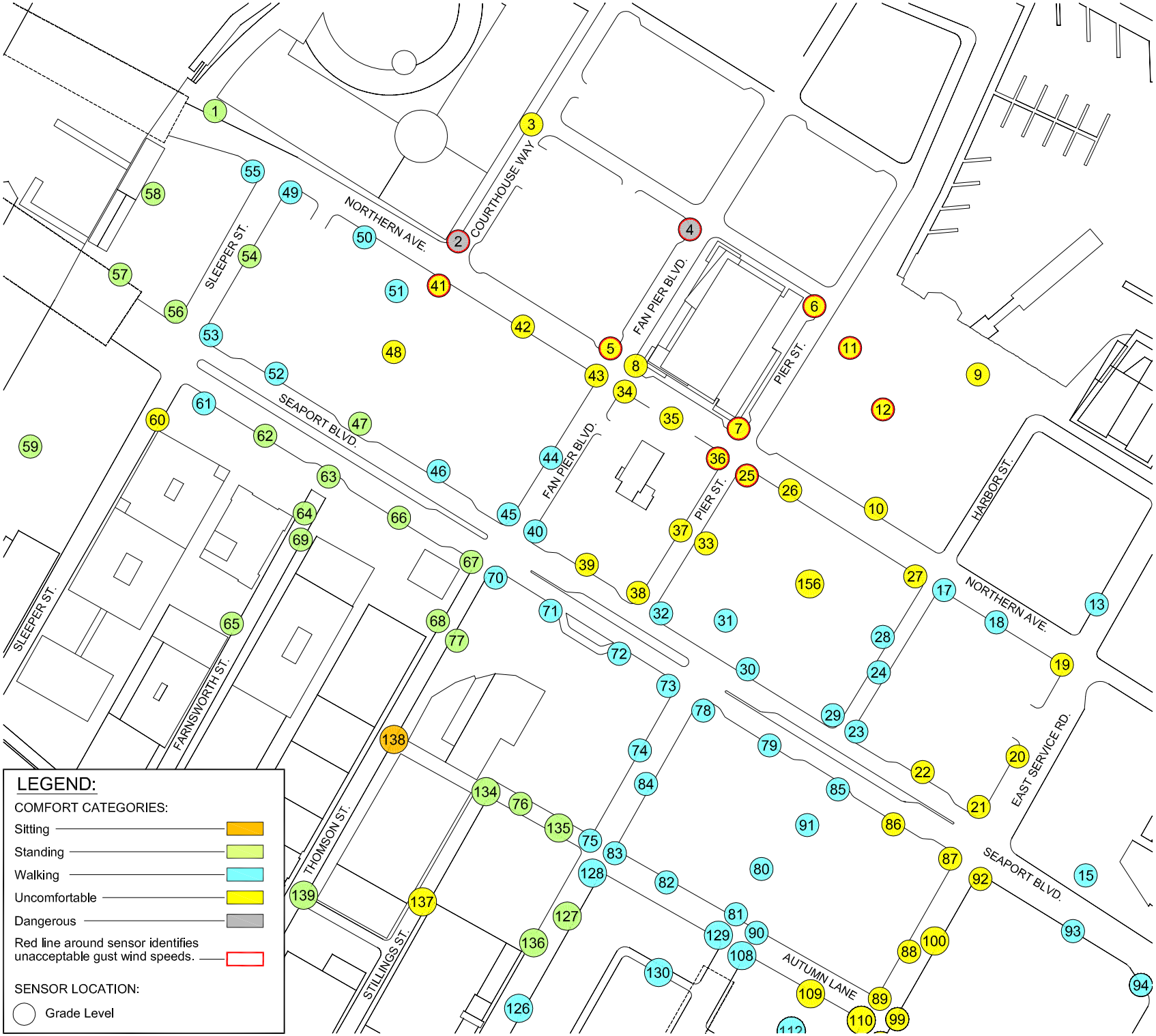
Date: July 14, 2009

GALE INTERNATIONAL

Morgan Stanley

WS DEVELOPMENT

prepared by:
KPF



SEAPORT SQUARE
IN SOUTH BOSTON

Figure 4.1-8

Pedestrian Wind Conditions Existing - Annual

Scale: 1"=200'

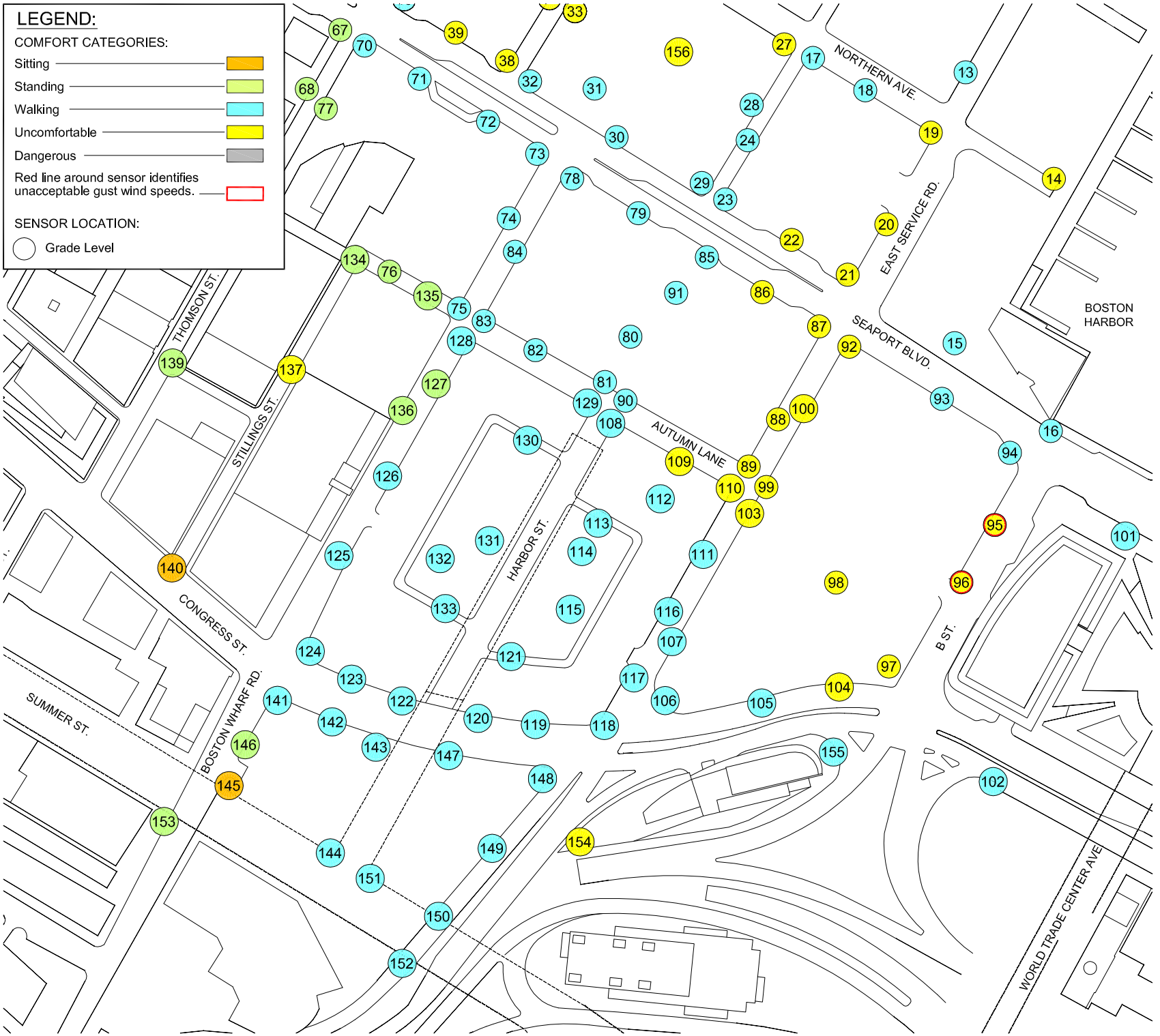
Date: July 14, 2009

GALE INTERNATIONAL

Morgan Stanley

WS DEVELOPMENT

prepared by:
KPF



SEAPORT SQUARE
IN SOUTH BOSTON

Figure 4.1-9

Pedestrian Wind Conditions Existing - Annual

Scale: 1"=200'

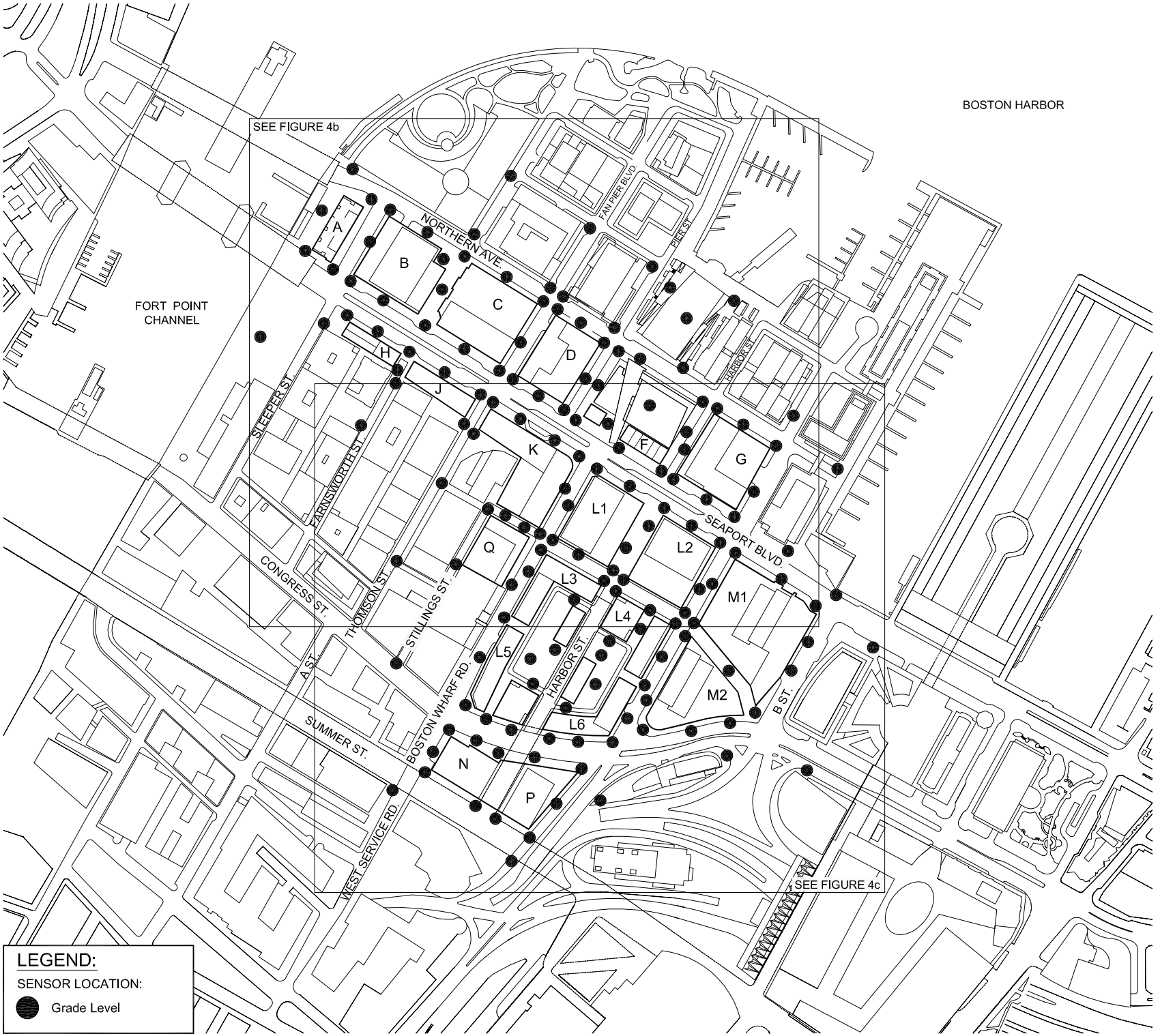
Date: July 14, 2009

GALE INTERNATIONAL

Morgan Stanley

WS DEVELOPMENT

prepared by:
KPF



SEAPORT SQUARE
IN SOUTH BOSTON

Figure 4.1-10

Key Plan - Build

Scale: 1"=400'

Date: July 14, 2009

GALE INTERNATIONAL

Morgan Stanley

WS DEVELOPMENT

prepared by:
KPF

SEAPORT SQUARE
IN SOUTH BOSTON

Figure 4.1-11

Pedestrian Wind Conditions Build - Annual

Scale: 1"=200'

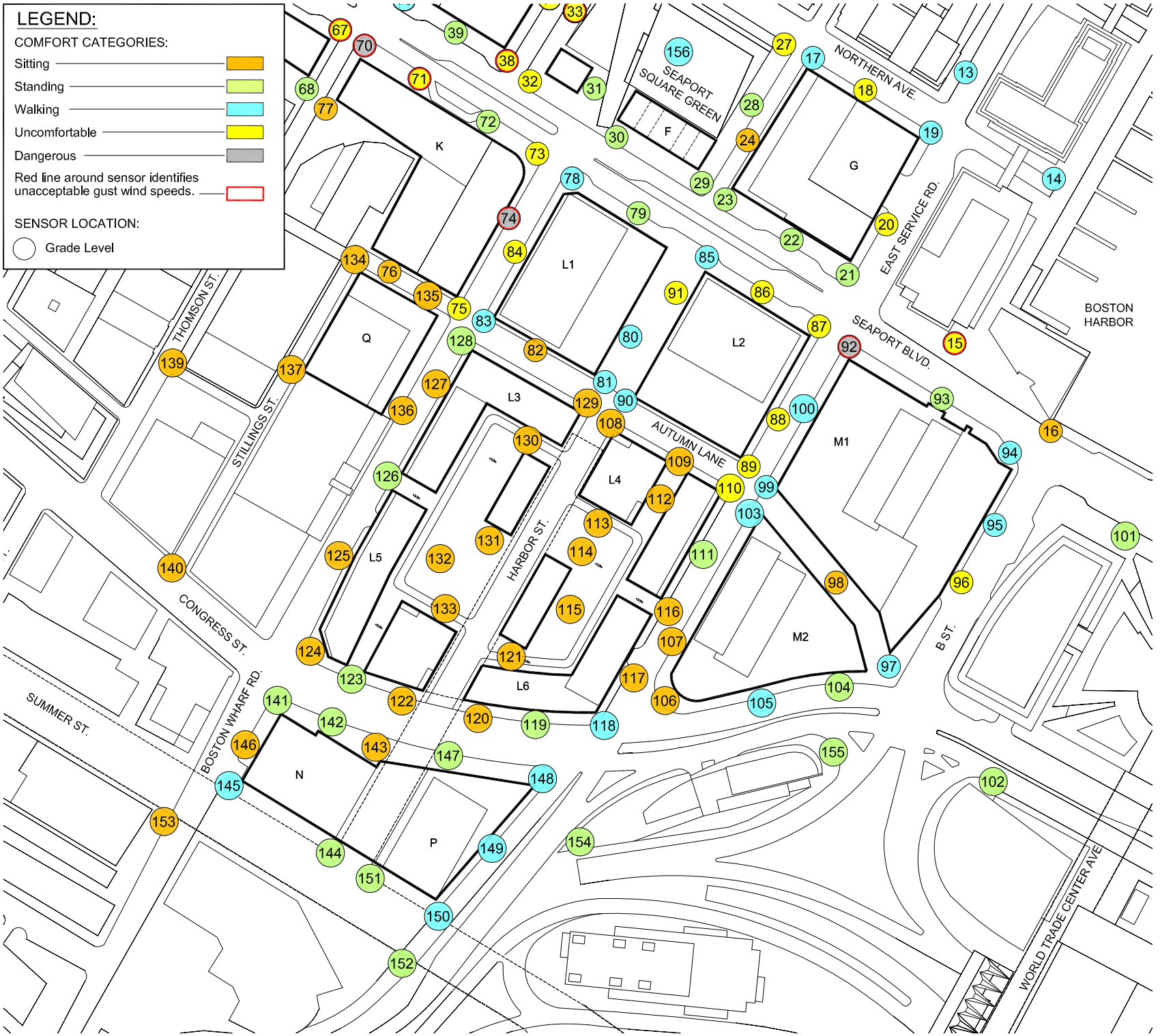
Date: July 14, 2009

GALE INTERNATIONAL

Morgan Stanley

WS DEVELOPMENT

prepared by:
KPF



SEAPORT SQUARE
IN SOUTH BOSTON

Figure 4.1-12

Pedestrian Wind Conditions Build - Annual

Scale: 1"=200'

Date: July 14, 2009

GALE INTERNATIONAL

Morgan Stanley

WS DEVELOPMENT

prepared by:
KPF

SEAPORT SQUARE
IN SOUTH BOSTON

Figure 4.1-13

Key Plan - Build with Mitigation

Scale: 1"=400'

Date: July 14, 2009

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SEAPORT SQUARE
IN SOUTH BOSTON

Figure 4.1-14

Pedestrian Wind Conditions Build with Mitigation - Annual

Scale: 1"=200'

Date: July 14, 2009

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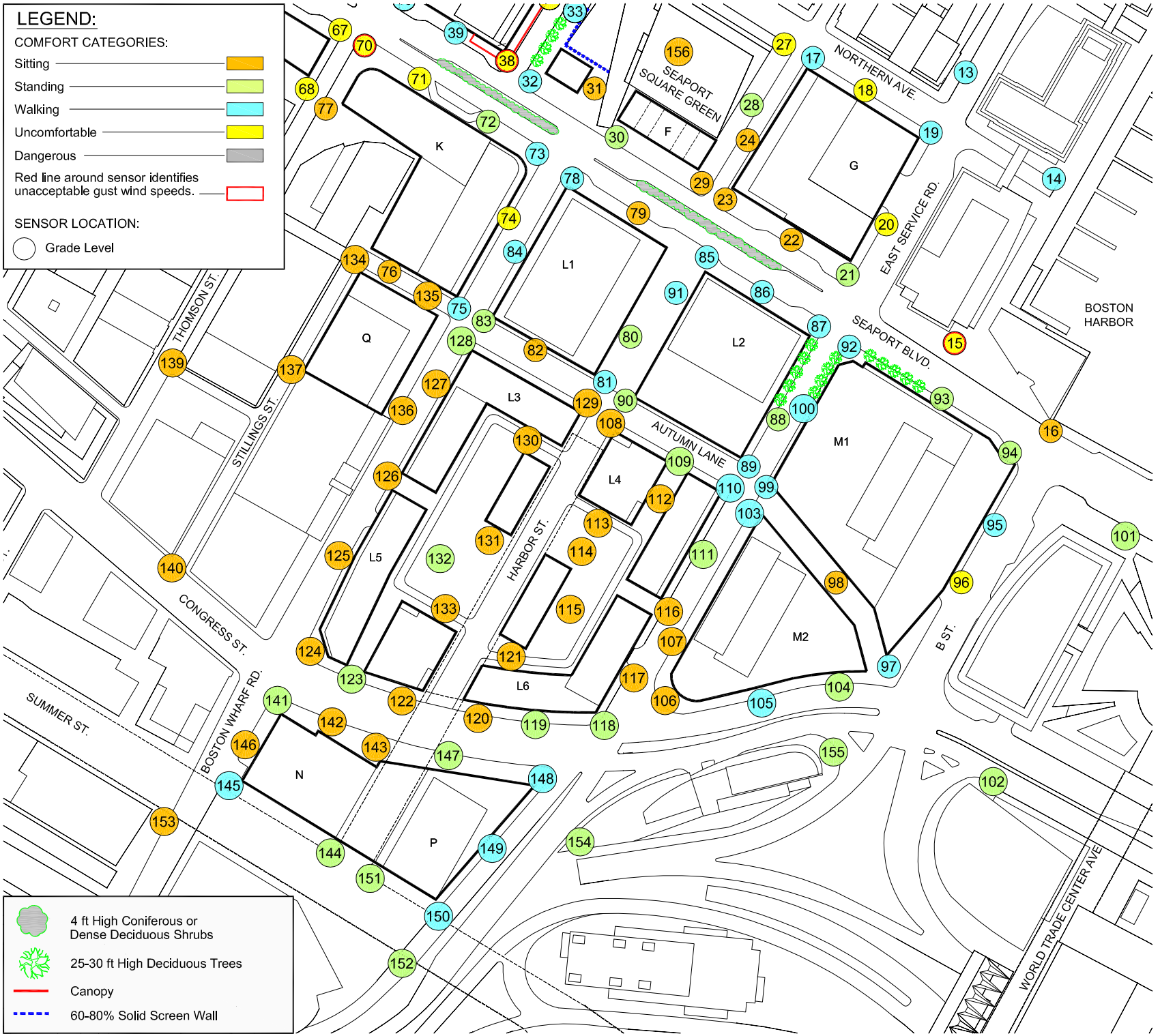

SEAPORT SQUARE
IN SOUTH BOSTON

Figure 4.1-15

Pedestrian Wind Conditions Build with Mitigation - Annual

Scale: 1"=200'

Date: July 14, 2009

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Uncomfortable wind conditions or wind conditions marginally acceptable for walking occurred along the sidewalks east of Fan Pier Boulevard, north of Seaport Boulevard and south of Northern Avenue. Uncomfortable wind conditions in this area were generally concentrated along Northern Avenue, Pier Street, East Service Road and in Seaport Square Green. In general, wind conditions were generally more favorable west of Courthouse Way. However, the effective gust criterion was exceeded on Northern Avenue at the intersection of Courthouse Way (Location 41).

Uncomfortable wind conditions were also concentrated along East Service Road from Autumn Lane to Northern Avenue, as well as along B Street. These higher wind speeds were due to the open exposure of the area to the prevailing northeasterly winds. South of Seaport Boulevard, wind conditions were generally more favorable, hence suitable for walking or better. The exceptions were: on Sleeper Street (Location 60) where uncomfortable wind conditions were measured due to the acceleration of strong northeasterly winds around the northwest corner of the building at the corner of Sleeper Street and Seaport Boulevard; on Stillings Street (Location 137) where northeasterly winds were channeled along the street, creating uncomfortable wind conditions; and on East Service Road (Location 154) where the exposure to southwesterly winds created uncomfortable wind conditions. The effective gust criterion was exceeded along B Street (Locations 95 and 96) due to strong northwesterly winds accelerating around the World Trade Center tower.

4.1.5.2 Build Configuration

In general, the addition of the proposed Seaport Square Project and future surrounding building massing improved wind conditions in and around the proposed development, particularly south of Seaport Boulevard (see Figures 4.1-8, 4.1-9, 4.1-11 and 4.1-12).

Of the 156 locations studied for annual wind conditions, 92 improved from the Existing to the Build configurations. However, Blocks D, F, K and Seaport Square Green are particularly exposed to Boston Harbor to the northeast (and strong annual northeasterly winds) due to the open expanses of Fan Pier Park and Seaport Square Green. Thus, uncomfortable pedestrian wind comfort conditions in these areas of the development site are to be expected. As previously mentioned, in order to provide an expansive open space area, and as directed by the South Boston Municipal Harbor Plan, Seaport Square Green was planned immediately adjacent to Fan Pier Park. The resultant wind conditions will be mitigated to ensure the open space areas may be used and enjoyed by residents and visitors alike.

Conditions at the proposed Project site including the immediately surrounding area are generally improved in the summer and fall seasons when wind conditions are more favorable (see Appendix E). In a few local areas, the proposed building massing caused a worsening of pedestrian wind comfort conditions. The Build configuration results are discussed in more detail below.

Fan Pier Park and Blocks North of Northern Avenue (Locations 1 through 14)

Wind conditions along pedestrian walkways north of Northern Avenue generally improved to suitable for walking throughout the area. This includes a reduction in wind speeds along Fan Pier Boulevard (Location 4) and Courthouse Way (Location 2). The majority of areas were comfortable for walking or better, on an annual basis. Ten out of 14 locations were suitable for walking or better. Uncomfortable wind conditions remained within Fan Pier Park (Locations 9, 11 12), and at the northwest corner of Northern Avenue and Pier Street (Location 7). In both the Existing and Build condition, one location continued to fail the effective gust criterion and this was at the southeast corner of Fan Pier Park (Location 7). (Figures 4.1-11 and 4.1-12)

Blocks D, F, G and Seaport Square Green (Locations 15 through 40 and 156)

In general, high wind speeds were measured around Block D along Northern Avenue, Pier Street, Seaport Boulevard, and along the pedestrian walkways on the north and west sides of Seaport Square Green. Uncomfortable wind conditions occurred around Block D (Locations 34, 37 and 38), while dangerous wind conditions were observed along the north side (Location 35). The high wind speeds around Block D were primarily due to the strong northeasterly winds blowing through Fan Pier Park and Seaport Square Green, accelerating around Block D, and channeling along Northern Avenue between the north side of Block D and the One Pier Street office building, situated across Northern Avenue.

Uncomfortable wind conditions also occurred around the perimeter of Seaport Square Green (Locations 25 to 27, 32 and 33). Conditions in the center of Seaport Square Green (Location 156) were suitable for walking. In the summer season, when wind conditions tend to be more favorable, this area was suitable for standing, while pedestrian comfort conditions around the perimeter of the park improved to walking conditions (refer to Appendix E). Uncomfortable pedestrian wind comfort conditions were measured around Block G (Locations 18 and 20), and locally on the north side of Seaport Boulevard across from Block M1 (Location 15), due to the exposure to the strong northeasterly winds. The remaining pedestrian walkways in this area had wind conditions conducive to walking or better. The effective gust criterion was exceeded at four locations, all in the vicinity of Block D (Locations 33, 34, 35 and 38).

As previously mentioned, in order to provide an expansive open space area, and as directed by the South Boston Municipal Harbor Plan, Seaport Square Green was planned immediately adjacent to Fan Pier Park. The resultant wind conditions will be mitigated to ensure the open space areas may be used and enjoyed by residents and visitors alike.

Blocks A, B and C (Locations 41 through 58)

Wind comfort conditions were generally suitable for walking or better along the pedestrian walkways around Blocks A, B and C. Sixteen of 18 locations were suitable for walking or better. The exception was on Fan Pier Boulevard (Location 44) and between Blocks B and C (Location 48), where uncomfortable wind conditions occurred. The wind speeds along Fan Pier Boulevard were a result of downwashing northerly winds around the Block C podium and tower, as well as the channeling of winds between Blocks C and D. Between Blocks B and C, the uncomfortable wind conditions were primarily due to the channeling of northeasterly winds.

The effective gust criterion was met at all locations in this area.

Blocks H, J, K, L1, L2 and M1 (Locations 59 through 101)

As these Blocks are located in the middle of the site, they are generally more sheltered from the prevailing winds, and hence wind conditions are generally suitable for walking or better, on an annual basis for 28 of 43 locations (Figures 4.1-11 and 4.1-12). However, uncomfortable wind conditions were observed along Seaport Boulevard (Locations 67, 71, 73, 86 and 87), as well as along the side streets (Locations 75, 84, 88, 89, 91 and 96). Dangerous wind conditions also occurred in the vicinity (Locations 70, 74 and 92), due to the interaction of the prevailing northeasterly winds with the proposed massing of Blocks K and M1. Overall, the high wind speeds were due to winds channeling between the buildings or the overall exposure, particularly along Seaport Boulevard, to the prevailing northeasterly winds. The effective gust criterion was exceeded at five locations (Locations 67, 70, 71, 74 and 92).

Blocks Q, L3, L4, L5, L6, M2, N and P (Locations 102 through 155)

Pedestrian wind conditions south of Autumn Lane were generally suitable for walking, standing or sitting, with the majority of areas, particularly around Blocks L3, L4, L5 and L6, suitable for sitting. The exception was at the northeast corner of Block L4 (Location 110) where wind conditions were uncomfortable. In general, the pedestrian wind comfort conditions in these areas were an improvement over the Existing configuration, in which conditions were generally suitable only for walking (Figures 4.1-9 and 4.1-12). In fact, 53 out of 54 locations are suitable for walking or better. South of Autumn Lane, the effect of the strong annual northeasterly winds tended to be reduced enough by the upwind building massing to generally improve pedestrian wind comfort conditions throughout these areas.

The effective gust criterion was met at all locations in this area.

4.1.5.3 Build Configuration With Mitigation

Further wind tunnel testing was undertaken to explore solutions for improving pedestrian wind comfort conditions in areas where dangerous conditions were measured in the initial Build configuration wind tunnel test (see Section 4.1.6.2 above). The resulting pedestrian wind comfort conditions are shown in Figures 4.1-14 and 4.1-15. Of the 156 locations studied for annual wind conditions, 108 of the locations had wind conditions which improved from the Existing configuration to the Build with Mitigation configuration. The potential mitigation measures employed focused on improving pedestrian wind conditions in the following four general areas:

1) Pedestrian walkways around Block D along Northern Avenue, Pier Street and Seaport Boulevard (Locations 34 to 38);

2) In and around Seaport Square Green (Locations 25 to 33, 156);

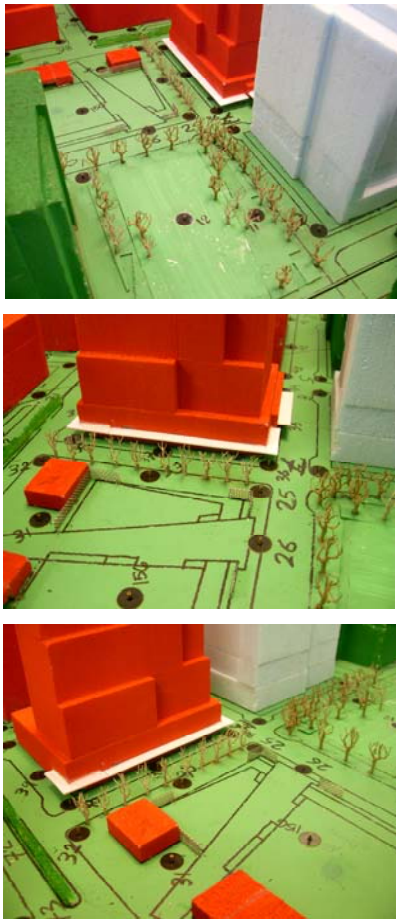
3) Pedestrian walkways around Block K along Seaport Boulevard and Boston Wharf Road (Locations 70, 71, 73, 74); and,

4) Pedestrian walkways around the north corner of Block M1 along Seaport Boulevard and East Service Road (Location 92).

In consultation with the design team, potential mitigation measures were developed which consisted of massing changes to Blocks D, K, L1 and M1, the addition of canopies to Block D, and the inclusion of wind screens and landscaping.

Massing changes to Block D consisted of enlarging the setback of the tower on the north, east and south sides, a change to the tower floor plan, and the chamfering of the southern podium corner (Location 38). A wrap-around canopy (12 to 15 feet deep) was also incorporated to further minimize the negative impact of downwashing northeasterly winds on Northern Avenue, Pier Street and Seaport Boulevard (Locations 34 through 38). A combination colonnade and canopy could also be employed to achieve the same effect In addition, landscaping in the form of planter boxes was added to the sidewalk along Northern Avenue, between Locations 35 and 36 (Figure 4.1-14).

Porous screen walls (60-80% solid) were incorporated around Seaport Square Green, and deciduous trees were added along the east side of Pier Street. Landscaping could be employed in lieu of the porous screen walls. Deciduous trees were added to Fan Pier Park, as per the updated site plan information provided to the Project team from the Fan Pier Project and contained in Appendix E. The general intent of including landscaping and screen walls in these areas was to disrupt the northeasterly winds passing through Fan Pier Park and Seaport Square Green, thus reducing the negative impact of these winds on pedestrian wind comfort on walkways around Block D and along Seaport Boulevard.



***Images 1a, 1b, 1c**: Mitigation Solutions in Fan Pier Park, Seaport Square Green and Block D*

Photos of the conceptual mitigation measures are shown in Images 1a, 1b, and 1c. The potential mitigation measures resulted in a reduction of the dangerous wind conditions at Location 35 to an uncomfortable comfort level. The added landscaping in the park also improved pedestrian wind comfort conditions in these areas, particularly along Pier Street. The addition of the canopy around Block D had the most substantial effect on improving comfort conditions in the area. Additional landscaping on the west side of Fan Pier Park (e.g. coniferous trees) would have a less substantial, but still positive impact in the area as well. In lieu of additional landscaping in Fan Pier Park, planters or wind screens could be employed along the sidewalk on the north side of Block D between Locations 35 and 36, in order to ensure that pedestrian comfort conditions in this area are appropriate. Uncomfortable conditions remain at Location 12 in the middle of Fan Pier Park, similar to the Existing Configuration. However, improved pedestrian wind comfort conditions suitable for walking were measured during the summer season.

In order to improve the dangerous wind conditions on the walkways surrounding Block K (Locations 70 and 74), the tower portion of Block K along Boston Wharf Road was set back from the podium. In addition, the northwest corner of the Block K tower was rounded in order to improve wind conditions. Additional landscaping at the northwest corner could also be employed to mitigate uncomfortable winds. The conceptual mitigation measures were effective in improving comfort conditions from dangerous to uncomfortable in these areas.

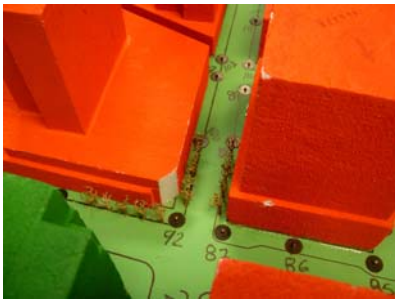


***Image 2**: Deciduous Trees at North Corner of Block M1*

At Block M1, the towers were moved closer to the southeast edge of the podium, and the northwest corner of the podium was chamfered. In order to further reduce wind speeds at the northwest corner (Location 92), deciduous trees were added along the south side of Seaport Boulevard (see Figure 4.1-15) and the east and west sides of East Service Road (see Image 2 and Figure 4.1-15). The mitigation resulted in an improvement in wind comfort, from uncomfortable and dangerous at the corner (Location 92).

Image 3: *Dense Shrubs Along Seaport Blvd. Medians*

In addition to the conceptual mitigation measures described above, other mitigation measures such as shrubs could be added along the medians of Seaport Boulevard to generally aid in disrupting the strong northeasterly winds flowing along this boulevard (see Image 3).

4.1.6 Conclusion

Generally, the wind conditions improved or stayed the same with the proposed Project in place. Of the 156 locations studied for annual wind conditions, 145 or approximately 93% of the locations had wind conditions which improved or remained the same from the Existing configuration to the Build with Mitigation configuration. For all test configurations, wind conditions are generally improved in the summer and fall seasons when wind conditions are more favorable and open space areas are generally more active.

Based on the results of the wind tunnel tests described, it is anticipated that the potential mitigation measures described in Section 4.1.5.3 or other mitigation measures will be implemented in order to eliminate dangerous pedestrian comfort conditions that exist today as well as with the proposed Seaport Square Project.

With mitigation 138 of 156 locations are suitable for walking or better, only 18 of 156 locations have uncomfortable conditions, and no locations have dangerous conditions. The specific design or nature of any mitigation measures implemented is somewhat flexible, provided the aerodynamic effect is similar to or better than the mitigation measures described in Section 4.1.5.3. It has been noted that there are still a few areas where uncomfortable wind conditions remain. For these areas and others that may exceed the appropriate pedestrian wind comfort criterion, it is anticipated that further wind tunnel studies will be performed for each individual Block in order to establish more precise mitigation during the design review process.

4.2 Shadow

A shadow impact analysis was conducted to identify new shadow impacts from the as-of-right alternative and the proposed Project. The analysis looked at shadow impacts during three time periods (9:00 am, 12:00 noon, and 3:00 pm) during the 21st of each month from June to December. The study also identified shadows at 6:00 pm during the 21st of each

month from June to September. These seven months provide a complete picture of shadow impacts during the year, as the shadow impacts during certain months would be similar (e.g. April 21 and October 21). The shadow analysis is shown in Figures 4.2-1 through 4.2-25. The Proponent has also provided dawn-to-dusk digital shadow animations for the 21st of each month studied. These animations can be found on the attached CD, and show the net new shadow of the Project in relation to the existing conditions (i.e. surface parking lots) rather than in relation to the as-of-right condition.

The analysis focuses on public open spaces, major pedestrian areas, sidewalks and watersheet in the vicinity of the Project Site. It should also be noted that the analysis was completed using general massing of the Project, and as the design of the buildings moves forward, it is anticipated that the addition of architectural features, such as setbacks and curved facades, will result in a decrease in net new shadow as presented in the analysis.

Shadows have been determined using the applicable Altitude and Azimuth data for Boston.

Because the Project Site is currently comprised of parking lots, the Project will result in new shadow when compared to existing conditions. The shadows resulting from the proposed Project and the as-of-right alternative are very similar. In many cases there are no net new shadows from the proposed Project beyond those created as a result of the as-of-right alternative, and in other cases, the proposed Project creates minor new shadows beyond those created by the as-of-right alternative. Overall, however, new shadow will fall primarily on the Project Site and adjacent streets. Both sun and shade will be cast across the Project's open spaces during most time periods studied, allowing for individuals to choose their comfort level depending on the season and weather. The Project has been planned so that its open spaces will provide both sun and shade. Impacts to surrounding areas outside of the Project Site as well as impacts to existing open spaces are minor. Public open spaces in the vicinity of the Project Site included within the analysis are the Harborwalk, Old Sleeper Street, Fan Pier Park and Courthouse Plaza on the northwest side of the Moakley Federal Courthouse, Old Northern Avenue Bridge, the Evelyn Moakley Bridge and Children's Wharf Park.

4.2.1 June 21

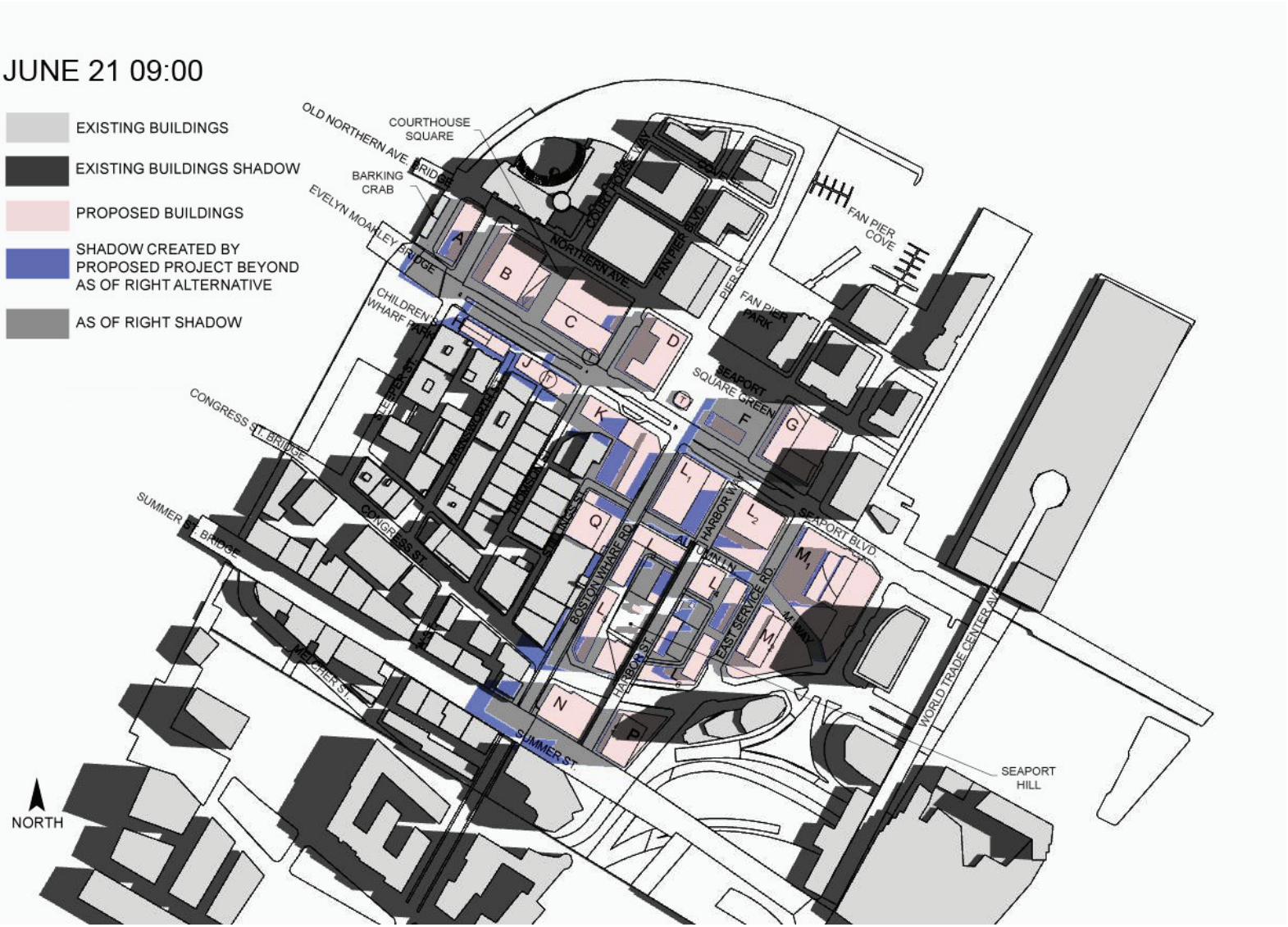
New shadow created on June 21 is illustrated in Figures 4.2-1 through 4.2-4.

At 9:00 am on June 21, there will be no new shadow on Fan Pier Park, Courthouse Plaza or the Old Northern Avenue Bridge. Shadows from the as-of-right alternative and proposed Project are similar. New shadow from the as-of-right alternative and proposed Project will be cast in a westerly direction over portions of Seaport Boulevard, Boston Wharf Road, Harbor Street, Autumn Lane, Summer Street and very minor portions of the Evelyn Moakley Bridge and Children's Wharf Park. New shadow will also cover a portion of Seaport Square Green as well as portions of Seaport Hill from both the proposed Project and the as-of-right alternative. The proposed Project does not cast shadows on Courthouse Square, Harbor Way, M Way and Old Sleeper Street beyond those created by the as-of-right condition. Most of the Project's open spaces will have both sun and shade, allowing for individuals to choose their comfort depending on the weather.

At 12:00 noon, new shadow will be cast in a northerly direction. No new shadow will be cast on to the Harborwalk, Fan Pier Park, Evelyn Moakley Bridge, Old Northern Avenue Bridge, Old Sleeper Street, Children's Wharf Park, and Courthouse Plaza. New shadow will be created by the as-of-right alternative and minimally extended by the proposed Project onto a small portion of the eastern side of Seaport Square Green and a minor portion of Seaport Hill. Sidewalks along Seaport Boulevard will also remain predominantly unaffected, although short stretches along the southern side of the road will receive minor amounts of new shadow. New shadow from both the as-of-right alternative and proposed Project will be cast onto portions of Boston Wharf Road, Harbor Street, East Service Road, Autumn Lane and Northern Avenue. New shadow will also be cast onto small portions of Courthouse Square, Harbor Way and M Way. The Project's open spaces will have both sun and shade, allowing for individuals to choose their comfort depending on the weather. The proposed Project will result in only minor net new shadows beyond those created by the as-of-right alternative.

At 3:00 pm, new shadow will be cast in a northeasterly direction. No new shadow will be cast on to Courthouse Plaza, the Evelyn Moakley Bridge, Old Northern Avenue Bridge, Children's Wharf Park or Old Sleeper Street. New shadow from Block M will cast a shadow onto a minor portion of the Harborwalk adjacent to the Seaport World Trade Center. New shadow will be cast onto portions of Northern Avenue, Seaport Boulevard, Boston Wharf Road, Harbor Street, East Service Road, Autumn Lane, B Street and Congress Street. Minor areas of new shadow will slightly encroach onto the southwestern portions of Fan Pier Park and Seaport Hill, and onto Seaport Square Green, although the majority of these public areas, as well as most of Seaport Square Green, will remain un-shaded. Portions of Courthouse Square, Harbor Way and M Way will receive new shadow as well, and the proposed Project results in very minimal net new shadows beyond those created by the as-of-right alternative on the open spaces. The Project's open spaces will have both sun and shade, allowing individuals to choose their comfort depending on the weather. Again, the shadow impacts from the proposed Project and the as-of right alternative are similar.

At 6:00 pm, new shadow will be cast in an easterly direction. No new shadow will be created on Courthouse Plaza, Old Sleeper Street and Old Northern Avenue Bridge. New shadows will fall onto portions of Seaport Boulevard, I-90 Ramps and Congress Street, as well as portions of Boston Wharf Road, Autumn Lane, Northern Avenue, Harbor Street and World Trade Center Avenue. Minor areas of new shadow will also reach the Harborwalk near the Seaport World Trade Center. New shadow will extend the existing shadow cast across the watersheet west of the Seaport World Trade Center. New shadows will be cast onto a portion of Fan Pier Park and Seaport Square Green, as well as portions of Seaport Hill. The proposed Project results in only minimal new shadow on the open spaces beyond those created by the as-of-right alternative. The proposed Project does not cast net new shadow beyond those created by the as-of-right alternative on Courthouse Square, Harbor Way and M Way. Again, the shadow impacts from the proposed Project and the as-of right alternative are similar.



SEAPORT SQUARE
IN SOUTH BOSTON

Figure 4.2-1

Shadow During June 21 at 9:00 am

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SEAPORT SQUARE
IN SOUTH BOSTON

Figure 4.2-2

Shadow During June 21 at 12:00 noon

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SEAPORT SQUARE
IN SOUTH BOSTON

Figure 4.2-3

Shadow During June 21 at 3:00 pm

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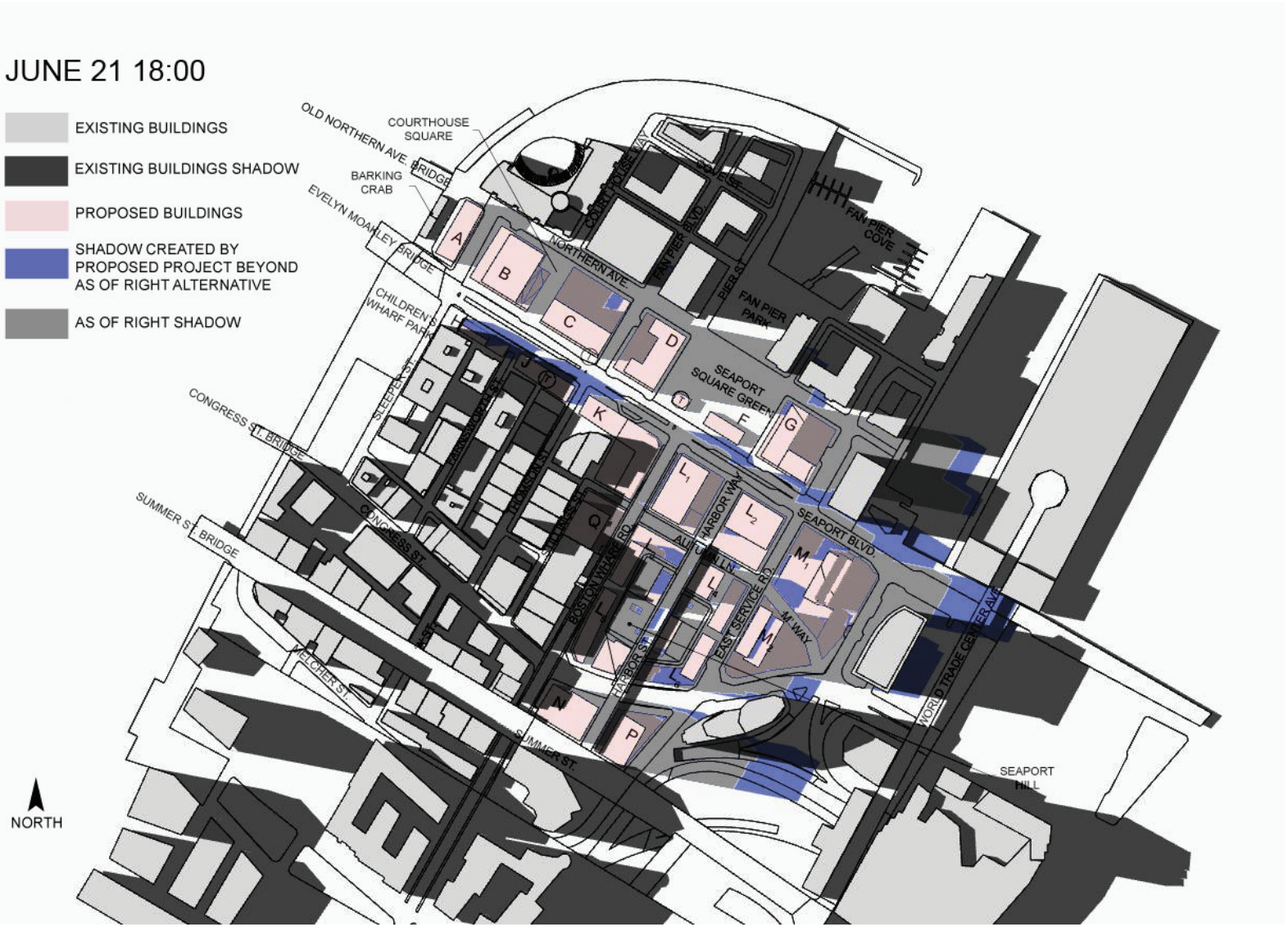

SEAPORT SQUARE
IN SOUTH BOSTON

Figure 4.2-4

Shadow During June 21 at 6:00 pm

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4.2.2 July 21

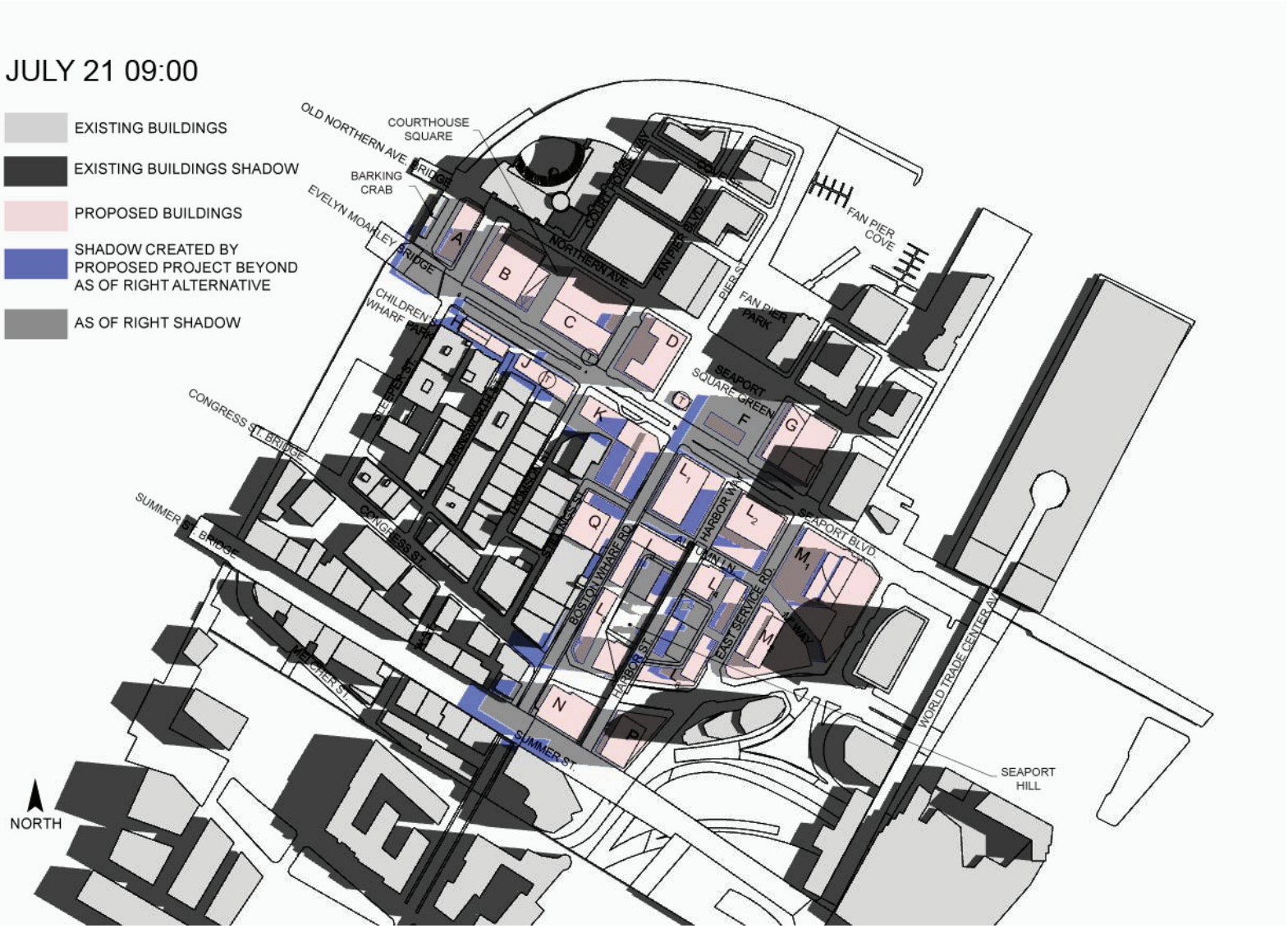
New shadow created on July 21 is illustrated in Figures 4.2-5 through 4.2-8.

At 9:00 am on July 21, there will be no new shadow on Fan Pier Park, Old Northern Avenue Bridge and Courthouse Plaza. New shadow from the Project and the as-of-right alternative will be cast in a westerly direction over portions of Seaport Boulevard, Boston Wharf Road, Harbor Street, Autumn Lane, Summer Street and Congress Street as well as on minimal portions of the Evelyn Moakley Bridge and Children's Wharf Park. New shadow will also cover a small portion of Seaport Square Green, as well as portions of Seaport Hill. New shadow will be cast on to a sliver of the Harborwalk along the Fort Point Channel, as well as a portion of Old Sleeper Street. The proposed Project does not cast net new shadow beyond those created by the as-of-right alternative on Courthouse Square, Harbor Way and M Way. Most of the Project's open spaces will have both sun and shade, allowing for individuals to choose their comfort depending on the weather. Again, the shadow impacts from the proposed Project and the as-of-right alternative are similar.

At 12:00 noon, new shadow will be cast in a northerly direction. No new shadow will be cast on to the Harborwalk, Fan Pier Park, Evelyn Moakley Bridge, Children's Wharf Park, Old Northern Avenue Bridge and Courthouse Plaza. New shadow will be cast on to minor portions of Seaport Boulevard, Northern Avenue, Boston Wharf Road, Congress Street, Harbor Street, Autumn Lane and East Service Road. New shadow will cover a small strip along the eastern side of Seaport Square Green, and a minor portion of Seaport Hill, Courthouse Square, Harbor Way, Old Sleeper Street and M Way with the proposed Project creating only minor new shadow beyond that created by the as-of-right alternative. The Project's open spaces will have both sun and shade, allowing for individuals to choose their comfort depending on the weather. Again, the proposed Project results in only minor new shadow beyond those created by the as-of-right alternative.

At 3:00 pm, new shadow will be cast in a northeasterly direction. No new shadow will be cast on to Courthouse Plaza, Old Sleeper Street, Old Northern Avenue Bridge, the Evelyn Moakley Bridge or Children's Wharf Park. New shadow from Block M will be cast onto a minor portion of the Harborwalk. New shadow will be cast onto portions of Northern Avenue, Seaport Boulevard, Boston Wharf Road, Harbor Street, East Service Road, Autumn Lane, B Street and Congress Street. Minor areas of new shadow will encroach onto the southwestern portions of Fan Pier Park and a portion of Seaport Hill and Seaport Square Green, although the majority of these areas will remain un-shaded. Portions of Courthouse Square, Harbor Way and M Way will receive new shadow. The proposed Project results in only minor net new impacts on the open spaces beyond those created by the as-of-right alternative. The Project's open spaces will have both sun and shade, allowing for individuals to choose their comfort depending on the weather. Again, the shadow impacts from the proposed Project and the as-of-right alternative are similar.

At 6:00 pm, new shadow will be cast in an easterly direction. No new shadow will be created on Courthouse Plaza, the Evelyn Moakley Bridge, Old Northern Avenue Bridge, Children's Wharf Park and Old Sleeper Street. New shadows will fall onto portions of Northern Avenue, Seaport Boulevard, I-90 Ramps and Congress Street, and minor portions of Autumn Lane, Northern Avenue, Harbor Street, B Street and World Trade Center Avenue. Minor areas of new shadow will also reach the Harborwalk west and south of the Seaport World Trade Center. New shadow will extend the existing shadow that will be cast across the watersheet west of the Seaport World Trade Center. New shadows will be cast onto portions of Fan Pier Park, Seaport Square Green and Seaport Hill, M Way, Courthouse Square, and Harbor Way with the proposed Project creating only minor new shadow beyond that created by the as-of-right alternative. Again, the shadow impacts from the proposed Project and the as-of right alternative are similar.



SEAPORT SQUARE
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Figure 4.2-5

Shadow During July 21 at 9:00 am

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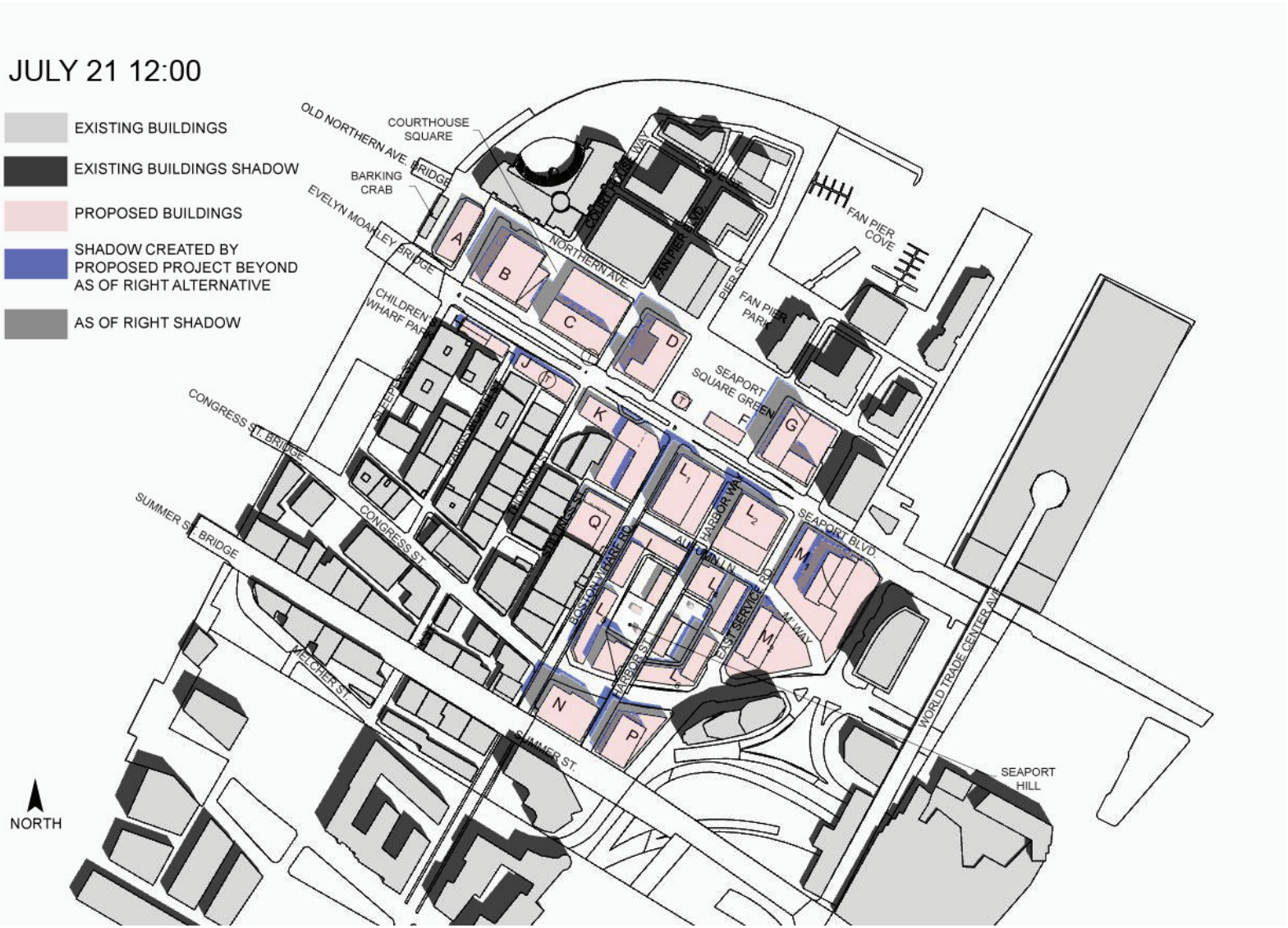

SEAPORT SQUARE
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Figure 4.2-6

Shadow During July 21 at 12:00 noon

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SEAPORT SQUARE
IN SOUTH BOSTON

Figure 4.2-7

Shadow During July 21 at 3:00 pm

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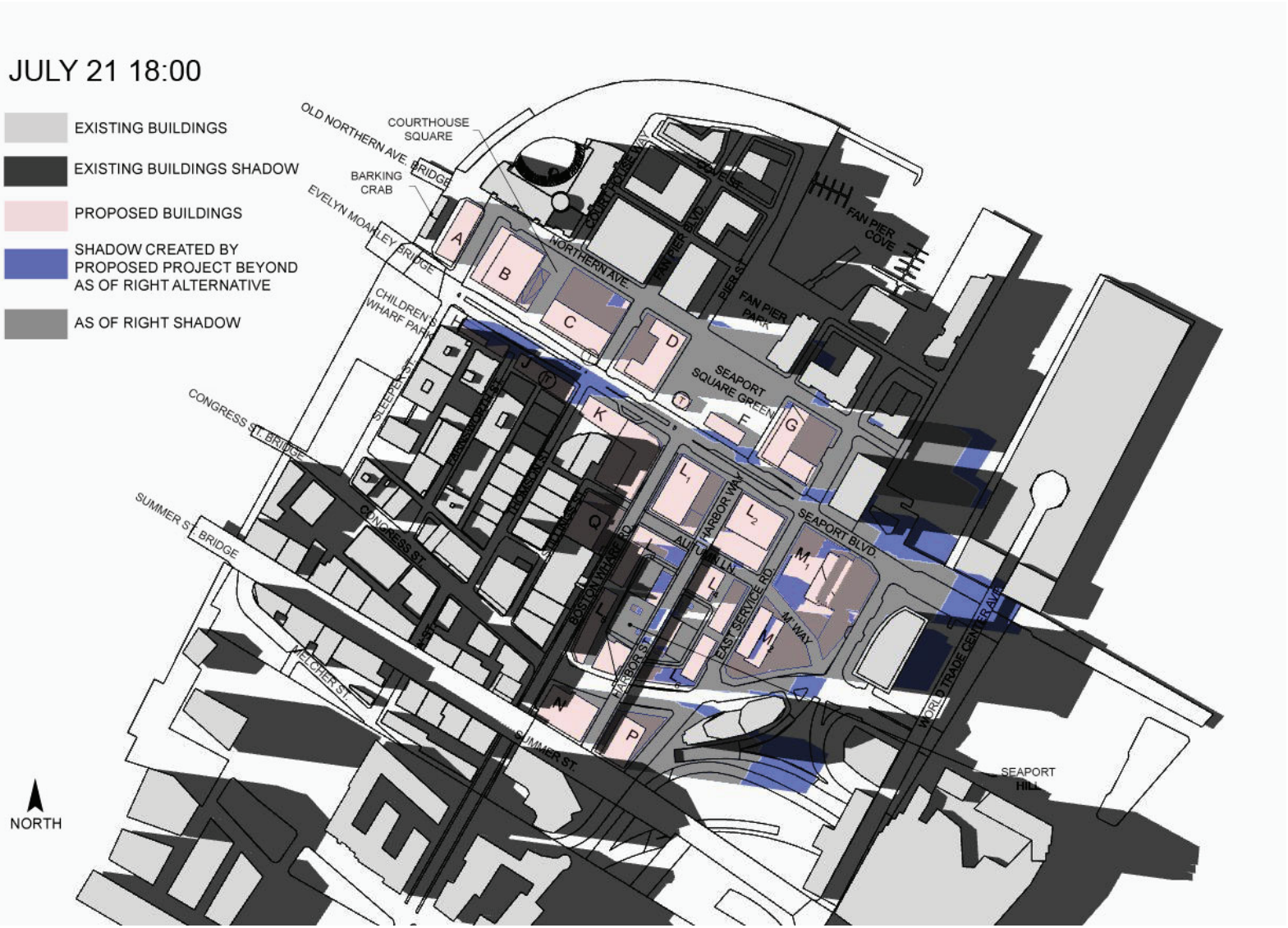

SEAPORT SQUARE
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Figure 4.2-8

Shadow During July 21 at 6:00 pm

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4.2.3 August 21

New shadow created on August 21 is illustrated in Figures 4.2-9 through 4.2-12.

At 9:00 am on August 21, there will be no new shadow on Fan Pier Park, Old Northern Avenue Bridge and Courthouse Plaza. New shadow from the Project will be cast in a westerly direction over portions of Seaport Boulevard, East Service Road, Boston Wharf Road, Harbor Street, and Summer Street, and minor portions of Congress Street. New shadow will be cast onto portions of Seaport Square Green, Seaport Hill, Courthouse Square, Harbor Way, Old Sleeper Street and M Way, as well as minimal portions of the Harborwalk near the World Trade Center, Evelyn Moakley Bridge and Children's Wharf Park with the proposed Project resulting in only minor net new shadow impacts beyond those created by the as-of-right alternative. The Project's largest open spaces will have both sun and shade, allowing for individuals to choose their comfort depending on the weather.

At 12:00 noon, new shadow will be cast in a northerly direction. No new shadow will be cast on to the Harborwalk, Courthouse Plaza, Northern Avenue Bridge, the Evelyn Moakley Bridge or Children's Wharf Park. New shadow will be cast onto a portion of Seaport Boulevard, Northern Avenue, Boston Wharf Road, Congress Street, Harbor Street, Autumn Lane and East Service Road. Minor portions of Fan Pier Park, Seaport Square Green, Seaport Hill, Courthouse Square, Old Sleeper Street, M Way and Harbor Way will receive new shadow, though the proposed Project's net new shadows beyond the as-of-right alternative are minimal. The Project's open spaces will have both sun and shade, allowing for individuals to choose their comfort depending on the weather. Again, the shadow impacts from the proposed Project and the as-of right alternative are similar.

At 3:00 pm, new shadow will be cast in a northeasterly direction. No new shadow will be cast onto Courthouse Plaza, Old Sleeper Street, Old Northern Avenue Bridge, the Evelyn Moakley Bridge or Children's Wharf Park. New shadow from Block M will be cast onto a minor portion of the Harborwalk. New shadow will be cast onto portions of Seaport Boulevard, Congress Street, East Service Road and Harbor Street, as well as portions of B Street, Northern Avenue, Autumn Lane and Boston Wharf Road. Minor portions of Seaport Square Green, Fan Pier Park and Seaport Hill will receive new shadow. Portions of Courthouse Square and M Way will receive new shadow with the proposed Project resulting in minimal, if any, net new shadow impacts beyond those of the as-of-right alternative. The Project's open spaces will have both sun and shade, allowing for individuals to choose their comfort depending on the weather. Again, the shadow impacts from the proposed Project and the as-of right alternative are similar.

At 6:00 pm, much of the area will be in shadow. No new shadow will be cast onto Courthouse Plaza, Old Sleeper Street, Old Northern Avenue Bridge, the Evelyn Moakley Bridge or Children's Wharf Park. New shadow will be cast in an easterly direction over portions of Seaport Boulevard, World Trade Center Avenue, Congress Street, B Street, and the I-90 Ramps. New shadow will be cast onto portions of Fan Pier Park, Seaport Square Green and Seaport Hill, Courthouse Square, Harbor Way and M Way, with the proposed Project resulting in only minimal new shadows beyond those of the as-of-right alternative. Minor portions of the Harborwalk adjacent to the Seaport World Trade Center as well as the watersheet will receive new shadow. Again, the shadow impacts from the proposed Project and the as-of right alternative are similar.

SEAPORT SQUARE
IN SOUTH BOSTON

Figure 4.2-9

Shadow During August 21 at 9:00 am

GALE INTERNATIONAL

Morgan Stanley

WS DEVELOPMENT

prepared by:
KPF

Figure 4.2-10

Shadow During August 21 at 12:00 noon

GALE INTERNATIONAL

Morgan Stanley

WS DEVELOPMENT

prepared by:
KPF

SEAPORT SQUARE
IN SOUTH BOSTON

Figure 4.2-11

Shadow During August 21 at 3:00 pm

GALE INTERNATIONAL

Morgan Stanley

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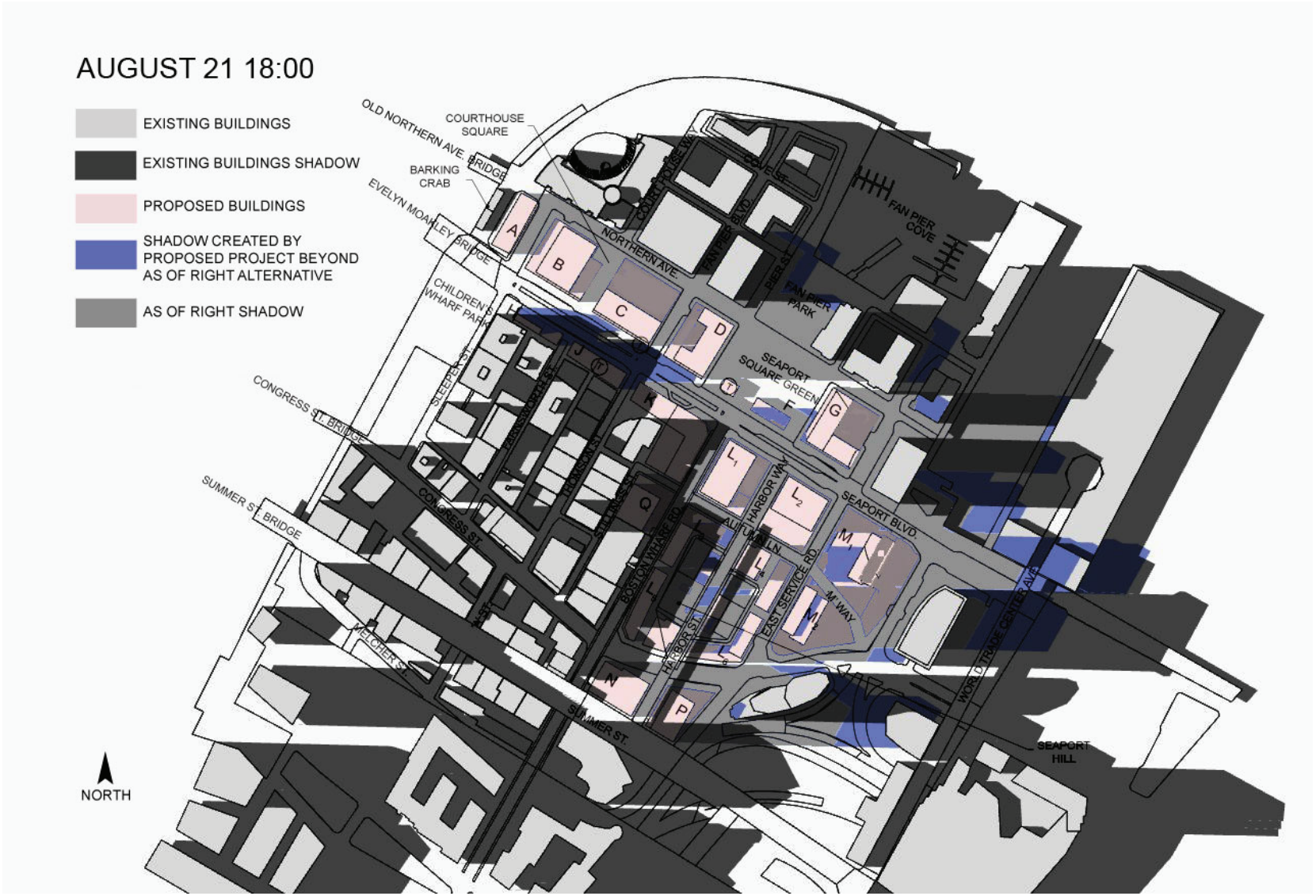
KPF



SEAPORT SQUARE
IN SOUTH BOSTON

Figure 4.2-12

Shadow During August 21 at 6:00 pm

GALE INTERNATIONAL

Morgan Stanley

WS DEVELOPMENT

prepared by:
KPF

4.2.4 September 21

New shadow created on September 21 is illustrated in Figures 4.2-13 through 4.2-16.

At 9:00 am on September 21, new shadow from the Project will be cast in a westerly direction. There will be no new shadows on Courthouse Plaza, Old Northern Avenue Bridge or Fan Pier Park. New shadow will be cast across the Fort Point Channel watersheet and onto a small portion of Children's Wharf Park, the Evelyn Moakley Bridge, and Old Sleeper Street and the Harborwalk. New shadow will be cast onto portions of Seaport Boulevard, Summer Street, Harbor Street, Harbor Way, Autumn Lane and Congress Street, as well as portions of Seaport Square Green, Seaport Hill, and Courthouse Square with the proposed Project resulting in only minimal, if any, new shadows on open spaces beyond those created by the as-of-right alternative.

At 12:00 noon, shadow will be cast in a northerly direction. No new shadow from the proposed Project will be created on Courthouse Plaza, Old Northern Avenue Bridge, the Evelyn Moakley Bridge, Children's Wharf Park or the Harborwalk. New shadow will be cast onto portions of Northern Avenue, Seaport Boulevard, Boston Wharf Road, Harbor Street, Autumn Lane, and East Service Road. Fan Pier Park, Seaport Square Green, Seaport Hill, Harbor Way, Courthouse Square, M Way and Old Sleeper Street will also receive new shadow. Only minimal net new shadows are created by the proposed Project on these open spaces beyond those created by the as-of-right alternative. The Project's open spaces will have both sun and shade, allowing for individuals to choose their comfort depending on the weather. Again, the shadow impacts from the proposed Project and the as-of right alternative are similar.

At 3:00 pm, shadow will be cast in a northeasterly direction. No new shadow from the proposed Project will be created on Courthouse Plaza, Old Northern Avenue Bridge, Old Sleeper Street, the Evelyn Moakley Bridge or Children's Wharf Park. New shadow will be cast onto Seaport Boulevard, Harbor Street, Autumn Lane, Congress Street, Boston Wharf Road, B Street and East Service Road. New shadow will also be cast onto a strip of Fan Pier Park, the southeastern and southwestern corners of Seaport Square Green, and portions of Seaport Hill. New shadow will also be cast across a minor portion of the watersheet west of the Seaport World Trade Center, the Harborwalk near the Seaport World Trade Center, and minor portions of Harbor Way. The Project's open spaces will have both sun and shade, allowing for individuals to choose their comfort depending on the weather. Again, the shadow impacts from the proposed Project and the as-of right alternative are similar.

At 6:00 pm, the area will already be largely affected by existing shadows. No new shadows from the proposed Project will be created on the Harborwalk, Old Northern Avenue Bridge, Old Sleeper Street, Fan Pier Park, Courthouse Plaza, the Evelyn Moakley Bridge or Children's Wharf Park. New shadow will be cast northeasterly, but will generally only occur on rooftops and a portion of the watersheet east of the Seaport World Trade Center. There will be new shadow on portions of Seaport Boulevard, Northern Avenue, Congress Street, Courthouse Square, and M Way. Again, the shadow impacts from the proposed Project and the as-of right alternative are similar.

SEAPORT SQUARE
IN SOUTH BOSTON

Figure 4.2-13

Shadow During September 21 at 9:00 am

GALE INTERNATIONAL

Morgan Stanley

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KPF

SEAPORT SQUARE
IN SOUTH BOSTON

Figure 4.2-14

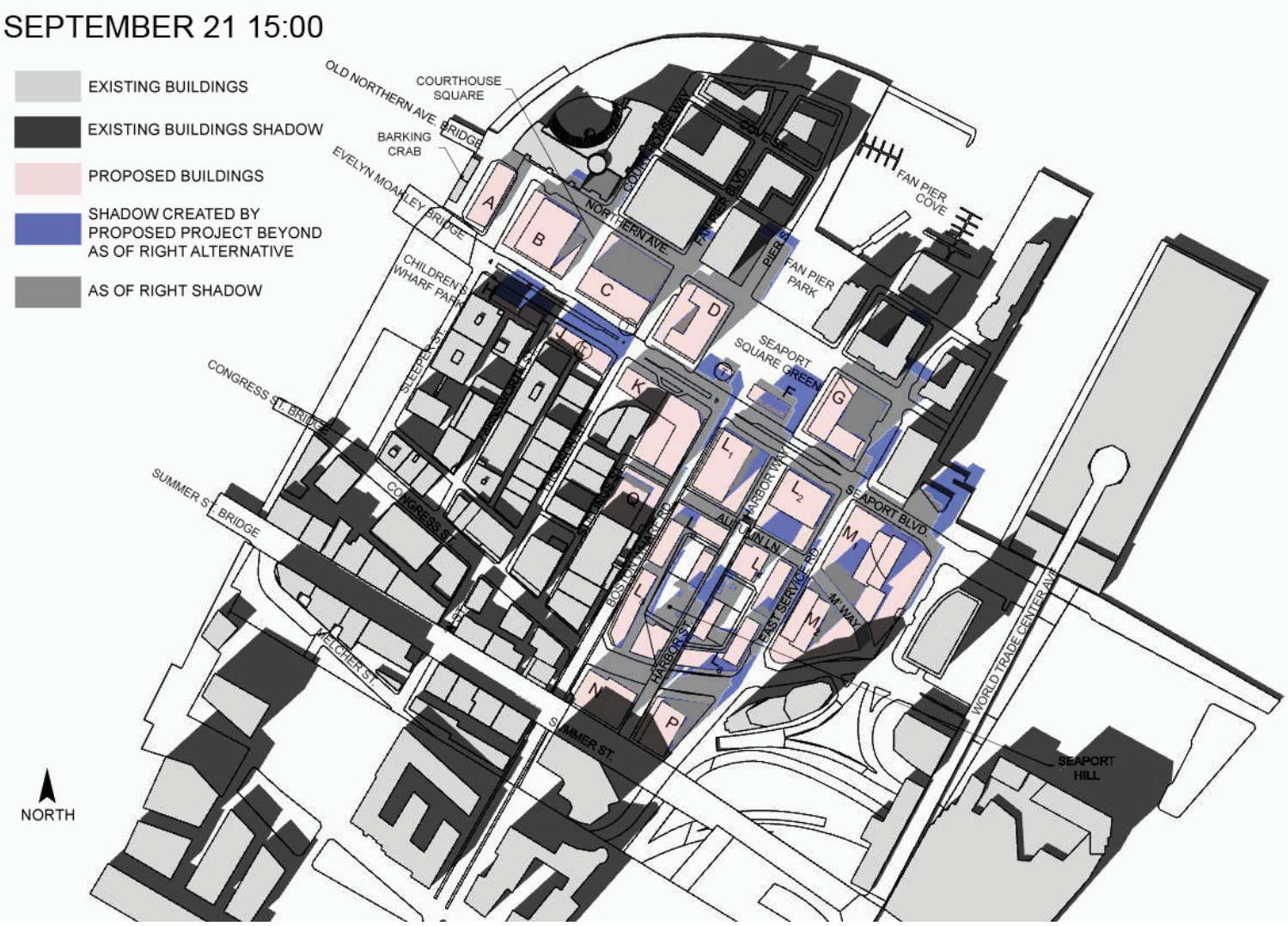
Shadow During September 21 at 12:00 noon

GALE INTERNATIONAL

Morgan Stanley

WS DEVELOPMENT

prepared by:
KPF



SEAPORT SQUARE
IN SOUTH BOSTON

Figure 4.2-15

Shadow During September 21 at 3:00 pm

GALE INTERNATIONAL

Morgan Stanley

WS DEVELOPMENT

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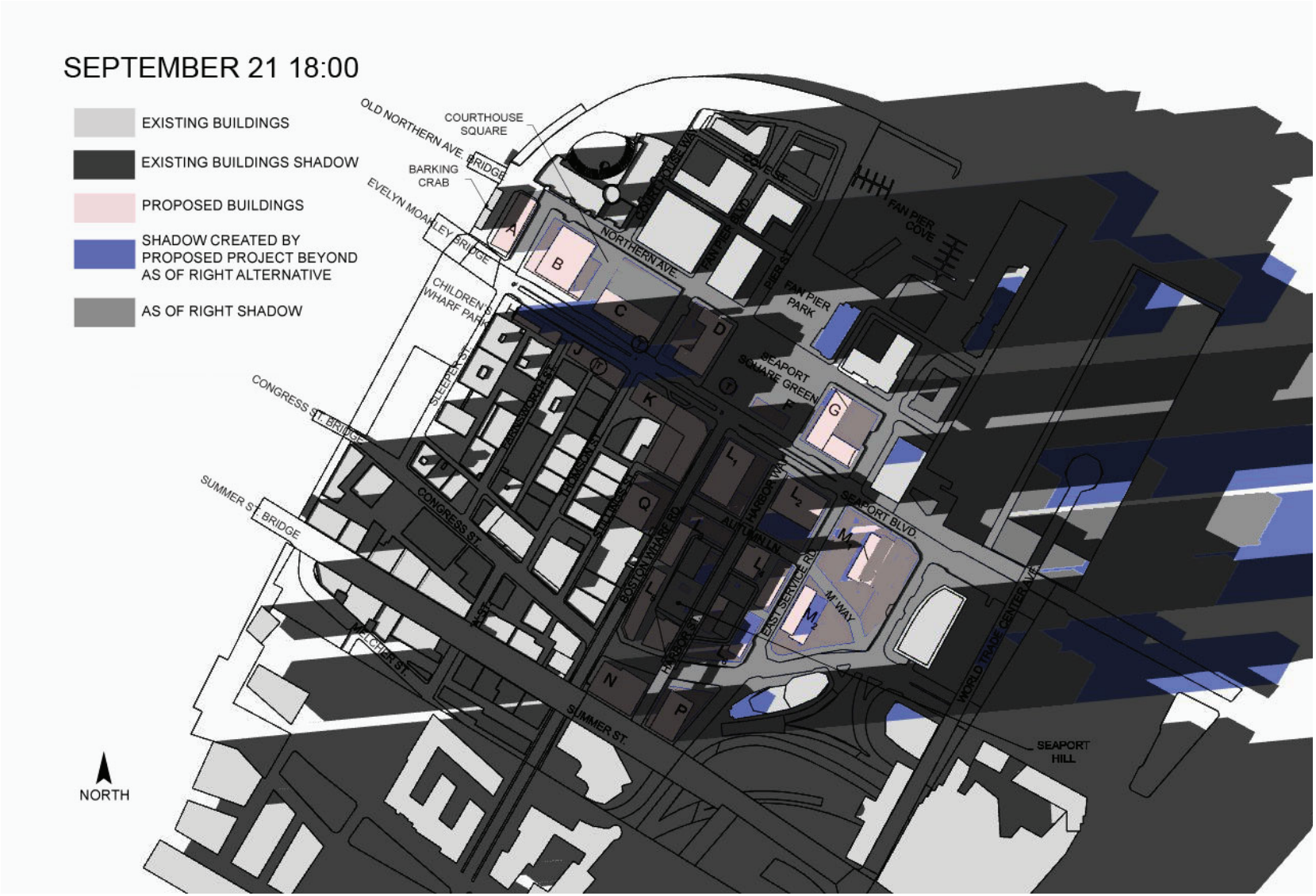
KPF



SEAPORT SQUARE
IN SOUTH BOSTON

Figure 4.2-16

Shadow During September 21 at 6:00 pm

GALE INTERNATIONAL

Morgan Stanley

WS DEVELOPMENT

prepared by:
KPF

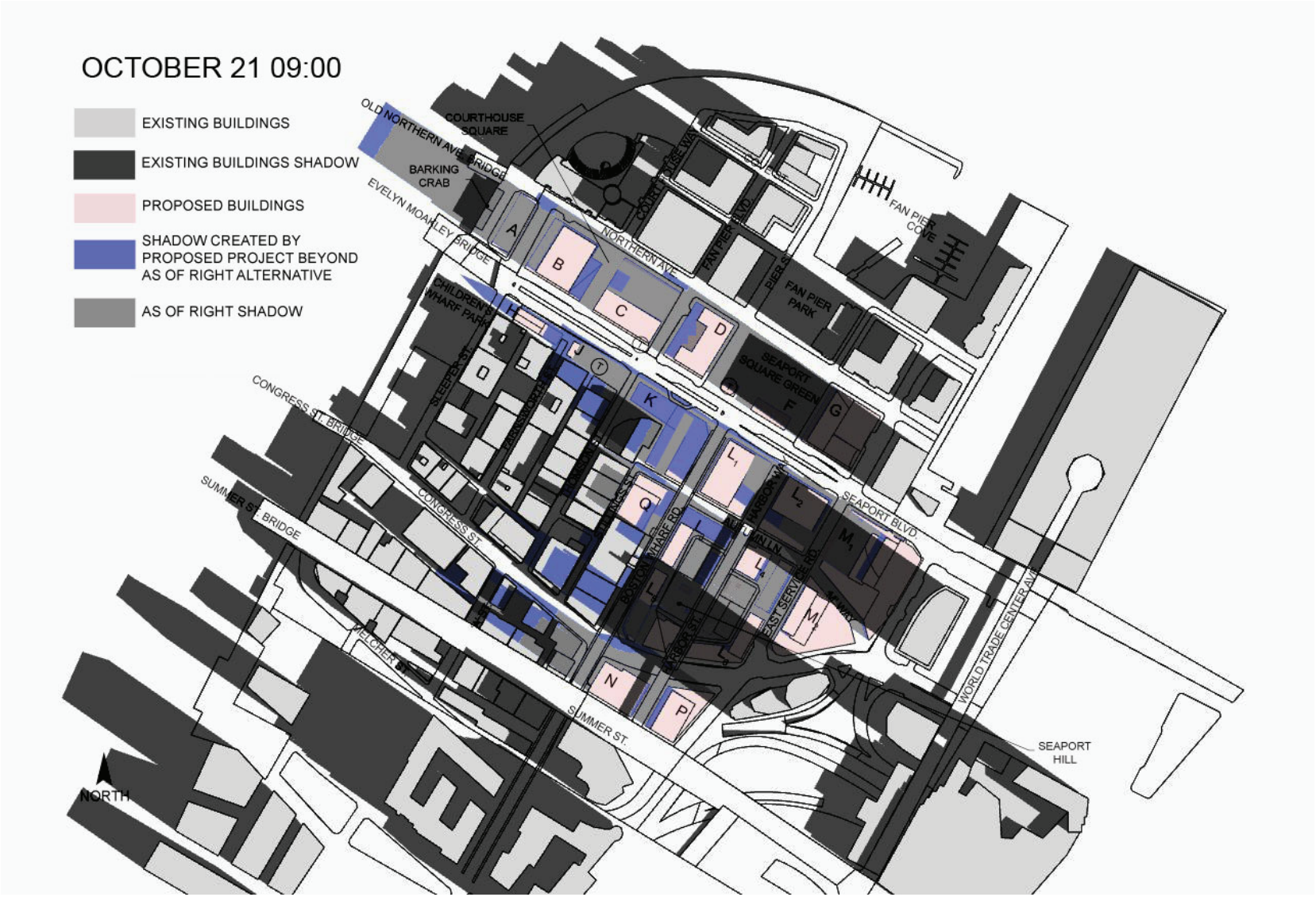
4.2.5 October 21

New shadow created on October 21 is illustrated in Figures 4.2-17 through 4.2-19.

At 9:00 am on October 21, new shadow from the Project will be cast in a westerly direction. There will be no new shadows on Courthouse Plaza, the Evelyn Moakley Bridge or Fan Pier Park. New shadow will be cast across a minor portion of the Fort Point Channel watersheet, Old Northern Avenue Bridge, the Harborwalk, Children's Wharf Park and across Old Sleeper Street. New shadow will be cast onto portions of Congress Street, Harbor Street, Northern Avenue, Harbor Street, Boston Wharf Road, East Service Road, and Seaport Boulevard. No new shadow will be cast onto Seaport Square Green. Harbor Way, Courthouse Square and M Way will receive new shadow. Again, the shadow impacts from the proposed Project and the as-of right alternative are similar.

At 12:00 noon, shadow will be cast in a northerly direction. No new shadow from the proposed Project will be created on Courthouse Plaza or the Harborwalk, Old Northern Avenue Bridge, the Evelyn Moakley Bridge or Children's Wharf Park. New shadow will be cast onto portions of Northern Avenue, Seaport Boulevard, Boston Wharf Road, Harbor Street, Autumn Lane, and East Service Road. Portions of Seaport Square Green, Seaport Hill, Fan Pier Park, Courthouse Square, M Way, Harbor Way, and Old Sleeper Street will receive new shadow. The Project's open spaces will have both sun and shade, allowing for individuals to choose their comfort depending on the weather. Again, the shadow impacts from the proposed Project and the as-of right alternative are similar.

At 3:00 pm, shadow will be cast in a northeasterly direction. Courthouse Plaza, Old Sleeper Street, Old Northern Avenue Bridge, the Evelyn Moakley Bridge and Children's Wharf Park will be unaffected by new shadow. New shadow will be cast onto small portions of Seaport Boulevard, Harbor Street, Congress Street, Boston Wharf Road, B Street and East Service Road. New shadow will also be cast onto a minor portion of Fan Pier Park, and portions of Seaport Square Green, Seaport Hill, Courthouse Square and M Way. New shadow will also be cast across a portion of the watersheet west of the Seaport World Trade Center, the Harborwalk near the Seaport World Trade Center, and minor portions of Harbor Way. The Project's open spaces will have both sun and shade, allowing for individuals to choose their comfort depending on the weather. Again, the shadow impacts from the proposed Project and the as-of right alternative are similar.



SEAPORT SQUARE
IN SOUTH BOSTON

Figure 4.2-17

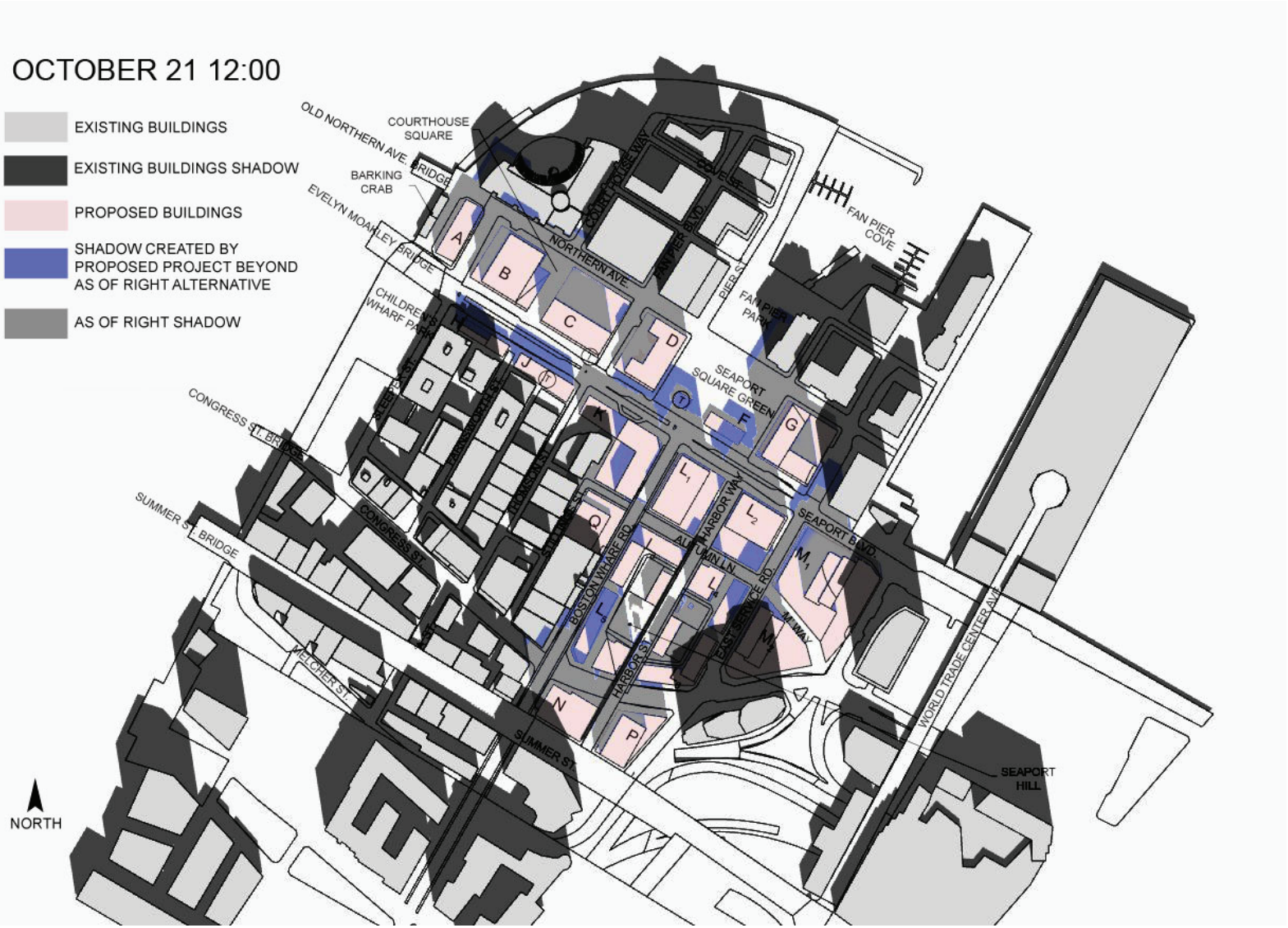
Shadow During October 21 at 9:00 am

GALE INTERNATIONAL

Morgan Stanley

WS DEVELOPMENT

prepared by:
KPF



SEAPORT SQUARE
IN SOUTH BOSTON

Figure 4.2-18

Shadow During October 21 at 12:00 noon

GALE INTERNATIONAL

Morgan Stanley

WS DEVELOPMENT

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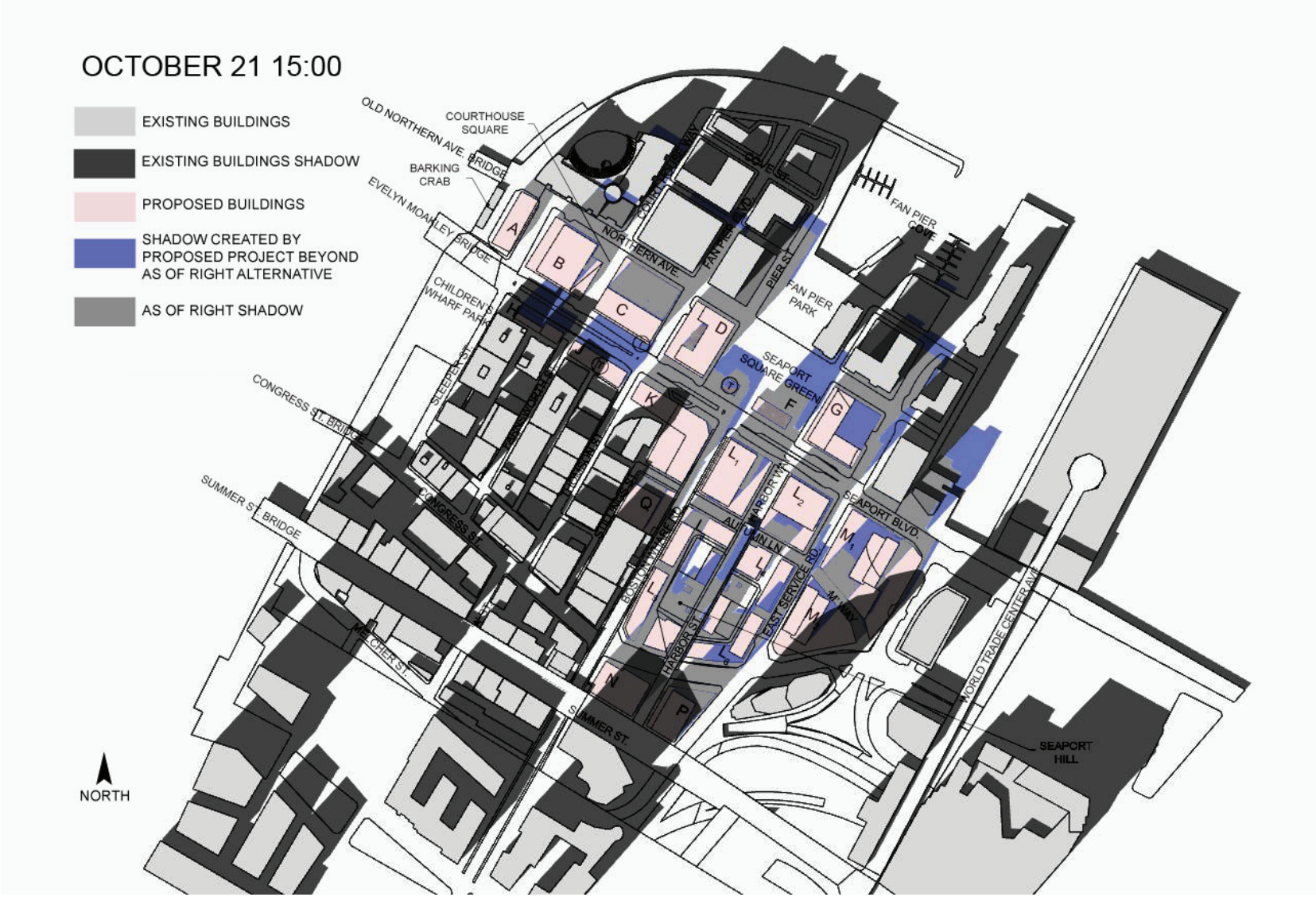
KPF



SEAPORT SQUARE
IN SOUTH BOSTON

Figure 4.2-19

Shadow During October 21 at 3:00 pm

GALE INTERNATIONAL

Morgan Stanley

WS DEVELOPMENT

prepared by:
KPF

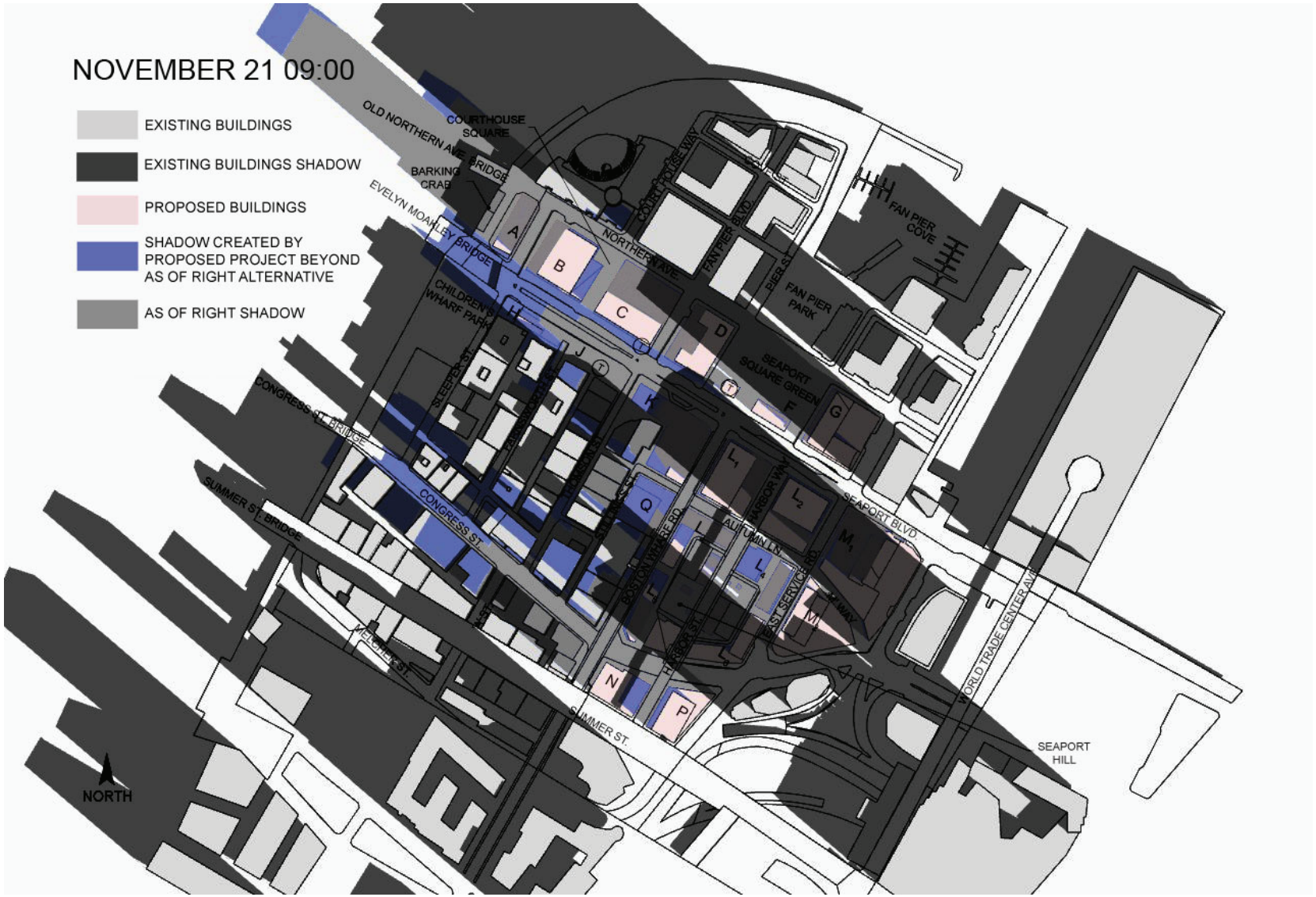
4.2.6 November 21

New shadow created on November 21 is illustrated in Figures 4.2-20 through 4.2-22.

At 9:00 am on November 21, new shadow from the Project will be cast in a westerly direction. No new shadow will be cast onto Courthouse Plaza or Fan Pier Park. Much of the area will be under shadow, and new shadow will be cast onto portions of Seaport Boulevard, Northern Avenue, and Congress Street, as well as East Service Road, Harbor Street, Boston Wharf Road, the Harborwalk, Old Sleeper Street, Old Northern Avenue Bridge, the Evelyn Moakley Bridge and Children's Wharf Park as well as the watersheet. Additional shadow is generally cast onto rooftops. Again, the shadow impacts from the proposed Project and the as-of right alternative are similar.

At 12:00 noon, shadow will be cast in a northerly direction. No new shadow from the proposed Project will be cast on Courthouse Plaza, Old Northern Avenue Bridge, the Evelyn Moakley Bridge or Children's Wharf Park. New shadow will be cast onto portions of Seaport Boulevard, Northern Avenue, Harbor Street and Boston Wharf Road, Seaport Square Green, Seaport Hill, Fan Pier Park, Courthouse Square, M Way, Harbor Way, Old Sleeper Street and the Harborwalk. Again, the shadow impacts from the proposed Project and the as-of right alternative are similar.

At 3:00 pm, shadow will be cast in a northeasterly direction. Courthouse Plaza, the Harborwalk, Old Sleeper Street, Old Northern Avenue Bridge, the Evelyn Moakley Bridge and Children's Wharf Park will be unaffected by new shadow. New shadow will be cast onto portions of Seaport Boulevard, Harbor Street, East Service Road and Northern Avenue, as well as minor portions of B Street, Boston Wharf Road, Congress Street and M Way. New shadow will also be cast onto a minor portion of Fan Pier Park and Seaport Hill, as well as portions of Seaport Square Green, Courthouse Square and Harbor Way. New shadow will also be cast onto portions of the watersheet west of the Seaport World Trade Center and a minor portion northeast of the Courthouse. Again, the shadow impacts from the proposed Project and the as-of right alternative are similar.



SEAPORT SQUARE
IN SOUTH BOSTON

Figure 4.2-20

Shadow During November 21 at 9:00 am

GALE INTERNATIONAL

Morgan Stanley

WS DEVELOPMENT

prepared by:
KPF

SEAPORT SQUARE
IN SOUTH BOSTON

Figure 4.2-21

Shadow During November 21 at 12:00 noon

GALE INTERNATIONAL

Morgan Stanley

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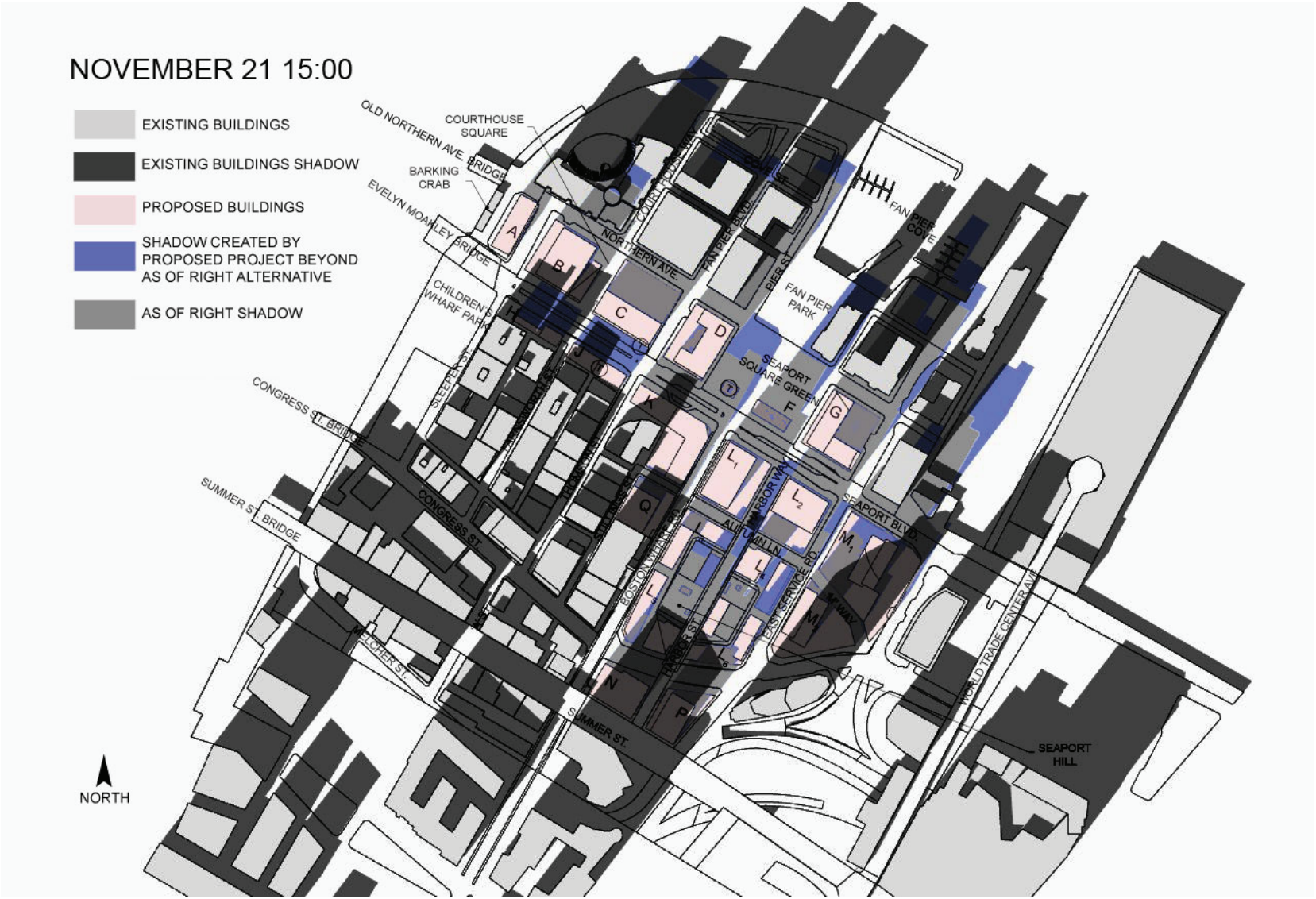


SEAPORT SQUARE
IN SOUTH BOSTON

Figure 4.2-22

Shadow During November 21 at 3:00 pm

GALE INTERNATIONAL

Morgan Stanley

WS DEVELOPMENT

prepared by:
KPF

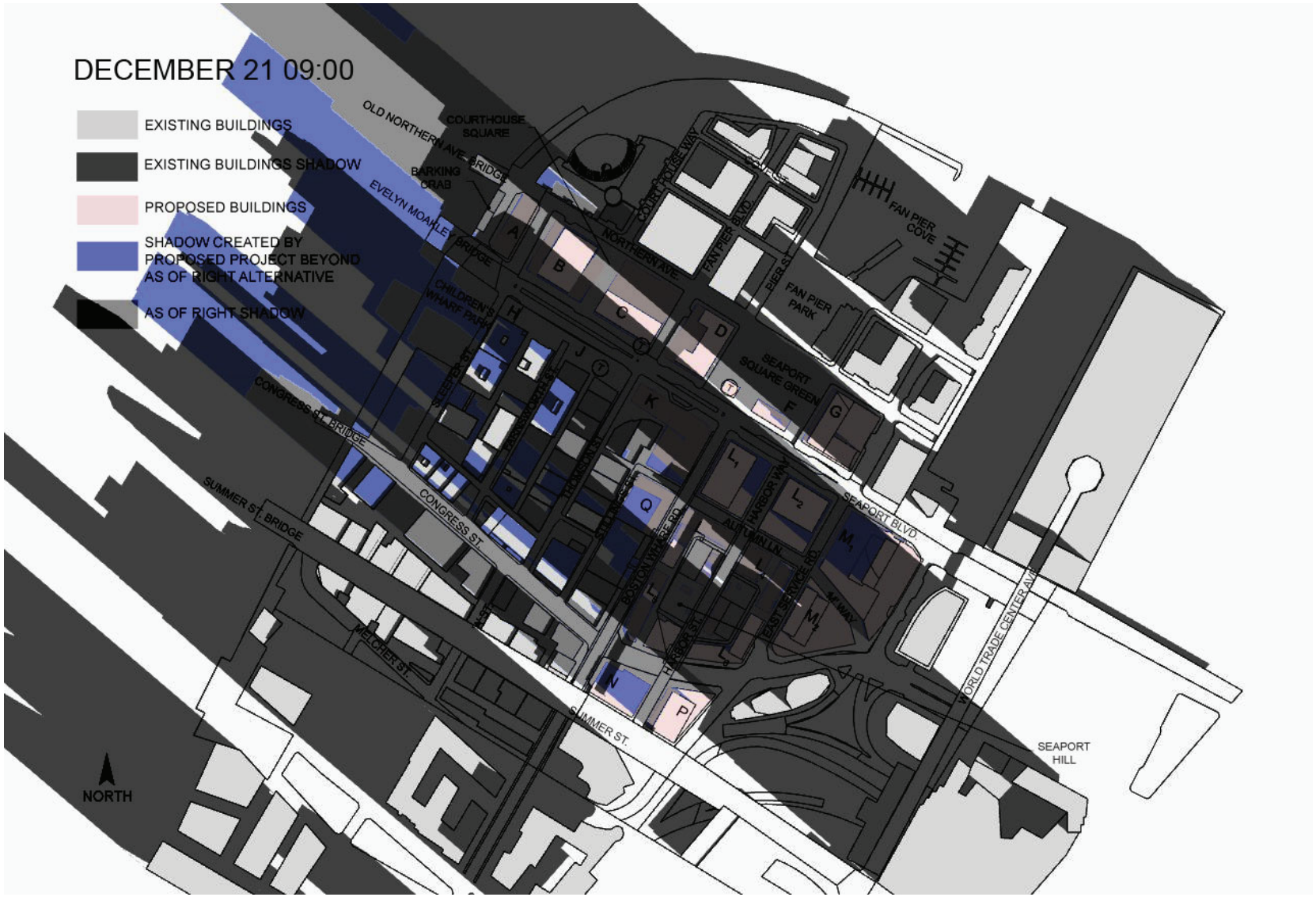
4.2.7 December 21

The winter solstice creates the least favorable conditions for sunlight in New England due to the lowest sun angle relative to any other season. This low angle results in elongated shadows that even under existing conditions cover much of the area in the vicinity of the Project. New shadow created on the winter solstice is illustrated in Figures 4.2-23 through 4.2-25.

At 9:00 am, new shadow will fall in a northwesterly direction. No new shadows will fall on the Courthouse Plaza, the Harborwalk, Fan Pier Park and the Children's Wharf Park. During this time period, new shadow will fall primarily onto rooftops and the Fort Point Channel watersheet and a small portion of Old Northern Avenue Bridge, the Evelyn Moakley Bridge and Old Sleeper Street.

By 12:00 noon, new shadow will be cast in a northerly direction. No new shadows are cast onto Courthouse Plaza, the Evelyn Moakley Bridge or Children's Wharf Park. New shadow will be cast onto portions of Fan Pier Park, Seaport Square Green, the Harborwalk, Old Northern Avenue Bridge as well as portions of Seaport Hill, M Way, Courthouse Square and Old Sleeper Street. New shadow will be cast onto Seaport Boulevard, Northern Avenue, Boston Wharf Road, Harbor Street, East Service Road, and Congress Street.

At 3:00 pm, shadows will be cast in a northeasterly direction. No new shadows are cast onto the Old Sleeper Street, Courthouse Plaza, the Evelyn Moakley Bridge and Children's Wharf Park. New shadow will reach Fan Pier Park, Seaport Square Green, Seaport Hill, Harbor Way, Courthouse Square and minor portions of the Harborwalk. Portions of Northern Avenue, Seaport Boulevard, East Service Road, Harbor Street and Autumn Lane will also receive new shadow. New shadow will also minimally extend the existing shadow on the Boston Harbor watersheet, and the watersheet west of the Seaport World Trade Center. Again, the shadow impacts from the proposed Project and the as-of right alternative are similar.



SEAPORT SQUARE
IN SOUTH BOSTON

Figure 4.2-23

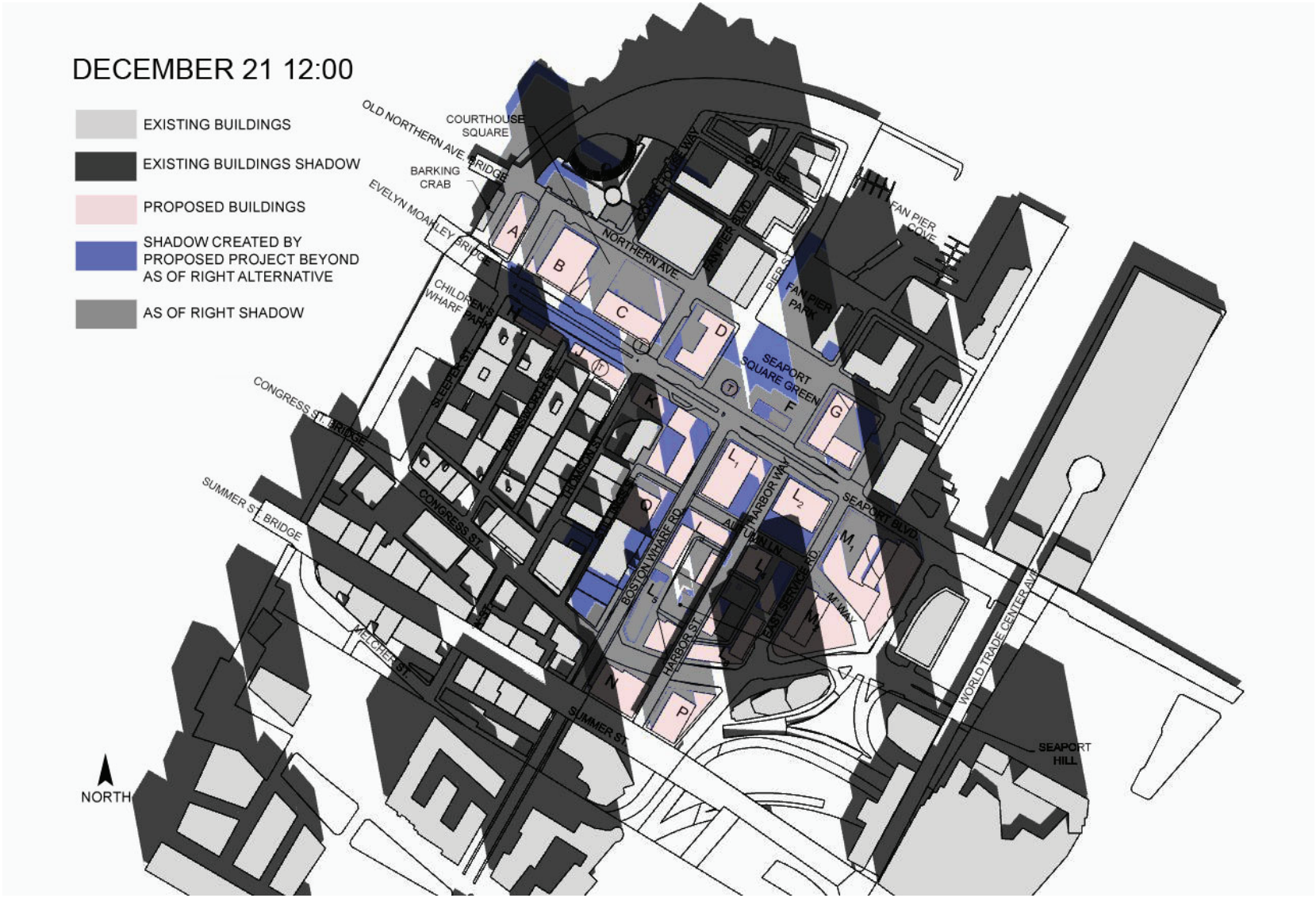
Shadow During December 21 at 9:00 am

GALE INTERNATIONAL

Morgan Stanley

WS DEVELOPMENT

prepared by:
KPF



SEAPORT SQUARE
IN SOUTH BOSTON

Figure 4.2-24

Shadow During December 21 at 12:00 noon

GALE INTERNATIONAL

Morgan Stanley

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KPF

SEAPORT SQUARE
IN SOUTH BOSTON

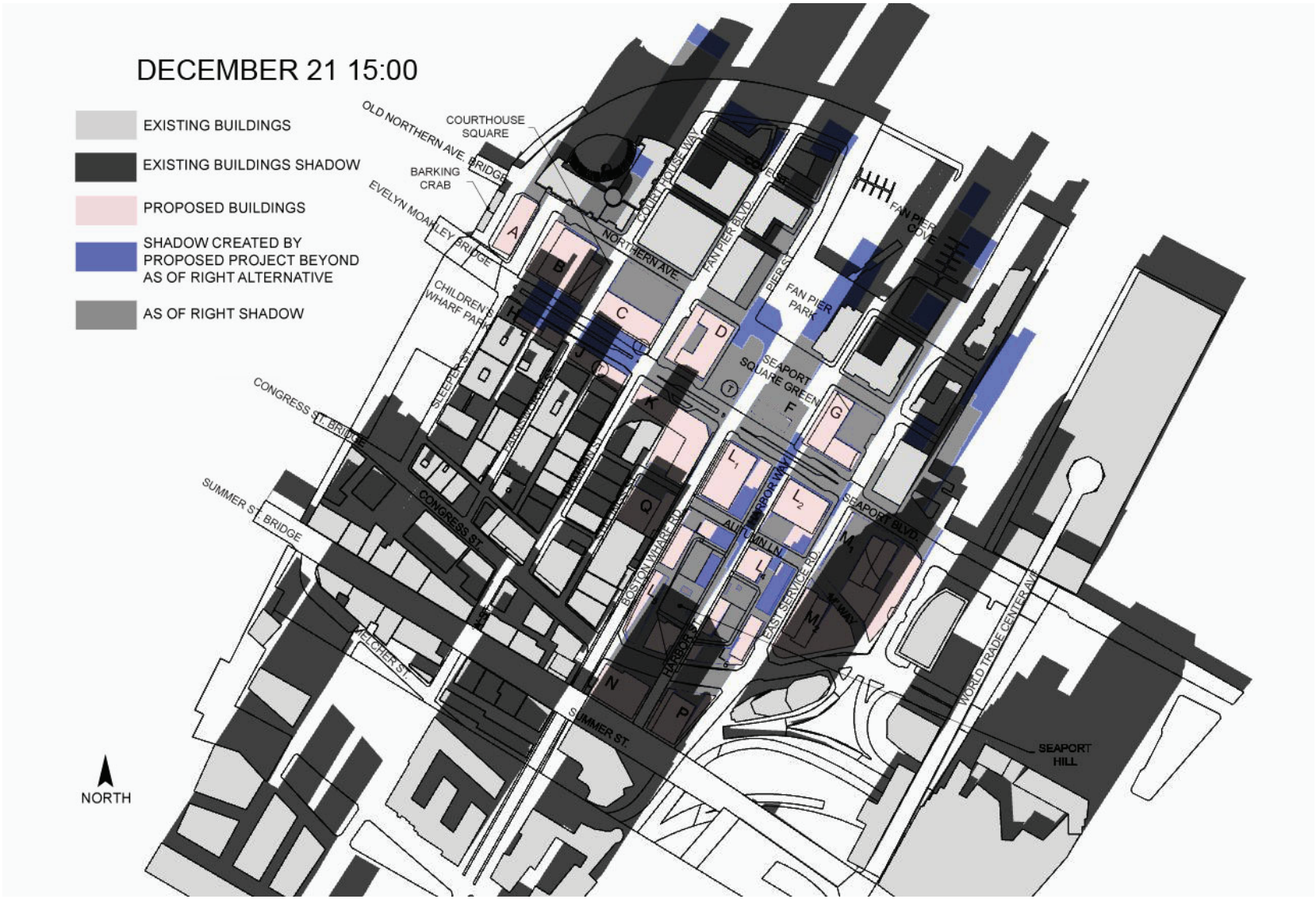

Figure 4.2-25

Shadow During December 21 at 3:00 pm

GALE INTERNATIONAL

Morgan Stanley

WS DEVELOPMENT

prepared by:
KPF

4.2.8 Conclusions

Overall, new shadow will fall primarily on the Project Site and adjacent streets. The shadows resulting from the proposed Project and the as-of-right alternative are very similar. In many cases there are no net new shadows beyond those created as a result of the as-of-right alternative and in other cases, the proposed Project creates only minor new shadows beyond those created by the as-of-right alternative.

As previously mentioned, this analysis uses the proposed massing on each Block to study shadow impacts from the Project. It is anticipated that the design of the buildings will include architectural features, such as setbacks and curved facades that will decrease shadow impacts. In addition, this analysis will be used during the design phase to minimize impacts to open spaces.

Existing open spaces in the Project vicinity will have only minimal impact from the proposed Project. Project shadows are not expected to reach Courthouse Plaza. The majority of the Harborwalk will be unaffected by the Project. New shadow will be cast across only a minor portion of the Harborwalk west of the Seaport World Trade Center and where the Harborwalk crosses Seaport Boulevard during a few of the time periods studied.

All of the Project's open spaces including Courthouse Square, M Way, Harbor Way, Seaport Square Green and Seaport Hill, as well as Fan Pier Park and Old Sleeper Street, will have both sunny and shady areas during most time periods, allowing individuals to choose their comfort level depending on the season and weather.

4.3 Daylight Analysis

4.3.1 Introduction and Summary of Analysis

The purpose of the daylight analysis is to estimate the extent to which a proposed project will affect the amount of daylight reaching the streets and the sidewalks in the immediate vicinity of a project site. The daylight analysis for the Project considers the existing, as-of-right and proposed conditions, and conditions of the surrounding area.

Most of the Project Site is currently used for surface parking, with the exception of the Chapel of Our Lady of Good Voyage and an MBTA headhouse. Therefore, there is currently little daylight obstruction on the Project Site, and the development of the Project inherently leads to an increase in daylight obstruction. The resulting conditions for the proposed buildings will be within the range of existing daylight obstruction values in the Project vicinity. Overall, daylight conditions from the Project are typical of urban areas. It should also be noted that this analysis was completed using general massing of the Project, and as the design of the buildings moves forward, it is anticipated that the addition of architectural features, such as setbacks and curved facades, will result in a decrease in the daylight obstruction values as presented in this analysis.

4.3.2 Methodology

The daylight analysis was performed using the Boston Redevelopment Authority Daylight Analysis ("BRADA") computer program. This program measures the percentage of sky-dome that is obstructed by a project and is a useful tool in evaluating the net change in obstruction from existing to build conditions at a specific site.

Using BRADA, a silhouette view of a building is taken at ground level from the middle of the adjacent city streets or pedestrian ways centered on the proposed building. The façade of the building facing the viewpoint, including heights, setbacks, corners and other features, is plotted onto a base map using lateral and elevation angles. The two-dimensional base map generated by BRADA represents a figure of the building in the "sky-dome" from the viewpoint chosen. The BRADA program calculates the percentage of daylight that will be obstructed on a scale of 0% to 100% based on the width of the view, the distance between the viewpoint and the building, and the massing and setbacks incorporated into the design of the building; the lower the number, the lower the percentage of obstruction of daylight from any given viewpoint.

The BRA has requested that the analysis study the following elements for data comparison:

- Existing conditions;
- As-of-Right conditions;
- Proposed conditions; and
- The context of the area.

The buildings proposed as part of the Project will range between 24 and 270 feet in height, which is typical for urban neighborhoods and consistent with building heights for existing and proposed buildings in the Project vicinity. As a result, daylight obstruction values are expected to be typical of the surrounding neighborhood.

The analysis focused on the taller and more densely built portions of the Project. Viewpoints were selected based on the height and massing of the proposed buildings, as well as the width of the roadways, in order to provide a comprehensive study of the Project. Viewpoints were chosen along Northern Avenue looking southwest at Blocks B and C (Viewpoint 1), Seaport Boulevard looking northeast at Blocks B and C (Viewpoint 2), Northern Avenue looking southwest at Block G (Viewpoint 3), Seaport Boulevard looking northeast at Block G (Viewpoint 4), Seaport Boulevard looking southwest at Blocks L1 and L2 (Viewpoint 5), East Service Road looking northwest at Blocks L4 and L6 (Viewpoint 6), and Boston Wharf Road looking southeast at Blocks L3 and L5. Daylight obstruction on Congress, Summer and B Streets is anticipated to result in similar values to the other viewpoints studied as well as the area context points.

In addition to the seven viewpoints provided above, the analysis considered area context points to provide a basis of comparison to existing conditions in the surrounding area. Viewpoints are illustrated on Figure 4.3-1.

4.3.3 Daylight Analysis Results

The results for each viewpoint under each alternative condition are described in Table 4.3-1. Figures 4.3-2 through 4.3-8 illustrate the BRADA results for each analysis and are located at the end of this section. As previously described and as noted on the table, because the existing site is primarily vacant, the existing daylight obstruction is zero percent.

Table 4.3-1 Daylight Obstruction Values

Viewpoint Locations		Existing Conditions	As-of-right Condition	Proposed Conditions
Viewpoint 1	Northern Avenue looking southwest at Blocks B and C	0%	37.7%	39.1%
Viewpoint 2	Seaport Boulevard looking northeast at Blocks B and C	0%	52.3%	53.9%
Viewpoint 3	Northern Avenue looking southwest at Block G	0%	65.3%	65.7%
Viewpoint 4	Seaport Boulevard looking northeast at Block G	0%	74.3%	78.1%
Viewpoint 5	Seaport Boulevard looking southwest at Blocks L1 and L2	0%	43.7%	53.8%
Viewpoint 6	East Service Road looking northwest at Blocks L4 and L6	0%	64.1%	73.6%
Viewpoint 7	Boston Wharf Road looking southeast at Blocks L3 and L5	0%	53.3%	73.3%
AC 1	346-354 Congress Street/FP3[1]	Range from 62.3% to 88.4%		
AC 2	Seaport Hotel [2]	Range from 64.2% to 89.1%		
AC 3	Boston Convention & Exhibition Center (BCEC) [3]	Range from 9.6% to 100.0%		

1. Daylight values as reported in the 346-354 Congress Street Project Notification Form (December 19, 2005).
2. Daylight values as reported in the Draft Project Impact Report / Single Environmental Impact Report for the Boston Waterfront Hotel at Parcel F2 and Residences at Parcels G & J (October 31, 2001).
3. Daylight values as reported in the BCEC Draft Project Impact Report (November 5, 1999) and Final Project Impact Report (March 8, 2000).

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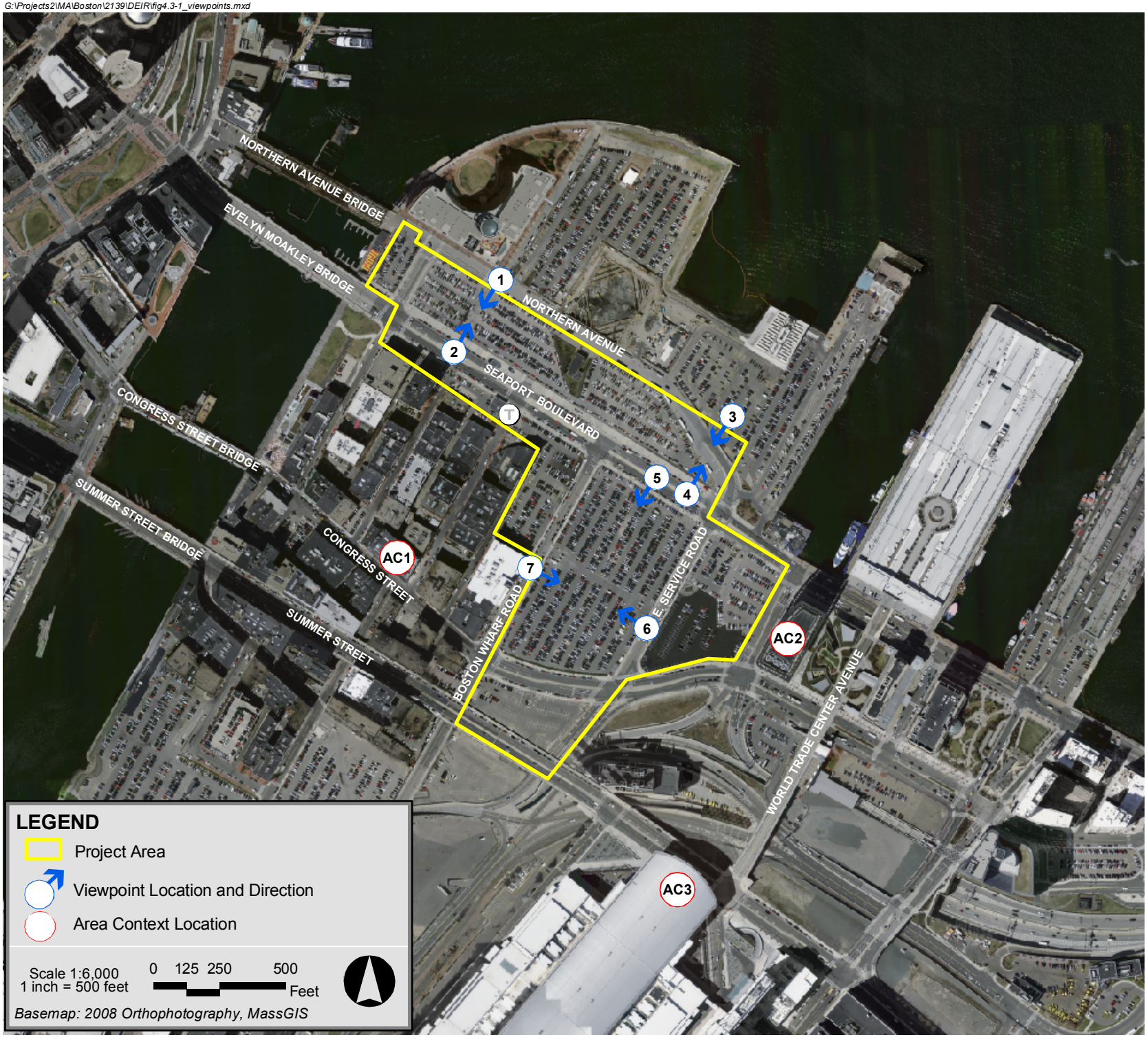


SEAPORT SQUARE
IN SOUTH BOSTON

Figure 4.3-1

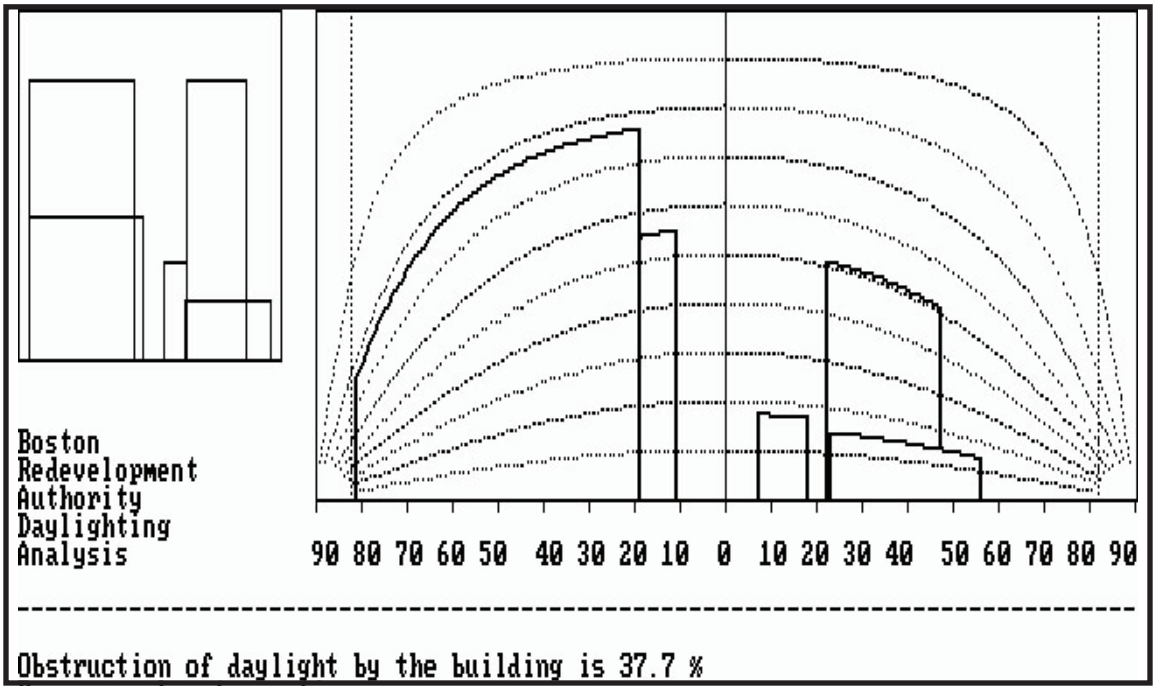
Viewpoint Locations

GALE INTERNATIONAL

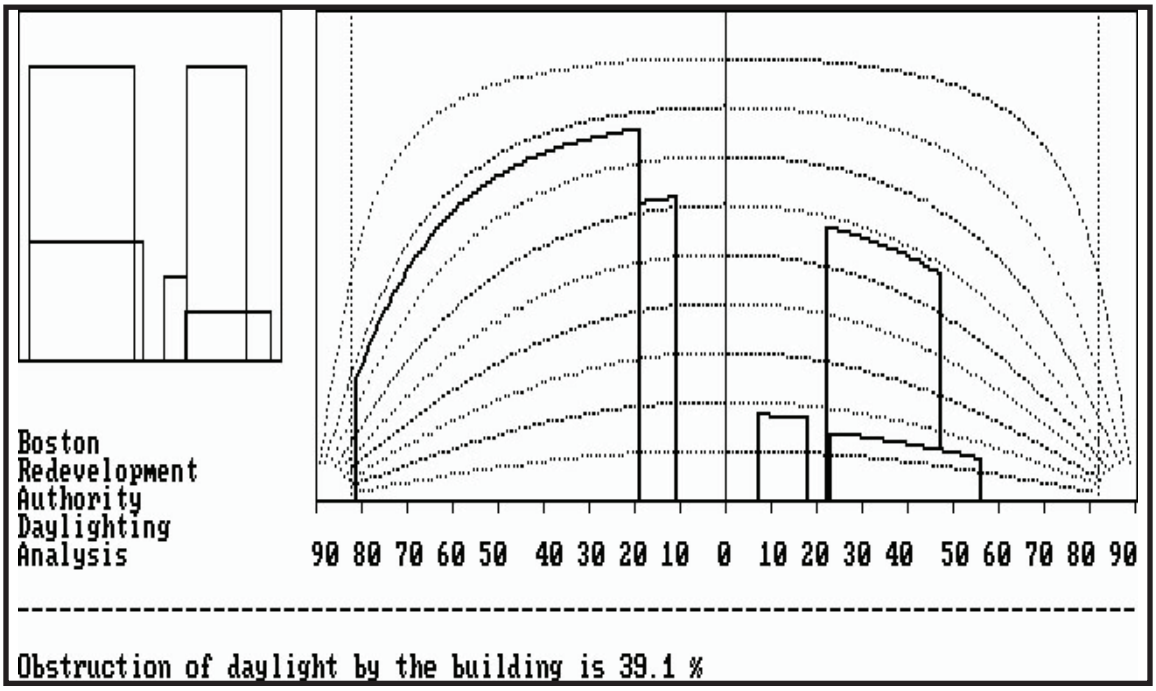
Morgan Stanley

WS DEVELOPMENT

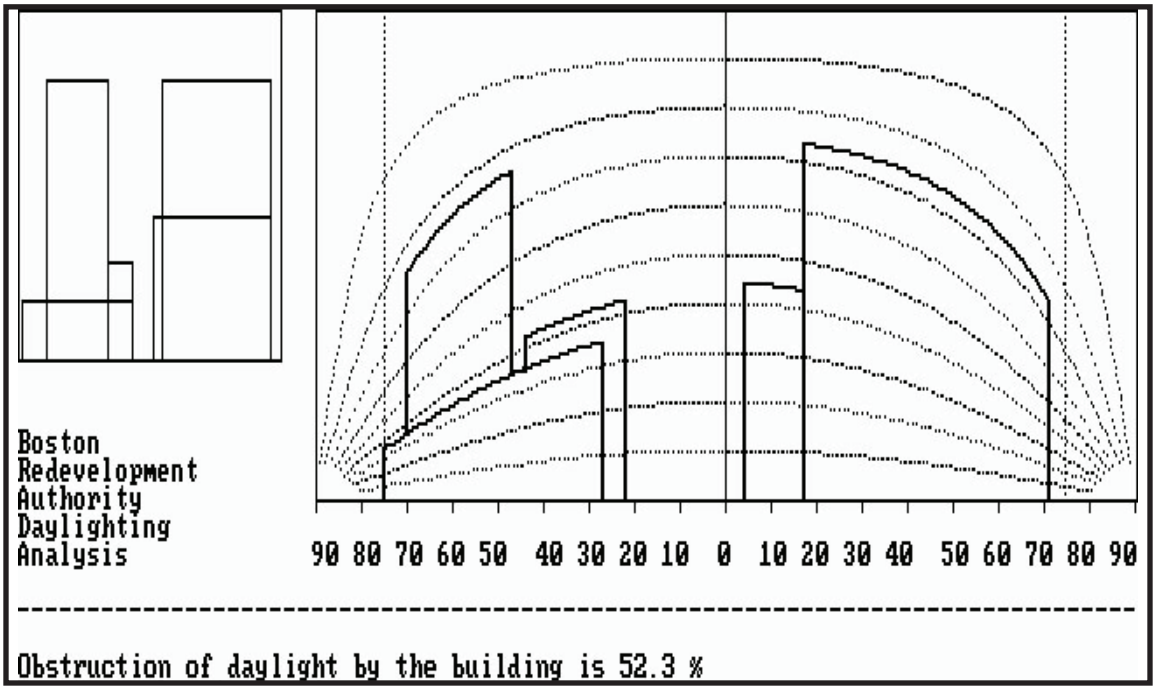
prepared by:
Epsilon Associates, Inc.



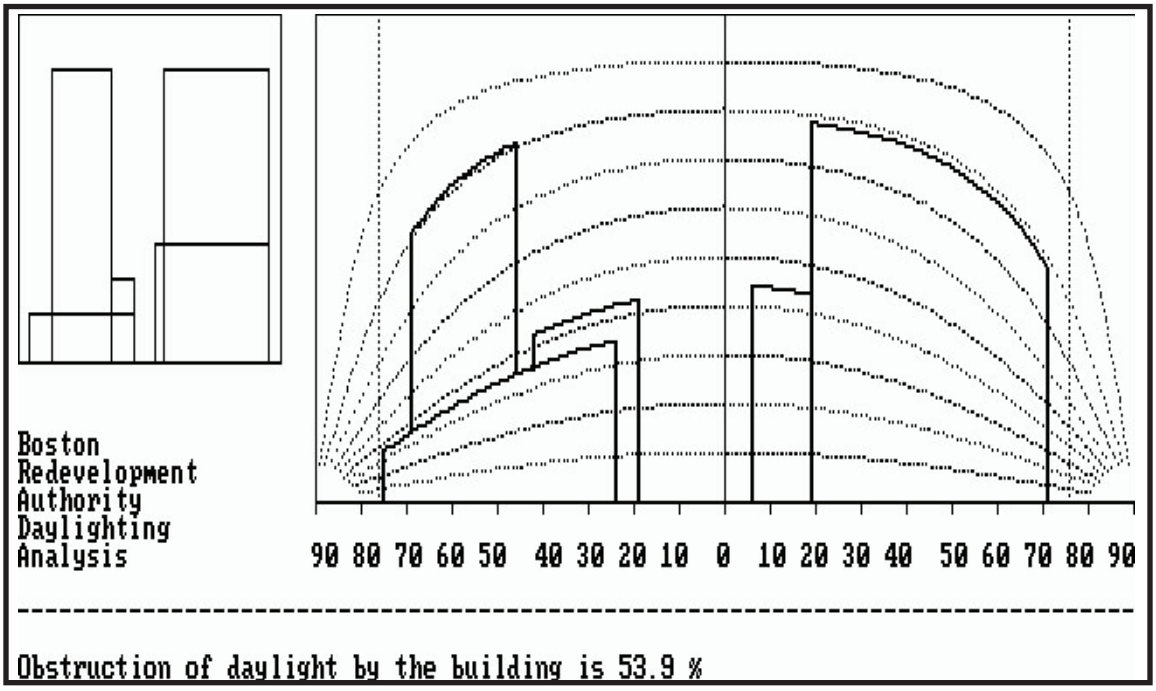
Viewpoint 1 – As-of-Right Conditions: Northern Avenue looking southwest at Blocks B and C



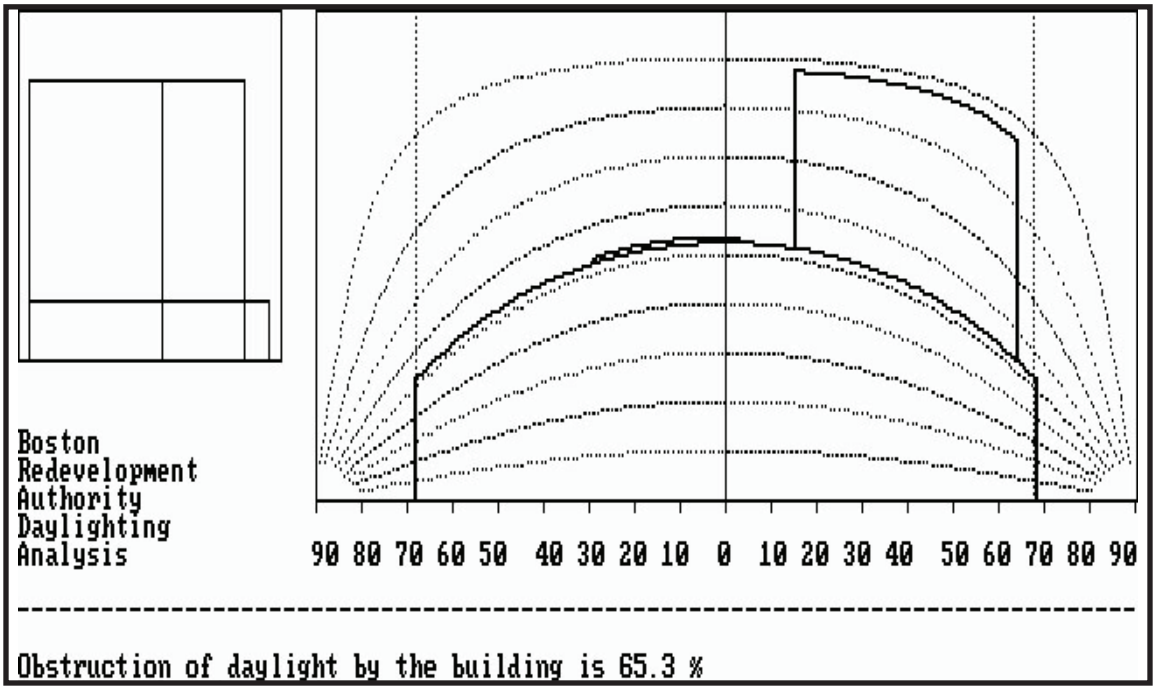
Viewpoint 1 – Proposed Conditions: Northern Avenue looking southwest at Blocks B and C



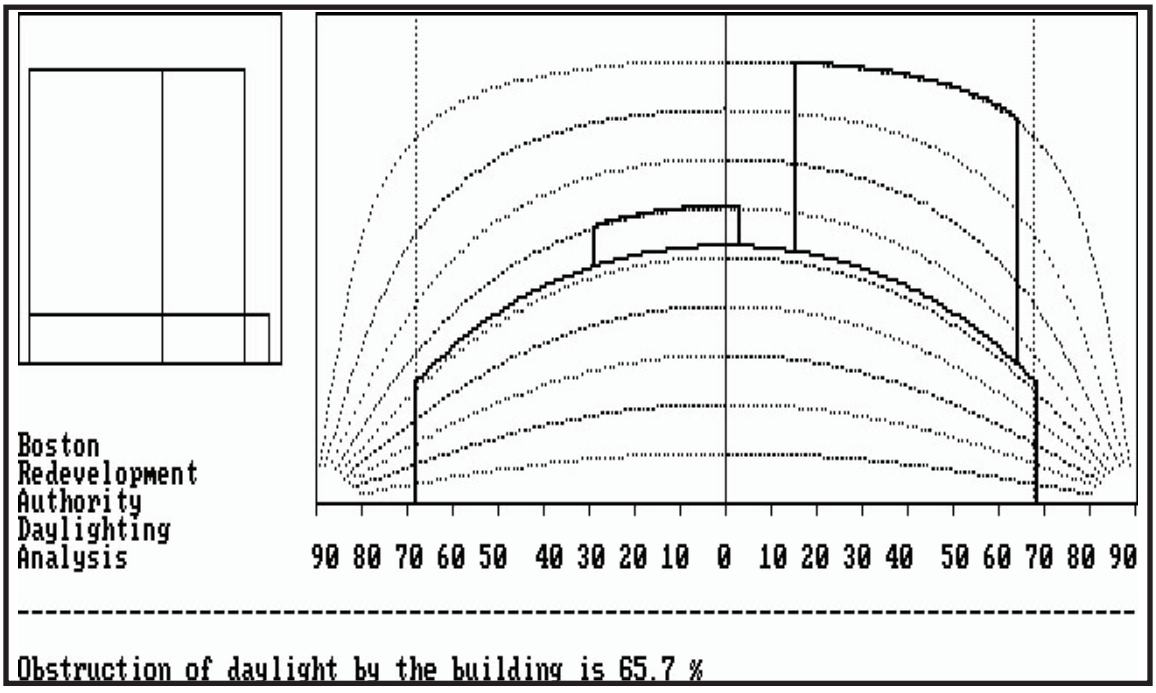
Viewpoint 2 – As-of-Right Conditions: Seaport Boulevard looking northeast at Blocks B and C



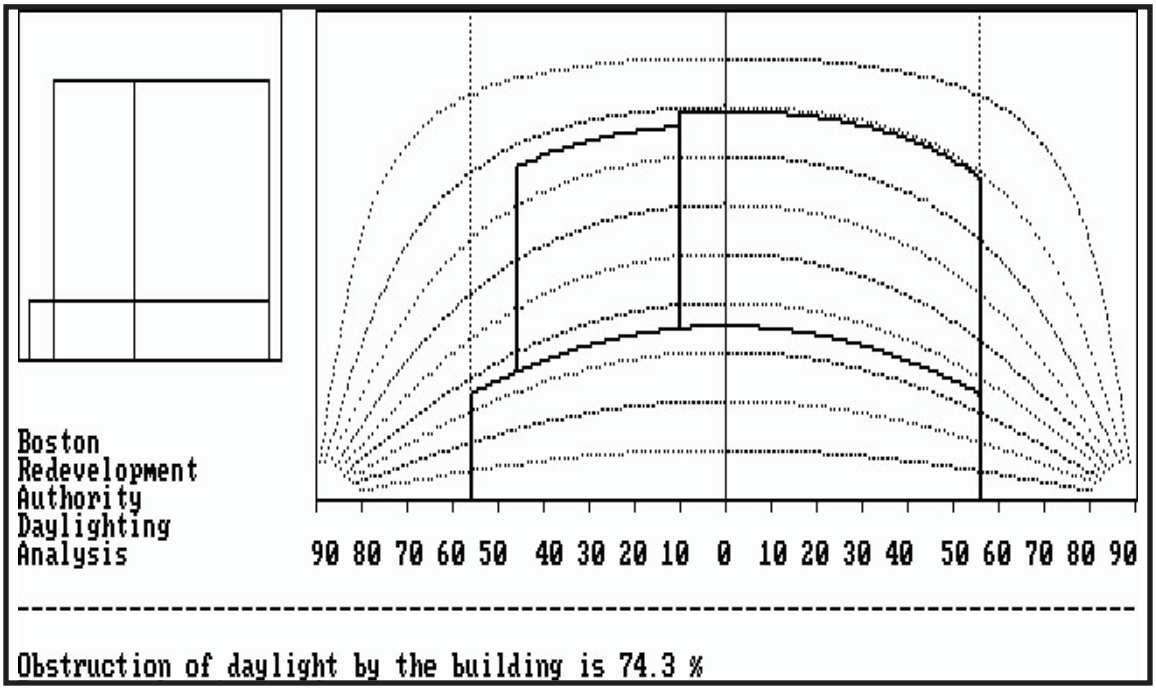
Viewpoint 2 – Proposed Conditions: Seaport Boulevard looking northeast at Blocks B and C



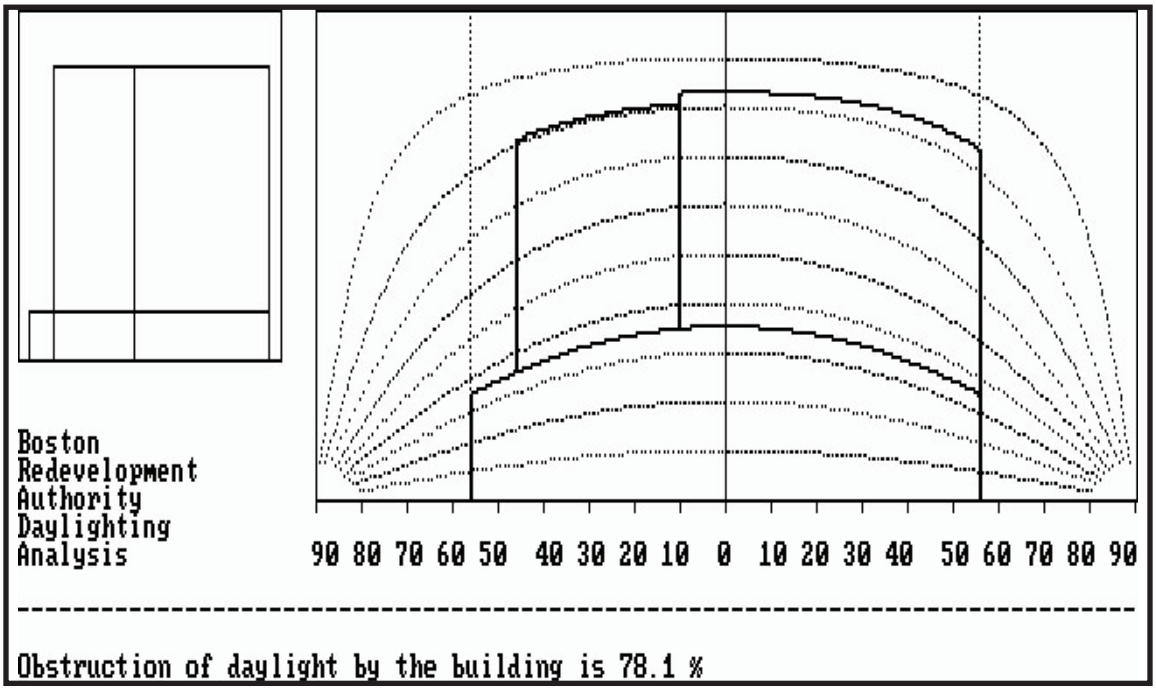
Viewpoint 3 – As-of-Right Conditions: Northern Avenue looking southwest at Block G



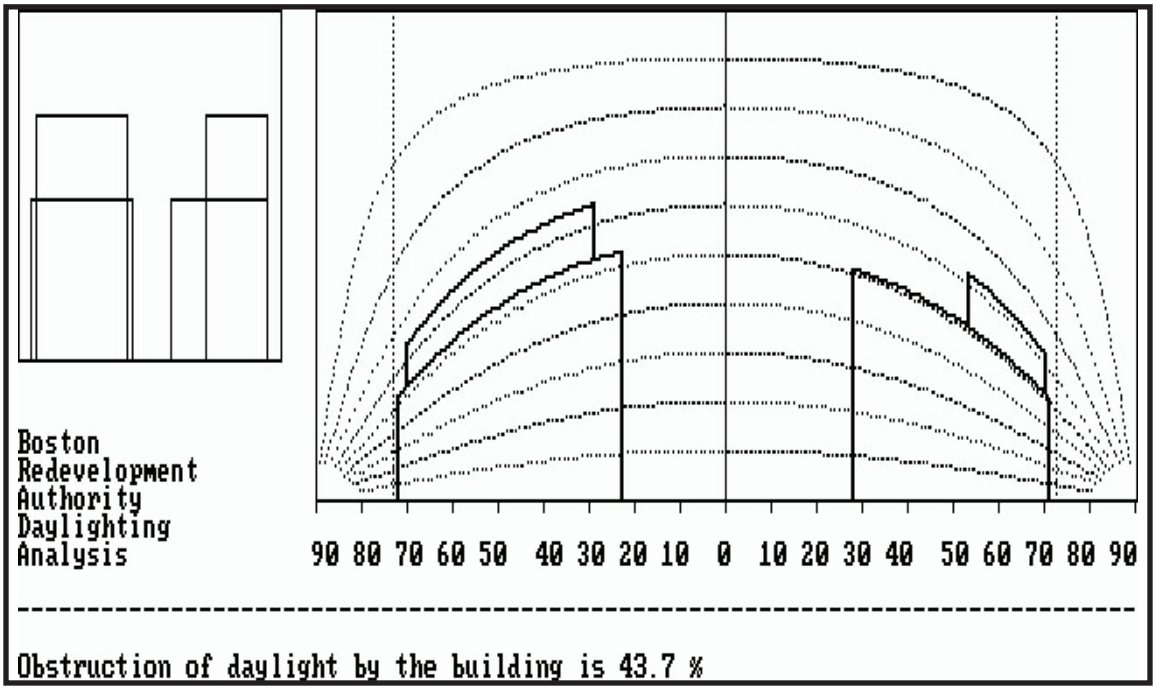
Viewpoint 3 – Proposed Conditions: Northern Avenue looking southwest at Block G



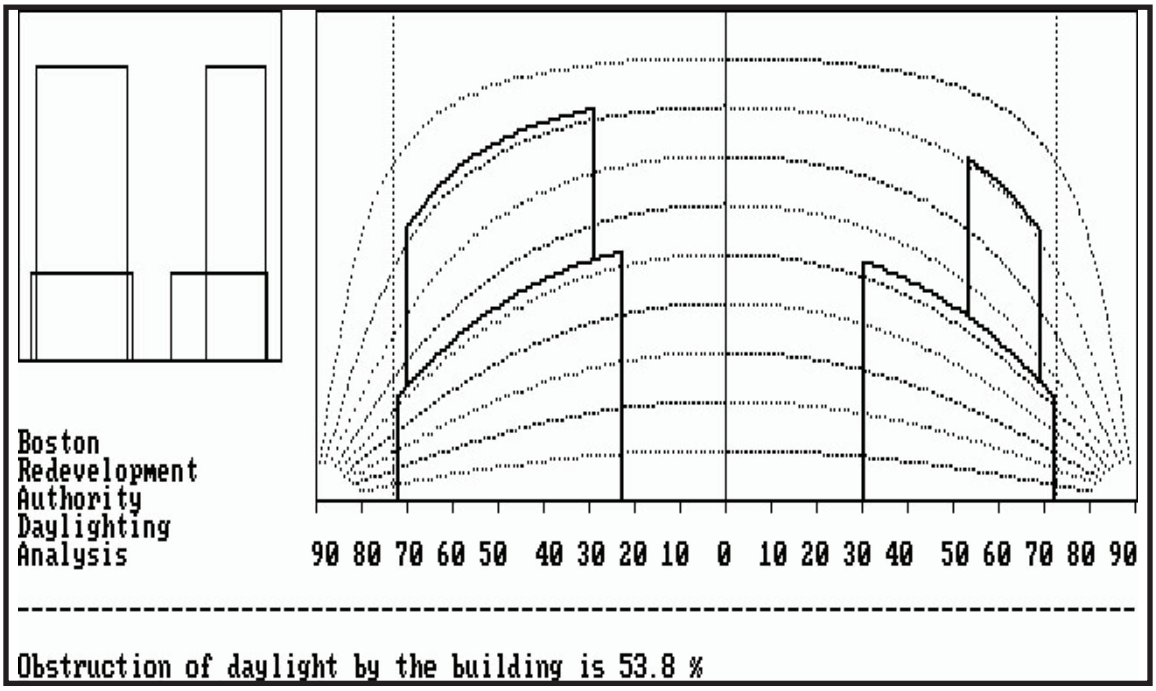
Viewpoint 4 – As-of-Right Conditions: Seaport Boulevard looking northeast at Block G



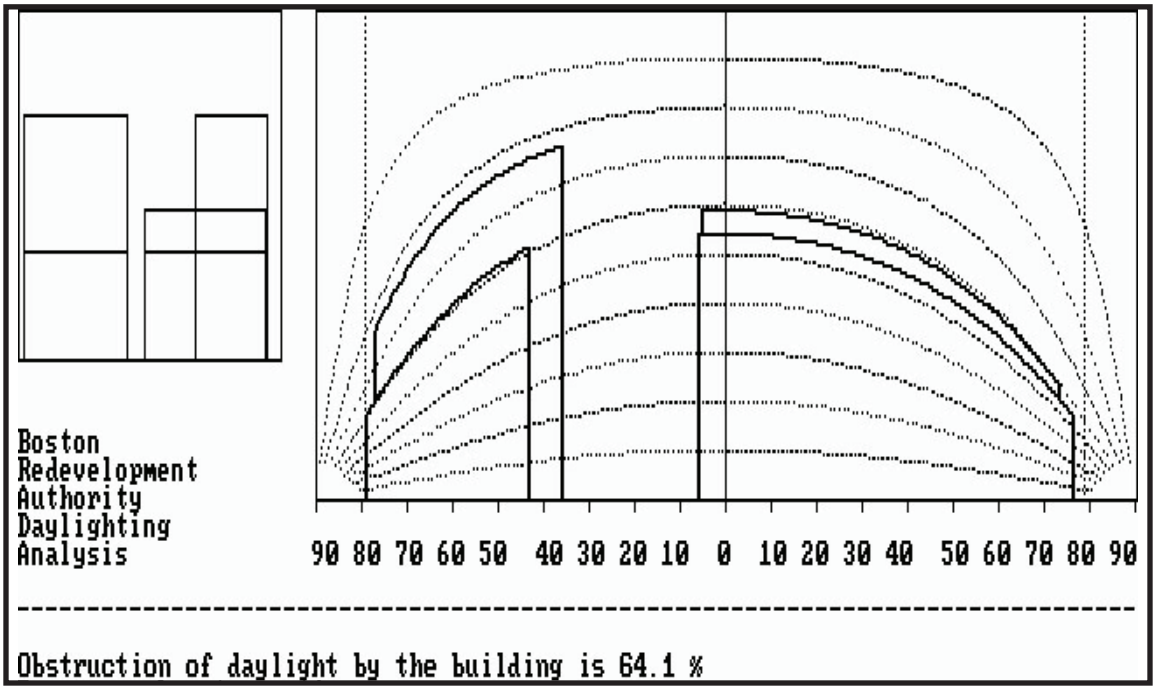
Viewpoint 4 – Proposed Conditions: Seaport Boulevard looking northeast at Block G



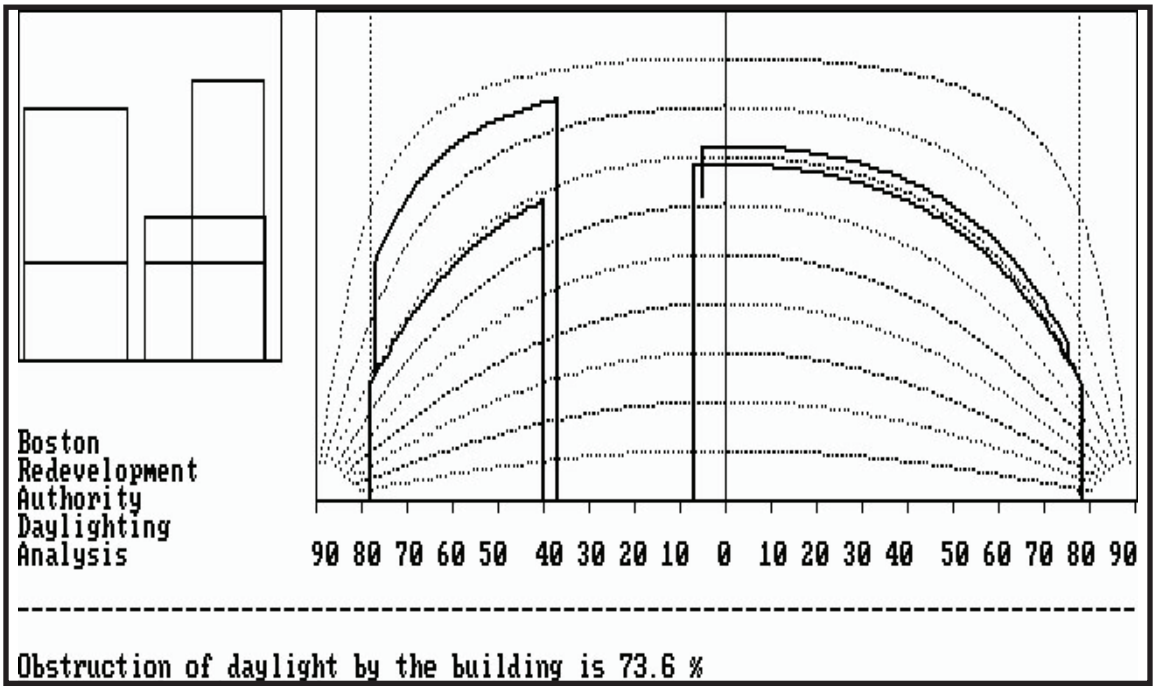
Viewpoint 5 – As-of-Right Conditions: Seaport Boulevard looking southwest at Blocks L1 and L2



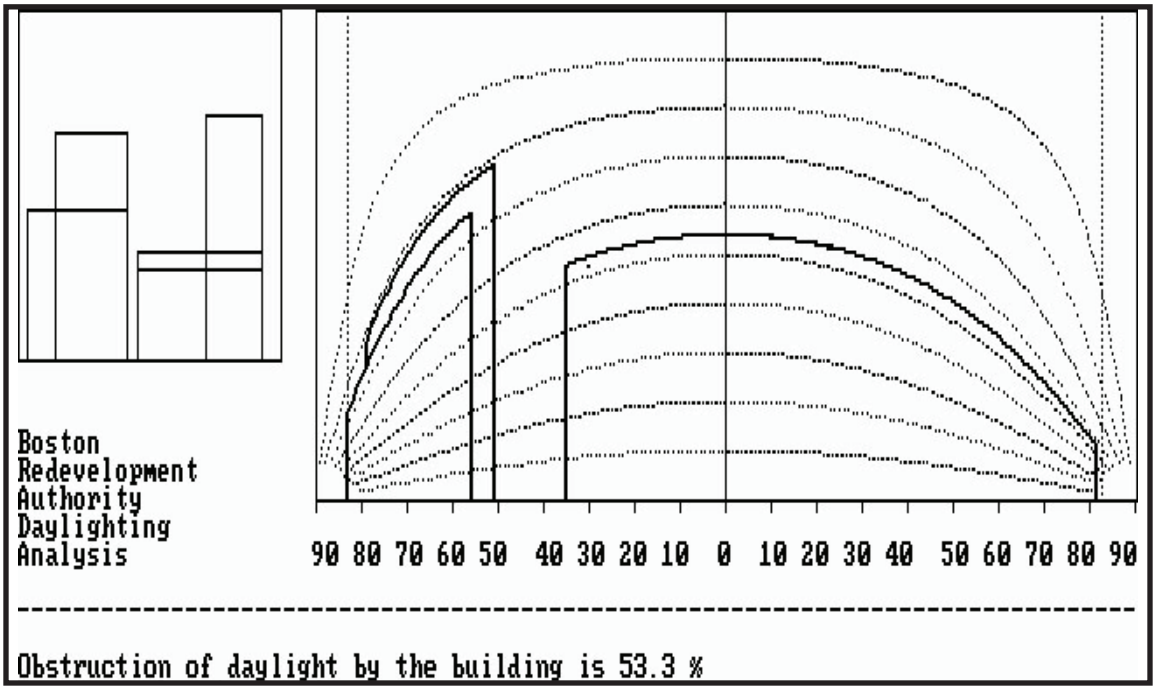
Viewpoint 5 – Proposed Conditions: Seaport Boulevard looking southwest at Blocks L1 and L2



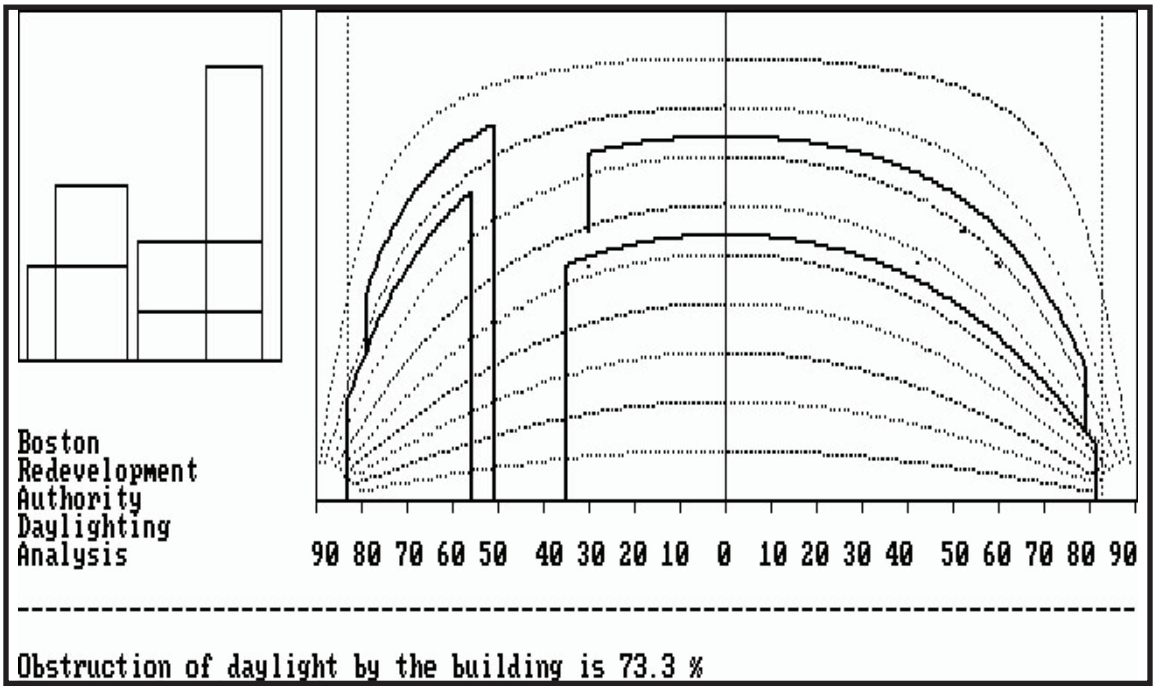
Viewpoint 6 – As-of-Right Conditions: East Service Road looking northwest at Blocks L4 and L6



Viewpoint 6 – Proposed Conditions: East Service Road looking northwest at Blocks L4 and L6



Viewpoint 7 – As-of-Right Conditions: Boston Wharf Road looking southeast at Blocks L3 and L5



Viewpoint 7 – Proposed Conditions: Boston Wharf Road looking southeast at Blocks L3 and L5

Northern Avenue (Blocks B and C) – Viewpoint 1

Northern Avenue runs from northwest to southeast across the Project Site. Viewpoint 1 was taken from the center of Northern Avenue looking southwest at Blocks B and C. The development site for Blocks B and C is currently occupied by a surface parking lot. At up to 250 feet, construction of Blocks B and C will result in a daylight obstruction value of 39.1%, which is similar to the daylight obstruction value for the as-of-right alternative of 37.7%, and will be within the range of daylight obstruction values of surrounding existing buildings.

Seaport Boulevard (Blocks B and C) – Viewpoint 2

Seaport Boulevard also runs from northwest to southeast across the Project Site. Viewpoint 2 was taken from the center of Seaport Boulevard looking northeast at Blocks B and C. The site is currently occupied by a surface parking lot. The construction of Blocks B and C will result in a daylight obstruction value of 53.9%, which is similar to the daylight obstruction value for the as-of-right alternative of 52.3%, and within the range of daylight obstruction values from other existing buildings in the Project vicinity.

Northern Avenue (Block G) – Viewpoint 3

Viewpoint 3 was taken from the center of Northern Avenue looking southwest at Block G. The construction of Building G will result in a daylight obstruction value of 65.7%, which is similar to the daylight obstruction for the as-of-right alternative of 65.3%. The site is currently occupied by a surface parking lot and a portion of the Northern Avenue roadway.

Seaport Avenue (Block G) – Viewpoint 4

Viewpoint 4 was taken from the center of Seaport Boulevard looking northeast at Block G. As mentioned, the site is currently occupied by a surface parking lot and a portion of the Northern Avenue roadway. Construction of Block G will result in a daylight obstruction value of 78.1%, which is the highest daylight obstruction value for the Project and slightly higher than the as-of-right massing value of 74.3%, but still lower than the highest daylight obstruction values of surrounding existing buildings such as 346-354 Congress Street/FP3 (88.4%) and the Seaport Hotel (89.1%).

Seaport Boulevard (Blocks L1 and L2) – Viewpoint 5

Viewpoint 5 was taken from the center of Seaport Boulevard looking southwest at Blocks L1 and L2. The site is currently being used for surface parking. Construction of Blocks L1 and L2 will result in a daylight obstruction value of 53.8%, compared to 43.7% for the as-of-right alternative which has shorter buildings.

East Service Road (Blocks L4 and L6) – Viewpoint 6

East Service Road runs from south to north along the eastern portion of the Project Site. Viewpoint 6 was taken from the center of East Service Road looking northwest at Blocks L4 and L6. The site is currently occupied by a surface parking lot. Construction of Blocks L4 and L6 will result in a daylight obstruction value of 73.6%. In comparison, the as-of-right alternative will result in a daylight obstruction value of 64.1% because of shorter building heights.

Boston Wharf Road (Blocks L3 and L5) – Viewpoint 7

East Service Road runs from south to north along the eastern portion of the Project Site. Viewpoint 7 was taken from the center of Boston Wharf Road looking southeast at Blocks L3 and L5. The site is currently occupied by a surface parking lot. Construction of Blocks L3 and L5 will result in a daylight obstruction value to 73.3%, which exceeds the daylight obstruction value for the as-of-right massing value (53.3%), but will be consistent with daylight obstruction values from other nearby existing buildings.

Area Context Views

The Project area is characterized by a mix of commercial, cultural, institutional, and residential uses in building heights ranging between one and 22 stories, as well as surface parking lots and recreational open space. Overall, the Project's daylight obstruction values fit within the context of these areas.

To provide a larger context for a specific comparison of daylight conditions, obstruction values for three projects in the vicinity were referenced from documents filed with the BRA. The daylight conditions adjacent to the Project Site ranged from 62.3% to 88.4% (AC1) at 346-354 Congress Street/FP3, 64.2% to 89.1% at the Seaport Hotel and up to 100% at the BCEC on Summer Street (AC3).

4.3.4 Conclusions

The daylight analysis conducted for the Project describes existing, as-of-right, and proposed daylight obstruction conditions at the Project Site and in the surrounding area. Since the Project Site generally consists of surface parking lots, the results of the BRADA analysis indicate that the development of the Project will result in increased daylight obstruction at the Project Site over existing conditions. Overall, the daylight obstruction values for the proposed Project will be within the range or lower than daylight obstruction values of the surrounding area. The resulting conditions will be similar to the as-of-right conditions in most cases.. The daylight obstruction values are typical of densely built urban areas. In addition, this analysis used the massing on each Block, and as the Project buildings are

designed, it is anticipated that the addition of architectural features, such as setbacks and curved facades, will result in a decrease in the daylight obstruction values as presented above.

4.4 Solar Glare

Buildings within the Project Site will utilize high-performance envelopes that balance the various metrics of visual aesthetic, thermal performance, cost, heat gain, and constructability. As all Blocks are anticipated to comply with Article 37 of the City of Boston Zoning Code and will be "LEED Certifiable" per LEED-NC v2.2 and LEED 2009 definitions, all buildings will incorporate extensive energy efficiency technologies into the building design in order to meet the stringent energy performance benchmarks embedded within the LEED rating system.

The Proponent does not anticipate any solar glare issues resulting from curtainwall, window wall, or punch window installations. Additionally, any opaque exterior cladding materials (metal, glass, etc.) used in the building envelope will be evaluated for their reflectivity characteristics. Glazing performance metrics will be balanced to optimize visible light transmittance against thermal insulation value and solar heat gain. Tinted and/or coated low-e glazing will be used to meet the desired performance metrics needed to achieve the required energy savings on each Block. Mirrored finishes or glazing with a high percentage of exterior reflectivity are not anticipated to be used within the Project Site.

4.5 Air Quality

4.5.1 Introduction

An air quality analysis was conducted to determine the impact of pollutant emissions from combustion and mobile source emissions generated by the Project. A mesoscale analysis is performed to determine whether and to what extent the proposed Project will increase the amount of ozone precursors in the area, as well as to determine if the Project is consistent with the Massachusetts State Implementation Plan (SIP). A microscale analysis is typically performed to evaluate the potential air quality impacts of carbon monoxide (CO) due to traffic flow around the Project area. In addition, for stationary sources (i.e. combustion stacks, and garage vents), United States Environmental Protection Agency (EPA) approved air dispersion models were used to estimate ambient concentrations of nitrogen oxides (NOx), particulate matter (PM-10 and PM-2.5), and sulfur dioxide (SO_2), in addition to CO.

The impacts were added to monitored background values and compared to the Federal National Ambient Air Quality Standards (NAAQS). The standards were developed by the EPA to protect human health against adverse health effects with a margin of safety.

The modeling methodology was developed in accordance with the latest Massachusetts Department of Environmental Protection (MassDEP) modeling policies and Federal modeling guidelines.[2] The air quality analysis results show that CO, NOx, PM-10, PM-2.5, and SO_2 concentrations at all receptors studied are well under NAAQS thresholds.

Modeling assumptions and backup data for results presented in this section are provided in Appendix C.

4.5.2 Methodology

4.5.2.1 Mesoscale Analysis

A mesoscale analysis predicts the change in regional ozone precursor emissions due to the Project. The total vehicle pollutant burden was estimated for the existing conditions, the Mid-term No-Build, Seaport Square Build, and Seaport Square Build with Mitigation conditions based on the traffic analysis. The Seaport Square Build condition includes proposed projects in the area as described in Chapter 3.

The EPA's MOBILE6.2 computer program was used to estimate motor vehicle emission factors of VOC and NOx on the roadway network. Conservatively, emission factors derived from MOBILE6.2 for VOC and NOx are based on the worst case of either wintertime or summertime conditions. Using the vehicle count data, the mileage between intersections, modeled signalized intersection delay times, and the emission factors, per day and per year emission estimates were calculated. MOBILE6.2 outputs are provided in Appendix C.

The traffic volumes provided in Chapter 3 form the basis of the mesoscale study. Approximately eighty-five roadway links were included in the mesoscale analysis. Peak hour traffic volumes were provided by the transportation consultant. Estimates of average daily traffic (ADT) were made from the peak hour volumes assuming a 10% K-Factor. An average speed of 30 mph was used for all links. Distances for the links were estimated with mapping software.

Average per vehicle idle times were based on SYNCHRO output reports prepared for the transportation study. Idling vehicle emissions, at signalized intersections only, were calculated. Peak delay times at signalized intersections with LOS of "F" were capped at 80 seconds. The cap of 80 seconds was implemented to remove any bias from extremely poor LOS intersections.

Traffic analyses typically include analysis of the peak hour. It was assumed that the peak hour delay times persisted for 8 hours per day. Therefore, a factor of 33% (8/24 hrs) was used to convert peak hour delay to daily delay. A factor of 71% (5 days per week at 52 weeks per year/365 days) was used to convert from daily to annual timeframes.

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[2] 40 CFR 51 Appendix W, Guideline on Air Quality Models, 70 FR 68228, Nov. 9, 2005

4.5.2.2 Microscale Analysis

The microscale analysis typically examines ground-level CO impacts due to traffic queues in the immediate vicinity of a project. CO is used in microscale studies to indicate roadway pollutant levels since it is the most abundant pollutant emitted by motor vehicles and can result in so-called "hot spot" (high concentration) locations around congested intersections. NAAQS have been established by the EPA for CO to protect the public health (known as primary standards). These standards do not allow ambient CO concentrations to exceed 35 parts per million (ppm) for a one-hour averaging period and 9 ppm for an eight-hour averaging period, more than once per year at any location. The widespread use of CO catalysts on late-model vehicles has reduced the occurrences of CO hotspots. Air quality modeling techniques (computer simulation programs) are typically used to predict CO levels for both existing and future conditions to evaluate compliance of the roadways with the standards. The analyses followed the procedure outlined in EPA's intersection modeling guidance.[3]

The microscale analysis has been conducted using the latest versions of EPA MOBILE6.2, CAL3QHC, and AERMOD to estimate CO concentrations at sidewalk receptor locations.

Seaport Square Build year emissions data calculated from the MOBILE6.2 model, along with traffic data, were input into the CAL3QHC program to determine CO concentrations due to traffic flowing through the selected intersections. AERMOD was used to estimate potential ground-level impacts due to emissions from the parking garage and combustion sources.

CAL3QHC and AERMOD results were then added to background CO values of 3.0 ppm (one-hour) and 1.7 ppm (eight-hour), as provided by the EPA, to determine total air quality impacts due to the Project. This value was compared to the NAAQS for CO of 35 ppm (one-hour) and 9 ppm (eight-hour).

Intersection Selection

Intersection selection criteria for a microscale analysis is typically based on a Level of Service (LOS) D where the project increases traffic volumes by ten percent or greater, or if the intersection operates at LOS E or F and the project degrades conditions at the location. An analysis of the 33 intersections from the traffic study for the Seaport Square Build condition was conducted (see Chapter 3, Transportation). Although there were a large number of intersections that met the microscale selection criteria, microscale modeling was limited to what were determined to be the ten worst intersections:

1. Seaport Boulevard, East Service Road, and Old Northern Avenue;

[3] U.S. EPA, Guideline for Modeling Carbon Monoxide from Roadway Intersections; EPA-454/R-92-005, November 1992.

2. Congress Street, A Street, and Thomson Place;
3. Congress Street, Off-Ramps C and I, and East Service Road;
4. Congress Street, West Service Road, and Boston Wharf Road;
5. Northern Avenue and D Street (northbound);
6. Summer Street and D Street;
7. Congress Street, Ramps D and F, and B Street;
8. Seaport Boulevard./Northern Avenue/D Street (southbound)/Fish Pier Street;
9. Summer Street & Dorchester Avenue; and
10. Summer & Melcher Streets.

Because the study included the ten worst intersections, it is anticipated that CO impacts will be greater at these intersections than at any other.

The traffic volumes and LOS calculations provided in Chapter 3 form the basis of evaluating the traffic data versus the microscale thresholds.

Emissions Calculations (MOBILE6.2)

The EPA MOBILE6.2 computer program was used to estimate motor vehicle emission factors on the roadway network. Emission factors calculated by the MOBILE6.2 model are based on motor vehicle operations typical of daily periods. The Commonwealth's statewide annual Inspection and Maintenance (I&M) program was included, as well as the state specific vehicle age registration distribution. The input files for MOBILE6.2 for the existing (2009) and Seaport Square Build year are provided by MassDEP.[4] As is typical, minor edits to the files were necessary to allow the program to output emission factors for the various speeds used in the analyses.

The current version of MOBILE6.2 does not explicitly calculate idle emissions. However, idle emissions can be obtained from a vehicle speed of 2.5 mph (the lowest speed MOBILE6.2 will model). The resulting emission rate given in (grams/mile) is then multiplied by 2.5 mph to estimate idle emissions (given in grams/hour). Moving emissions are calculated based on actual speeds at which free-flowing vehicles travel through the intersections. A speed of 30 mph is used for all free-flow traffic. Speeds of 10 and 15 mph were used for right (and U-turns) and left turns, respectively, as specified by the transportation consultant.

[4] Latest input files for MOBILE6.2 were provided by Marc Bennett of MassDEP, May 4, 2009.

Winter emission factors are typically higher than summer for CO. Therefore, winter vehicular emission factors were conservatively used in the microscale analyses.

Receptors & Meteorology Inputs

Sets of up to 60 receptors were placed in the vicinity of each of the modeled intersections. Receptors extended approximately 150 to 200 feet on the sidewalks along the roadways approaching the intersection. The roadway links and receptor locations of each modeled intersection are presented in Figure 4.5-1 through Figure 4.5-10.

For the CAL3QHC model, limited meteorological inputs are required. Following EPA guidance[5], a wind speed of one m/s, stability class D (4), and a mixing height of 1,000 meters was used. To account for the intersection geometry, wind directions from 0° to 350°, every 10° were selected. A surface roughness length of 321 cm corresponding to "City – Central Business District" was selected.[6]

Impact Calculations (CAL3QHC)

The CAL3QHC model predicts one-hour concentrations using queue-links at intersections based on worst-case meteorological conditions and traffic input data. The one-hour concentrations were scaled by a factor of 0.7 to estimate eight-hour concentrations. The CAL3QHC methodology was based on EPA CO modeling guidance. Signal timings were provided directly from the traffic modeling runs. Travel speeds were estimated based on field observations, traffic data, and queue links at the intersections. The CAL3QHC input parameters are listed in Appendix C.

4.5.2.3 Stationary Source Analysis

AERMOD Modeling Methodology

The most recent version of the EPA AERMOD refined dispersion model (Version 07026) was selected to predict concentrations from the stationary sources related to the Project. AERMOD is the EPA's preferred model for regulatory applications. The use of AERMOD provides the benefits of using the most current algorithms available for steady state dispersion modeling.

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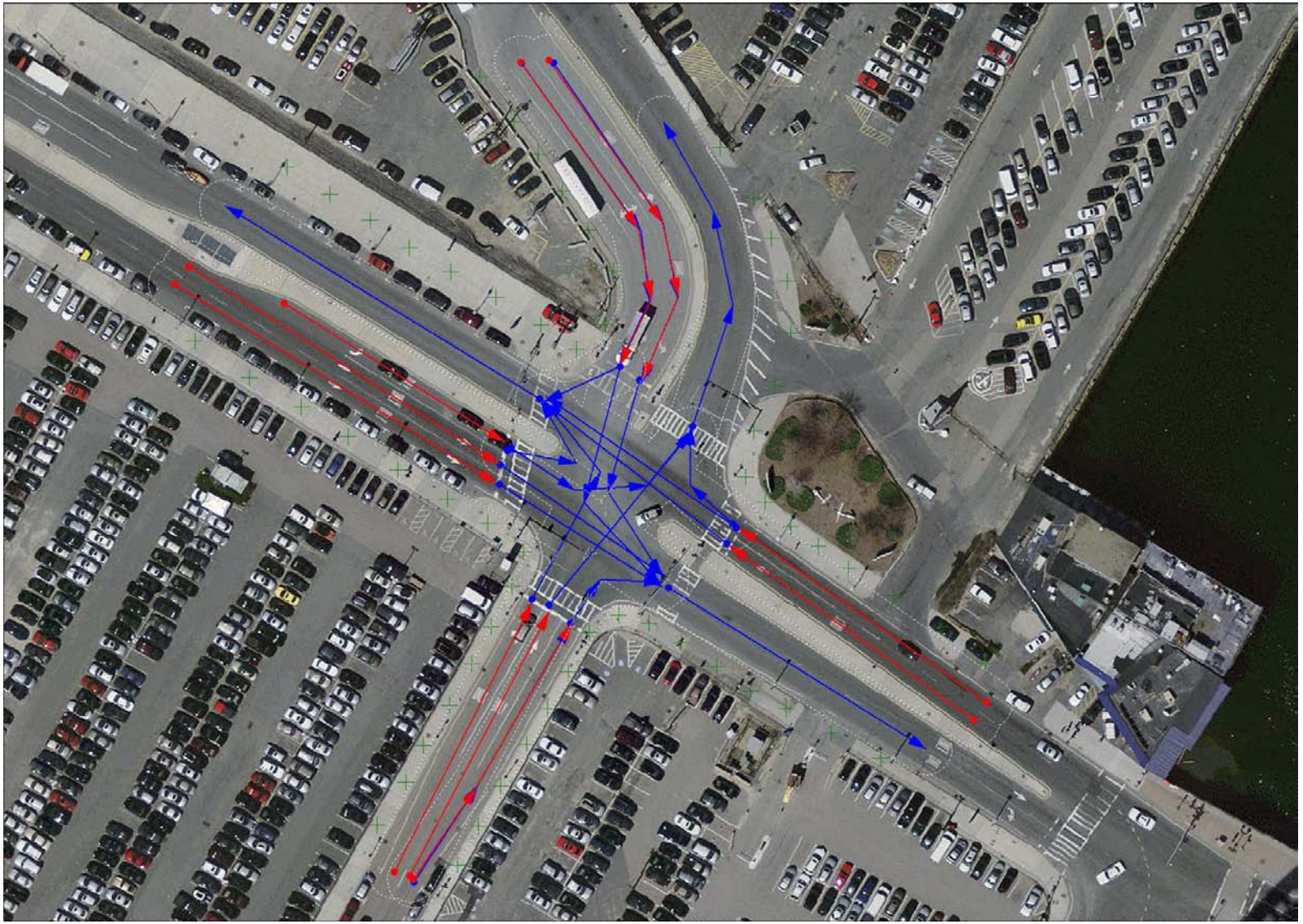
[5] U.S. EPA, *Guideline for Modeling Carbon Monoxide from Roadway Intersections.* EPA-454/R-92-005, November 1992.

[6] U.S. EPA, *User's Guide for CAL3QHC Version 2: A Modeling Methodology for Predicting Pollutant Concentrations Near Roadway Intersections.* EPA –454/R-92-006 (Revised), September 1995



SEAPORT SQUARE
IN SOUTH BOSTON

Figure 4.5-1

Links/Receptors for Seaport Blvd/ East Service Road/ Old Northern Ave

GALE INTERNATIONAL

Morgan Stanley

WS DEVELOPMENT

prepared by:
Epsilon Associates, Inc.

0 20 40 meters

SEAPORT SQUARE
IN SOUTH BOSTON

Figure 4.5-2

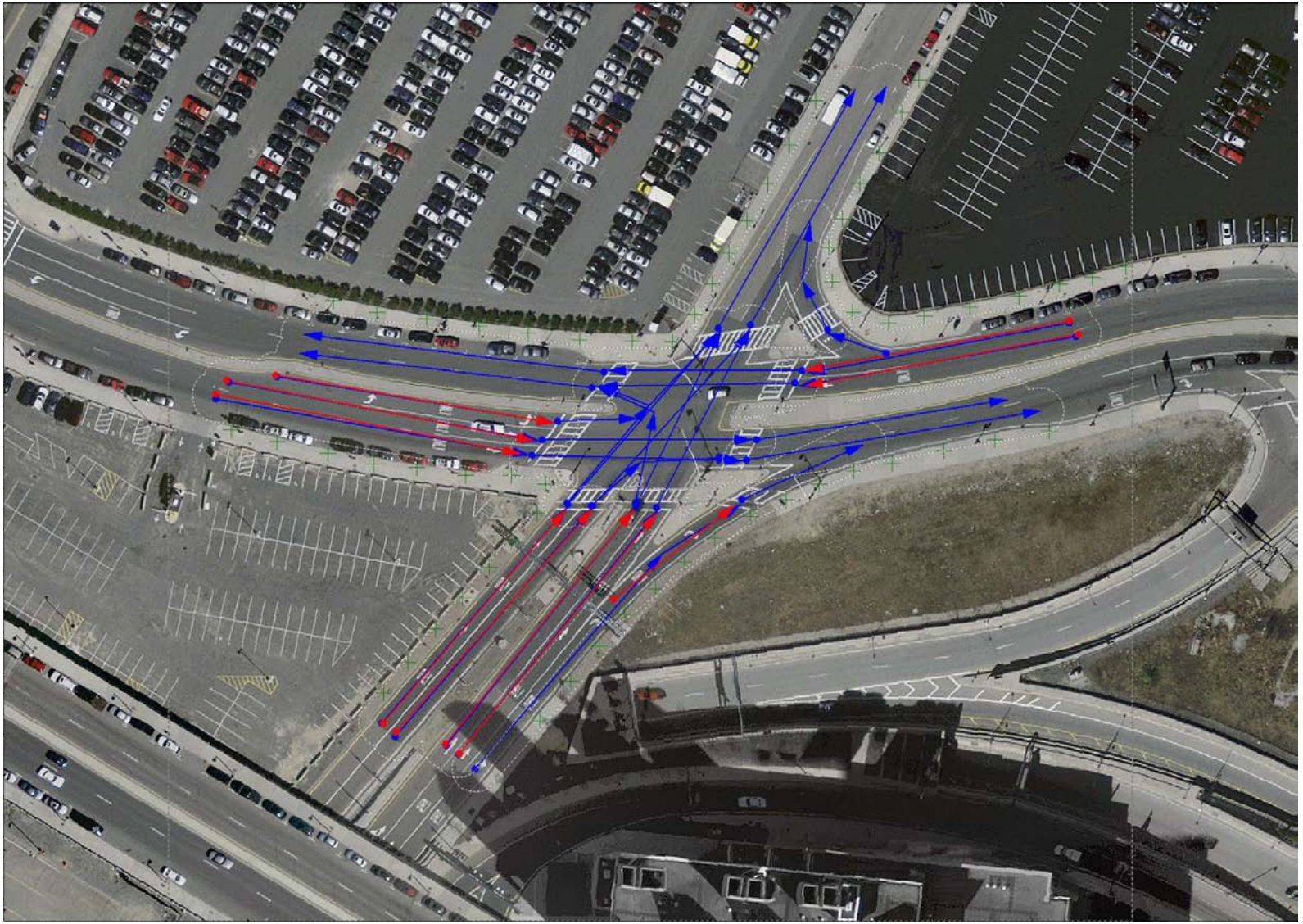
Links/Receptors for Congress Street/ A Street/ Thomson Place

GALE INTERNATIONAL

Morgan Stanley

WS DEVELOPMENT

prepared by:
Epsilon Associates, Inc.



0 20 40 meters

SEAPORT SQUARE
IN SOUTH BOSTON

Figure 4.5-3

Links/Receptors for Congress Street/ Off Ramps I and C/ East Service Road

GALE INTERNATIONAL

Morgan Stanley

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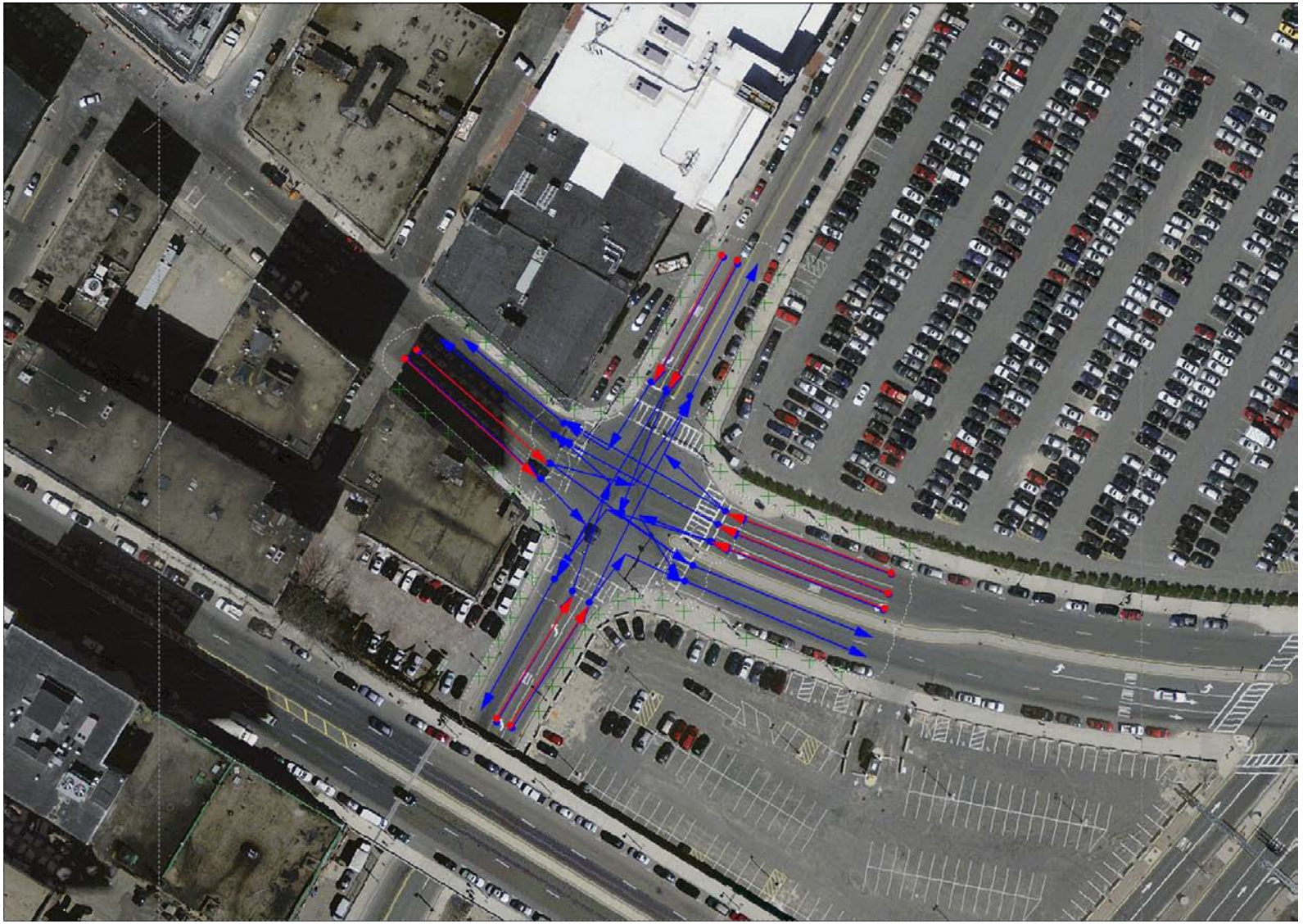
prepared by:
Epsilon Associates, Inc.



0 20 40 meters

SEAPORT SQUARE
IN SOUTH BOSTON

Figure 4.5-4

Links/Receptors for Congress Street/ West Service Road/ Boston Wharf Road

GALE INTERNATIONAL

Morgan Stanley

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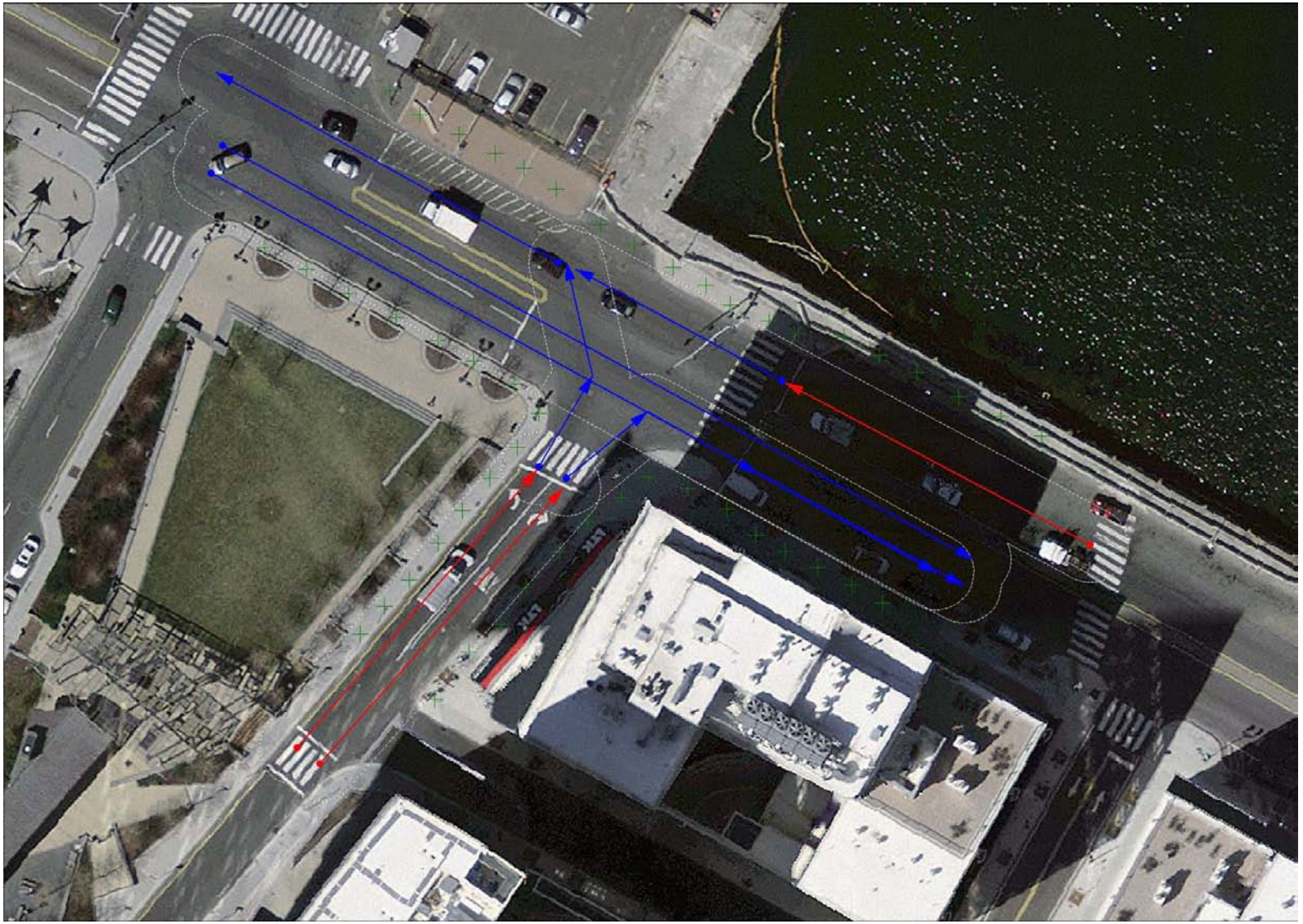
Epsilon Associates, Inc.



0 20 40 meters

SEAPORT SQUARE
IN SOUTH BOSTON

Figure 4.5-5

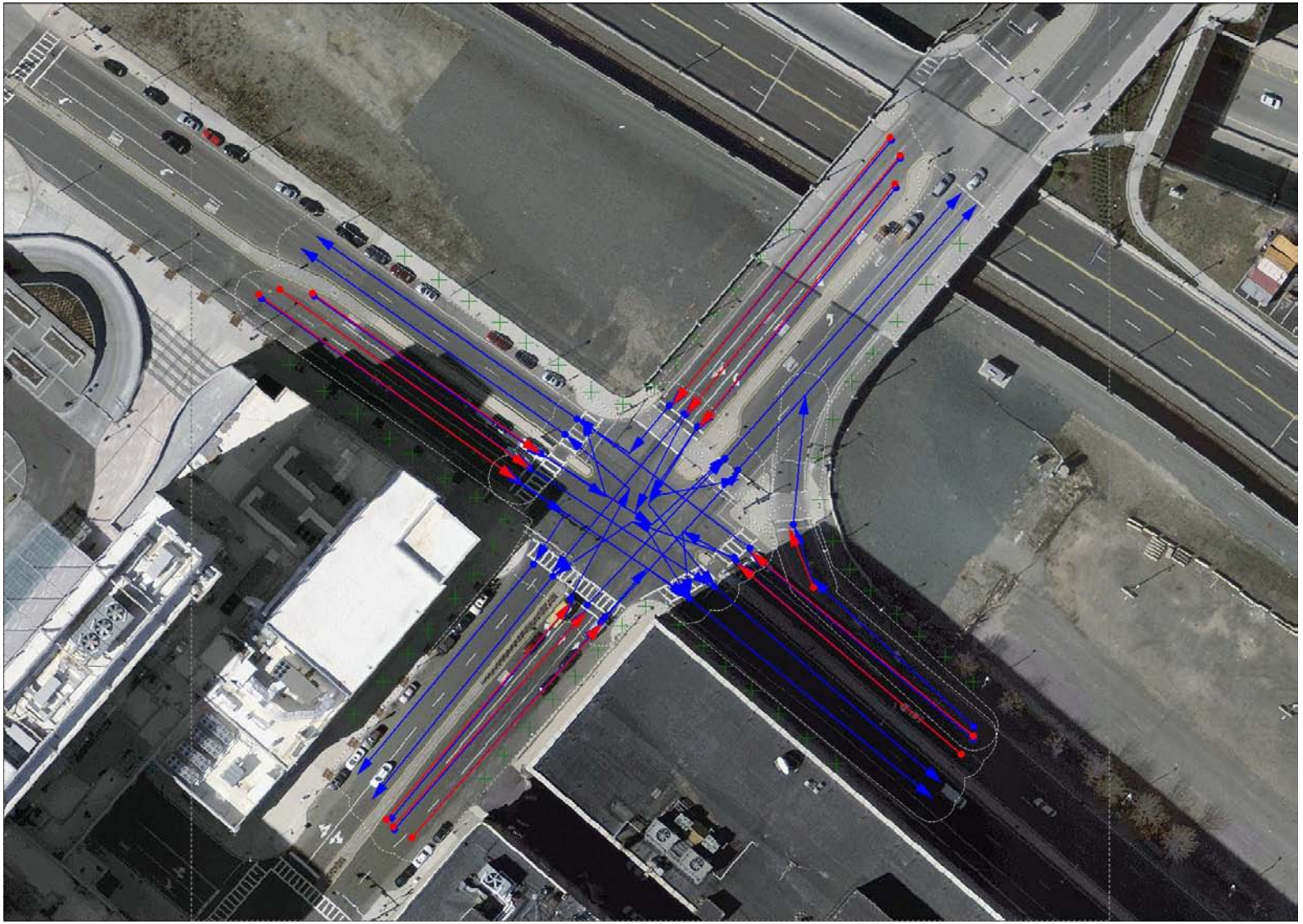
Links/Receptors for Northern Ave/ D Street (Northbound)

GALE INTERNATIONAL

Morgan Stanley

WS DEVELOPMENT

prepared by:
Epsilon Associates, Inc.



SEAPORT SQUARE
IN SOUTH BOSTON

Figure 4.5-6

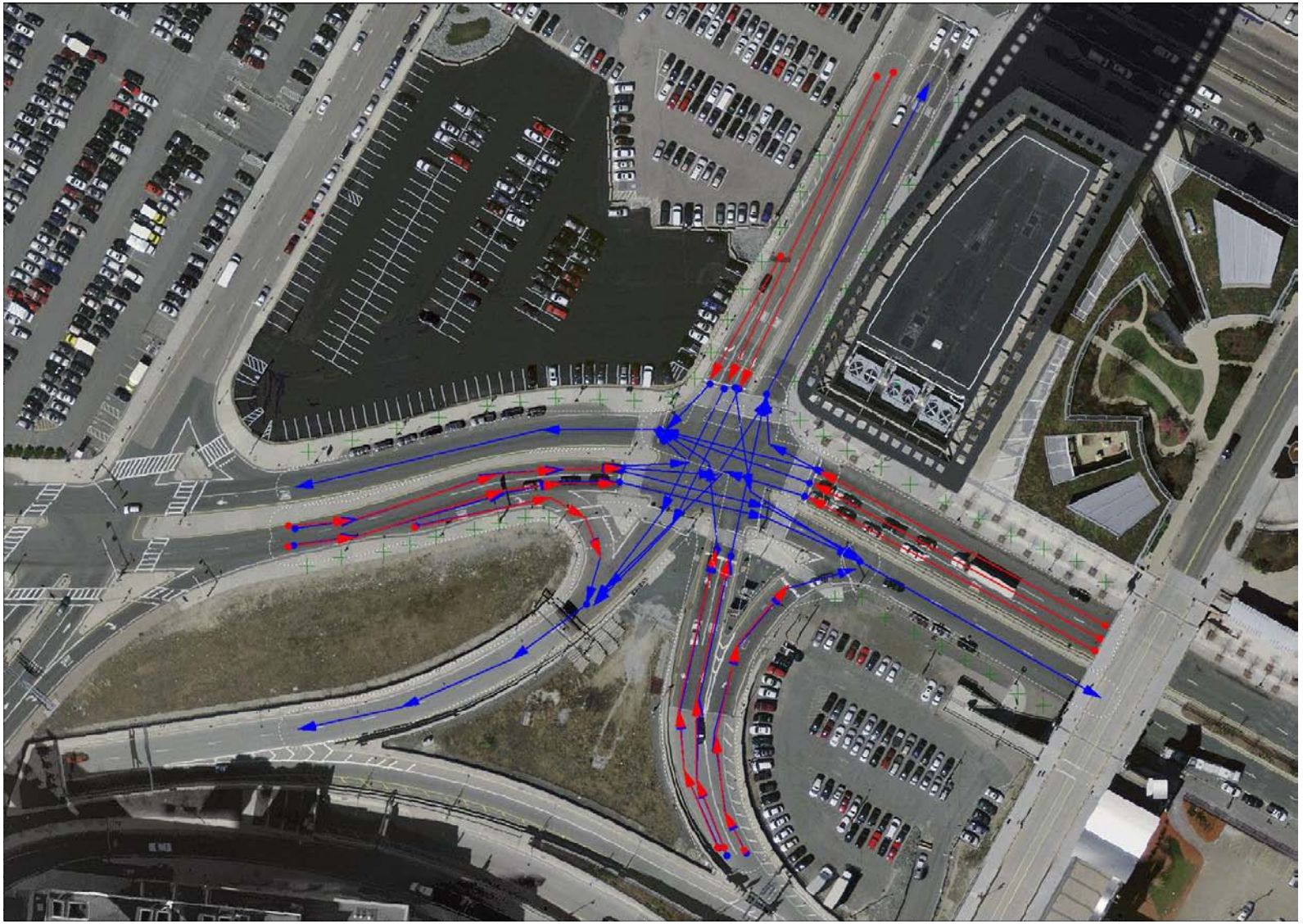
Links/Receptors for Summer Street/ D Street

GALE INTERNATIONAL

Morgan Stanley

WS DEVELOPMENT

prepared by:
Epsilon Associates, Inc.



0 20 40 meters

SEAPORT SQUARE
IN SOUTH BOSTON

Figure 4.5-7

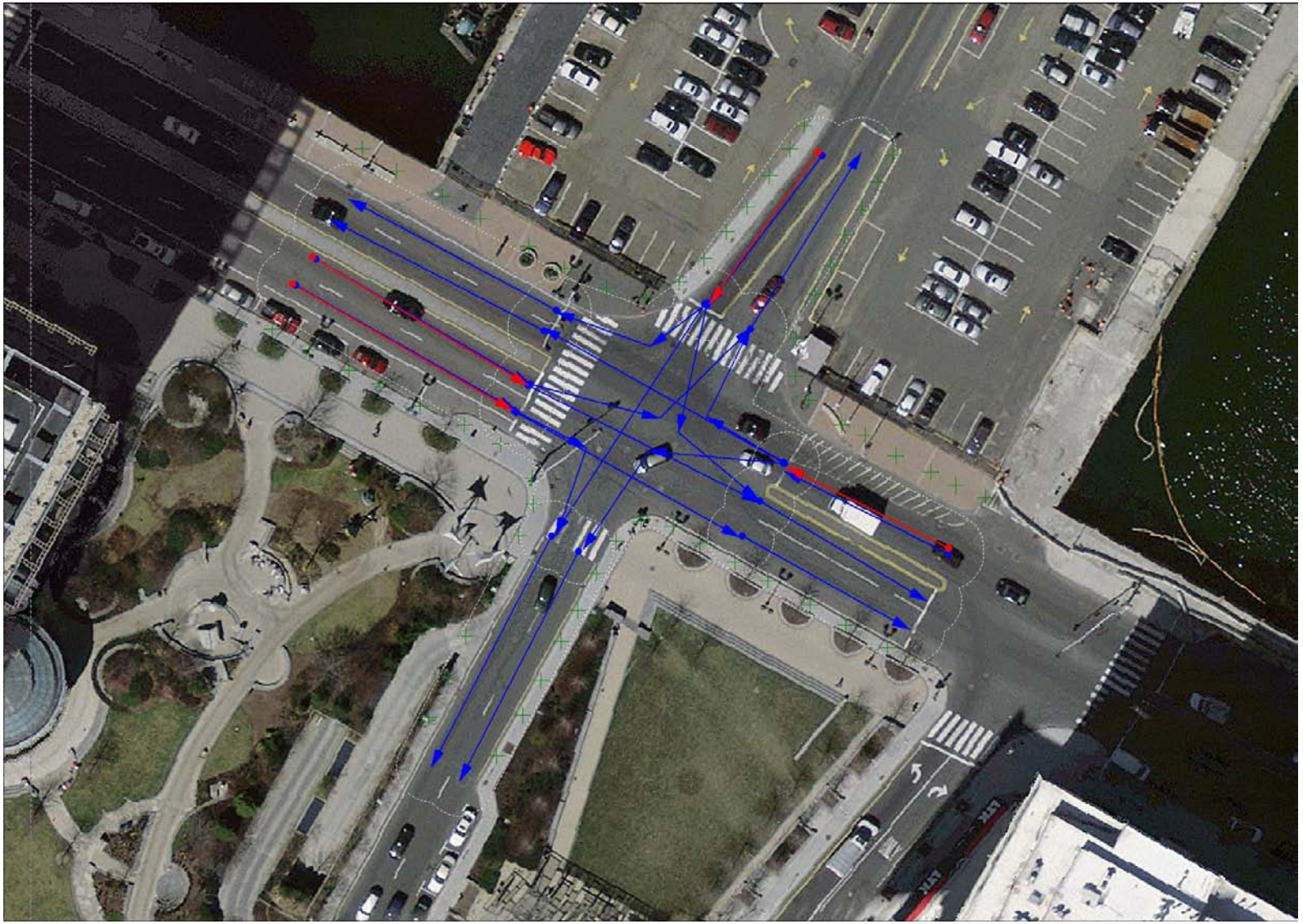
Links/Receptors for Congress Street/ Ramps D & F/ B Street

GALE INTERNATIONAL

Morgan Stanley

WS DEVELOPMENT

prepared by:
Epsilon Associates, Inc.



SEAPORT SQUARE
IN SOUTH BOSTON

Figure 4.5-8

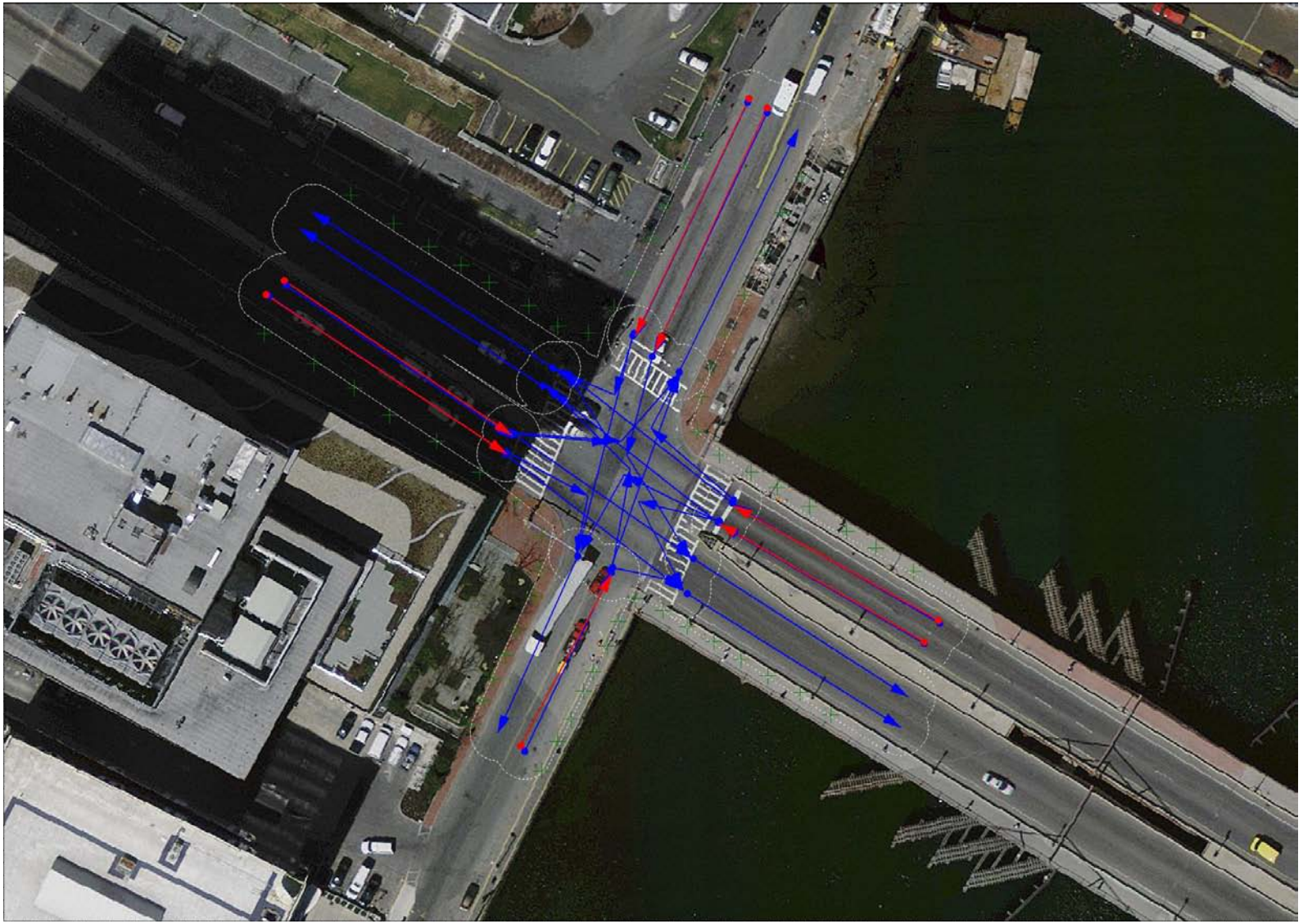
Links/Receptors for Seaport Boulevard/ Northern Avenue/ D Street/ Fish Pier Street

GALE INTERNATIONAL

Morgan Stanley

WS DEVELOPMENT

prepared by:
Epsilon Associates, Inc.



SEAPORT SQUARE
IN SOUTH BOSTON

Figure 4.5-9

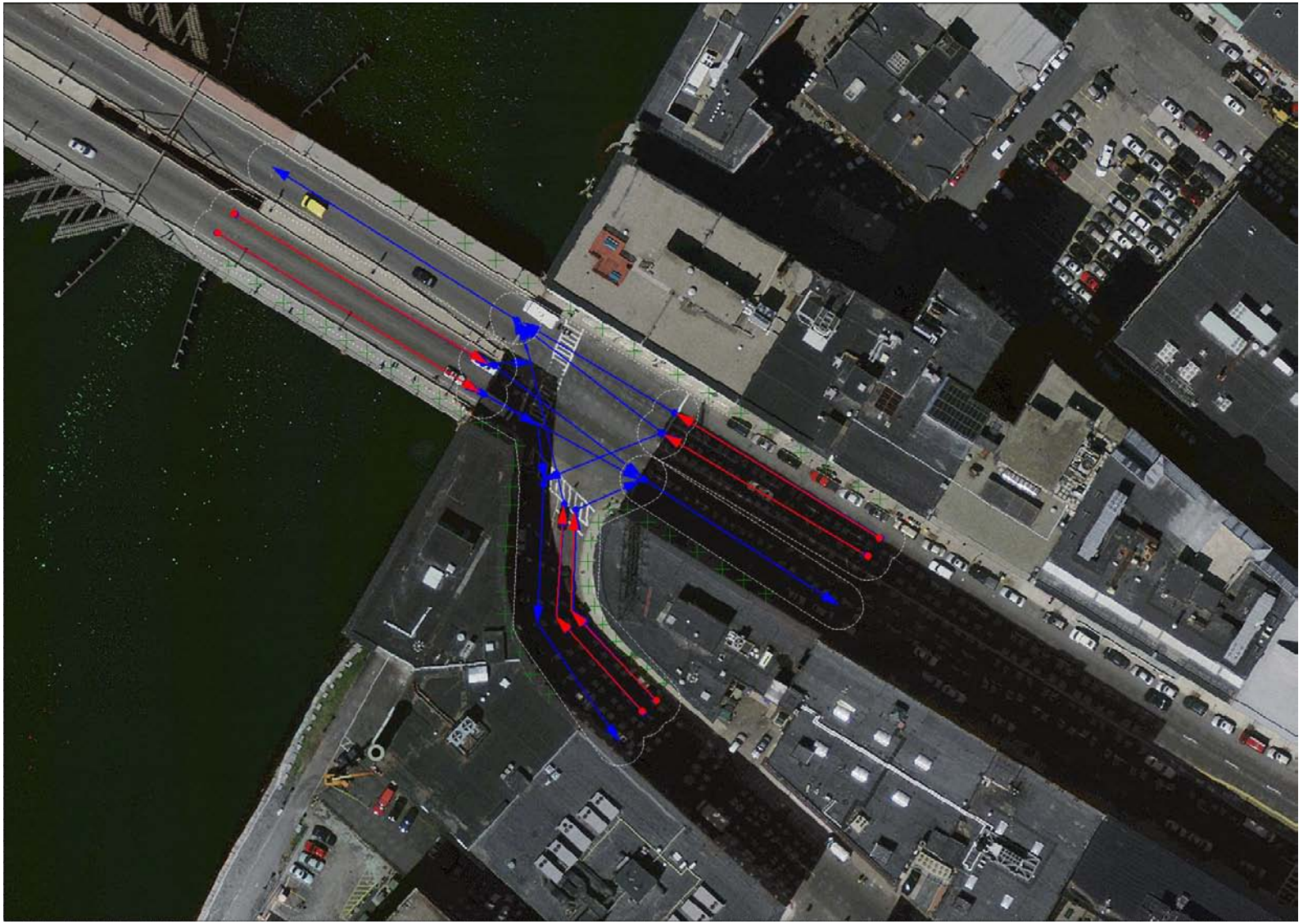
Links/Receptors for Summer Street/ Dorchester Avenue

GALE INTERNATIONAL

Morgan Stanley

WS DEVELOPMENT

prepared by:
Epsilon Associates, Inc.



0 20 40 meters

SEAPORT SQUARE
IN SOUTH BOSTON

Figure 4.5-10

Links/Receptors for Summer Street/ Melcher Street

GALE INTERNATIONAL

Morgan Stanley

WS DEVELOPMENT

prepared by:
Epsilon Associates, Inc.

The ISC-AERMOD View graphical user interface (GUI) Version 6.2, created by Lakes Environmental, was used to facilitate model setup and post-processing of data. The AERMOD model was selected for this analysis because it:

- is the required EPA model for all refined regulatory analyses for receptors within 50 km of a source;
- is a refined model for facilities with multiple sources, source types, and building-induced downwash;
- uses actual representative hourly meteorological data;
- incorporates direction-specific building parameters which can be used to predict impacts within the wake region of nearby structures;
- allows the modeling of multiple sources together to predict cumulative downwind impacts;
- provides for variable emission rates;
- provides options to select multiple averaging periods between one-hour and one year (scaling factors can be applied to adjust the one-hour impact to a peak impact less than one-hour); and
- allows the use of large Cartesian and polar receptor grids, as well as discrete receptor locations.

Regulatory default options adopted for the model include:

- *Use stack-tip downwash (except for building downwash)*. Stack-tip downwash is an adjustment of the actual stack release height for conditions when the gas exit velocity is less than 1.5 times the wind speed. For these conditions, the effective release height is reduced a bit, based on the diameter of the stack and the wind and gas exit velocity. This option applies to point sources only, such as emergency generators, cooling towers, boiler units and garage vents.

- *Use the missing data and calms processing routines*. The model treats missing meteorological data in the same way as the calms processing routine, i.e., it sets the concentration values to zero for that hour, and calculates the short term averages according to EPA's calms policy, as set forth in the Guideline. Since only one-hour averages are being used, concentrations predicted with calm or missing data would not affect model results.

The AERMOD model is able to assign sources to a rural or urban category to allow specified urban sources to use the effects of increased surface heating under stable atmospheric conditions. The urban dispersion classification was selected based on a visual

inspection of the area within a three kilometer radius of the Project Site. A population estimate of 600,000 was obtained from the U.S. Census website (www.census.gov) and is used in the AERMOD model to estimate the urban boundary layer height.

The regional meteorology in Boston is best approximated with meteorological data collected by the nearby Boston Logan International Airport in East Boston, MA. The station is located approximately 1.5 miles (2.4 km) to the east of the Project Site at an elevation of 15 feet (4.6 m) above mean sea level (amsl). This station is the closest site for which extensive meteorological data are available which are representative of similar topographic influences that affect the Project Site. Five years (2001-2005) of hourly surface data collected at the station include wind speed and direction, temperature, cloud cover and ceiling height. Upper air data from Gray, Maine was processed along with the surface data. The processed meteorological files for use in AERMOD were provided by the MassDEP. These files have been used on other AERMOD applications in the area for review by MassDEP and are presumed to be of sufficient quality for regulatory applications.

A network of 1,468 receptors was used for the refined AERMOD modeling analysis. A 625-meter by 725-meter nested grid of Cartesian receptors spaced every 25 meter and centered on the facility was used. Receptors were removed from areas where Project buildings are proposed. From this area to 200 meters beyond, receptors were spaced every 50 meters; every 100 meters; from 200 meters to 500 meters; and every 250 meters from 500 meters to two kilometers.

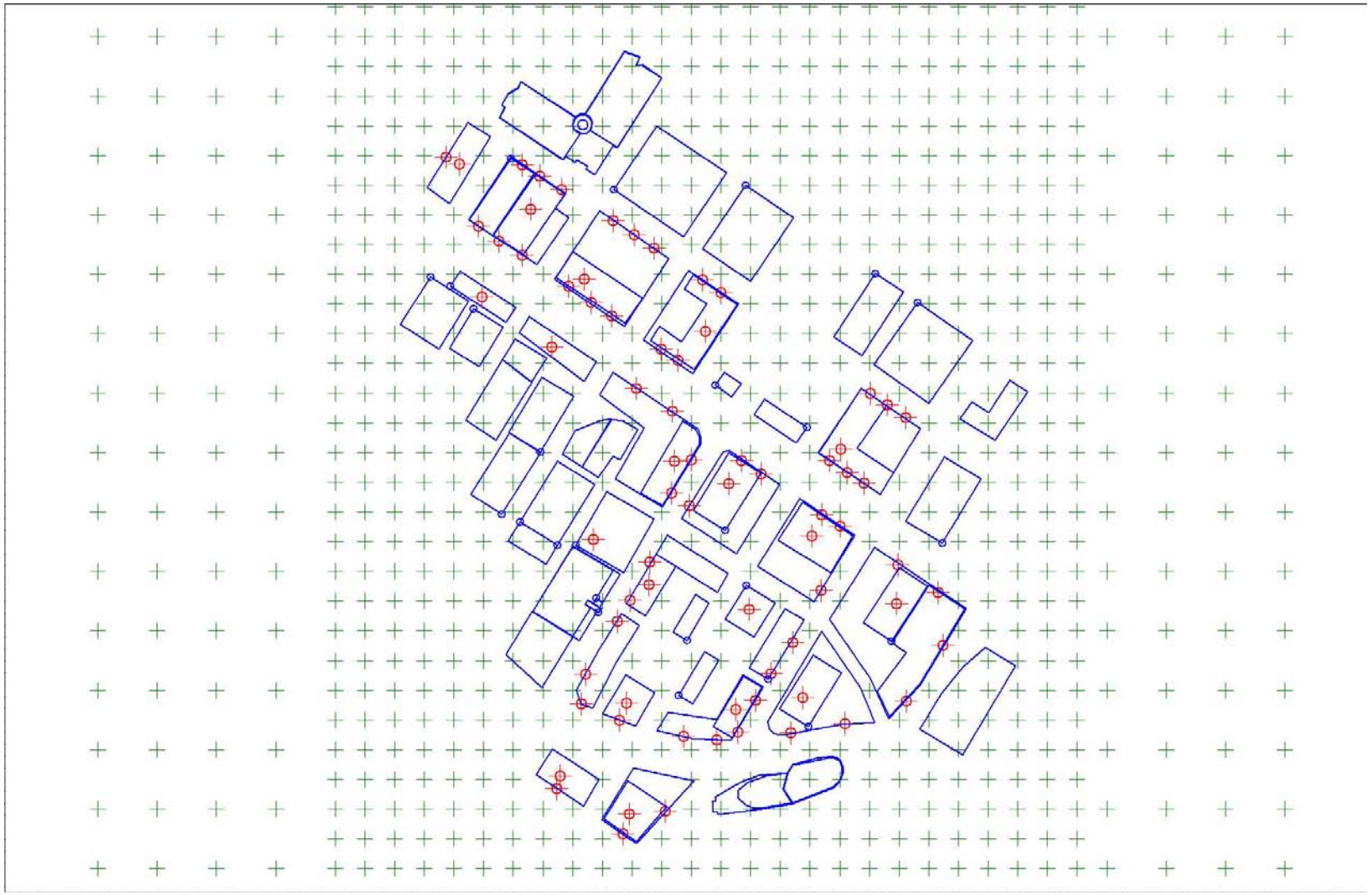
Terrain data were obtained from the U.S.G.S National Map Seamless Server (www.seamless.usgs.gov) according to guidance set forth by EPA.[7] Source, building, and receptor elevations were processed using the AERMAP processor by way of the Lakes AERMOD View interface. Figure 4.5-11 presents the source and receptor locations, as well as the buildings used in the GEP stack height/downwash analysis described below.

Stationary Sources

Parking Garage Exhaust Vents

Six underground parking garages totaling approximately 6,500 spaces are part of the Project. A one-level, 28-space garage will be located under Block A. A four-level, approximately 2,400-space garage will be located under Blocks B-G. A three-level, approximately 450-space garage will be located under Blocks K and Q. A five-level (three of which are underground) approximately 2,700-space garage will be located under Blocks L1-L6. A three-level, approximately 575-space garage will be located under Blocks M1 and

[7] U.S. EPA, AERMOD Implementation Guide, March 19, 2009.



SEAPORT SQUARE
IN SOUTH BOSTON

Figure 4.5-11

Stationary Source Modeling

GALE INTERNATIONAL

Morgan Stanley

WS DEVELOPMENT

prepared by:
Epsilon Associates, Inc.

M2. A two-level, approximately 350-space garage will be located under Blocks N and P. Carbon monoxide monitors will be installed within the garages to insure that levels of CO do not exceed health standards and will be used to control abatement ventilation when necessary.

Emissions from the parking garages were calculated using MOBILE6.2 and an estimate of the total miles traveled within the garages during the am and pm peak hours. Estimates of vehicle turnover by usage were provided by the transportation consultant. The total vehicle miles traveled (VMT) are calculated by multiplying the average distance a car would travel in the garage by the number of cars entering and leaving the garage.

For example, the largest footprint of the Blocks B-G garage is approximately 1,350 feet by 220 feet. Assuming the cars entering and exiting the garage travel approximately 1,570 feet, a total trip of 509.5 miles is traveled (1,570 feet x 1,714 cars / 5,280 feet per mile). Therefore, if a percentage of these spaces are either filled or vacated during the am or pm peak hour, approximately 2,038 miles (four levels at 509.5 vehicle-miles per level) will be driven in the Blocks B-G garage per hour. The VMT for the other garages were calculated similarly.

To provide a conservative assumption for emissions from the garages, an emission rate from MOBILE6.2 of 10 miles per hour was assumed for the Seaport Square Build conditions. The higher of the summer or winter factors were used, depending on pollutant. Additionally, emission factors were weighted such that only factors for light duty gasoline and diesel vehicle classes (MOBILE6.2 designations LDGV, LDGT, LDDV, and MCY) were used for garage emissions.

Therefore, the emission rates from the garage vents can be calculated as follows:

MOBILE6.2 emission factor in grams/mile
x garage VMT/hour
x 1 hour/3600 seconds
= grams/second

High velocity air intake louvers and the main garage entry will supply make-up air for the garages' ventilation systems. A ventilation air requirement of 1.5 cubic feet per minute per square foot of garage floor space was assumed. Since the information on the actual number, size, and location of garage vents has yet to be determined, assumptions were made such that the exhaust is released horizontally at 10 meters above ground level from a 10 foot by 10 foot square vent at a speed of 700 feet per minute (11.7 feet per second). The number of vents was assumed based on the air requirement, the size of the vents, and the air velocity. The vents were placed at various locations above each garage.

Although the garage exhaust vents would be controlled using CO monitors, the garage vents are conservatively assumed to emit at 100% for 8,760 hours per year, not accounting for daily fluctuations during off-peak hours (i.e., overnight). Detailed calculations, assumptions, and exhaust parameters are presented in Appendix C.

Heating Equipment

Current design plans are for 91 small (1.5 to 3.0 MMBtu/hr heat input) condensing boiler units to be installed on the buildings to be constructed on the 20 Blocks. These units will provide heating and cooling to the buildings. All units will be natural gas-fired and located in a mechanical area on the roofs or will exhaust through the roofs of the buildings.

The boilers will be well below the requirements of MassDEP's Environmental Results Program (ERP) since individual estimated heat inputs are well below the 10 MMBtu/hr ERP threshold. However, emissions were conservatively estimated for each boiler based on the MassDEP Boiler ERP program emission limits. Dispersion modeled impacts from the heating units were estimated from exhaust stacks 10 feet above the individual building roofs. Heating equipment is conservatively assumed to be in operation 8,760 hours/yr at full load. Detailed calculations and stack parameters are presented in Appendix C.

Since the boilers' rated capacities are below the ERP threshold of 10 MMBtu/hr, no registration with MassDEP is expected to be required.

Emergency Generators

Preliminary plans are for 19 emergency diesel generators to be installed on the roofs of the buildings to be constructed. The generators will have exhaust stacks that extend at least 10 feet above the individual building roof heights.

Typically, the generator will operate for approximately one hour each month for testing and general maintenance. The engine ERP regulation is similar to the boiler ERP in that new engines are subject to emission standards, recordkeeping, certification, and compliance with the MassDEP noise policy. Since the rated capacity of each of the diesel generators exceeds the ERP threshold of 37 kW, they will be subject to the ERP program and will each be limited to 300 hrs/yr of operation. Certification to MassDEP is required within 60 days of installation.

Emissions were estimated for the emergency generators based on typical vendor data and 300 hrs/yr of operation. Detailed calculations and stack parameters are presented in Appendix C.

Cooling Towers

Current design plans are for 28 cooling towers to be installed on the buildings to be constructed on the 20 Blocks. These units will remove the excess heat generated by the building's mechanical equipment. All units will be located on the roofs of the buildings.

Only emissions of particulate matter are assumed to be produced by the cooling tower cells. The cooling towers are assumed to operate at 100% capacity for 8,760 hours per year.

Emissions and exhaust parameters were based on typical vendor data and/or engineering judgment. Detailed calculations are presented in Appendix C.

GEP Stack Height Analysis

The Good Engineering Practice (GEP) stack height evaluation of the facility has been conducted in accordance with the EPA revised Guidelines for Determination of Good Engineering Practice Stack Height (EPA, 1985). A GEP stack is sufficiently high to avoid aerodynamic downwash effects from nearby buildings or structures. As defined by the EPA guidelines, the formula for computing GEP stack height is:

$$H_{GEP} = H_b + 1.5L$$

where H_{GEP} = GEP stack height,

H_b = Height of adjacent or nearby structures,

L = Lesser of height or maximum projected width of adjacent or nearby building (*i.e.*, the critical dimension), and nearby is within 5L of the stack from downwind (trailing edge) of the building.

The GEP formula was applied to each major structure associated with the Project. Facility grade is approximately at mean sea level. The EPA's Building Profile Input Program Prime Version (BPIP-Prime) was run to confirm the GEP height and to calculate building dimensions for use in AERMOD.

The point sources subject to building influences are the boiler stacks, garage vents, the cooling towers, and the emergency generator stacks.

The proposed boiler stacks, the cooling towers, garage vents, and emergency generator stacks are all below GEP height; therefore, building downwash effects were considered in the air quality modeling. The AERMOD model determines when and if to include downwash in its calculations. In addition, if downwash applies, the AERMOD downwash algorithm will be used to estimate concentrations in the building cavity areas.

4.5.3 Background Concentrations

To estimate background pollutant levels representative of the area, the most recent air quality monitor data reported on the EPA's AIRData website (http://www.epa.gov/air/data) were obtained for 2006 to 2008. MassDEP guidance specifies the use of the latest three years of available monitoring data from within 10 km of the Project Site.

The Clean Air Act allows for one exceedance per year of the CO and SO_2 short-term NAAQS per year. The highest second-high accounts for the one exceedance. Annual NAAQS are never to be exceeded. The 24-hour PM-10 standard is not to be exceeded more than once per year on average over three years. To attain the 24-hour PM-2.5 standard, the three-year average of the 98th percentile of 24-hour concentrations must not exceed 35 $\mu g/m^3$. For annual PM-2.5 averages, the average of the highest yearly observations was used as the background concentration.

Background concentrations were determined from the closest available monitoring stations to the proposed Project. The closest monitor, 0.8 miles away at East First Street, samples only for SO_2 and NO_2. The next closest monitor at North Street in Boston, one mile away, samples only for PM-2.5. The monitor at Harrison Avenue in Boston, 2.3 miles away, is used for the remaining pollutants (CO and PM-10). A summary of the background air quality concentrations are presented in Table 4.5-1.

For use in the microscale analysis, background concentrations of CO in ppm were required. The corresponding maximum background concentrations in ppm were 3.0 ppm for one-hour and 1.7 ppm for eight-hour CO.

Table 4.5-1 Observed Ambient Air Quality Concentrations and Selected Background Levels

Pollutant	Averaging Period	Station[6]	2006	2007	2008	Background	NAAQS
SO_2[1] ($\mu g/m^3$)	3-Hour	E1ST	65.0	202.8	78.0	202.8	1,300
	24-Hour	E1ST	31.2	39.0	36.4	39.0	365
	Annual	E1ST	10.4	15.6	10.4	15.6	80
CO [2] ($\mu g/m^3$)	1-Hour	HARR	3420	2280	1710	3240	40,000
	8-Hour	HARR	1938	1368	1026	1938	10,000
NO_2 [3] ($\mu g/m^3$)	Annual	E1ST	26.3	37.6	30.1	37.6	100
PM-10 ($\mu g/m^3$)	24-Hour	HARR	32	24	27	32	150
	Annual	HARR	16	14	14	16	50
PM-2.5 ($\mu g/m^3$)	24-Hour [4]	NST	27.4	30.3	26.7	28.1	35
	Annual [5]	NST	11.21	11.86	11.1	11.39	15

Notes: [1] SO_2 reported in ppm. Converted to $\mu g/m^3$ using factor of 1 ppm = 2600 $\mu g/m^3$.

[2] CO reported in ppm. Converted to $\mu g/m^3$ using factor of 1 ppm = 1140 $\mu g/m^3$.

[3] NO_2 reported in ppm. Converted to $\mu g/m^3$ using factor of 1 ppm = 1880 $\mu g/m^3$.

[4] Background level for 24-hour PM-2.5 is the average concentration of the 98th percentile for three years.

[5] Background level for annual PM-2.5 is the average for three years.

[6] E1ST = East First St., South Boston, MA; NST = 174 North St., Boston, MA; HARR = Harrison Ave, Boston, MA

4.5.4 Air Quality Results

4.5.4.1 Mesoscale Analysis

Results of the mesoscale analysis are presented in Table 4.5-2. The Seaport Square Build condition, when compared to the Existing conditions, shows a reduction of about 53% of NOx and 25% of VOC emissions. This is primarily due to improved vehicle technology, which translates to improved future vehicular emission rates. The results show an increase in VOC and NOx emissions of about 2-5% for the Seaport Square Build with Mitigation condition versus the Mid-term No-Build condition, due to the increase in vehicular traffic.

Mitigation Measures and Conclusions

The Proponent has identified and reviewed reasonable and feasible reduction and mitigation measures to address traffic congestion and the resulting increase in emissions associated with the Seaport Square Build scenario. Chapter 3 provides a description of the Transportation Demand Management (TDM) program that will be implemented to reduce Project-related vehicle trips. The Proponent is committed to implementing infrastructure and management improvements to minimize impact on the transportation system. These measures include alternative means of travel, rideshare programs and telecommuting and are already included in the Seaport Square Build scenario.

The proposed Seaport Square Build with Mitigation condition is described in Section 3.3.3. This condition includes further signal improvements at area intersections. Further reductions in delay can be achieved by optimizing signal phasing and/or lane configurations. Reductions in delay correlate to reductions in vehicle idle time. Since VOC emissions are highest at low engine RPM, further reductions in idle time would result in further reductions of VOC emissions. Slight decreases in NOx emissions would also be realized.

The reduction in delay times would also result in a general increase in traffic speed along roadway links. In general, emission rates of NOx decrease from idle to 30 miles per hour. Therefore any increase in speeds to approach the speed limit would result in decreases of NOx emissions. Since future changes in traffic speeds are speculative, exact reductions in emissions are not quantified.

Table 4.5-2 presents the emissions of VOC and NOx for the Seaport Square Build with Mitigation condition. The differences are due solely to the reduced intersection delay times quantified in the traffic intersection modeling. Calculation details for the mesoscale analysis are presented in Appendix C.

Table 4.5-2 Mesoscale Analysis Summary

Pollutant	VOC (lbs/day)	VOC (tons/yr)	NOx (lbs/day)	NOx (tons/yr)
2009 Existing	188.5	24	448.3	58
Mid-term No-Build	130.1	17	197.9	26
Seaport Square Build	140.8	18	211.4	27
Seaport Square Build minus Mid-term No-Build	10.8	1	13.5	2
Difference (%)	8%	8%	7%	7%
Seaport Square Build with Mitigation	132.6	17	207.2	27
Seaport Square Build with Mitigation minus Mid-term No Build	2.5	0	9.3	1
Difference (%)	2%	2%	5%	5%

In addition, any future mitigation measures not yet determined or discussed in Chapter 3 may be implemented resulting in further reductions in emissions. On a larger regional scale, it can be assumed that emissions are generally reduced by the conversion of existing parking facilities to a mixed-use development reducing or eliminating commuting trips from farther distances. Rather than trips from long-range commuters to the existing area parking lots, the area would require less vehicle use, with residents living, working, and enjoying the benefits of local amenities without the need of a vehicle trip.

Through further discussions with the BRA and BTD, it is anticipated that further mitigation measures will be implemented to alleviate traffic congestion and further reduce emissions.

4.5.4.2 Microscale Analysis

The results of the maximum one-hour predicted CO concentrations from CAL3QHC at each intersection are provided in Tables 4.5-3a-f for the Existing, Mid-term No-Build and Seaport Square Build scenarios. Eight-hour average concentrations are calculated by multiplying the maximum one-hour concentrations by a factor of 0.7.[8]

The results of the one-hour and eight-hour maximum modeled CO ground-level concentrations from CAL3QHC were added to EPA supplied background levels for comparison to the NAAQS. These values represent the highest potential concentrations at each intersection as they are predicted during the simultaneous occurrence of "defined" worst case meteorology. The highest one-hour traffic-related concentrations predicted in the area of the Project for the modeled conditions (6.20 ppm) plus background (3.0 ppm) is 9.20 ppm for the Seaport Square Build condition (at the intersection of Congress Street, Ramps D and F, and B Street). The highest eight-hour traffic-related concentration predicted

[8] U.S. EPA, Screening Procedures for Estimating the Air Quality Impact of Stationary Sources; EPA-454/R-92-019, October 1992

in the area of the Project for the modeled conditions (4.34 ppm) plus background (1.7 ppm) is 6.04 ppm for the Seaport Square Build condition. Both concentrations are well below the one-hour NAAQS of 35 ppm and the eight-hour NAAQS of 9 ppm.

When adding the high-second highest AERMOD-predicted one-hour CO concentrations from the stationary sources for the Seaport Square Build condition (8008 $\mu g/m^3$, 7.0 ppm), the one-hour modeled concentration (6.20 ppm) plus background (3.0 ppm) is 16.2 ppm. The total Seaport Square Build concentration includes the highest second-high predicted concentrations from AERMOD for the parking exhaust vents, the heating boilers, and the emergency generators. This combined value is also well below the one-hour NAAQS standard of 35 ppm.

Similarly, when adding the high-second highest AERMOD-predicted eight-hour CO concentrations from the stationary sources for the future build case (2686 $\mu g/m^3$, 2.4 ppm), the eight-hour modeled concentration (4.34 ppm) plus background (1.7 ppm) is 8.4 ppm. These values are also below the eight-hour NAAQS standard of 9.0 ppm.

This is a highly conservative estimate, since the added values are irrespective of time and space (i.e., the modeled and background concentrations occur at different times and at different locations).

It would be expected that any mitigation measures implemented to improve traffic flow at any of the modeled intersections would result in improved air quality impacts. Since there are no modeled exceedances of the NAAQS for the Seaport Square Build condition, it is inferred that there would be no exceedances of the NAAQS for the Seaport Square Build with Mitigation condition.

Because the intersections studied were the worst intersections, it is anticipated that all other intersections would meet the NAAQS.

4.5.4.3 Stationary Source Analysis

In addition to the microscale analysis, a cumulative impact analysis was also conducted for comparison to the NAAQS for SO_2, NOx, PM-10, and PM-2.5. This analysis addresses emissions from the Project's heating boilers, emergency generators, cooling towers, and the garage vents.

Worst case maximum predicted impacts from these sources were added to monitored background values obtained from the EPA AIRData website for 2006 to 2008 and compared to the NAAQS.

Table 4.5-4 presents the cumulative modeling results for the stationary sources plus monitored background values. The total impacts when combined with background are well below the NAAQS for all pollutants and averaging periods.

4.5.5 Conclusions

Using conservative estimates, the CO concentrations at the nearest receptors for impacts from the intersection, the heating boilers, and emergency generator units, plus monitored background values, are well under the CO NAAQS thresholds. In addition, maximum cumulative impacts from the heating boilers, garage vents, cooling towers, and emergency generators plus monitored background values are also well below the NAAQS thresholds for SO_2, NOx, PM-10, and PM-2.5.

Table 4.5-3a Summary of One-Hour Microscale Modeling Analysis (Existing 2009)

Intersection	Peak	CAL3QHC Modeled CO Impacts (ppm)	Monitored Background Concentration (ppm)	Total CO Impacts (ppm)	NAAQS (ppm)
1-Hour					
Seaport Boulevard / East Service Road / Old Northern Avenue	AM	2.80	3.0	5.80	35
	PM	1.70	3.0	4.70	35
Congress Street, A Street, and Thomson Place	AM	2.60	3.0	5.60	35
	PM	2.40	3.0	5.40	35
Congress Street, Off-Ramps C and I, and East Service Road	AM	2.60	3.0	5.60	35
	PM	1.50	3.0	4.50	35
Congress Street, West Service Road, and Boston Wharf Road	AM	1.30	3.0	4.30	35
	PM	1.40	3.0	4.40	35
Northern Avenue and D Street (northbound)	AM	1.00	3.0	4.00	35
	PM	0.60	3.0	3.60	35
Summer Street and D Street	AM	1.90	3.0	4.90	35
	PM	2.00	3.0	5.00	35
Congress Street, Ramps D and F, and B Street	AM	**7.30**	3.0	**10.3**	35
	PM	3.90	3.0	6.90	35
Seaport Boulevard/Northern Avenue/D Street (southbound)/Fish Pier Street	AM	1.60	3.0	4.60	35
	PM	2.30	3.0	5.30	35
Summer Street and Dorchester Avenue	AM	1.30	3.0	4.30	35
	PM	1.50	3.0	4.50	35
Summer and Melcher Streets	AM	1.60	3.0	4.60	35
	PM	1.70	3.0	4.70	35

Table 4.5-3b Summary of Eight-Hour Microscale Modeling Analysis (Existing 2009)

Intersection	Peak	CAL3QHC Modeled CO Impacts (ppm)	Monitored Background Concentration (ppm)	Total CO Impacts (ppm)	NAAQS (ppm)
8-Hour[2]					
Seaport Boulevard / East Service Road / Old Northern Avenue	AM	1.96	1.7	3.66	9
	PM	1.19	1.7	2.89	9
Congress Street, A Street, and Thomson Place	AM	1.82	1.7	3.52	9
	PM	1.68	1.7	3.38	9
Congress Street, Off-Ramps C and I, and East Service Road	AM	1.82	1.7	3.52	9
	PM	1.05	1.7	2.75	9
Congress Street, West Service Road, and Boston Wharf Road	AM	0.91	1.7	2.61	9
	PM	0.98	1.7	2.68	9
Northern Avenue and D Street (northbound)	AM	0.70	1.7	2.40	9
	PM	0.42	1.7	2.12	9
Summer Street and D Street	AM	1.33	1.7	3.03	9
	PM	1.40	1.7	3.10	9
Congress Street, Ramps D and F, and B Street	AM	**5.11**	1.7	**6.81**	9
	PM	2.73	1.7	4.43	9
Seaport Boulevard/Northern Avenue/D Street (southbound)/Fish Pier Street	AM	1.12	1.7	2.82	9
	PM	1.61	1.7	3.31	9
Summer Street and Dorchester Avenue	AM	0.91	1.7	2.61	9
	PM	1.05	1.7	2.75	9
Summer and Melcher Streets	AM	1.12	1.7	2.82	9
	PM	1.19	1.7	2.89	9

Notes:

[2] CAL3QHC eight-hour impacts were conservatively obtained by multiplying one-hour impacts by a screening factor of 0.7.

Table 4.5-3c Summary of One-Hour Microscale Modeling Analysis (Mid-Term No Build)

Intersection	Peak	CAL3QHC Modeled CO Impacts (ppm)	Monitored Background Concentration (ppm)	Total CO Impacts (ppm)	NAAQS (ppm)
1-Hour					
Seaport Boulevard / East Service Road / Old Northern Avenue	AM	1.90	3.0	4.90	35
	PM	1.40	3.0	4.40	35
Congress Street, A Street, and Thomson Place	AM	2.40	3.0	5.40	35
	PM	2.10	3.0	5.10	35
Congress Street, Off-Ramps C and I, and East Service Road	AM	1.40	3.0	4.40	35
	PM	0.90	3.0	3.90	35
Congress Street, West Service Road, and Boston Wharf Road	AM	1.20	3.0	4.20	35
	PM	1.20	3.0	4.20	35
Northern Avenue and D Street (northbound)	AM	1.10	3.0	4.10	35
	PM	1.00	3.0	4.00	35
Summer Street and D Street	AM	2.20	3.0	5.20	35
	PM	2.10	3.0	5.10	35
Congress Street, Ramps D and F, and B Street	AM	4.60	3.0	7.60	35
	PM	**4.90**	3.0	**7.90**	35
Seaport Boulevard/Northern Avenue/D Street (southbound)/Fish Pier Street	AM	1.00	3.0	4.00	35
	PM	1.40	3.0	4.40	35
Summer Street and Dorchester Avenue	AM	1.00	3.0	4.00	35
	PM	1.20	3.0	4.20	35
Summer and Melcher Streets	AM	1.70	3.0	4.70	35
	PM	2.50	3.0	5.50	35

Table 4.5-3d Summary of Eight-Hour Microscale Modeling Analysis (Mid-Term No Build)

Intersection	Peak	CAL3QHC Modeled CO Impacts (ppm)	Monitored Background Concentration (ppm)	Total CO Impacts (ppm)	NAAQS (ppm)
8-Hour[2]					
Seaport Boulevard / East Service Road / Old Northern Avenue	AM	1.33	1.7	3.03	9
	PM	0.98	1.7	2.68	9
Congress Street, A Street, and Thomson Place	AM	1.68	1.7	3.38	9
	PM	1.47	1.7	3.17	9
Congress Street, Off-Ramps C and I, and East Service Road	AM	0.98	1.7	2.68	9
	PM	0.63	1.7	2.33	9
Congress Street, West Service Road, and Boston Wharf Road	AM	0.84	1.7	2.54	9
	PM	0.84	1.7	2.54	9
Northern Avenue and D Street (northbound)	AM	0.77	1.7	2.47	9
	PM	0.70	1.7	2.40	9
Summer Street and D Street	AM	1.54	1.7	3.24	9
	PM	1.47	1.7	3.17	9
Congress Street, Ramps D and F, and B Street	AM	3.22	1.7	4.92	9
	PM	**3.43**	1.7	**5.13**	9
Seaport Boulevard/Northern Avenue/D Street (southbound)/Fish Pier Street	AM	0.70	1.7	2.40	9
	PM	0.98	1.7	2.68	9
Summer Street and Dorchester Avenue	AM	0.70	1.7	2.40	9
	PM	0.84	1.7	2.54	9
Summer and Melcher Streets	AM	1.19	1.7	2.89	9
	PM	1.75	1.7	3.45	9

Notes:

[2] CAL3QHC eight-hour impacts were conservatively obtained by multiplying one-hour impacts by a screening factor of 0.7.

Table 4.5-3e Summary of One-Hour Microscale Modeling Analysis (Seaport Square Build)

Intersection	Peak	CAL3QHC Modeled CO Impacts (ppm)	Monitored Background Concentration (ppm)	Total CO Impacts (ppm)	NAAQS (ppm)
1-Hour					
Seaport Boulevard / East Service Road / Old Northern Avenue	AM	2.30	3.0	5.30	35
	PM	2.50	3.0	5.50	35
Congress Street, A Street, and Thomson Place	AM	1.90	3.0	4.90	35
	PM	2.30	3.0	5.30	35
Congress Street, Off-Ramps C and I, and East Service Road	AM	1.40	3.0	4.40	35
	PM	1.20	3.0	4.20	35
Congress Street, West Service Road, and Boston Wharf Road	AM	1.30	3.0	4.30	35
	PM	1.50	3.0	4.50	35
Northern Avenue and D Street (northbound)	AM	1.20	3.0	4.20	35
	PM	1.20	3.0	4.20	35
Summer Street and D Street	AM	2.20	3.0	5.20	35
	PM	2.40	3.0	5.40	35
Congress Street, Ramps D and F, and B Street	AM	4.70	3.0	7.70	35
	PM	**6.20**	3.0	**9.20**	35
Seaport Boulevard/Northern Avenue/D Street (southbound)/Fish Pier Street	AM	1.30	3.0	4.30	35
	PM	1.60	3.0	4.60	35
Summer Street and Dorchester Avenue	AM	1.10	3.0	4.10	35
	PM	1.30	3.0	4.30	35
Summer and Melcher Streets	AM	1.60	3.0	4.60	35
	PM	2.20	3.0	5.20	35

Table 4.5-3f Summary of Eight-Hour Microscale Modeling Analysis (Seaport Square Build)

Intersection	Peak	CAL3QHC Modeled CO Impacts (ppm)	Monitored Background Concentration (ppm)	Total CO Impacts (ppm)	NAAQS (ppm)
8-Hour[2]					
Seaport Boulevard / East Service Road / Old Northern Avenue	AM	1.61	1.7	3.31	9
	PM	1.75	1.7	3.45	9
Congress Street, A Street, and Thomson Place	AM	1.33	1.7	3.03	9
	PM	1.61	1.7	3.31	9
Congress Street, Off-Ramps C and I, and East Service Road	AM	0.98	1.7	2.68	9
	PM	0.84	1.7	2.54	9
Congress Street, West Service Road, and Boston Wharf Road	AM	0.91	1.7	2.61	9
	PM	1.05	1.7	2.75	9
Northern Avenue and D Street (northbound)	AM	0.84	1.7	2.54	9
	PM	0.84	1.7	2.54	9
Summer Street and D Street	AM	1.54	1.7	3.24	9
	PM	1.68	1.7	3.38	9
Congress Street, Ramps D and F, and B Street	AM	3.29	1.7	4.99	9
	PM	**4.34**	1.7	**6.04**	9
Seaport Boulevard/Northern Avenue/D Street (southbound)/Fish Pier Street	AM	0.91	1.7	2.61	9
	PM	1.12	1.7	2.82	9
Summer Street and Dorchester Avenue	AM	0.77	1.7	2.47	9
	PM	0.91	1.7	2.61	9
Summer and Melcher Streets	AM	1.12	1.7	2.82	9
	PM	1.54	1.7	3.24	9

Notes:

[2] CAL3QHC eight-hour impacts were conservatively obtained by multiplying one-hour impacts by a screening factor of 0.7.

Table 4.5-4 Summary of NAAQS Stationary Source Modeling Analysis

Pollutant	Period	Stationary Source Total Modeled Concentration ($\mu g/m^3$)	Monitored Background Concentration ($\mu g/m^3$)	Total Concentration ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)
NOx	Annual High	8.7	37.6	46.3	100
SO_2	3-Hour H2H	45.5	202.8	248.3	1300
	24-Hour H2H	27.0	39.0	66.0	365
	Annual High	0.4	15.6	16.0	80
PM-10	24-Hour H2H	4.0	32	36.0	150
	Annual High	0.8	16	16.8	50
PM-2.5	24-Hour H8H	3.1	28.1	31.2	35
	Annual High	0.7	11.4	12.1	15
CO	1-Hour H2H	8008	3420	11428	40000
	8-Hour H2H	2686	1938	4624	10000
Hours of Operation Emergency Generator: 300					
Hours of Boiler Operation Heating: 8,760					

4.6 Greenhouse Gas Analysis

This section addresses greenhouse gas (GHG) emissions generated by the Project and options that may reduce those emissions, in accordance with the MEPA Greenhouse Gas Emissions Policy and Protocol (GHG Policy). The GHG Policy requires that certain projects undergoing review by the MEPA Office quantify the project's GHG emissions and identify measures to avoid, minimize, or mitigate such emissions. In addition to quantifying project-related GHG emissions, the GHG Policy also requires proponents to quantify the impact of proposed mitigation in terms of energy savings and GHG emissions.

Seaport Square is a complex project comprised of 20 city blocks with mixed uses including office, condominiums and apartments, a Chapel, hotel, educational facilities, performing arts center, and retail blended into an integrated community. The GHG model does not include the Chapel because it will be controlled by the Archdiocese and its small size limits its impact on GHG emissions. It will be developed in multiple phases over a period of several years, as discussed in Section 1.9.

To quantify achievements in energy efficiency and sustainable design, the Proponent will utilize the nationally recognized Leadership in Energy and Environmental Design (LEED) program as administered by the US Green Building Council (USGBC). LEED-New Construction (NC), LEED-Core and Shell (CS), LEED-Schools, and LEED-Neighborhood Development (ND) will all be utilized to quantify the Project's attainment of various metrics relating to sustainability and "green" design.

Organization of this Section

Although this section addresses GHG emissions, the analysis provided herein focuses on Project-related emissions of carbon dioxide (CO_2). As noted in the GHG Policy, there are other GHGs, but CO_2 is the predominant contributor to global warming, and emissions can be calculated for CO_2 with readily accessible data.

For this Project, GHG can be categorized into two groups: emissions related to activities that are stationary on the site and emissions related to transportation. Activities on the site can be further broken down into direct sources and indirect sources: direct sources include GHG emissions from fuel combustion and indirect sources include GHG emissions associated with electricity used on the site that is imported from off-site power plants via the regional electrical grid. Emissions from on-site activities are discussed in Section 4.6.1, while emissions related to transportation are discussed in Section 4.6.2. The two are combined into a summary GHG analysis in Section 4.6.3 together with a summary of mitigation commitments. Supporting technical analyses and information are presented in Appendix D.

The GHG Policy requires the Proponent to calculate and compare the GHG emissions in three cases, each of which incorporates all three of the above components:

Case 1 is the baseline from which progress in energy use and GHG emissions reductions are measured. Case 1 includes buildings complying with the Massachusetts Building Code, 7th Edition.

Offsite transportation-related emissions are modeled for the "build condition" without additional improvements proposed by the Project, developed using the standard methodology outlined in the EEA/EOT Guidelines for EIR/EIS Traffic Impact Assessment. However, as discussed in Section 4.6.2, the Proponent was not able to separate Project-related TDM from the redevelopment of this area, and so they are included in the baseline case.

Case 2 represents the proposed Project, including measures incorporated into the building shell, its mechanical, electrical and plumbing (MEP) systems, lighting design, and other factors that go above and beyond those required for code compliance. Further transportation improvements are included in Case 2.

Case 3 represents a project alternative configuration with greater GHG emissions-related mitigation related to the buildings than the proposed Project. In the analysis presented herein, this case includes additional mitigation measures that are under intense study and may be applied as further design development occurs, but cannot be committed to at this time. Case 3 includes no further transportation mitigation.

In Section 4.6.1, the stationary sources modeled in each case are described in detail, followed by a description of the building energy use modeling and GHG emissions analyses of the three cases. Results are compared by calculating both the total expected emissions of each case and the percentage difference between them.

Numerous further building design enhancements and energy-related technologies will continue to be evaluated for possible incorporation into the Project as design progresses. Some technologies have been eliminated from further consideration for some or all of the Project's buildings. These technologies, and the rationale for either deferring examination or rejecting use, follows the Cases 1-3 modeling results. Thus an examination of all potential GHG mitigation techniques applicable to the stationary sources is addressed in Section 4.6.1.

It should be noted that, with the exception of Block A, none of the Blocks in the Project have been developed past an early conceptual level of design. As the design has not been established to the extent that specific MEP/architectural systems and performance metrics have been identified, the MEPA GHG quantification process will necessarily impose certain design restrictions on individual buildings as design progresses. The Proponent is willing to commit to the implementation of certain energy efficiency technologies, but in certain cases, the ability to realistically evaluate other technologies does not exist at the current level of design. In these cases, the Proponent can only commit to or reject certain technologies at a later point in time as the design of individual Blocks gets to a level where a technical evaluation and realistic cost-benefit analysis can be made.

The Proponent is committing to a level of energy savings and emissions reductions indicated in this MEPA filing. While individual Blocks may achieve the stated emissions reductions (or energy savings) through one specific set of design mandates as described in Case 2 (Section 4.6.1.3), the actual design of individual Blocks must necessarily remain flexible. If, during the course of design of an individual Block, a specific combination of design strategies proves more advantageous from a marketing, engineering, cost, or constrained space perspective, the design of that Block may vary from what is shown in Case 2.

Section 4.6.2 is comprised of a similar approach to traffic analysis. Case 1 is a baseline. The overall development of the area, including plans by the City of Boston for optimizing traffic flow as the area grows, has been negotiated with the City in a manner that integrates the Proponents TDM plans inextricably. Therefore, although Policy guidance would place TDM measures in Case 2, it is not practical to do so in this case. Case 2, then, includes

some further measures the Proponent proposes that are directly linked to Project development. As all feasible traffic mitigation measures have been included in either the TDM plans or additional measures discussed in Case 2 of Section 4.6.2, no additional mitigation is analyzed in a Case 3.

Section 4.6.3 combines stationary and traffic sources into an overall Project case analysis, and then summarizes the Proponent's commitments to Project energy use and GHG emissions mitigation.

4.6.1 Stationary Sources

As described above, mitigation techniques, generally referred to herein as technologies, are described by one of four categories:

- Proposed as part of the Project (Case 2)
- Under study for possible inclusion, but not committed to at this time (included in Case 3)
- Under study, or to be studied at some time in the future, and
- Rejected

The Proponent has examined approximately 45 mitigation technologies for application at each of the Project's 20 Blocks. A matrix of technologies evaluated for each Block, and which category it falls into, is summarized in Table 4.6-1. This matrix of choices is indicative of the extensive and detailed efforts the Proponent is using to achieve a fully functional and sustainable neighborhood (see also Section 4.13) as well as to maximize mitigation of GHG emissions.

4.6.1.1 Case 1 – Baseline

The base case is a project that is designed to meet the 7th edition of the Massachusetts Building Code (Code). The Code incorporates the building energy provisions both ASHRAE 90.1-2007 and IECC 2006 and gives the applicant the option of which to use. In this analysis, the ASHRAE option is utilized.

When modeled, it demonstrates the energy utilization, and hence GHG emissions, of a set of buildings that meet, but do not exceed, the requirements of the Code. This is <u>not</u> the project that the Proponent proposes to build. It is merely a baseline for energy use analysis that serves as a reference point from which to demonstrate the improvements in energy use and GHG emissions of the proposed design and of other additional measures that may or may not be implemented.

The Code is a dynamic regulation and is revised periodically. In particular, whenever a revision to ASHRAE 90.1 or the IECC is published, the Code automatically incorporates them one year later. IECC 2009 was recently published and will be incorporated into the Code in 2010. ASHRAE is scheduled to be revised in 2010 and will be incorporated into the code in 2011. The Code in effect at the time the Proponent submits a building permit application for a specific building is the Code to which that building must conform. Therefore it is likely that the buildings of this Project will be subject to later, more stringent versions of the Code. At this time, however, the exact nature of any future editions of the Code is unknown. Therefore, in accordance with MEPA Office guidance, this analysis is based on the current, 7th edition of the Code, with ASHRAE option, and this version of the Code will remain the baseline case for all future energy modeling of the Project.

As will be demonstrated in later sections herein, the Project is designed to exceed the current Code by a substantial margin in many areas. If the Code becomes more restrictive in the future, the Project is unlikely to have to change in any significant way.

The basic systems of Case 1 are described in MEP Systems Concept tables in Appendix D1. The basic elements of the building shells and HVAC component efficiencies are presented in Table 4.6-1, and are compared to the same elements in the proposed design. Further detail is included in Appendix D2.

Table 4.6-1 Building Envelope and HVAC System Attributes

Model Element, applies to:	Code Model Attributes Case 1	Proposed Project Attributes Case 2
All Systems		
Lighting Power Density	Code levels by Building Area	Code levels by Building Area
Hot Water Boilers	80% Efficient Boilers	90% Efficient Boilers
Domestic Hot Water Boilers	80% Efficient Boilers	90% Efficient Boilers
Heat Recovery	None	Enthalpy Wheel (74% recovery)
Pump Motors[1]	High Efficiency	Premium Efficiency
All Envelopes		
Glass U-Value	0.35	0.28
Glass SC	0.46	0.322
Wall U-Value	0.064	0.0526
Roof U-Value	0.065	0.033
Heat Pump		
Cooling COP	3.8	4.3
Heating COP	4.2	4.7
Fan Power	0.000209 kW/cfm	0.000209 kW/cfm

Table 4.6-1 Building Envelope and HVAC System Attributes (Continued)

Model Element, applies to:	Code Model Attributes Case 1	Proposed Project Attributes Case 2
Pkgd Water Cooled VAV		
Fan Power	0.00134 kW/cfm	0.00134 kW/cfm
4-Pipe Fan Coil - Water Cooled		
Chiller COP	6.1	7.0
Water-Cooled VAV		
Chiller COP	6.1	7.0
Fan Power	0.00134 kW/cfm	0.00134 kW/cfm

Where:

U-value = measurement of heat value through a given material
SC = shading coefficient (measure of solar gain through glazing)
COP = measure of how much electricity is required to produce a given cooling effect

[1] For example, for a 25 hp motor code efficiency is high efficient at 92.4% Enclosed Motor 1800 rpm; a premium efficient 25 hp motor would be 93.6% efficient.

4.6.1.2 Case 2 – Proposed Project

Case 2 represents the proposed Project, including measures incorporated into the building and MEP systems above and beyond those required for code compliance. The proposed Project includes the following energy efficiency measures, as indicated in the matrix of sustainability options presented in Table 4.6-2. The Project is in a very early stage of design; nevertheless these measures have been committed to by the Proponent.

Building Envelope & HVAC Systems

Sustainability has been an important component of the design process for Seaport Square. The Proponent is committed to developing a highly sustainable project and a critical component of sustainability is energy use. Two prominent factors in controlling energy use are a building shell that minimizes the energy required to maintain the desired interior conditions and an HVAC system comprised of high efficiency components to maximize the efficiency with which the necessary energy is delivered.

A high efficiency building shell includes, among other components, greater insulation in the walls and roof and glazing design that combines functionality, heat rejection and high insulating properties. High efficiency HVAC systems include use of condensing boilers, high efficiency chillers, premium electric motors, and incorporating variable frequency drive (VFD) motors, above and beyond the requirements of the building code, where practical. Key building design elements that relate to the energy efficiency of the building envelopes and their HVAC systems are compared in Table 4.6-1.

Table 4.6-2 Sustainability Options Matrix

KEY: P = Proposed (Case 2) S = to be studied at later design phase, if appropriate S3 = Under study, included in Case 3 X = Rejected, not applicable or not feasible

STRATEGY	Block A	Block B	Block C	Block D	Block F1	Block F2	Block G	Block J	Block K	Block L1	Block L2	Block L3	Block L4	Block L5	Block L6	Block M1	Block M2	Block N	Block P	Block Q
High performance building envelope	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Green roof/podium areas	P	P	P	P	X	X	P	X	P	P	P	P	P	P	P	P	P	P	P	P
High-albedo / reflective roofs	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Double-skin façade	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Exterior shading devices	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Interior automatic shading devices	X	S	S	S	X	X	X	X	X	S	S	X	X	X	X	X	X	S	S	S
Low resistance crcuiting	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
High efficiency mechanical equipt.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Radiant heat - lobbies	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Under-floor air distribution	X	S3	X	X	X	X	X	X	X	S3	S3	X	X	X	X	X	X	X	X	S3
Heat recovery	P	P	P	P	X	X	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Natural ventilation[1]	P	X	P	P	X	X	X	P	X	X	X	P	P	P	P	P	P	X	X	X
Variable kitchen exhaust	P	P	P	P	X	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Room occupancy sensor	X	X	S3	S3	X	X	P	S3	P	X	X	S3	S3	S3	S3	X	S3	X	P	X
Natural lighting	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Daylight harvesting	X	P	X	X	X	X	X	X	X	P	P	X	X	X	X	X	X	P	X	P
High performance lighting	X	S3	X	X	X	X	X	X	X	S3	S3	X	X	X	X	X	X	X	X	S3
Energy management system	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Energy-Star appliances	X	X	P	P	X	X	P	P	X	X	X	P	P	P	P	X	P	X	X	X
Advanced energy efficient elevators	X	S	S	S	X	X	S	X	S	S	S	S	S	S	S	S	S	S	S	X
Solar thermal hot water generation	S3	X	S3	S3	X	X	S3	S3	S3	X	X	S3	S3	S3	S3	S3	S3	X	S3	X
Solar thermal hot water-ready	P	X	P	P	X	X	P	P	P	X	X	P	P	P	P	P	P	X	P	X
Ground source heat pumps	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Cogeneration	X	S3	S3	S3	S3	S3	S3	X	S3	S3	S3	S3	S3	S3	S3	S3	S3	S3	S3	S3
Micro-CHP	X	X	S	S	X	X	S	X	S	X	X	S	S	S	S	S	S	X	S	X
PV - roof	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Building-integrated PV	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
PV ready	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Fuel cell	X	S	X	X	X	X	S	X	S	X	S	S	X	X	X	X	X	X	X	X
Wind turbine	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Rainwater harvest, groundwater recharge[2]	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Low flow fixtures	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Drought-tolerant landscaping	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Recycling collection areas	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Enhanced building commissioning (LEED)	X	S	X	X	X	X	X	X	X	S	S	X	X	X	X	X	X	S	S	S
Low-VOC interior Finishes	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
high flyash / advanced low-cement concrete	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Construction waste recycling	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Recycled content materials	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Locally-sourced materials	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Preferential parking for fuel-efficient / carpool	X	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Bicycle parking	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Shower facilities for bicycle commuters	S	P	S	S	S	S	S	S	S	P	P	S	S	S	S	S	S	S	S	P
Access to car-sharing vehicles	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Electric vehicle charging station infrastructure	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P

[1] Natural ventilation is proposed as part of a mixed-mode ventilation strategy, combining natural and mechanical ventilation.
[2] Rainwater harvest will be used for cooling tower make-up, irrigatio

In addition to being included within the Project's LEED-ND boundary, individual Blocks will be registered with the US Green Building Council (USGBC) under the LEED rating system most appropriate to the use type of the building being constructed. Individual Blocks will target a LEED Silver rating under the LEED-NC, LEED-CS, or LEED-Schools rating systems. Most Blocks will be registered under the new LEED 2009 rating system. Block A has already been registered with the USGBC under the LEED-NC v2.2 rating system (post-EAc1 mandate for 14% energy savings). Section 4.13 provides additional detail about the various credits that individual Blocks are targeting.

Building footprints are largely constrained by the existing street grid, including the existing Seaport Boulevard, Northern Avenue, Boston Wharf Road, and East Service Road. In order to optimize floor plates for maximum construction efficiency, building façades will remain generally parallel to the existing street grid. The existing orientation of these streets constrains buildings to have the southernmost façade actually be oriented approximately 20 degrees to the west. In other words, the primary axis of the development aligns southerly facades at an angle of approximately 200 degrees (180 degrees being due South). To counteract this slight shift away from the optimal façade orientation, the design of the exterior envelope on each Block will be evaluated on a façade-by-façade basis (each side of the building) for optimal configuration of glazing areas, opaque wall area, shading devices, overhangs, screens, balconies, operable windows, etc. As only the basic characteristics of the envelope performance can be accounted for in this early evaluation stage, no additional credit has been taken in the energy modeling for overhangs, balconies, screens, or exterior shading devices.

Other components that impact energy efficiency and are included in the Project's proposed design include the following items.

Low Resistance Circuitry

Low resistance circuiting will be used throughout the Project. Low resistance circuiting uses lower wire gauges (i.e. thicker wires) than those required by the electrical code to conduct electricity. This has the effect of reducing the power lost, in the form of heat, due to the internal resistance of the wire, and decreasing air conditioning load.

Radiant Heat

It is anticipated that the ground floor lobbies of the buildings will be heated with radiant heat systems, which consist of hot water pumped through tubes imbedded in the floor slab. Because water has a higher thermal capacitance than air, it requires less energy to heat a space hydronically (with water) than with air (i.e. instead of a 30 horsepower (hp) fan forcing hot air into the space, an approximately 5 hp pump will do the same). Energy savings will accrue as this heating system will be active throughout the heating season. Radiant heat is ideally suited for large lobby type areas, as it has limited zoning capacities, so it is not proposed in other areas.

Heat Recovery

Heat recovery, in the form of an enthalpy wheel heat exchanger, will be incorporated into the building ventilation system design where possible, i.e. when there are dedicated outside air and exhaust streams, between which heat can be transferred and recovered. It is anticipated that this will be the case in the majority of the buildings. The heat exchanger recovers heat from the exhaust air and transfers it to the incoming fresh air (or vice versa in the summer), reducing the heating and cooling energy loads in the winter and summer, respectively. When operating at peak efficiencies, enthalpy heat recovery heat exchangers are capable of recovering approximately 70% of the heat which would otherwise go to waste.

Natural Ventilation

It is anticipated that the residences and condominiums will have hybrid ventilation, i.e. natural ventilation will be available to supplement mechanical ventilation when outside conditions are appropriate.

Natural ventilation as the primary ventilation mode is not appropriate due to the cold local climate conditions. Instead, natural ventilation will be available in the residential spaces, but mechanical ventilation will be available when outdoor conditions are unfavorable to natural ventilation.

Variable Kitchen Exhaust

The kitchen exhaust airflows will be reduced when the respective kitchen hoods are not in use, as determined by a sensor, or individual switches for condominiums, reducing the annual energy consumed by the exhaust fans (vs. the typical method of running the exhaust at full capacity whenever the hood is on). Variable exhausts will be used in condominium, education facility, hotel and commercial cooking facilities.

Room Occupancy HVAC/Lighting Sensors

Occupancy sensors are proposed for hotel spaces and are under consideration for apartments (see Section 4.6.1.3, Case 3). Sensors adjust the heating/cooling setpoint when rooms are unoccupied, thereby reducing the energy spent on heating/cooling unoccupied or vacant rooms. Sensors also turn off the artificial lights when a space is unoccupied.

Energy Star Appliances

Energy Star appliances utilize less energy than other models of the same appliances. Apartments and hotels will be fitted with Energy Star appliances and condominium and office tenants will be encouraged to utilize Energy Star appliances.

Low-flow Fixtures

Several features of the proposed Project will reduce water consumption, in turn reducing wastewater generation. Such reductions reduce indirect GHG emissions by reducing the MWRA's water pumping and wastewater treatment energy requirements. Only credit for low-flow fixtures has been included in the building energy modeling. Other measures are described in "Other Mitigation Measures" later in this section.

All Blocks, except for Block A, are anticipated to be registered under the LEED 2009 rating system from the US Green Building Council. One of the new pre-requisites in the LEED 2009 rating system is a mandatory 20% reduction of potable water consumption in plumbing fixtures compared to a modified EPAct baseline. Additionally, selected Seaport Square Blocks will target additional incremental potable water reductions. Reductions will be realized through the selection and installation of advanced low-flow toilets, dual-flush toilets, high-efficiency urinals, and low-flow faucets and lavatories.

Residential and hotel mixed-use Blocks will meet the LEED pre-requisite of an overall 20% reduction compared to the baseline EPAct case, and will target, but not commit to, at this time, 30% reduction. Office mixed-use and educational facility Blocks will commit to 20% reduction and will target a 30% reduction or greater.

While potable water use reduction targets will be set by use type, the targets mentioned above are for aggregate Blocks. Accordingly, the Proponent will attempt to balance the marketing restrictions of residential condominium buildings against aggressive water-savings metrics in commercial areas.

Other Mitigation Measures

Additional measures will add indirectly to GHG mitigation, though their primary purpose is to accomplish other goals. These are identified here, but because their GHG emissions reduction potentials are difficult to quantify with any reasonable accuracy and are numerically expected to be a small part of the overall mitigation, they are not included in the stationary source energy modeling reported in Section 4.6.1.4.

Green and High-albedo Roofs

The various Blocks within the Project will have green roofs and SRI-compliant roofing material. It is anticipated that 75% of non-MEP roof space will be covered with SRI-compliant roofing or green roof systems. Green roof areas will be designed to require minimal to no permanent irrigation. The primary basis of design for green roofs on podium rooftops is to mitigate the urban heat island effect, improve rooftop insulating properties, and improve stormwater peak runoff rates. Species and planting systems will be selected that allow for maximum water uptake during storm events while requiring minimal

irrigation throughout the year. As the areas of green and high-albedo roofs cannot be determined at this stage of design, no credit is taken for these technologies in the modeling in Section 4.6.1.4.

Energy Management System

Each building will be provided with Energy Management Systems (EMS) which will continuously monitor building mechanical equipment (air handlers, fans, cooling towers, chillers, boilers, etc.) control points, including airflows, water flows, energy consumption, etc. This will allow building operators to optimize building energy usage and will notify operators when equipment is not functioning as desired (and thereby wasting energy). The EMS will be capable of remote monitoring as well as monitoring from a central operator's station.

In addition, the Proponent is studying the potential use of additional metering, monitoring and billing options that will provide information at the tenant level to incentivize tenants to be efficient in energy use. Although EMS will reduce Project energy use and GHG emissions, the amount is difficult to quantify. Therefore, no credit has been taken for this in building energy modeling in Section 4.6.1.4.

Tenant Manuals

The Proponent will develop tenant manuals to provide instruction and guidance in the proper use of supplied equipment and systems, as well as suggested standards for tenant fit-out activities in core and shell spaces. This will encourage tenants to maximize the efficient use of the capabilities of the building and its components. Representative sample outlines (Table of Contents) of the Tenant Operations Manual as well as the Tenant Fit-Out Design Guidelines Manual are contained in Appendix D3.

Fundamental Commissioning of the Building Energy Systems

The Project will designate an independent and qualified commissioning agent to be responsible for establishing commissioning requirements to be incorporated into construction documents by the design team, developing and implementing a commissioning plan, verifying installation and performance of commissioned systems, and completing a summary report. The scope of commissioning will involve energy-related systems, including HVAC, lighting controls, renewable energy systems, and hot water systems. Commissioning of building systems will proceed on a Block-by-Block basis, and a separate commissioning plan will be implemented for each Block.

PV-Ready

Although photovoltaic (PV) panels for the production of electricity are not proposed at this time (see evaluation in Section 4.6.1.5), all buildings will be PV-ready. The buildings will be designed so that they are capable of supporting future PV arrays, if and when the

technology becomes more efficient and flexible. Space will be allocated and reserved for the DC to AC inverters that are required, and the electrical distribution in each building will have sufficient spare pole space to connect the future PV.

Rainwater Harvest – Groundwater Recharge, Irrigation

It is anticipated that rainwater will be harvested and stored for various uses. The uses include groundwater recharge, irrigation, and possibly cooling tower make-up, although the amount of available rainwater would not appear to contribute a significant fraction of the cooling tower water consumption. Although not included in Cases 1 or 2, feasibility of rainwater harvest and re-use will be examined on a block-by-block basis during the detailed design phase on each block.

Native/Adapted Vegetation

Seaport Square will encourage the use of drought-tolerant species in all green roof, landscape, and tree areas. The landscape design team will work with the civil team on the Project to maximize the projected stormwater benefits of the landscape design. The goal of the landscaped areas in the Project is to provide substantial functional value beyond aesthetic and visual appeal.

Green roof areas will be designed to require little to no permanent irrigation. As the primary basis of design for green roofs on podium rooftops is to mitigate the urban heat island effect, improve rooftop insulating properties, and improve stormwater peak runoff rates, the species and planting systems selected will allow for maximum water uptake during storm events while requiring minimal irrigation throughout the year. Other landscape areas planted for aesthetic/visual impact will be designed to require little to no permanent irrigation during the standard growing season. Trees in all locations throughout the Project will be provided with a greater than minimum soil volume. As shading from trees can provide a significant benefit to the pedestrian-level microclimate during the summertime, special attention will be paid to the shading capability and layout of trees near pedestrian walking paths and sidewalks, within the pedestrian gathering areas of Seaport Square Green/Seaport Hill, and along Seaport Boulevard. For Seaport Square Green and Seaport Hill turfgrass areas, the Proponent will work to identify hardy turfgrass species with reduced water demand and root structures compatible with the anticipated duty cycles of these high-traffic areas. "Establishment" irrigation and the provision of permanent irrigation will be discussed for the turfgrass areas as those Blocks begin the formal design process.

Non-potable water sources are being investigated to supplement irrigation demand in a portion of the landscape/tree areas. As designs progress, the source and use of non-potable water sources (collected rainwater, stormwater, etc.) to supplement irrigation demand will be evaluated on a Block-by-Block basis.

The reduction in potable water demand for landscaping throughout the Project can add up to substantial water savings and indirect energy savings (from treatment, pumping/delivery, etc.). However, no credit is taken in the Case 2 energy modeling for the savings realized from the anticipated reduction in potable water consumed for landscaping.

Daylight Harvesting

Daylight harvesting systems are anticipated in office lobbies and educational buildings and would consist of sensors to reduce the amount of artificial lighting when natural lighting is available; this strategy compliments natural lighting. The sensors could be photocells or schedule-based. No commitment is made to implement daylight harvesting systems in tenant office spaces at this time. Suggestions and recommendations will be made in the Tenant Fit-out Design Guide, but the Proponent does not intend to mandate the installation of daylight harvesting systems in speculative office spaces.

Recycling Areas

The Seaport Square Project will design recycling collection staging areas into all buildings included in the study. The initial metric used to meet this requirement will be the LEED 2009 rating system, which requires the provision of collection facilities for paper, cardboard, metal, glass, and plastic.

The developer will also investigate other possibilities as a part of the LEED-ND effort to set up advanced partnerships with local hazardous waste collection facilities to provide collection points for fluorescent light bulbs, batteries, electronic equipment, household chemicals, and/or paints/solvents, etc. While the details of this possible program have not been fully investigated, due diligence will be taken by the Proponent to investigate all feasible options to reduce the volume and weight of toxic/hazardous materials entering the waste stream of the buildings post-occupancy.

Regional Content Materials

Individual Seaport Square Blocks will encourage the specification of regionally-sourced materials wherever possible. Specifications will be written into Project documents requiring contractors and subcontractors to evaluate materials not only by cost, but also by distance from extraction point and manufacturing source. Pertinent submittals provided by the contractor/supplier to the construction manager or owner will be required to report regional content of materials per LEED/USGBC definitions. Concrete aggregate/cement, wood, glass/glazing products, metals, masonry, and drywall will be evaluated for comparing the cost effectiveness of locally-sourced alternatives. As part of the LEED effort on the Project, individual Blocks will target 10% regional materials content by overall construction materials cost (per LEED 2009 definitions, which excludes MEP/FF+E/Specialty Equipment and finishes from cost totals).

Recycled Content Materials

Individual Seaport Square Blocks will encourage the specification of recycled-content materials wherever possible. Specifications will be written into Project documents requiring contractors and subcontractors to evaluate materials not only by cost, but also report recycled-materials content in relevant submittals provided to the owner or construction manager (CM). Concrete aggregate/cement, wood, glass/glazing products, metals, masonry, and drywall will be evaluated for cost effectiveness of recycled-content alternatives. As part of the LEED effort on the Project, individual Blocks will target 10% recycled-content materials as a fraction of overall construction materials cost (per LEED 2009 definitions, which excludes MEP/FF+E/Specialty Equipment and finishes from cost totals).

Construction Waste Management

The Proponent will work with a master CM firm to outline, develop, and implement a comprehensive construction staging and phasing plan. Part of this plan will involve the creation of a comprehensive construction waste management plan. As development and construction of multiple Blocks may occur in parallel, possible synergies may develop between adjacent sites wherein the burden of construction debris separation can be more effectively managed at a Project, as opposed to individual site, level.

The Project is currently anticipating at least a 50% reduction in construction debris diverted to landfill (by weight) and is targeting a 75% construction waste recycling rate by Block.

4.6.1.3 Case 3 – Alternatives with Greater GHG Mitigation

This case analyzes the potential for certain additional technologies to achieve greater-than-proposed energy efficiency and, therefore, further reduced GHG emissions. The Project is in the early stages of design with only conceptual level information available at this stage. These Case 3 technologies are being evaluated for potential GHG emissions reductions. All have potential for GHG reductions, but the costs, suitability of application, and, in one case, complications raised by commercial and regulatory barriers are insufficiently developed at this time for the Proponent to commit to their use. The implementation strategies for these specific technologies will continue to be evaluated as the Project design develops.

Technologies evaluated in Case 3, as indicated in Table 4.6-1, include:

- Solar thermal hot water heaters on the roofs of Blocks containing residential spaces (apartments, condominiums and hotels).
- Under Floor Air Distribution (UFAD) in office spaces
- Room Occupancy HVAC/Lighting Sensors for apartments

- High Performance Lighting in office common areas in office buildings
- Central utilities plant (cogeneration)

Solar-Thermal Hot Water

Solar thermal hot water (STH) systems are under evaluation to provide heating for domestic hot water for the hotel and residential Blocks. The podium-level spaces are not appropriate siting locations for solar panels because the shadow effects from the adjacent/surrounding building towers within the Project and from other tall buildings located on neighboring Blocks would significantly reduce the performance from the panels. The other, as tall high-rises, have relatively small roofs compared to their occupied areas, and these small roofs will be, by necessity, crowded with rooftop equipment (i.e.; cooling towers, emergency diesel generators, ventilation fans, and elevator penthouses). This will result in a limited footprint area where panels could capture solar radiation to create hot water. Further study is required during the detailed design of these buildings to determine if enough rooftop area can be set-aside to install a panel array that could significantly contribute to the heat energy required to generate domestic hot water.

A preliminary analysis of the economics of STH is provided in Appendix D4. The potential to reduce GHG emissions for a nominal application of STH for the hotel and residential spaces is included in the Case 3 modeling presented in Section 4.6.1.4.

A basic economic feasibility analysis was done on the selected residential and hotel Blocks to illustrate the potential benefit of a STH array based on the preliminary hot water demand of each individual building.

General siting/availability guidelines state that optimum STH designs will target between 40-60% of annual hot water demand. As indicated in Appendix D4, in the column Solar Savings, this guideline is not met in any Block with a 500 sf array, and is met in only two buildings with a 3,000 sf array. As the solar resource varies throughout the year, the size of the system must be optimized to both demand as well as resource availability in order to maximize system efficiency.

The results in Appendix D4 show three distinct economic conditions: a) no economic incentives or rebates, b) federal incentives only (in the form of the 30% investment tax credit, currently available for STH systems through 2016), and c) federal incentives coupled with currently available utility rebates from NGrid, the natural gas utility for the Project. The three payback scenarios were created in part due to the long timeline of the Project. While federal incentives will remain available the longest, interim utility incentives may push the Project into the realm of financial viability in some cases. In discussions with the utility providers, however, the long-term availability of the utility incentives cannot be promised, as incentives offered to customers by utilities must be approved by the State on a yearly basis.

Only the cases with full utility and governmental incentives, and with sufficient available unshaded roof space for a large array (i.e., 3,000 sf), approach a payback period that might justify application. Without the full incentive array and adequate roof-top space availability, the investment in STH would not be justified.

As individual Blocks begin the detailed design and construction process, the available tower rooftop solar resource will be evaluated against then-available utility and state/federal rebates in order to determine whether the installation will be included in the base building construction contract. Due to the uncertain availability of rebates and incentives at the time the Project actually intends to install STH systems in Blocks, no specific commitments to installing STH systems can be made at this time.

In all relevant cases, as described in the Case 2 narrative, Blocks will be designed to be "Solar Thermal-Ready", whether or not the systems are installed at the time of initial construction. This involves making provision for pipe chase space up to the rooftop as well as making provision for future storage tank space and pump space in the Domestic Hot Water (DHW) distribution area.

Under-Floor Air Distribution

Under-Floor Air Distribution (UFAD) reduces energy consumption by extending the amount of time that the HVAC system can run in economizer cycle (i.e. using outside air to cool a space rather than mechanically cooled air) and by reducing the amount of air and the fan horsepower (and thus electrical energy) required to deliver the air. It is under study to see if it is technically and economically feasible within the architectural constraints in the office buildings. Implementation of UFAD requires a raised floor and a different configuration and layout of air handling units compared to spaces served by conventional overhead means. For these reasons it is not an applicable technology for most other building spaces.

The potential for GHG emissions reductions is described in Section 4.6.1.4.

Room Occupancy HVAC/Lighting Sensors

These devices were described in Case 2. In Case 3, their expanded use in residential (apartment and condominium) spaces is examined. These sensors are not appropriate technology for most office or retail spaces, which tend to be continuously occupied during working hours.

High-Performance Lighting

High-performance lighting is under consideration for the common spaces in the buildings; this would consist of a lighting design which would result in 90% of the Code-allowed installed lighting power density, reducing the amount of electricity consumed by the lighting system, and the corresponding energy used by the HVAC system to remove the heat generated by the lights.

Lower lighting levels are not as generally accepted by the public or retail tenants, potentially creating a marketing challenge. Lighting power density reductions will be presented in the Tenant Fit-Out Design Guide (Appendix D3) as a potential sustainable design strategy in office spaces during fit-out design and construction.

Central Utilities Plant - Cogeneration

For the PNF/ENF filing of June 2, 2008, the Proponent committed to a feasibility study,

> "*to explore the viability of various types of co-generation and central energy plant alternatives. Final determination on energy systems and distribution methods will be developed as various schemes are refined." (PNF/ENF 1.4.3.2 Public Improvements)*

Summary

Cogeneration could satisfy some of the site's power, cooling and heat needs while reducing the associated carbon-dioxide emissions. Standard grid-connected power plants operate at approximately 30 to 50% efficiency. Because cogeneration uses waste heat to provide Project heating and reduces transmission loss, it can generate power and heat at 70% or greater efficiency.

The Proponent is continuing to study the use of a cogeneration system as part of the Project. The Proponent continues to struggle with several challenges to incorporating cogeneration as part of the Project, including: siting the plant(s), first cost financing, distribution of electricity across public ways, and reconciling equipment utilization and construction schedules, as discussed below. Due to these substantial unresolved issues, the Proponent is not prepared to propose cogeneration as part of Case 2, but is examining it further as part of Case 3.

Discussion

As part of the Proponent's commitment to explore the viability of cogeneration for the Seaport Square Project, it hired RG Vanderweil Engineers, an engineering firm with extensive experience in the design of cogeneration facilities, trigeneration facilities, central energy plants, and combined heat and power (CHP) facilities, to perform a pre-concept study. The purpose of that study was to evaluate at a high level the viability of locating, permitting, and connecting a central energy plant with CHP capabilities at the Project Site. The first phase of this study was conducted in August 2008. As a result of the Notice of Project Change filed with MEPA in April 2009, a modification was made to the original pre-concept study that re-allocated land uses to reflect the proposed changes in Blocks B, C, L1, and L2. For simplicity, the term "pre-concept study" refers hereinafter to both the original and the updated study.

The CHP facility is referred to as the Seaport Square Total Energy Plant, or S^2TEP. Note that the challenges besetting feasibility of the S^2TEP did not change as a result of updating the pre-concept study. In fact, problems related to Project phasing came into sharper relief as a result of having to re-allocate assumed thermal and electrical load. The updated study is provided in Appendix D5.

The results of the pre-concept study can be divided into three primary categories: "Constraints," "Benefits," and "Challenges." Each category is described below.

- Constraints:
  - The optimal plant design should be a "thermal following" plant, meaning that its electricity-generating capacity would be sized to meet the thermal demand (heating and cooling) of the Project. The electrical generating capacity of the plant would only be able to meet a fraction of the Project's peak electrical demand. Accordingly, the Project would still have to be interconnected with existing electrical utilities running past the site.
  - It would be possible to phase installation of the S^2TEP by using two primary plant locations, one north of Seaport Boulevard and the other south of it. In this way, the S^2TEP could reach its full capacity over time and align production capacity to the Project's development schedule.
  - Access to utility lines though contiguous underground spaces would be critical for any owner/operator of the potential S^2TEP. The large underground parking areas proposed as part of the Project could facilitate the creation of accessible utility easements to distribute electricity, hot water, and chilled water from the S^2TEP to the majority of Project Blocks.
- Benefits:
  - By optimizing the generating capacity of the S^2TEP, it is possible to efficiently generate electricity and capture waste heat for heating and cooling use throughout the Project. This reduces GHG emissions Project-wide compared to a scenario where electricity is supplied from the grid and heating/cooling is generated by unrelated combustion or electrical processes.
  - The amalgamation of individual building mechanical electrical and plumbing (MEP) equipment into one or two central energy plants could be advantageous because it would reduce the total amount of MEP space and equipment required for the overall Project. If each building were to require less MEP space, then leasable space could be increased or construction cost could be reduced by keeping leasable space constant. Large, centralized MEP equipment for the Project could also decrease construction cost Project-wide by obviating

individual MEP units. Additionally, individual buildings would not require cooling towers, making rooftop structural and vibration isolation designs less complicated. Newly available rooftop space could potentially be used as an amenity for building occupants, as green roof area, or for solar PV/DHW installations.

- Under a design/build/own/operate (d/b/o/o) agreement with a third party, the capital costs associated with construction of the S²TEP could largely be avoided by the Proponent. The third party could enter into long-term power purchase agreements with the parcel owners to deliver energy to individual Blocks within the Project Site. Because third-party financing would reduce the initial cost of construction for individual buildings, and a large centralized energy plant would, in any event, be less costly than individual MEP installations at each building, the developer of each building could devote the funds to increasing efficiency of other building elements, such as envelope, HVAC terminal equipment, lighting, etc.

- Generating some electricity, heating and cooling at the Project Site through the S²TEP could come at equal or lower cost to Project occupants than power or steam from local utilities or competitive suppliers.

- Both the sustainability inherent in the S²TEP approach and cost-competitiveness of the energy it generates could increase the attractiveness of the Project to occupants or purchasers of individual buildings, spaces, or units.

♦ Challenges:

Regulatory Challenges

- Franchise rights held by the local electric distribution company prohibit other electric distribution facilities from crossing public rights-of-way. Because the Project is located wholly within NSTAR Electric's service area, the Proponent would have to reach a legal agreement with NSTAR regarding NSTAR's exclusive electric distribution rights, or receive special approval from the Department of Public Utilities.

- To distribute the electricity generated by the S²TEP property to individual Blocks, a central switching room would likely need to be installed within both S²TEP North and S²TEP South. These switching rooms would each require a primary feed from NSTAR, and all Blocks within the Project would have to be located "downstream" of that point. The centralized switching and downstream distribution to individual electric customers would require an agreement with NSTAR.

- As individual building spaces within particular Blocks of the Project come to be occupied, a legal framework must be put in place to allow individual occupants to be billed by the operator of the S²TEP for the electricity they use, but without violating existing franchise rights held by NSTAR which prevent the resale of the electricity NSTAR distributes.

- Because the S²TEP would ultimately supply energy to all the Blocks within the Project Site, the S²TEP would need to be sized to the full build-out of the Project. Project economics are likely to require the construction of either the full S²TEP North or the full S²TEP South plant before all Blocks come on-line, resulting in a net surplus of electricity, hot water, and chilled water generating capacity, at least for some periods of years. However, distributing such surplus power and utilities is problematic. If the Project were to have the ability to perform as a Net Metering facility in the interim during the Project build-out phase, the revenue generated from the sale of electricity could possibly make the overall S²TEP economically viable. Current net metering regulations sharply limit the size of cogeneration facility that can sell power back to the grid. The S²TEP could only qualify under Class I or Neighborhood Net Metering Facilities in the Green Communities Act if its generating capacity were 60kW or less, far less than the multiple MW planned for the S²TEP. Therefore, the S²TEP facility would need to become licensed as a wholesale power generator (qualifying facility), which carries its own significant costs and other complications for a real estate development.

Engineering Challenges

- Due to the anticipated phasing of the Project into multiple stages of construction, as well as the potential complications associated with crossing Seaport Boulevard and the MBTA Silver Line tunnel with primary electrical, hot water, and chilled water lines, the S²TEP would have to be bi-located into "S²TEP North" and "S²TEP South," with a total electrical generating capacity of 5-9 MW.

- Due to the minimum size of the generating equipment needed in order to make the S²TEP energetically viable upon initial start-up, the Project phasing and construction completion dates have become critically important. A large enough initial component of the total Project build-out must be brought on-line within a certain period of time to create a baseline demand for electricity, heating, and cooling. Otherwise, much of the S²TEP equipment would remain idle unless agreement could be reached with NSTAR to buy surplus electricity, or unless net metering rules were in place to allow export of the electricity from a facility of the size/capacity of the S²TEP. Market conditions will, in part, dictate construction phasing, and market conditions are not within the Proponent's control.

- The S^2TEP would require a significant allocation of basement-level area to house the required switchgear, generators, heat recovery devices, chillers, gas compressors, and equipment clearance space. Although this necessary basement area would total only slightly more than 60% of the aggregate square footage of the "non co-gen" or "traditional" MEP equipment that would be allocated to each building individually for primary heating/cooling/switchgear needs, the S^2TEP would necessarily have to be located in a *centralized* area and is expected to eliminate a significant amount of parking. Therefore, accessory parking for the Project would necessarily differ from the analysis under this Draft PIR/EIR. Any change in the proposed parking will require review by the BTD and MEPA. There are also market demand issues related to the number of parking spaces provided.

Operational Challenges

- The arrangements with individual occupants of the Project (e.g. office tenants, retailers, condominium owners, apartment renters) would have to be structured -- both physically and legally -- to allow billing based on utility consumption as metered by the S^2TEP operator. Highly complex legal agreements would likely be necessary to pro-rate capital equipment costs incurred during construction of the S^2TEP. These would vary by land use, given their different load requirements.

- Compelling all Project occupants to pay into and use the S^2TEP could preclude the separate financing and/or sale of individual Blocks from the overall Project, making financing for the overall Project infeasible.

- The Proponent has no expertise operating cogeneration systems. Therefore, a third-party operator would need to be selected and consigned to design, build, own, and operate the S^2TEP. The business negotiations with any potential third-party entity will necessarily revolve around a "guarantee of usage." Yet, current short- and medium-term economic realities make it unlikely that the Project can be developed in large concurrent phases, making it difficult to assure a third party that there will be enough building square footage on line at any given time to use up the capacity of S^2TEP North and/or S^2TEP South unless either net metering is in place and applicable or an agreement could be reached with NSTAR to buy surplus electricity,. Any third-party operator must necessarily achieve a return on investment that is acceptable to its own investors. Otherwise, the Proponent must rely on public financing for the S^2TEP.

- Available public financing is also problematic. Several different programs on the state, federal, and utility level currently provide tax credits or other financial incentives to installers of alternative and renewable energy facilities, such as solar or wind. However, there are fewer programs targeted at cogeneration

systems. Moreover, the possible ownership structure of a third-party d/b/o/o plant such as the S^2TEP may preclude the facility from receiving the full benefit of these potential credits and rebates. The financial incentives for the S^2TEP do not appear to be significant enough to provide a compelling alternative to the baseline case of contracting with the local utilities for electric and gas service to individual Blocks, with no interconnection, power sharing, or load diversification benefit.

Conclusion

Because of the attractiveness of cogeneration as described above, the Proponent continues to seek solutions to the many challenges also described. A viable business plan would have to address the primary engineering, regulatory and operational issues of existing utility cooperation/ interconnection, Project phasing, and space allocation. In addition, it would have to identify a third-party operator qualified and available to manage the design, construction, ownership, and operation of the S^2TEP.

To address these many challenges, the Proponent is continuing its discussions with various state and local regulatory entities, as well as with NSTAR. The Proponent is also in discussion with a third-party entity to move the design and feasibility work to the next level of concept development. The discussions seek to determine the optimal system design, size, orientation, capacity, utility routing, plant phasing, and operational agreement. As of the time of the filing of this Draft PIR/EIR, the Proponent cannot commit to the installation of a co-generation facility or central energy plant.

4.6.1.4 Energy Use and GHG Emissions Modeling

Direct and indirect energy uses were modeled for each of the three cases described in the previous sections. The EQUEST model, a widely recognized building energy model and one of the models suggested in the Policy, was used to estimate the building energy consumption. Inputs/outputs of cogeneration and STH systems were calculated separately and added to the summary tables as credits or debits, as appropriate.

EQUEST modeling was conducted by Vanderweil Engineers using, as a baseline (Case 1), the Massachusetts Building Code, 7th Edition, including ASHRAE 90.1-2007. While it is understood that the ASHRAE standard will be updated in 2010 and that update will be integrated into the building code in 2011 when some of the Project buildings will be constructed, there is no information as yet available describing the 2011 Code revisions.

Parameters included in the model for building envelope attributes for Cases 1 and 2 are listed in Table 4.6-2. Appendix D2 contains additional detail of the EQUEST model input for building design. EQUEST was not configured to output individual Block data; individual blocks, especially in later phases of the Project, are at too early a design stage for such analysis to be useful.

In order to analyze the energy use aspects of this large and complex project in an efficient manner, blocks were grouped into four models using program area (use type) as a grouping tool. For example, Model 1 includes buildings that are a combination of retail and office space; Model 2 contains buildings that include residential spaces such as apartments and condominiums; etc. Analysis of monthly energy use results from these four models, run for each of the Baseline and Proposed cases, are included in Appendix D.6.1.

The annual energy use was then estimated at the individual Block level by factoring the annual summaries from Models 1-4 by area, with other adjustments as necessary. Appendix D6.2 includes annual energy use summaries by Block, separately comparing Cases 1 vs. 2 and 1 vs. 3. In this Appendix, Case 3 incorporates UFAD, room sensors and high performance lighting, and STH (solar thermal hot water). The S^2TEP was added at the Project roll-up level only as it impacts all buildings in a non-uniform way, and only a preliminary evaluation of a nominal CHP system was conducted..

Case 3 was developed by applying engineering judgment to various energy end uses associated with the technologies examined. Room setback/setup control was estimated to reduce apartment and condominium area cooling energy by 8%, fan energy by 16%, and heating energy (gas usage) by 10%. Lighting upgrade in office common areas, assumed to comprise 10% of the office areas, are estimated to decrease lighting energy 10% in those spaces. UFAD applied to all office areas is estimated to reduce fan energy by 15%. STH was applied to hotel and residential buildings by assuming a 500 sf collector array on each building. The resulting annual summaries for each technology are presented in Appendix D7.

Potential benefits of the S^2TEP were calculated separately. The associated assumptions, energy use and GHG emissions calculations are presented in Appendix D7 and taken as credits or debits on separate line-items in Table 4.6-3.

Table 4.6-3 is a roll-up of the modeling to a Project level in which associated GHG emissions for the stationary sources of the Project are presented in a side-by-side comparison for Cases 1, 2 and 3. The mitigation measures included in the proposed Project, as presented in Section 4.6.1.2, show a decrease of 6,800 tons/yr of GHG emissions compared to the code-compliant Case 1, a reduction of approximately 14.8%.

The additional enhancements of Case 3, if all five technologies were implemented in the manner evaluated, would reduce GHG emissions approximately a further 5,300 tons/yr with a total decrease of 26.3% compared to Case 1. The individual technologies considered in Case 3 might yield GHG benefits as presented in Table 4.6-4, which presents the potential additional reductions in energy use and GHG emissions over Case 2. Summary tables showing the analysis of each of the sub-cases are provided in Appendix D7.

Table 4.6-3 Building Energy Use & GHG Emissions

	Code-compliant (Case 1)	Proposed (Case 2)	Case 1–>2 Differential	Potential Future (Case 3)	Case 1–>3 Differential
DIRECT (NATURAL GAS)	therms	therms		therms	
Space Heating	2,169,135	1,193,071	-45%	1,170,474	-46%
Domestic Hot Water	611,663	543,112	-11%	543,112	-17%
Solar Hot Water Credit	---	---		-34,656	
Cogen Plant Heating Credit	---	---		-1,608,147	
Cogen Plant Fuel Input	---	---		3,578,548	
Total	**2,780,798**	**1,736,183**	-38%	**3,649,331**	31%
INDIRECT (ELECTRICITY)	kWh	kWh		kWh	
Space heating	2,887,116	2,552,753	-12%	2,552,753	-12%
Space Cooling	9,383,631	7,650,963	-18%	7,537,918	-20%
Cooling Tower (Heat Rejection)	508,336	482,830	-5%	482,830	-5%
Ventilation and Fans	9,999,894	10,645,322	6%	9,702,115	-3%
Pumps & Auxilary	5,985,525	5,664,230	-5%	5,664,230	-5%
Misc. Equipment	15,609,900	15,609,900	0%	15,410,010	-1%
Area Lighting	21,682,099	21,682,099	0%	21,643,761	0%
Pkg garage lighting	7,735,781	7,735,781	0%	7,735,781	0%
Water/wastewater trtmt	440,738	385,440	-13%	385,440	-13%
Cogen Plant Power Credit	---	---		-39,420,000	
Total	**74,233,019**	**72,409,318**	-2%	**31,694,839**	-57%
GHG EMISSIONS	tons/yr	tons/yr		tons/yr	
Direct Gas-burning	16,184	10,105	-38%	21,239	31%
Indirect Imported Electricity	29,990	29,253	-2%	12,805	-57%
Total	**46,174**	**39,358**	**-14.8%**	**34,044**	**-26.3%**

CO_2 Emission Factors:

Electricity [1]	808 lb/MWh		
Gas [2]	116.4 lb/MMBtu	=	11.64 lb/therm

[1] ISO-NE 2006 Marginal Emissions Rate Analysis, Table 5.12, 2006 value
[2] Conversions, Emissions Factors, and Other Reference Data, U. S. EPA, Novenbver 2004

Case 3 Upgrades: (Refer to Section 4.6.1.3 for details)
1. 500 ft^2 solar HW collector for each building
2. Room setback control for hotels and condos
3. Lighting upgrade to office common areas
4. Underfloor air delivery for offices
5. 5 MW Cogeneration

Please note the results summarized here are based on preliminary design and are subject to change as the design of the buildings and mechanical systems becomes more definitive.

Table 4.6-4 Potential for GHG Emissions Reductions of Case 3 Technologies

Case 3 Technology	Energy Use Reduction from Case 2		GHG Emissions Reductions from Case 2	
	Natural Gas	Electricity	tpy	% of Case 2
Solar Thermal Hot Water (500 sf on residential buildings)	1.8%	0%	179	0.5%
UFAD, room sensors, and high performance lighting	1.3%	1.8%	654	1.7%
Seaport Square Total Energy Plant (5 MW)	-113%	54%	4,458	11.3%

STH, if a nominal 500 sf array were implemented on each residential building, would yield a nearly 6% decrease in natural gas use for hot water heating below Case 2, for an overall natural gas use decrease of 1.8% and a corresponding further decrease in GHG emissions of approximately 180 tpy , or 0.5% of Project GHG emissions .

UFAD, additional room sensors and high-performance lighting were analyzed collectively. Their impacts are combined in Table 4.6-4 because there are interactions between them and other systems; i.e., their individual potential is not easily determined. This combination has the potential for a further reduction below Case 2 of 1.7% of GHG emissions, or more than 650 tpy.

The S^2TEP modeled consisted of gas-fired internal combustion engine(s) generating electricity and waste heat boilers recovering the waste heat as useful thermal energy. The S^2TEP, as modeled for this GHG analysis, is sized to match the approximate base thermal load of the Project so as to run at or near full load continuously; as a result, it would generate approximately 5 MW of electrical energy. The engine's capacity factor is expected to be approximately 90% or greater, common for this type of "base-load" facility. Waste heat is recovered at 80% efficiency and it is assumed that 90% is actually utilized, allowing for some variation in operating conditions. The thermal energy is used for space heating, domestic hot water production, or for driving absorption chillers to provide chilled water for space cooling. Absorption chilling is not currently included in the proposed Project design and EQUEST modeling, but is a potential option should S^2TEP development proceed.

The size of the plant has been kept at the lower range of the potential sizing/output since a detailed load profile analysis, quantifying the heating, cooling and power requirements of the Project, must be done to finalize the plant sizing. If the barriers identified in Section 4.1.6.3 can be overcome, more detailed engineering analysis will need to be performed during the "economic analysis" phase to optimize plant size, thermal output utilization, and electrical utilization.

The S^2TEP, as modeled for this MEPA GHG exercise, has the potential to reduce GHG emissions a further 11%, or almost 4,500 tpy, from the proposed Project (Case 2). The increase in emissions due to the gas utilization of the cogeneration plant are more than offset by the emissions reduction due to the more than 50% reduction in imported electricity from the relatively GHG-inefficient power grid. Other configurations that may be developed from further Project design and S^2TEP optimization may increase or decrease this potential.

The basis for this analysis is presented in Appendix D7. Although an overall efficiency of 83% is calculated for the S^2TEP, this simplified analysis may overstate the efficiency a few percentage points as diurnal, weekly, and seasonal load variations, which have not been determined at this preliminary stage of Project development, have not been considered. Nevertheless, this analysis demonstrates the significant GHG potential of a CHP system.

4.6.1.5 Other Mitigative Measures

In addition to the mitigation measures proposed in Case 2 and evaluated in Case 3, the Proponent also examined a large number of additional technologies. Some were rejected for technical, economic or other reasons. Others may have some potential, but economics are not currently favorable, the technology is just emerging, building design is insufficiently developed to evaluate technology application, or some other reasons exist for postponing further examination of them at this stage of Project development.

Wind Turbines

The Project has done a preliminary study into the feasibility of installing site-located wind turbines. Two primary types of turbines were investigated in this study: small "urban" turbines of 10 kW or less, and larger "utility scale" turbines at greater than 50 kW.

Large Turbines: Utility-scale turbines are often sited in low-development density areas where a consistent wind resource, unaffected by the built environment, maximizes the payback rate for the installed equipment. Siting facilities in low density areas minimizes wind turbulence, a major contributor to reduced performance and longevity of large-scale wind turbines. The City of Boston and surrounding areas have several cases of urban/ suburban installation of larger turbines. Among those cases are the IBEW turbine adjacent to the Southeast Expressway in Dorchester, MA, the Forbes Park complex in Chelsea, MA, and the multiple wind turbines in Hull, MA. These projects are sited in relatively open areas without tall buildings in close proximity.

The Seaport Square Project will contain a dense arrangement of buildings ranging in height from 100 to 250 feet. For optimization of available wind resource, wind turbines should be located with a minimum separation distance of five times the adjacent building height. This negates the siting of any large utility wind turbines at lower levels within the Project boundary.

Additionally, the height on structures within the Seaport Square Project is constrained by the FAA flight cone radiating from the end of Runway 27 westward towards the Project Site. The FAA has placed a hard-deck restriction of +260 ft to +274 ft MSL for various Blocks within the Project area. The FAA has defined this restriction in such a way that no permanent objects can be located above those elevations (within the flight cone). This FAA height restriction prevents the ability of the Project to install any utility-scale wind turbines at a sufficient height to avoid the building-induced turbulence previously mentioned. The placement of a large utility-scale wind turbine was deemed "not viable" by the Proponent because of these two primary restrictions alone.

To confirm the Proponent's research and conversation, a regionally-based manufacturer/ installer of 100 kW turbines was contacted with regards to the proposed Project Site. After a brief conversation, consensus was reached that the Seaport Square site is not a viable candidate for 100+ kW turbine installation, given the current and future conditions of the site.

Small Turbines: Due to the urban infill nature of the Project and its proximity to surrounding buildings of variable height (the Project Site abuts existing buildings with heights ranging from 80-250 feet), the available wind resource will be highly variable and turbulent. Smaller "urban" or "parapet" turbines have been specifically engineered to better handle the turbulent nature of the wind resource at building rooftop level in urban settings. These smaller turbine units typically start at 1kW in size, but can include larger 2, 5, and 10 kW units. Initial cost investigations show an installed cost over $5,000 per installed kW, with annual output of the machines being very dependent on the surrounding built environment. Given the cost associated with installation, structural reinforcement, and the lack of ability to accurately predict available wind resource (and therefore payback of the equipment), the decision was made to not pursue any model of small-scale "urban wind" or "parapet wind" systems in the Seaport Square Project at this time.

Photovoltaics - Rooftop

PV panel installation can only potentially occur on rooftops of tower buildings within the Project. The podium-level spaces are not appropriate siting locations for PV panels because the shadow effects from the adjacent/surrounding building towers within the Project and from other tall buildings located on neighboring Blocks would significantly reduce the performance from PV panels. This condition is the same for both solar PV considerations as well as solar thermal hot water system considerations.

Podium areas on buildings will be covered with a substantial percentage of vegetated roofs or will be used as pedestrian-accessible spaces. These design goals for podium-level rooftop areas will necessitate that the majority of MEP equipment and emergency generators be located on tower building rooftops. Given the tower structure of many of the proposed buildings, the cooling towers and associated MEP equipment and emergency generators will occupy a significant proportion of the tower rooftop area.

Based on prior experience with tower-type buildings, the area for solar PV capacity that can be located within the roof areas not covered with MEP equipment, emergency generators, and elevator penthouses, is expected to be small. Furthermore, because of FAA height restrictions, cooling towers will generally be required to be located towards the south side of the roofs (the side furthest from Logan Airport), further restricting the amount of unshaded south-facing rooftop area available to PV panels. Any PV installation would be expected to only be able to offset a very small fraction of yearly electrical demand for the Project.

The actual degree to which rooftop equipment might be located so as to provide unshaded space for PV panels requires considerable design development and cannot be determined at this stage of project design. Hence, from a technical viewpoint, the capability to utilize rooftop PV must be left to later stages of design.

A preliminary analysis of the economics of rooftop PV is presented in Appendix D8. This economic analysis was prepared in a similar fashion to the STH analysis. Two areas of solar PV array footprints were evaluated: a 500 sf footprint and a 3,000 sf footprint. As with the STH analysis, the multiple-scale sensitivity analyses were done to see what sort of economies of scale could be created by maximizing available rooftop space. Currently-available technologies were used to run the analyses on installed cost, payback, power density, etc.

For solar PV, there are several different rebates and incentives that can potentially reduce installed system cost. Two cases were evaluated for consideration: a) no rebates or incentives and b) all current rebates and incentives on both the Federal and State levels, including REC sell-back (no utility incentives for solar PV are currently available from NSTAR, the Project's electric utility provider). The analysis also assumed that financing of the installation would be in cash, not part of overall construction financing. Scenario "a" reflects a "worst case" payback scheme, and scenario "b" reflects a "best case" scenario by taking advantage of all known incentives and rebates.

In summary, the initial economic analysis shows that solar PV systems may be feasible on selected building rooftops. Three considerations preclude the Project from committing to any installed PV capacity at this stage in the permitting/design process.

1. The design of the rooftops has not been finalized – in fact, design has not even begun yet on the majority of building rooftops. Accordingly, the available amount of unshaded roof space is still unknown, and so the footprint/installed capacity of any potential arrays cannot currently be calculated.

2. The ownership and financing structure of individual Blocks is also not yet finalized. While third-party financing options do currently exist to offset capital expenditures for PV systems during construction, those companies have certain size restrictions on installed capacity and can only commit to a project if the design is at a stage where installed capacity and generated output can reasonably be determined.

Additionally, the ownership structure of the building and the financing entity for construction will affect a project's ability to take advantage of the 30% Federal investment tax credit. As this incentive is a primary driver of system financial viability and greatly affects the payback period of the system (as shown in Appendix D8), the ability to apply this tax credit to a relevant entity is of primary importance when evaluating initial economic considerations.

3. The incentives available through the Commonwealth Solar program are currently only funded through FY 2012. In addition, the available funds for this program are reportedly being used faster than anticipated, and may be used up by 2011. Additional funding to continue the program is uncertain. A limited number of Blocks are anticipated to be in the construction phase when the Commonwealth Solar program ends. The majority of Seaport Square buildings will not be placed into service until FY2013 or later. The additional rebate of between $3.23-$3.30/Watt provided by the Commonwealth Solar program makes an enormous difference in Project payback performance. As this rebate represents approximately 40% of installed cost of the Project, the ability of the Project to take advantage of this rebate is a critical consideration.

The Proponent will evaluate the available rooftop areas, financing opportunities, and incentives/rebates for individual Blocks as design on those individual Blocks progresses. No commitments are made at this time to any specific amount of installed PV capacity by Block or for the Project as a whole.

As indicated in Section 4.6.1.2, Case 2, all Seaport Square buildings will be constructed to be PV-ready so that, if technology and/or economics change in the future, PV can be added with minimal need for base building alteration.

Photovoltaics - Building-Integrated

Building-integrated photovoltaic (BIPV) arrays are solar PV collectors integrated into the vertical façade of a building. This technology currently involves a much higher capital cost per installed kW, thus higher energy cost compared to roof-top PV panels.

Areas of application are more limited for BIPV installations than for rooftop-mounted PV arrays. In comparable BIPV installations, the south-facing façade of MEP/elevator penthouses have been covered partially or fully in BIPV panels. This necessitates that the south-facing penthouse façade remains unobstructed by shadows from surrounding buildings and/or adjacent rooftop equipment. In other applications, BIPV panels have been integrated into the upper levels of building façades in place of spandrel panels in curtainwall designs. This scenario has the ability to offset some of the cost of the BIPV fabrication because the BIPV panels are replacing a component of the building façade, and are not additional stand-alone objects.

As with the solar PV and solar thermal hot water considerations, the rooftop and envelope design on individual Blocks has not yet been developed to the point where this technology can be adequately evaluated.

Provision will be made for the BIPV-ready façades on all curtainwall buildings with the potential for south-facing façade areas not anticipated to be blocked or shadowed by current or planned buildings. Chases and conduit space will be reserved for potential future installation of BIPV in the two primary areas described above. For rooftop MEP/elevator penthouse applications, the chase area can be coincident with any reserved chase space set aside for rooftop-mounted solar PV arrays. Inverter space will be reserved in electrical rooms to facilitate any potential future installation of this technology.

Ground-Source Heat Pumps (GSHP)

GSHPs take advantage of the relatively constant temperature and infinite mass of the ground to seasonally either extract or discharge heat in an efficient thermodynamic cycle. GSHP systems are of two types. An open loop system draws in and returns groundwater from one or more open wells. A closed loop system keeps the working fluid in a closed circuit of pipes, relying on heat transfer through the pipe walls to or from the ground.

GSHP systems have been evaluated and have been rejected for use in the Project. GSHP systems are not deemed be technically feasible for the following reasons:

- a GSHP system would have to be prohibitively large in order to satisfy the heating and cooling needs of the large buildings. Tall buildings require a large amount of cooling/heating relative to their footprint. This implies that the amount of land area required to be dedicated to a well field to obtain the requisite heat transfer surface area, in the forms of well casing or buried tubes, would be greater than the available property area, and

- Open-systems (which circulate groundwater through a heat exchanger to provide heating and cooling) would likely be fouled by the salt or brackish water which has likely infiltrated the Project Site; this would degrade heating and cooling capacity over time.

- Closed-loop systems are not feasible as they require even more land area than open loop systems and there isn't enough site area available in comparison to the amount of occupied space to allow for the Project heating and cooling needs to be provided for with this system.

Although a smaller GSHP system might be used to supplement a normal heating and cooling system, the added complexity and costs of an integrated dual system for a fraction of the Block's demands is not deemed justifiable.

Micro-CHP

Small combined heat and power systems (micro-CHP) are small integrated cogeneration systems installed on a building-by-building basis, rather than in a central plant (which serves all the buildings). Since the S^2TEP is being examined in detail, and would have higher performance and higher utilization than a series of individual micro-CHP units, micro-CHP would be redundant. These may be examined for hotel and residential spaces in the future if the S^2TEP is determined to not be viable.

Micro-CHP systems generate electricity, hot water or steam, and chilled water in an integrated package. They are available in a variety of modular sizes and configurations. A micro-CHP may utilize a small combustion turbine or a gas-fired internal combustion engine as the prime mover, integrated with electrical generation, emissions controls, heat recovery systems and absorbtion or hybrid absorbtion/electric chillers. They are complex, expensive systems that must be custom-fit to an individual building's needs to maximize efficiency. Furthermore, they are significant sources of noise and vibration, requiring an additional layer of engineering of the spaces to mitigate unwanted consequences.

Micro-CHP requires more detailed building design information than is currently available. It will be examined further for application to office and large hotel buildings if the S^2TEP proves to be infeasible, but even then will require a later stage of individual building design to establish its economic practicability.

Fuel Cells

Fuel cells use methane (natural gas) in an electro-chemical process operating at low temperature to generate electricity. High-grade and/or low-grade waste heat recovery makes these units into a combined heat and power (CHP) technology.

Although fuel cells have been utilized in very limited applications for continuous power generation, they are very expensive. An earlier investigation identified costs in excess of $5,000/kW. A substantial subsidy program would be necessary to make fuel cells economically viable and competitive with existing "traditional" natural gas-fired combustion technology.

Utilization of the waste heat during summer months presents an additional system design challenge. The CHP aspect of the fuel cell requires a consistent need for either heating, domestic hot water production or cooling. Fuel cells have been implemented in grocery store and hotel properties due to their consistent demand for electricity and their ability to effectively use the low-grade waste heat generated. For economic considerations of this technology, the demand profile of a building (based on use type and tenant requirements) must be known to a much greater detail than is currently available on individual Blocks.

While the hotel Blocks may be able to use the power and heat generated to maximum efficiency, the primary driver for implementation of this technology remains the economic cost barrier compared to competitive power/heating sources.

United Technologies is a leader in the design and manufacturing of large-scale stationary fuel cell units. The Proponent has an existing relationship with United Technologies and will evaluate the design parameters and electrical/heating requirements on individual Blocks as design progresses. Additionally, the available incentives and rebates for installation of fuel cell technologies will be evaluated during individual Block design to determine whether Project economics support the design and installation of any fuel cell technologies.

Enhanced LEED Building Commissioning

Most Blocks within the Seaport Square Project will be pursuing LEED certification on a Block-by-Block basis under the LEED 2009 rating system. As part of the LEED certification process, certain Blocks will engage in the "Enhanced" LEED commissioning option. This option begins the commissioning process earlier in the design stage, and also includes a post-occupancy follow-up visit to ensure that building systems have been operating properly in both the heating and cooling season. This credit will be targeted for achievement in office, and educational facility Blocks. It will be evaluated for residential and hotel mixed-use Blocks and all other Blocks during the early design stages of the individual Blocks. Advanced Energy Efficient Elevators

The Seaport Square Project will include 23 buildings with over 60 elevators. The energy consumption of the elevator systems is a component of the base building electrical load, but does not necessarily constitute a significant proportion of overall building energy consumption. However, given the comprehensive approach to energy savings being implemented in the Seaport Square Project, a preliminary analysis was done to evaluate the potential for electricity savings through the use of advanced belt-drive elevators with regenerative braking technologies. Manufacturer websites claim savings of up to 75% compared to traditional geared elevator systems. If traditional elevators are duty-rated at 10-15kW, and are in use the equivalent of several hours per day, the potential for electricity savings when aggregated across a large project is significant.

The Seaport Square Project has over 60 elevators in buildings over 100 feet tall that could potentially utilize this advanced technology. Assuming that 2/3 of the tower elevators are in a residential or hotel setting and 1/3 are in an office setting, an aggregated use of two hours per day at 10 kW operating load could lead to electrical consumption of nearly 400,000 kWh per year. Assuming advanced elevators might reduce or offset building electricity consumption due to elevator use by at least 50%, then indirect GHG emissions could be reduced by at least 80 tons per year.

The Proponent will evaluate the installation of these advanced elevators during the detailed design phases of the Project on a Block-by-Block basis.

Enhanced Refrigerant Management

Refrigerants, typically various compounds classified as hydrofluorocarbons (HFCs), are greenhouse gases of stronger effect than CO_2. Releases of HFC, however, are due to leaks or equipment failure and are not routine emissions. Nevertheless, use of low-CO_2-equivalent HFCs is beneficial, providing the functionality of the refrigeration equipment is maintained.

Individual Blocks will evaluate which refrigerants are designed into each Block's HVAC and refrigeration components, as well as fire suppression systems. Inclusion of the most appropriate refrigerants with a reduced contribution to ozone depletion and reduced GHG-equivalent concentrations will be evaluated during detailed design based on the specific mechanical systems selected for inclusion in the individual Blocks. It is anticipated that all Blocks will be able to achieve this LEED credit through the appropriate selection of refrigerants and efficient refrigeration systems.

High Flyash-content Concrete / High-performance Concrete

High flyash concrete or high performance concrete are concrete mixtures that utilize less Portland cement than conventional concrete without sacrificing the structural properties for which concrete is used. The manufacturing of Portland cement is a high-energy process that generates considerable amounts of GHG. Therefore, reduced use of cement in the Project's concrete reduces the embodied energy of the concrete and its associated indirect GHG emissions.

The Proponent is currently investigating various alternatives to lower the embodied energy of each ton of cast-in-place concrete installed on site. As the Project Site is anticipated to contain hundreds of thousands of cubic yards of concrete, there are substantial GHG savings to be had by optimizing the concrete production process and/or replacing cement with alternative cementitious materials. The Proponent is investigating the incorporation of a percentage of flyash into certain concrete mixes to reduce cement content per cubic yard placed. Additionally, the Proponent has been in talks with a firm that provides process optimization of concrete mixes at batch plants, and is working with that firm to determine the potential for carbon emission reductions of certain concrete mixes created in the greater Boston area. Investigation is ongoing, and the Proponent's relationship with the batching optimization firm is still in the formative stages.

The implementation of the optimization process on concrete mixes could be applied across a majority of cast-in-place concrete for the entire Seaport Square Project. The process has been shown to reduce embodied carbon emissions of each ton of cast-in-place concrete by up to 40% in other markets.

4.6.2 Mobile Source Emissions

In accordance with the MEPA GHG Policy, GHG emissions within the mesoscale study area were estimated (see Section 4.5.4.1 for a discussion of the mesoscale analysis). For this study, the EPA's MOBILE6.2 computer program was used to estimate motor vehicle emission factors of GHG on the roadway network. Conservatively, emission factors derived from MOBILE6.2 for GHG are based on the worst case of either wintertime or summertime conditions. Using vehicle count data, the mileage between intersections, and the emission factors, per day and per year emission estimates for moving vehicles along roadway links were calculated. In addition, intersection delay data were used to estimate emissions from idling vehicles. MOBILE6.2 outputs and the mobile source GHG calculations are provided in Appendix C. Peak hour traffic volumes were provided by the transportation consultant and extrapolated to average daily traffic (ADT) volumes using a 10% K-factor. Factors were also used to adjust timescales. Refer to Section 4.5 for details on the MOBILE6.2 program, and the mesoscale methodology also used in this GHG emissions analysis.

Case 1 Case 1 is intended to represent the difference between the No-Build case and the Build case without proponent-proposed mitigation; i.e., the traffic associated with the addition of the Project to the area. However, due to development projects in the Seaport area as well as new infrastructure, such as access ramps, the City of Boston plans signal optimization efforts in the Seaport area. The effect of this optimization is included in the Build case.

The Transportation Demand Management program described in Chapter 3 is also included in the Build case. Even though much of this program is the Proponent's mitigation plan, it is so integral to the Project that it was not deemed feasible to extract its influence to account for it totally in Case 2. Thus Case 1 represents a heavily mitigated case rather then a true Build-without-mitigation case. The differences between Case 1 and Case 2 would be greater if the TDM was not assumed in Case 1.

Case 2 Case 2 represents the Build condition with additional mitigation as proposed by the Proponent (minus the No-Build condition). These mitigation features include:

- Lane realignment and signal re-optimization, as described in Chapter 3, Section 3.1.3

Case 3 As the Proponent is adding mitigation measures, as feasible, to the proposed Project (Case 2), no additional mitigation is available for inclusion in Case 3.

Table 4.6-5 Transportation Related GHG Emissions

	Case 1	Case 2	Case 3
	Build - No Build	Build with Mitigation - No Build	N/A
Net VMT, miles/day	10,515	10,515	N/A
Roadway GHG, tpy	1,703	1,703	N/A
Net Delay, hrs/day	508	-373	N/A
Intersection GHG, tpy	206	-151	N/A
Net GHG Emissions, tpy	1,908	1,552	N/A
Percent reduction	---	19%	N/A

Table 4.6-5 presents the results of the transportation GHG emissions analysis. Since there are no net increases in vehicle volumes, no change in speeds, and no physical changes to the link lengths, emissions from moving vehicles remains unchanged from Case 1 to Case 2. However, with expected signal optimization, delay times at intersections are reduced from an average of 49.2 to 36.2 seconds for am peak and 49.6 to 44.3 seconds for pm peak between the No-Build and Build with Mitigation cases. At some intersections, reductions in delay time as much as 50 seconds per vehicle are realized. Given the large number of vehicles, improved intersection signalization (i.e., reduction in delay) results in significant reductions of GHG emissions from reduced idling times. As presented above, the proposed transportation mitigation program (Case 2) results in a 19% reduction in GHG emissions (356 tpy) compared to Case 1.

4.6.3 Summary and Mitigation Commitments

Table 4.6-6 presents the combined stationary source and transportation GHG emissions profiles of the three cases. As transportation indirect emissions play a small role in comparison to stationary source emissions, the reduction percentages for Cases 2 and 3 are very nearly the same as for stationary sources alone, as presented in Table 4.3-4.

Table 4.6-6 Project GHG Emissions Summary (tpy)

	Case 1 Baseline	Case 2 Proposed Project	Potential Future (Case 3)
Direct GHG Emissions (Natural Gas)	16,184	10,105	21,239
Indirect GHG Emissions (Electricity)	29,990	29,253	12,805
Indirect GHG Emissions (Transportation)	1,908	1,552	1,552
	48,082	40,910	35,596
Reductions from Case 1		14.9%	26.0%

The Proponent's commitments to mitigate Project GHG emissions from the stationary sources are extensive, as indicated in Table 4.6-2. Overall, the Project is expected to achieve a reduction in GHG emissions from the baseline case of almost 15%. Numerous additional mitigation steps have not been quantified, primarily because the degree of accuracy or the reliability of the quantification method is not high or is uncertain.

The Proponent is committed to the following design elements for the Project:

- High performance building envelope as indicated in Table 4.6-1
- High efficiency mechanical equipment, as indicated in Table 4.6-1
- Green roof/podium areas in selected locations and high-albedo/reflective roofs in a majority of other non-MEP/skylight areas.
- Low resistance circuiting
- Radiant heat in ground-floor lobbies
- Heat recovery in Block ventilation exhausts
- Natural ventilation in combination with forced ventilation wherever practical
- Variable kitchen exhaust fans in condominium, education facility, hotel and commercial cooking facilities
- Room occupancy sensors in hotel spaces
- Energy management systems in each Block
- Energy-Star appliances in hotels and apartments
- Residential and hotel Blocks will be Solar Thermal Hot Water-ready
- All Blocks will be constructed to be PV-ready
- Rainwater harvest, groundwater recharge
- Low-flow and water-efficient plumbing fixtures
- Drought-tolerant landscaping
- Recycling collection areas
- Construction waste recycling $>50\%$
- Recycled content materials for construction
- Locally-TDM measures as described in Chapter 3
- Post-construction traffic signal reoptimization

The Proponent remains committed to the level of GHG emissions reduction and energy savings presented in the above analysis, but must retain an amount of design flexibility to allow for changes that will inevitably occur as individual Block design progresses. Case 2 provides a comprehensive look at anticipated performance based on estimates of system performance. If, during the course of design on an individual Block, a specific combination of design strategies proves more advantageous from a marketing, engineering, cost, or constrained space perspective, the design of that Block may vary from what is shown in Case 2. Energy performance minima (and associated GHG emissions) by Block, as shown in Appendix D6, will be adhered to in individual Block designs to the extent possible;

however, since the Blocks will be developed in phases spread over several years, the Proponent may opt to implement the GHG emissions mitigation based on the phase or other combination of Blocks rather than individual Blocks.

4.7 Noise

4.7.1 Introduction

This section includes a noise analysis for the Project, including a noise-monitoring program to determine existing noise levels and an estimate of future noise levels when the Project is in operation. The analysis indicates that predicted noise levels from Project mechanical equipment will be below the most stringent City of Boston Noise Zoning requirements for nighttime and daytime residential zones, and well below existing measured baseline noise levels in the area.

4.7.2 Noise Terminology

There are several ways in which sound (noise) levels are measured and quantified. All of them use the logarithmic decibel (dB) scale. The following information defines the noise measurement terminology used in this analysis.

The decibel scale is logarithmic to accommodate the wide range of sound intensities found in the environment. A property of the decibel scale is that the sound pressure levels of two separate sounds are not directly additive. For example, if a sound of 50 dB is added to another sound of 50 dB, the total is only a three-decibel increase (to 53 dB), not a doubling to 100 dB. Thus, every three dB change in sound levels represents a doubling or halving of sound energy. Related to this is the fact that a change in sound levels of less than three dB is imperceptible to the human ear.

Another property of decibels is that if one source of noise is 10 dB (or more) louder than another source, then the total sound level is simply the sound level of the higher source. For example, a source of sound at 60 dB plus another source of sound at 47 dB is 60 dB.

The sound level meter used to measure noise is a standardized instrument. It contains "weighting networks" to adjust the frequency response of the instrument to approximate that of the human ear under various circumstances. One network is the A-weighting network (there are also B- and C-weighting networks). The A-weighted scale (dBA) most closely approximates how the human ear responds to sound at various frequencies. Sounds are frequently reported as detected with the A-weighting network of the sound level meter. A-weighted sound levels emphasize the middle frequency (i.e., middle pitched – around 1,000 Hertz sounds), and de-emphasize lower and higher frequency sounds. A-weighted sound levels are reported in decibels designated as "dBA."

Because the sounds in our environment vary with time they cannot simply be described with a single number. Two methods are used for describing variable sounds. These are exceedance levels and the equivalent level, both of which are derived from a large number of moment-to-moment A-weighted sound level measurements. Exceedance levels are values from the cumulative amplitude distribution of all of the sound levels observed during a measurement period. Exceedance levels are designated L_n, where n can have a value of 0 to 100%. For example:

- L_{90} is the sound level in dBA exceeded 90% of the time during the measurement period. The L_{90} is close to the lowest sound level observed. It is essentially the same as the residual sound level, which is the sound level observed when there are no obvious nearby intermittent noise sources.
- L_{50} is the median sound level: the sound level in dBA exceeded 50% of the time during the measurement period.
- L_{10} is the sound level in dBA exceeded only 10% of the time. It is close to the maximum level observed during the measurement period. The L_{10} is sometimes called the intrusive sound level because it is caused by occasional louder noises like those from passing motor vehicles.
- L_{eq}, the equivalent level, is the level of a hypothetical steady sound that would have the same energy (i.e., the same time-averaged mean square sound pressure) as the actual fluctuating sound observed. The equivalent level is designated L_{eq} and is also A-weighted. The equivalent level represents the time average of the fluctuating sound pressure, but because sound is represented on a logarithmic scale and the averaging is done with linear mean square sound pressure values, the L_{eq} is mostly determined by occasional loud, intrusive noises.

By using various noise metrics it is possible to separate prevailing, steady sounds (the L_{90}) from occasional, louder sounds (L_{10}) in the noise environment or combined average levels (L_{eq}). This analysis of sounds expected from the Project treats all noises as though they will be steady and continuous and hence the L_{90} exceedance level was used. In the design of noise control treatments it is essential to know something about the frequency spectrum of the noise of interest. Noise control treatments do not function like the human ear, so simple A-weighted levels are not useful for noise-control design. The spectra of noises are usually stated in terms of octave band sound pressure levels, in dB, with the octave frequency bands being those established by standard. To facilitate the noise-control design process, the estimates of noise levels in this analysis are also presented in terms of octave band sound pressure levels.

Baseline noise levels were measured in the vicinity of the proposed buildings and were compared to predicted noise levels that were based on standard engineering practice or information provided by the manufacturers of representative mechanical equipment. The predicted noise levels were compared to the City of Boston Zoning District Noise Standards.

4.7.3 Noise Regulations and Criteria

The primary set of regulations relating to the potential increase in noise levels is the City of Boston Zoning District Noise Standards (City of Boston Code – Ordinances: Section 16–26 Unreasonable Noise and City of Boston Air Pollution Control Commission Regulations for the Control of Noise in the City of Boston). Results of the baseline ambient noise level survey and the modeled noise levels were compared to the City of Boston Zoning District Noise Standards. Separate regulations within the Standard provide criteria to control different types of noise. Regulation 2 is applicable to the effects of the completed proposed buildings and was considered in this noise study. Table 4.7-1 includes the Zoning District Standards.

The Massachusetts Department of Environmental Protection (MassDEP) regulates community noise by its Noise Policy: DAQC policy 90-001. The MassDEP policy limits source sound levels to a 10-dBA increase in the ambient measured noise level (L_{90}) at the Project property line and at the nearest residences. The policy further prohibits pure tone conditions – when any octave band center frequency sound pressure level exceeds the two adjacent center frequency sound pressure levels by three decibels or more.

Table 4.7-1 City of Boston Zoning District Noise Standards, Maximum Allowable Sound Pressure Levels

Octave Band Center Frequency (Hz)	Residential Zoning District		Residential-Industrial Zoning District		Business Zoning District	Industrial Zoning District
	Daytime (dB)	All Other Times (dB)	Daytime (dB)	All Other Times (dB)	Anytime (dB)	Anytime (dB)
31.5	76	68	79	72	79	83
63	75	67	78	71	78	82
125	69	61	73	65	73	77
250	62	52	68	57	68	73
500	56	46	62	51	62	67
1000	50	40	56	45	56	61
2000	45	33	51	39	51	57
4000	40	28	47	34	47	53
8000	38	26	44	32	44	50
A-Weighted (dBA)	**60**	**50**	**65**	**55**	**65**	**70**

Notes:
- Noise standards are extracted from Regulation 2.5, City of Boston Air Pollution Control Commission, "Regulations for the Control of Noise in the City of Boston", adopted December 17, 1976.
- All standards apply at the property line of the receiving property.
- dB and dBA based on a reference pressure of 20 micropascals.
- Daytime refers to the period between 7:00 am and 6:00 pm daily except Sunday.

4.7.4 Existing Conditions

4.7.4.1 Baseline Noise Environment

An ambient noise level survey was conducted to characterize the existing "baseline" acoustical environment in the vicinity of the Project. Existing noise sources in the vicinity of the Project include: vehicular traffic (including trucks) on the local roadways; pedestrian traffic; and mechanical equipment located on the surrounding buildings.

4.7.4.2 Noise Measurement Locations

The selection of the sound monitoring receptor locations was based upon a review of the current land use in the area of the Project Site. Three noise-monitoring locations were selected as representative locations to obtain a sampling of the ambient baseline noise environment. The measurement locations are depicted on Figure 4.7-1 and are described below.

- Location 1 is on Northern Avenue, northeast of the Chapel of Our Lady of Good Voyage.
- Location 2 is on East Service Road, between Seaport Boulevard and Congress Street.
- Location 3 is on Congress Street, between East Service Road and B Street.
- Location 4 is on Stillings Street near an existing parking garage and parking lot.
- Location 5 is near 33 Sleeper Street.
- Location 6 is near the intersection of Summer Street and Boston Wharf Road.

4.7.4.3 Noise Measurement Methodology

Sound level measurements were for 20 minutes per location during daytime (11:00 am to 2:30 pm) on April 29, 2009, and nighttime hours (12:00 am to 3:00 am) on April 30, 2009. Since noise impacts are greatest at night when existing noise levels are lowest, the study was designed to measure community noise levels under conditions typical of a "quiet period" for the area. Daytime measurements were scheduled to exclude peak traffic conditions.

The sound levels were measured at publicly accessible locations at a height of five feet above the ground and at locations where there were no large reflective surfaces to affect the measured levels. The measurements were made under low wind conditions and with dry roadway surfaces. Wind speed measurements were made with a Davis Instruments TurboMeter electronic wind speed indicator, and temperature and humidity measurements were made using a psychrometer. Unofficial observations about meteorology or land use in the community were made solely to characterize the existing sound levels in the area and to estimate the noise sensitivity at properties near the proposed Project.

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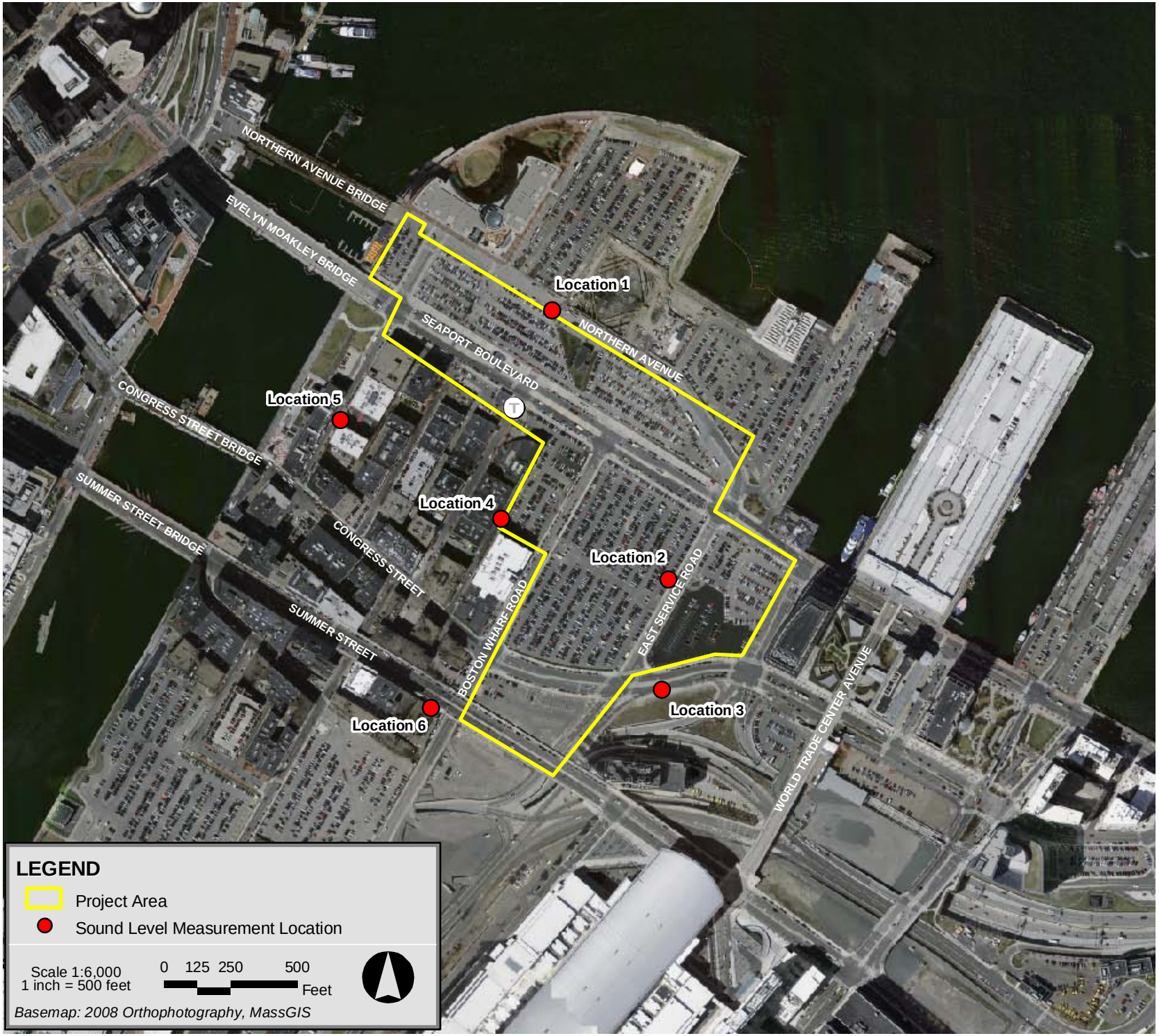

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Figure 4.7-1

Sound Level
Measurement Locations

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prepared by:
Epsilon Associates, Inc.

4.7.4.4 Measurement Equipment

A Norsonic Model Nor140 sound level meter was used to collect ambient sound pressure level data. The instrumentation meets the "Type 1 - Precision" requirements set forth in American National Standards Institute (ANSI) S1.4 for acoustical measuring devices. The microphone was tripod-mounted at a height of five feet above ground, and the meter was set to the "slow" response. Statistical descriptors (L_{eq}, L_{90}, etc.) were calculated for each 20-minute sampling period. Octave band levels for this study correspond to the same data set processed for the broadband levels. The measurement equipment was calibrated in the field before and after the surveys with an acoustical calibrator which meets the standards of IEC 942 Class 1L and ANSI S1.40-1984.

4.7.4.5 Baseline Ambient Noise Levels

The existing ambient noise environment is impacted primarily by vehicular traffic on nearby roadways, including Seaport Boulevard, Boston Wharf Road, Congress Street and East Service Road. Baseline noise monitoring results are presented in Table 4.7-2, and summarized below.

- The daytime residual background (L_{90}) measurements ranged from 51 to 59 dBA;
- The nighttime residual background (L_{90}) measurements ranged from 48 to 54 dBA;
- The daytime equivalent level (L_{eq}) measurements ranged from 54 to 67 dBA; and
- The nighttime equivalent level (L_{eq}) measurements ranged from 51 to 62 dBA.

Table 4.7-2 Baseline Ambient Noise Measurements

							Octave Band Center Frequency (Hz)								
Location and Period	Start	L_{10}	L_{50}	L_{90}	L_{eq}	L_{max}	32	63	125	250	500	1000	2000	4000	8000
	Time	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	L_{90} (dB)	L_{90} (dB)	L_{90} (dB)	L_{90} (dB)	L_{90} (dB)	L_{90} (dB)	L_{90} (dB)	L_{90} (dB)	L_{90} (dB)
Loc 1 Day	1:11 PM	67	59	**55**	63	82	65	65	58	55	53	50	45	37	27
Loc 2 Day	11:37 AM	60	54	**51**	57	76	65	63	54	50	48	47	39	27	15
Loc 3 Day	11:09 AM	67	63	**59**	65	89	67	66	61	56	55	56	48	34	21
Loc 4 Day	12:43 PM	56	53	**51**	54	78	64	60	54	51	49	46	37	25	14
Loc 5 Day	12:11 PM	64	59	**57**	61	76	63	63	59	57	55	52	48	38	24
Loc 6 Day	1:50 PM	71	63	**56**	67	87	65	64	59	54	53	52	44	32	23
Loc 1 Night	1:10 AM	59	56	**54**	57	72	61	63	59	55	53	48	39	28	16
Loc 2 Night	12:41 AM	58	54	**52**	57	78	61	63	59	53	50	47	38	26	14
Loc 3 Night	12:14 AM	62	56	**53**	60	78	61	62	59	52	50	48	42	30	17
Loc 4 Night	2:09 AM	53	49	**48**	51	72	59	59	56	50	45	41	33	22	14
Loc 5 Night	1:39 AM	55	54	**53**	55	72	57	55	53	55	53	46	38	26	16
Loc 6 Night	2:39 AM	65	56	**53**	62	81	57	58	54	52	51	49	43	32	16

Notes:
1. Daytime weather: Temperature = 58^0 F, RH = 14%, skies sunny, winds 1-3 mph.
   Nighttime weather: Temperature = 49^0 F, RH = 44%, clear skies, winds 4-7 mph.
2. Road Surfaces were dry during all periods.
3. All sampling periods were approximately 20 minutes duration.
4. Daytime measurements were collected on April 29, 2009.
   Nighttime measurements were collected on April 30, 2009.

4.7.5 Overview of Potential Project Noise Sources

The primary source of sound exterior to the new buildings will be cooling towers and ventilation fans located on the roofs. The analysis considered 20 Blocks (designated A, B, C, etc.), with a total of 23 buildings within the Project. Some Blocks have only one building, some Blocks have multiple buildings. A summary of the major mechanical equipment proposed for the Project is presented below in Tables 4.7-3a and 4.7-3b.

Most of the mechanical equipment for the buildings will be housed within a mechanical penthouse on the roof. It is expected that any noise from equipment within the penthouses, such as boilers, will be attenuated considerably. Noise from such sources is expected to be negligible at ground-level locations. Each Block (with the exception of one Block) will have at least one cooling tower located on the roof. Three types of cooling towers will be used, depending upon the expected building load. The "A Type" tower will have a nominal 985-Ton load capacity; the "B Type" will have a 650-Ton load capacity; and the "C Type" will have a 275-Ton load capacity. A summary of noise emissions, as estimated from the equipment's capacity or from manufacturer-provided specifications, is presented in Table 4.7-4, and includes broadband (dBA) sound power levels, as well as octave band sound levels.

Table 4.7-3a Expected Primary Noise Sources – Cooling Towers

Cooling Tower	Quantity	AGL Elevation (Feet)	Size/Capacity (Tons)
Block A	1 (C Type)	85	262
Block B	2 (A Type)	260	1,932
Block C	2 (B Type)	260	1,274
Block D	1 (A Type)	260	985
Block F	No Tower Needed	-	30
Block G	2 (A Type)	260	1,589
Block H	1 (C Type)	55	100
Block J	1 (C Type)	90	270
Block K	2 (B Type)	180	1,210
Block L1	2 (B Type)	260	1,091
Block L2	2 (B Type)	260	1,091
Block L3	1 (A Type)	160	798
Block L4	1 (A Type)	210	925
Block L5	2 (B Type)	260	1,152
Block L6	1 (A Type)	190	748
Block M1	2 (A Type)	260	1,160
Block M2	1 (A Type)	260	819
Block N	1 (A Type)	248	914
Block P	2 (A Type)	280	1,628
Block Q	1 (B Type)	112	478

Table 4.7-3b Expected Primary Noise Sources –Ventilation Fans

Block	Use	Ventilation Requirement (CFM)	Fan Volume (CFM)	Fan Code (see Table 4.7-4)	Quantity
A	Retail	7,317	8,000	1	1
	Residential	2,329	3,000	2	1
	Cultural	-	-	-	-
B	Retail	37,296	35,000	3	3
	Office	64,593			
C	Retail	65,292	30,000	4	3
	Residential	14,713			
D	Retail	21,462	35,000	3	1
	Residential	14,910	5,700	5	1
	Cultural	3,750			
F	Retail	2,838	3,000	2	1
G	Retail	39,807	35,000	3	2
	Residential	6,307	7,020	6	1
	Hotel	15,574			
	Cultural	3,750	4,680	7	1
H	Church	26,223	30,000	8	1
J	Retail	6,936	8,000	1	1
	Residential	2,462	3,000	2	1
K	Retail	28,326	30,000	8	1
	Residential	3,453	4,680	9	1
	Hotel	8,715	3,000	2	3
L1	Retail	24,264	30,000		1
	Office	60,689	30,000	8	2
L2	Retail	23,856	30,000	8	1
	Office	49,372	30,000	8	2
L3	Retail	9,801	8,000	1	1
	Residential	6,545	8,000	1	1
L4	Retail	10,026	8,000	1	1
	Residential	9,964	8,000	1	1
L5	Retail	7,902	8,000	1	1
	Residential	12,899	12,000	9	1
	Residential		4,680	7	1
L6	Retail	5,715	8,000	1	2
	Residential	8,883			
M1	Retail	70,437	35,000	3	2
	Residential	11,549	15,000	10	1

Table 4.7-3b Expected Primary Noise Sources –Ventilation Fans (Continued)

Block	Use	Ventilation Requirement (CFM)	Fan Volume (CFM)	Fan Code (see Table 4.7-4)	Quantity
M2	Retail	27,252	15,000	10	3
	Residential	13,587			
N	Educational Facility	293,250	15,000	10	20
P	Hotel	16,903	15,000	10	15
	Theater	223,804			
Q	Retail	9,600	12,000	9	1
	Office	16,806	15,000	10	1

Table 4.7-4 Reference Equipment Noise Levels – Total for all units

Noise Source	Form of Data	Ref. Distance (feet)	Level (dBA)	Octave Band Center Frequency (Hz)							
				63	125	250	500	1k	2k	4k	8k
Marley NC Class, NC8412VLN1 985-Ton Cooling Tower ("Type A")	Sound power	NA	98	101	97	98	95	94	90	84	74
Marley NC Class, NC8409ULN1 650-Ton Cooling Tower ("Type B")	Sound power	NA	94	100	97	96	92	87	86	83	75
Marley NC Class, NC8405NAN1 275-Ton Cooling Tower ("Type C")	Sound power	NA	95	98	95	95	94	90	85	81	76
Fan 1	Sound Power	NA	89	84	91	87	86	85	81	76	72
Fan 2	Sound power	NA	81	94	87	80	77	75	72	71	63
Fan 3	Sound Power	NA	100	93	96	102	98	94	87	84	80
Fan 4	Sound Power	NA	95	101	95	88	85	81	75	69	95
Fan 5	Sound Power	NA	86	84	83	81	83	82	77	72	64
Fan 6	Sound Power	NA	89	96	94	93	86	83	78	73	69

Table 4.7-4 Reference Equipment Noise Levels – Total for all units (Continued)

Noise Source	Form of Data	Ref. Distance (feet)	Level (dBA)	Octave Band Center Frequency (Hz)							
				63	125	250	500	1k	2k	4k	8k
Fan 7	Sound Power	NA	90	100	94	94	87	84	80	74	68
Fan 8	Sound Power	NA	88	102	96	89	86	82	77	70	66
Fan 9	Sound Power	NA	87	98	95	89	84	81	75	70	69
Fan 10	Sound Power	NA	84	86	86	83	82	79	73	67	60

NA = Not Applicable to sound power data.

Sound levels do not include any corrections for mitigation.

Manufacturer's Data Citations:

1. Greenheck SBS-2H30-15
2. Greenheck ERCH-45L-15 Rooftop Energy Recovery Unit
3. Greenheck 40-QEP-1-II 35,000
4. Greenheck 49-BISW-21
5. Greenheck QEI-20-II 5700
6. Greenheck 24-BISW-21
7. Greenheck 20-BISW-21
8. Greenheck 49-BISW
9. Greenheck 33-BISW-21
10. Greenheck QEI-33-I (15,000 CFM)

Emergency generators are expected to be located on the roofs of most buildings. The emergency generators will be controlled using exhaust silencers and sound-attenuating enclosures. To further limit impacts from the generators, the required periodic routine testing of the generators will be during daytime hours when background sound levels are highest. Given that periodic routine generator testing will be during daytime hours (when background sound levels are highest), noise impacts are not anticipated.

4.7.6 Modeling Methodology

Anticipated noise impacts associated with the Project were predicted at the nearest residences around the Project Site using the CadnaA noise calculation software. This software uses the ISO 9613-2 industrial noise calculation methodology. CadnaA allows for octave band calculation of noise from multiple noise sources, as well as for computation of diffraction around building edges and multiple reflections off parallel buildings and solid ground areas. In this manner, all significant noise sources and geometric propagation effects are accounted for in the noise modeling.

4.7.7 Future Sound Level of Project

Rooftop and HVAC Equipment

Predicted mechanical equipment noise levels from the Project at each receptor location, taking into account attenuation due to distance, structures, and noise control measures, are all below the MassDEP criteria of 10 dBA over the quietest nighttime sound levels. The predicted Project-generated exterior sound levels are expected to range from 44 dBA to 48 dBA at nearby receptors. The predicted sound levels from Project-related equipment are within the most stringent nighttime residential zoning limits for the City of Boston (50 dBA or less) at closest residential receptors. It should be noted that the existing ambient background levels already exceed 50 dBA at most locations studied. The Project's mechanical equipment will not create any pure tone conditions when combined with existing middle of the night background sound levels. The results of the modeling, including mitigation, are shown in Table 4.7-5 (MassDEP criteria) and Table 4.7-6 (Boston criteria).

Table 4.7-5 Comparison of Future Predicted Nighttime Sound Levels with Existing Background – MassDEP Criteria

Location	Lowest Existing L_{90} –Nighttime (dBA)	Project-Generated Sound Levels (dBA)[1]	Future L_{90} – Nighttime Total (dBA)	Increase (dBA)
Location 1 - Northern Avenue	54	44	55	0
Location 2 - East Service Road	51	48	53	2
Location 3 – Congress Street	53	43	53	0
Location 4 - Stillings Street	48	45	50	3
Location 5 -33 Sleeper Street	53	47	55	1
Location 6 - Summer Street	53	45	54	1

1. Assumes equipment operates continuously.

Table 4.7-6 Comparison of Future Predicted Nighttime Sound Levels Incorporating Appropriate Mitigation to City of Boston Criteria (Mechanical Equipment Only)

Location	Project-Generated Sound Level/Overall Sound Level (dBA)[1]	Boston Nighttime Limit (dBA)
Location 1 – Northern Avenue	**44**/55	50
Location 2 – East Service Road	**48**/53	50
Location 3 - Congress Street	**43**/53	50
Location 4 - Stillings Street	**45**/50	50
Location 5 - 33 Sleeper Street	**47**/55	50
Location 6 - Summer Street	**45**/54	50

1 Assumes equipment operates continuously.

4.7.8 Conclusions

The above results indicate that noise levels due to the Project at the various receptor locations are below the most stringent City of Boston Noise Zoning requirements for a nighttime residential zone for street-level receptors, and they are below existing measured nighttime baseline noise levels. As shown in Table 4.7-5, the increase in sound level is three dBA or less. As previously noted, an increase of three dBA or less is generally imperceptible. Therefore, the results of the analysis indicate that the proposed Project buildings can operate without significant impact on the existing acoustical environment.

4.8 Tidelands - Chapter 91 and the South Boston Municipal Harbor Plan

The Seaport Square Project represents a long-awaited opportunity to revitalize a significant area within the South Boston waterfront, creating a linkage between the Federal Courthouse, the World Trade Center, the Institute of Contemporary Art, and the new Boston Convention and Exhibition Center, as well as the South Boston and Fort Point neighborhoods.

The Project will create a vibrant mixed-use neighborhood, establish a significant gateway to the South Boston waterfront, and provide additional pedestrian pathways and connections to the City of Boston's Harborwalk. The Project will introduce year-round use and enjoyment of two new public green spaces - Seaport Square Green and Seaport Hill, as well as Courthouse Square, a new outdoor space - and will activate the waterfront with exterior and interior spaces that encourage public waterfront access and use, as well as programming to encourage year-round use. Figure 4.8-1 shows the total land area (shaded) within Chapter 91 jurisdiction. This land, approximately 80,000 sf and located within Blocks A, B, G, H, and M1, makes up approximately 7.8% of the entire Project Site.

The South Boston waterfront will be further activated by cultural and civic amenities including space for a library and exhibition space, a performing arts center and new Facilities of Public Accommodation, landscaping and public amenities. Specific components of the overall public benefit of this Project include:

- Extending the public realm to the waterfront
- New pedestrian connections
- New streets connecting landside to water
- Seasonal programming for community events
- New cultural corridor
- New facilities of public accommodation
- Protection of open spaces
- Off-site open space improvements
- Water transportation kiosk
- Interpretive signage and wayfinding

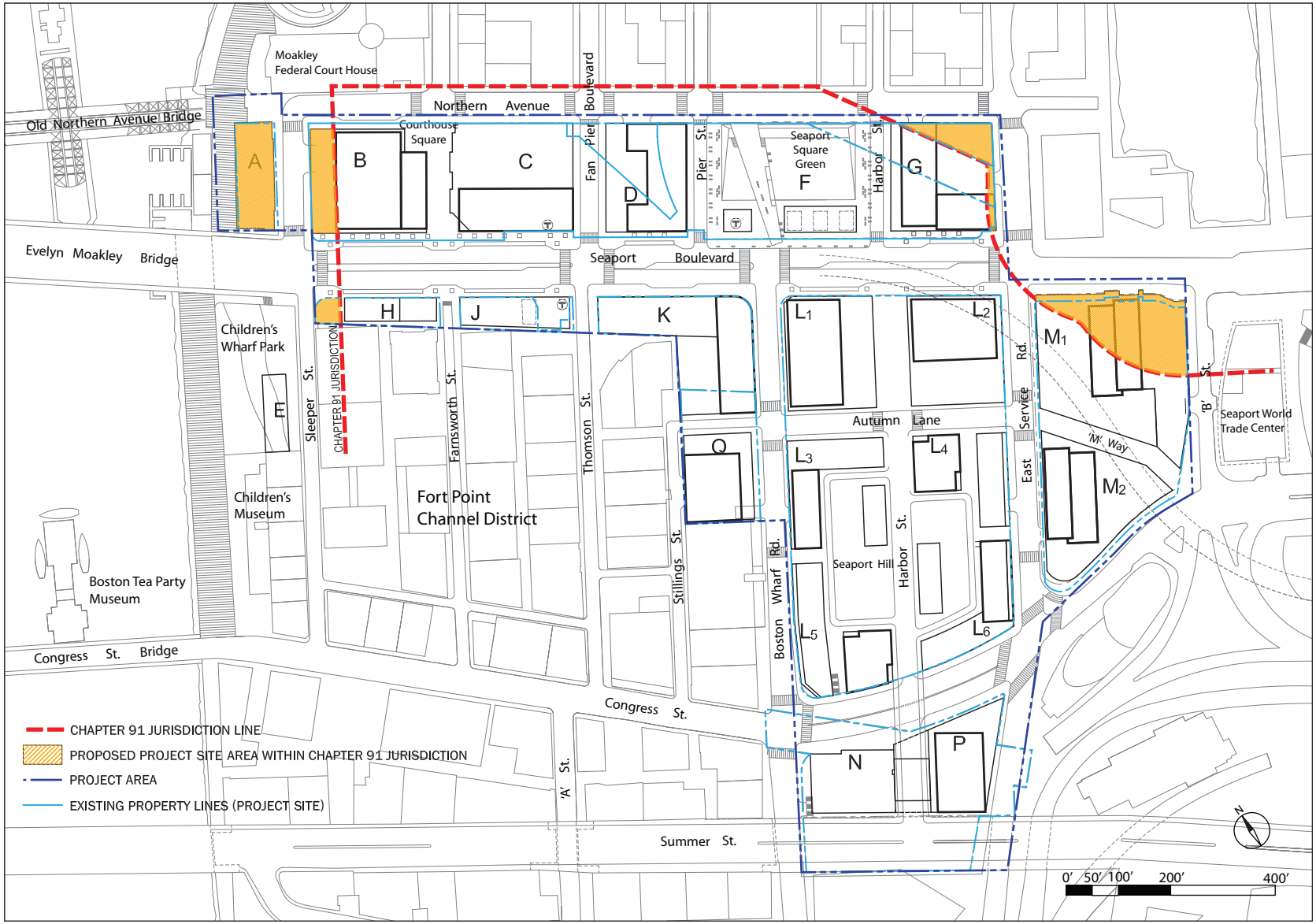
Each of these is described in more detail below.

The following sections review the Seaport Square Project and the benefits summarized above in relation to the Project's compatibility with Chapter 91, the South Boston Municipal Harbor Plan, and other planning initiatives designed to revitalize the South Boston waterfront.

4.8.1 The Phase 1 Blocks

In the Seaport Square PNF/ENF filed June 2, 2008, the Proponent requested a Phase 1 Waiver from further MEPA review for Blocks A, H and J. The Secretary of EOEEA granted a Phase 1 Waiver for these three blocks in a Final Record of Decision (FROD) dated September 17, 2008, and in a Decision on the Notice of Project Change on May 8, 2009. In addition, MEPA issued a positive Public Benefit Determination, dated October 17, 2008. As depicted in Figure 4.8-2, all of Block A and a small portion of Block H were subject to Chapter 91 licensing analysis in the Seaport Square PNF/ENF. Because Blocks A and H received a Waiver from further MEPA review, and Block J is outside Chapter 91 licensing jurisdiction, the following Chapter 91 analysis does not include Blocks A ,H or J.

Public benefits remain essentially the same as described in the PNF/ENF, with the additional benefit that the size of the footprint of the building proposed for Block H, the relocated Chapel, has decreased, and is now located entirely outside of Chapter 91 licensing jurisdiction. This modification provides additional open space to the area while reducing building volume within jurisdiction.



SEAPORT SQUARE
IN SOUTH BOSTON

Figure 4.8-1

Chapter 91 Compliance diagram Blocks A, B, G, H, and M1

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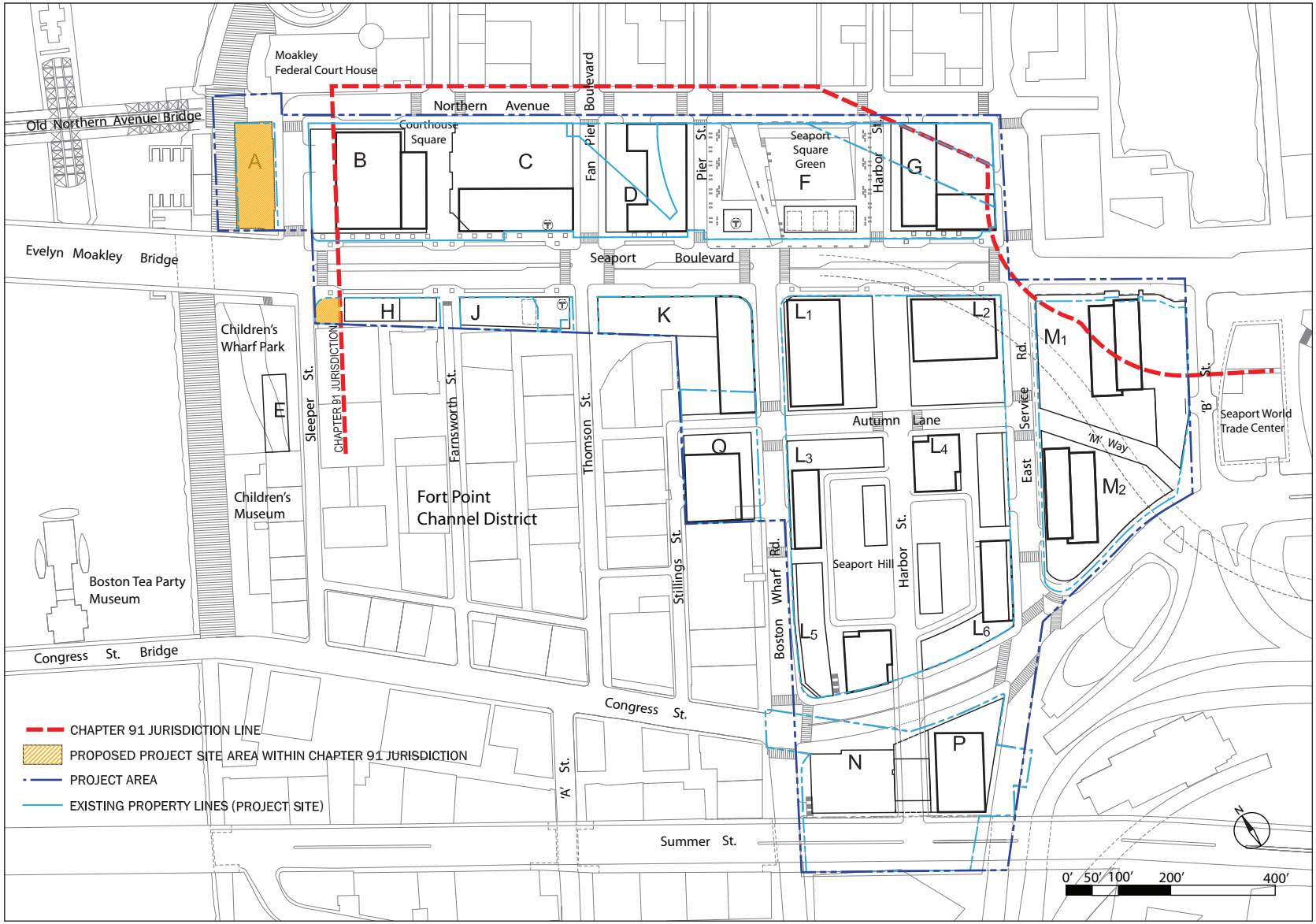

SEAPORT SQUARE
IN SOUTH BOSTON

Figure 4.8-2

Phase I Waiver
Blocks A, H, J

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4.8.2 South Boston Municipal Harbor Plan

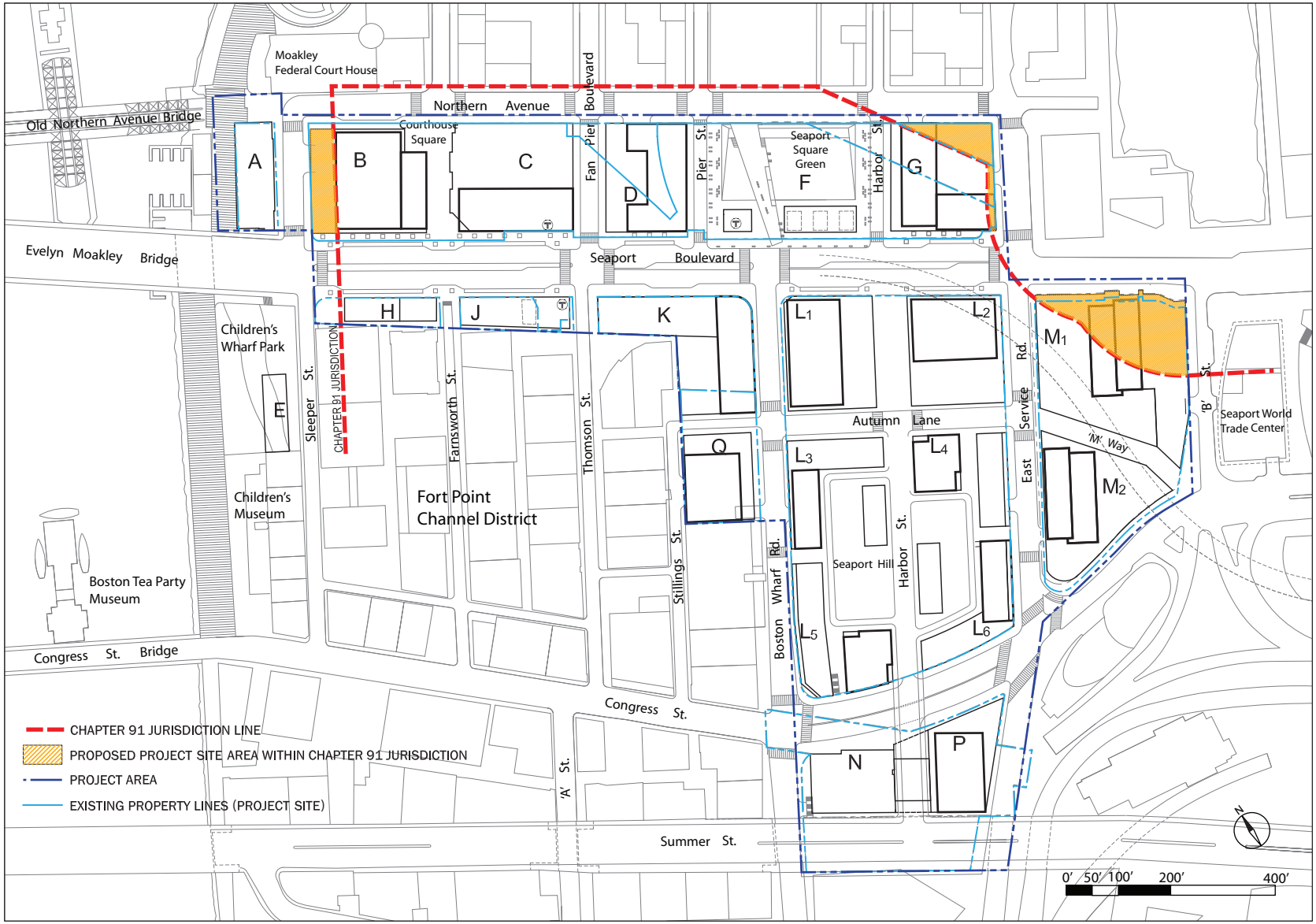
The protection, care and supervision of the public's interests in the shoreline and tidelands of the Commonwealth are implemented in part through the regulatory frameworks of Chapter 91, the Municipal Harbor Planning Process, and the recently enacted Landlocked Tidelands Legislation (defined below). The Chapter 91 regulations at 310 CMR 9.00 establish the standards for protecting the Commonwealth's and the public's interests in the waterfront. A related mechanism allows communities to address the state and local regulatory frameworks through a jointly approved Municipal Harbor Plan (310 CMR 23.00). Such plans allow for the tailoring of certain Chapter 91 regulatory requirements and associated public benefits to better and more completely address the overarching interest in protecting the waterways and tidelands of the Commonwealth as they relate to the specific characteristics of the planning area.

4.8.3 Chapter 91 Jurisdiction

Chapter 91 provides for the protection of the public's right to navigate and access the Massachusetts shoreline. Chapter 91 is implemented through regulations promulgated and administered by the Massachusetts Department of Environmental Protection (MassDEP) Waterways Program. Along the Massachusetts coastline, Chapter 91 jurisdiction includes both existing flowed tidelands and former tidelands that are now filled. Development activities within these flowed or filled tidelands generally require a license or permit, although activities on "landlocked" tidelands located more than 250 feet from the current shoreline *and* inland of a public right-of-way are exempt from such licensing.

The Chapter 91 regulations establish standards for shoreline projects with respect to a number of criteria. Key among these are the project's status as a water-dependent or non-water-dependent project, the location of the site on current or historically flowed tidelands, and the location of the site on tidelands identified as either Private or Commonwealth tidelands. The regulations also apply additional criteria to that portion of the site within the "water-dependent use zone."

As shown in Figure 4.8-3, Seaport Square Blocks B, G and M1 are located entirely within filled former Commonwealth tidelands and are separated from the current shoreline by a public right-of way. As such, only that portion of each Block that lies within 250 feet of flowed tidelands is subject to review under Chapter 91 and its associated regulations, while the remainder of the Block is exempt from licensing as landlocked tidelands.



SEAPORT SQUARE
IN SOUTH BOSTON

Figure 4.8-3

Chapter 91 Compliance diagram Blocks B, G, and M1

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The portions of Blocks B, G, and M1 within Chapter 91 licensing jurisdiction comprise approximately 55,500 sf, or approximately 5% of the Project Site.

The majority of the Seaport Square Project is located on landlocked filled tidelands, and the Project is required to prepare an EIR. As such, the Project is also subject to a public benefits review and determination by the Secretary of Energy and Environmental Affairs pursuant to recent legislation (Chapter 168 of the Acts of 2007) regarding landlocked tidelands (the "Landlocked Tidelands Legislation"). The Proponent's review of the public benefits of the entire Project is provided in Section 4.8.5 below.

4.8.3.1 Water Dependency

The proposed redevelopment of Blocks B, G and M1 will include mixed uses such as residential, retail, office, hotel and educational/cultural uses as further detailed in Table 4.8-1 below. Specifically, Block B proposes approximately 442,300 sf of office uses and approximately 119,900 sf of retail; Block G proposes approximately 200,000 sf of hotel uses, 165,000 sf of residential uses, and 128,000 sf of retail, and 5,000 sf of exhibition space; and Block M1 proposes approximately 226,700 sf of retail/entertainment uses, along with 300,000 sf of residential uses.

Table 4.8-1 Program for Chapter 91 Area

Block	Total (gsf)	Retail / Entertainment (gsf)	Residential (gsf)	Office / Research (gsf)	Hotel (gsf)	Educational/ Cultural (gsf)
Block B	**562,200**	119,900	0	442,300	0	0
Block G	**497,500**	128,000	165,000	0	200,000	5,000
Block M1	**526,700**	226,700	300,000	0	0	0

As a mixed-use development, these Blocks will be reviewed under Chapter 91 as a non-water-dependent project. The Project will be subject to the Chapter 91 standards, as modified by the SBMHP, for the conservation of capacity to provide for water-dependent uses as defined in the Chapter 91 regulations at 310 CMR 9.51, the standards for the utilization of the shoreline for water-dependent purposes at 310 CMR 9.52, and the standards for the activation of Commonwealth Tidelands at 310 CMR 9.53.

4.8.3.2 Private and Commonwealth Tidelands

As noted above, the applicability of Chapter 91 is established by the position of the site relative to the historic high water mark. Similarly, the historic low water mark is important in establishing whether the site is on Private or Commonwealth Tidelands. In the

December 6, 2000 SBMHP Decision, the Secretary of Energy and Environmental Affairs (then Secretary of Environmental Affairs) determined that "all lands subject to Chapter 91 jurisdiction in the South Boston Waterfront consist of Commonwealth Tidelands."

4.8.3.3 Water-Dependent Use Zone

The Chapter 91 regulations at 310 CMR 9.51 stipulate that nonwater-dependent use projects on any tidelands shall not unreasonably diminish the capacity of such lands to accommodate water-dependent uses. Toward this end, the regulations provide for the recognition of a water-dependent use zone within which new or expanded nonwater-dependent buildings are not allowed. The water-dependent use zone only relates to projects that have a project shoreline.

Because Blocks B, G and M1 are not located on the water, they do not have a project shoreline or a water-dependent use zone.

4.8.3.4 Municipal Harbor Plan Jurisdiction

The Municipal Harbor Plan regulations allow municipalities certain latitude with particular Chapter 91 standards related to use, height, setback and open space. These standards may be amended through a municipal harbor plan, provided that the substitute requirements or amplifications proposed by the municipality are not only consistent with the mandate of Chapter 91 to protect and preserve the rights of the Commonwealth's residents in the tidelands, but are also otherwise consistent with the Waterways Regulations. These substitute provisions may also require offsetting provisions (or public benefits) that are equivalent to the standard provisions within Chapter 91.

The SBMHP was the result of many years of planning by the City and was developed in consultation with the Municipal Harbor Plan Advisory Committee, area residents, advocacy groups, property owners and public agencies, including MassDEP and MCZM.

The SBMHP established planning goals for waterfront properties. Below are the goals as described in the SBMHP:

- Promote access to Boston Harbor as a shared natural resource and connect people, land and water.
- Preserve and enhance the industrial port and balance the growth of mixed-use and recreational activity along Boston Harbor with the needs of maritime commerce.
- Plan the area as a vital mixed-use neighborhood that expands the City's residential communities and provides a lively mix of open space, civic and cultural, water transit and commercial uses and job opportunities that are mutually supportive and bring activity to the waterfront.

- Develop the site as an integral part of Boston's economy, enhancing the City's hotel, office and research, retail and visitor industries and position the area as the economic catalyst for the region.
- Ensure that the South Boston residential community and all neighborhoods of the City are not only protected from potential impacts from development, but share in the benefits of private investment.

In advancing the City's waterfront planning objectives, the SBMHP Decision established several amplifications (more restrictive standards than Chapter 91) and substitute provisions (less restrictive standards) which created flexibility within the established Chapter 91 regulations to allow the implementation of site-specific requirements in order to enliven the area and create an active waterfront community. These include the following:

- Promote and protect ground floor Facilities of Public Accommodation uses by limiting accessory uses on the ground floor of buildings to 20% of the building footprint.
- Prohibit residential lobbies and entrances from fronting along the water side of buildings.
- Provide for lot coverage area and proportions that are in keeping with the Fort Point area by providing for the potential aggregation of open space requirements off-site, thereby encouraging larger waterfront open spaces and promoting the use and enjoyment of open space along with waterfront.
- Provide for building heights that are consistent with the surrounding area and that will preserve wind, shadow, and other conditions of the ground level environment that will be conducive to water-dependent uses.

4.8.4 Chapter 91 Regulatory Standards Review

No Chapter 91 licenses currently exist for Blocks B, G or M1, so the Proponent will seek licenses for the applicable portions of Blocks B, G and M1. Individual licenses will be sought for each Block.

The following subsections include a review of the Project in light of the applicable Chapter 91 regulatory standards and in relation to the municipal harbor planning and zoning efforts that have occurred in this area of the City and Harbor. Project components for which substitute provisions have been established by the 2000 South Boston MHP are identified below.

§9.15 Extended Term

As provided under CMR 9.15, the Proponent will be seeking extended license terms, and will promote stewardship of Commonwealth Tidelands.

§9.32 Categorical Restrictions on Fill and Structures

None of the proposed site uses or improvements are categorically restricted in previously filled tidelands.

§9.33 Environmental Protection Standards

Section 9.33 states that all projects must comply with the applicable environmental regulatory programs of the Commonwealth. The regulatory program specifically applicable to development of Blocks B, G and M1 is summarized below.

- Massachusetts Clean Water Act. A sewer connection permit will be filed with the Massachusetts Department of Environmental Protection.

§9.34 Conformance with Municipal Zoning and Harbor Plans

Blocks B, G and M1 are located within the Fort Point Waterfront Subdistrict of the Harborpark District (the "Fort Point Waterfront") and within the South Boston Inner Harbor Subdistrict of the South Boston Interim Planning Overlay District, as defined in the City of Boston's Seaport Public Realm Plan. The Blocks are also located within the area of the SBMHP referred to as McCourt/Broderick Parcels. The conformance of the proposed use of Blocks B, G and M1 with municipal zoning and with the SBMHP Decision is reviewed below.

Municipal Zoning. As detailed in this section, the Project meets the requirements set forth in Section 42E-5 of the Zoning Code for the issuance of the BRA's Section 18 Recommendation. In particular, physical access to the South Boston Waterfront and Fort Point Channel will be enhanced, and new open space will be provided at Seaport Square Green and Seaport Hill to encourage public use and enjoyment.

Municipal Harbor Plan Compliance. The SBMHP addresses the use and dimensional considerations of Blocks B, G and M1 that allowed for the realization of the City's goals and plans for this area of the South Boston waterfront. The SBMHP Decision, as approved by the Secretary of EEA, then provides guidance for Chapter 91 licensing and approvals. As described in this filing, this Project is consistent with and promotes waterfront activation and public enjoyment of waterfront areas as envisioned by the SBMHP Plan and as approved under the SBMHP.

§9.35 Standards to Preserve Water-Related Public Rights

The Waterway's regulations at §9.35 are designed to preserve the public's right to navigation, free passage over and through the water and access to Town Landings, and to insure that public open spaces are properly managed and maintained.

Development on Blocks B, G and M1 do not include any development on the water.

The Proponent or its successors will be responsible for the on-going management and maintenance of improvements planned for the Seaport Square Green, a 1.25 acre open space which will enhance the public's access to and enjoyment of the waterfront, Seaport Hill, a 0.75 acre open space, as well as Courthouse Square, an open space immediately in front of the Moakley Federal Courthouse. In addition, this public open space will welcome pedestrians to the site and move them toward the waterfront. These open spaces and public pedestrian connections will provide a connection within the entire Project as well as the South Boston waterfront and Fort Point Channel.

The Proponent expects that there will be no restriction on the hours of use of the public open space. Similarly, there will be no gates or fencing associated with the public areas. Informational signage will be provided in accordance with the license. A maintenance plan will be developed with MassDEP input to insure the public areas are maintained as licensed.

§9.36 Standards to Protect Water-Dependent Uses

The regulations at §9.36 are designed to protect any water-dependent uses occurring at or proximate to the site. This includes water-dependent uses within the five years prior to the filing of the license application. There are currently no water-dependent uses within the Project Site, and there have been none within the last five years. As a Phase 1 Waiver condition, given the proximity of the Barking Crab Restaurant and Neptune Marine Services, the Proponent will ensure that existing service functions for the Restaurant and Marine Services are maintained or improved through the construction period as well as after Project completion.

§9.37 Engineering Construction Standards

All structures will be designed and constructed in a manner that is structurally sound and will be certified by a Registered Professional Engineer.

§9.51 Conservation of Capacity for Water-Dependent Use

Section 9.51 of the Chapter 91 regulations states that non-water-dependent projects that include fill or structures on any tidelands shall not unreasonably diminish the capacity of the tidelands to accommodate future water-dependent uses. In order to meet this standard, §9.51 establishes specific standards and conditions. However, where a Municipal Harbor Plan has been formally accepted by the Secretary of Energy and Environmental Affairs, the standards established by the Municipal Harbor Plan shall substitute for the regulatory conditions within Chapter 91. As discussed above, this Project lies within the boundary of the SBMHP.

Improvements associated with the development of Blocks B, G and M1 will greatly enhance and promote pedestrian access and enjoyment of the South Boston Waterfront and the Fort Point Channel. The Project will meet and/or exceed the Chapter 91 regulatory standards by complying with those standards and through direct compliance with City of Boston MHP substitutes and offsets for those standards, as applicable. A review of the Project's compliance with the standards of §9.51 is as follows:

Facilities of Private Tenancy. The Chapter 91 regulations at §9.51(3)(b) prohibit Facilities of Private Tenancy on any pile-supported structure on flowed tidelands, or on the ground floor of any filled tidelands within 100 feet of a project shoreline. The SBMHP Decision reaffirms this concept, and further requires that any accessory ground floor uses be limited to 20% of the building footprint.

Although there are no flowed tidelands within the Project, all ground-floor building space within Blocks B, G and M1 will be occupied by Facilities of Public Accommodation (public uses), including those portions of Blocks B, G and M1 outside of licensing jurisdiction. In addition, Blocks B, G and M1 will include second level Facilities of Public Accommodation, thereby providing additional public benefits beyond those required by either the SBMHP or Chapter 91. Ground floor uses accessory to upper floor private uses will occupy 20% or less of the building footprint.

Setback. Blocks B, G and M1 do not have project shorelines (defined by Chapter 91 as the high water mark, or the perimeter of any pier, wharf or other structure supported by existing piles), so they do not include water-dependent use zones.

Open Space. Phase 1 will provide more Chapter 91 open space than is required for Blocks A and H; that compliance has been addressed in the PNF/ENF.

The Chapter 91 regulations contain numerical standards, the combined effect of which is to limit the site-coverage for non-water-dependent buildings on Commonwealth Tidelands so that at least 50% of the project site consists of exterior open spaces for active or passive public use and enjoyment. Open space is required to be provided concurrent with development impacts.

The substitute provision adopted in the SBMHP permits 100% lot coverage on those portions within jurisdiction for Blocks B, G and M1 so long as additional open space is provided off-site. Blocks B and G are planned for Phase 2, while Block M1 is planned for Phase 3.

The lot coverage within jurisdiction on Block B is approximately 10,200 sf, while the lot coverage within jurisdiction for Block G is approximately 9,800 sf, for a total of 20,000 for Phase 2. Blocks B and G have some open space (non-built area) within jurisdiction totaling

approximately 1,700 sf, so the total amount of open space required for Phase 2, if located within Chapter 91 jurisdiction, is approximately 18,300 sf (20,000 sf – 1,700 sf). In Phase 3, lot coverage within jurisdiction for Block M1 is approximately 30,500 sf.

The SBMHP allows open space to be aggregated offsite in an amount equal to the building footprint, either within jurisdiction (at a 1:1 ratio) or outside of Chapter 91 licensing jurisdiction (at a 1.25:1 ratio). Therefore, to comply with the substitute open space provision for Blocks B, G and M1, a total of approximately 48,800 sf of open space must be identified within jurisdiction elsewhere in the Project area. If this open space is provided outside jurisdiction, the 1:25:1 ratio applies, and approximately 62,700 sf of open space is required.

The Proponent will provide more open space outside of (but adjacent to) Chapter 91 jurisdiction during Phases 2 and 3 than the SBMHP requires be provided for each phase. [9] Open space at Seaport Square Green and Courthouse Square are both planned for Phase 2. Both Harbor Way and M Way are planned for Phase 3. The location of planned open space, including Seaport Square Green, Courthouse Square, and Harbor Way provides a visual connection with the waterfront, and provides the community with a sense of place. Figure 4.8-4 identifies the location of the open space.

As set forth in Figure 4.8-2, in order to offset Phase 2 open space, approximately 25,000 sf of open space is required using the 1:25:1 ratio. Seaport Square Green is approximately 51,000 sf and Courthouse Square is approximately 15,000 sf, providing approximately 67,700 sf of open space, well in excess of the requirement.

An additional 38,125 sf of open space is required outside of jurisdiction in connection with Phase 3. The Project provides more than enough open space in Phase 2 to meet the open space requirement for Phase 3, and Harbor Way and M Way provide an additional 28,200 sf of open space as part of Phase 3. Please see Table 4.8-2.

[9] We also note that the Proponent expects that Phase 1 will provide approximately 10,000 sf of open space in excess of what is required for Phase 1 by Chapter 91.

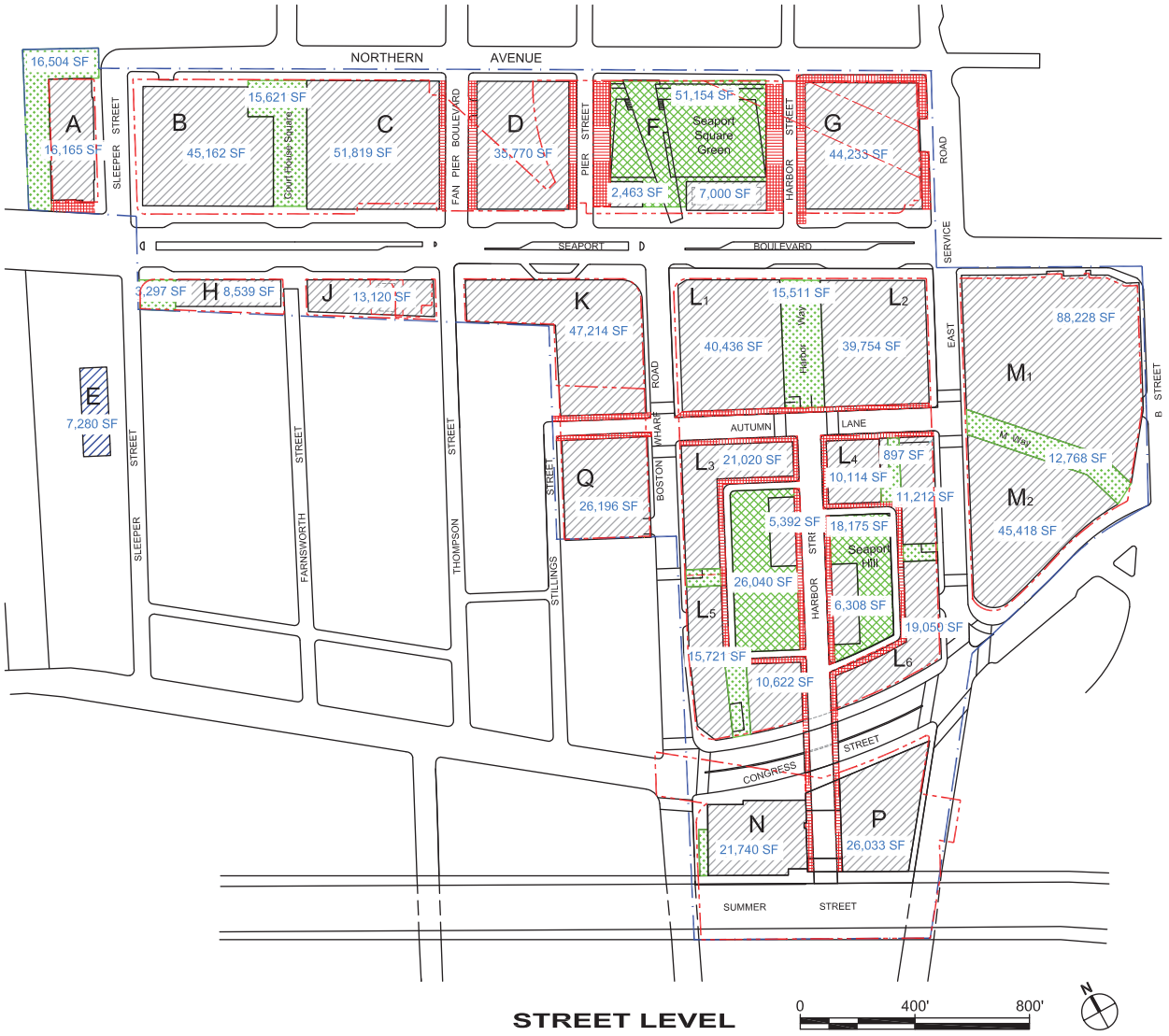
Table 4.8-2 Open space pursuant to South Boston Municipal Harbor Plan Decision

Phase and Block[10]	Open Space Required If Provided Within c. 91 Jurisdiction	Open Space Required If Provided Off-Site (1:1.25 ratio)	On-Site Open Space Provided	Other Open Space Provided	Total Open Space Provided	Open Space in Excess of Required Open Space (cumulative)
Phase 1 [11] A and H	16,000 sf	N/A	2,000 sf on Block H	16,000 sf on Old Sleeper 8,000 sf on Parcel E	26,000 sf	+10,000 sf
Phase 2 B and G	N/A	24,575[12] sf	1,700 sf on Blocks B and G	66,000 sf [13] (Seaport Square Green and Courthouse Square)	67,700 sf	+53,125 sf
Phase 3 M1	N/A	38,125 sf		28,200 sf (Harbor Way and M Way)	28,200 sf	+43,200 sf
Total	16,000 sf	62,700 sf			**121,900 sf**	**+43,200 sf**

[10] Block phasing could change with market conditions. Open space will be provided concurrent with development.

[11] Blocks A and H received a Phase 1 Waiver from MEPA.

[12] Reflects 1,700 sf provided on site on Blocks B and G at 1:1 ratio.



1,008,370 SF
PROJECT SITE

1,436,300 SF
PROJECT AREA

658,729 SF
BUILD OUT
(TOTAL SITE COVERAGE)

70,768 SF
NEW SIDEWALKS
(5,700 LF)

75,754 SF
PEDESTRIAN ONLY WAYS

102,550 SF
GREEN SPACE

7,280 SF
Parcel E
(not included in percentage calcul

PROJECT SITE	23 ACRES / 1,008,370 SF
BUILD OUT	658,730 SF
UNBUILT	349,640 SF

$$\frac{\text{UNBUILT (349,604 SF)}}{\text{PROJECT SITE (1,008,370 SF)}} = 35\%$$

SEAPORT SQUARE
IN SOUTH BOSTON

Figure 4.8-4

Project Site
Open Space

GALE INTERNATIONAL

Morgan Stanley

WS DEVELOPMENT

prepared by:
KPF

Although not considered for these open space calculations, Seaport Hill will provide an additional approximately 44,000 sf of open space. At the time of Project completion, it is anticipated that the amount of open space may be considered as potential offsets for the Shadow Protection Zone Analysis (see following "height" section).

Height. The Chapter 91 regulations at §9.51(3)(e) limit the height of new or expanded buildings to 55 feet if located within 100 feet of the project shoreline. At greater landward distances, the height of such buildings is limited to 55 feet plus one-half foot for every additional foot of separation from the project shoreline.

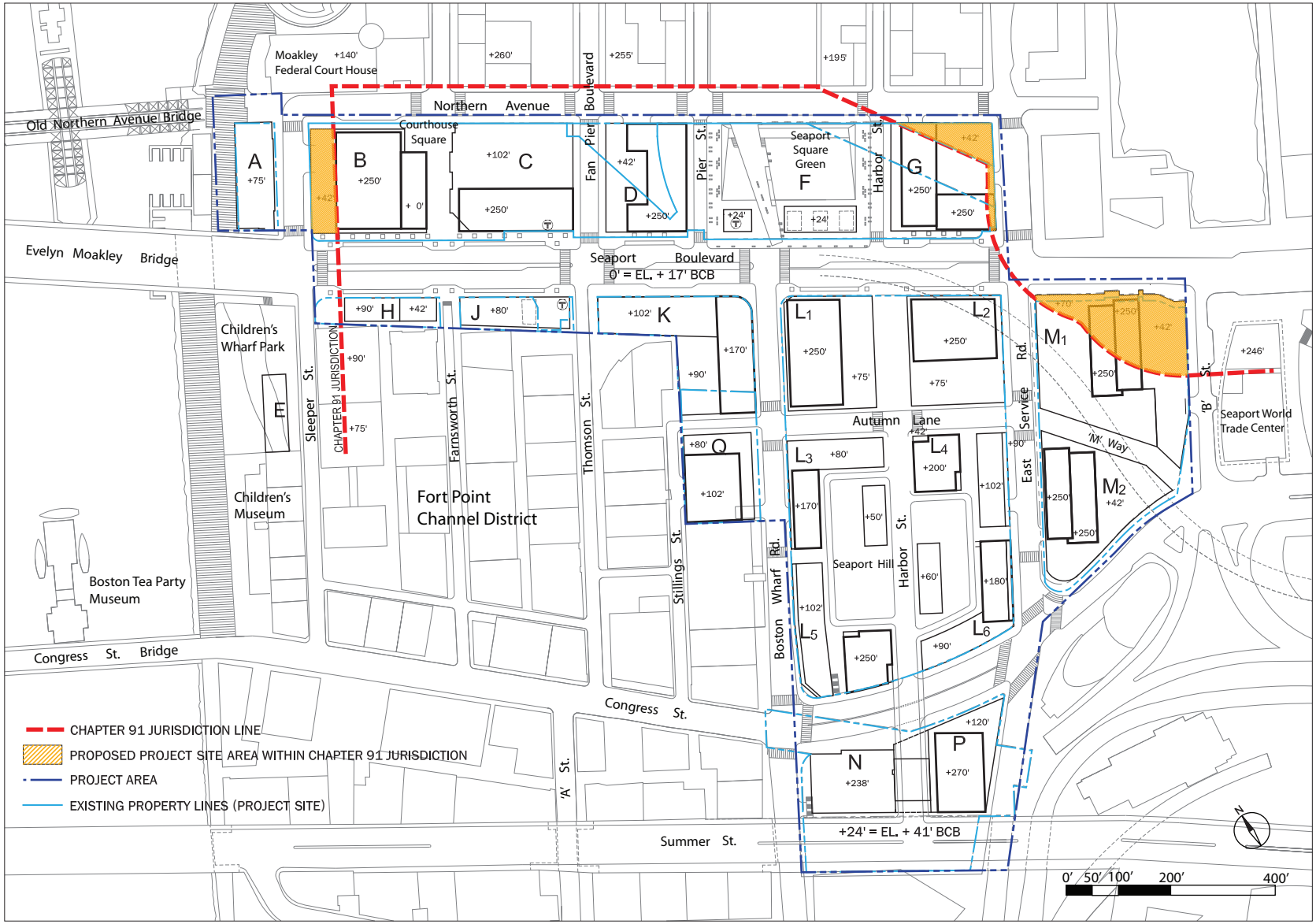
The substitute provision adopted in the SBMHP Decision provides Block B with a maximum height of 200 feet, and Blocks G and M1 with a maximum height of 250 feet. On Block B, only a lower building podium is within jurisdiction with a podium height of approximately 42 feet, far below what is allowed under the SBMHP or even Chapter 91.

As shown in Figure 4.8-5, the proposed buildings on Blocks G and M1 reach a top height of approximately 250 feet within jurisdiction as allowed by the SBMHP Decision along with substantially lower podium elements within jurisdiction ranging from 42 feet to 70 feet, far less height than provided under the SBMHP.

To compensate for wind, shadow and other potential adverse impacts to water-related public interests caused by substitute height provisions, the SBMHP provides a formula that quantifies both the degree of impacts and the level of offsets required. Under this formula, height-related impacts beyond those under a Chapter 91 compliant height are quantified as the net area within a designated Shadow Protection Zone (SPZ) that would receive net new shadow for over an hour on October 23 (see Figure 4.8-6 to 4.8-14).

Because Block B does not take advantage of any additional height from the SBMHP, this analysis considers only Blocks G and M1. While the Shadow Protection Zone analysis does not separate net new shadow cast from Block G as opposed to Block M1, impacts will be assessed individually by Block during the licensing process in order to determine the level of offsets associated with each Block.

Shadow impacts were estimated and quantified in order to determine if additional offsetting measures (beyond the open space as identified previously) are required. Figure 4.8-16 shows the estimated total area of net new shadow (beyond Chapter 91 compliant heights) for over an hour, totaling approximately 33,000 sf, created by Blocks G and M1. The base for the shadow diagrams shows only those buildings that were already in place as of January 1, 2001. It is important to note that even though the ICA is currently built and a new office tower on Fan Pier is well underway, these two buildings were not considered as part of the analysis. Therefore, there is a certain amount of "double counting" for net new shadow impacts. In other words, it is anticipated that net new shadow from Blocks G and M1 would be reduced had the shadow analysis considered buildings in place after January 1, 2001.



HEIGHT INDICATED AS MEASURED BY THE ZONING CODE

SEAPORT SQUARE
IN SOUTH BOSTON

Figure 4.8-5

Chapter 91 Compliance diagram with building heights

GALE INTERNATIONAL

Morgan Stanley

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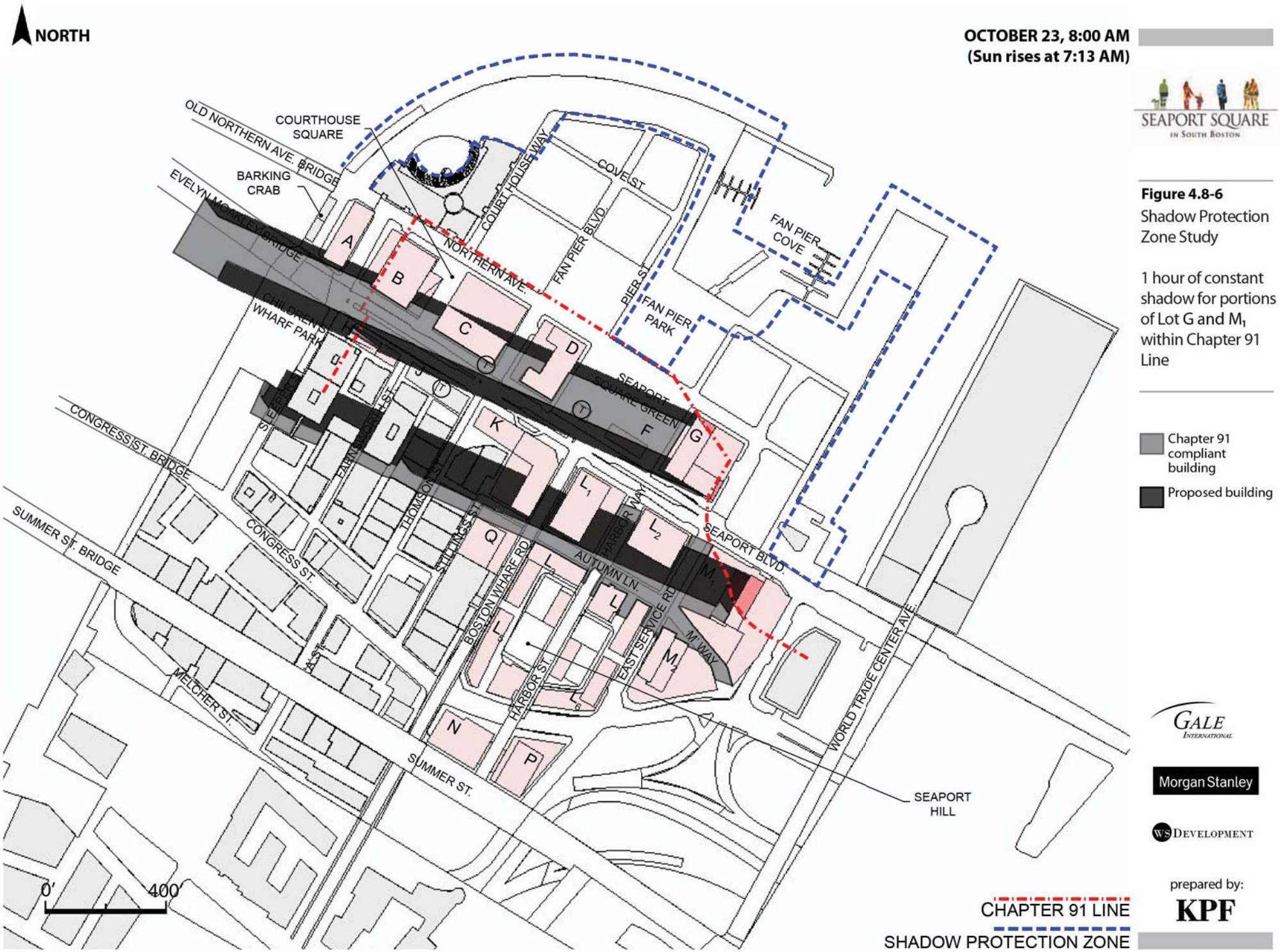
KPF



SEAPORT SQUARE
IN SOUTH BOSTON

Figure 4.8-6
Shadow Protection Zone Study

1 hour of constant shadow for portions of Lot G and M_1 within Chapter 91 Line

Chapter 91 compliant building

Proposed building

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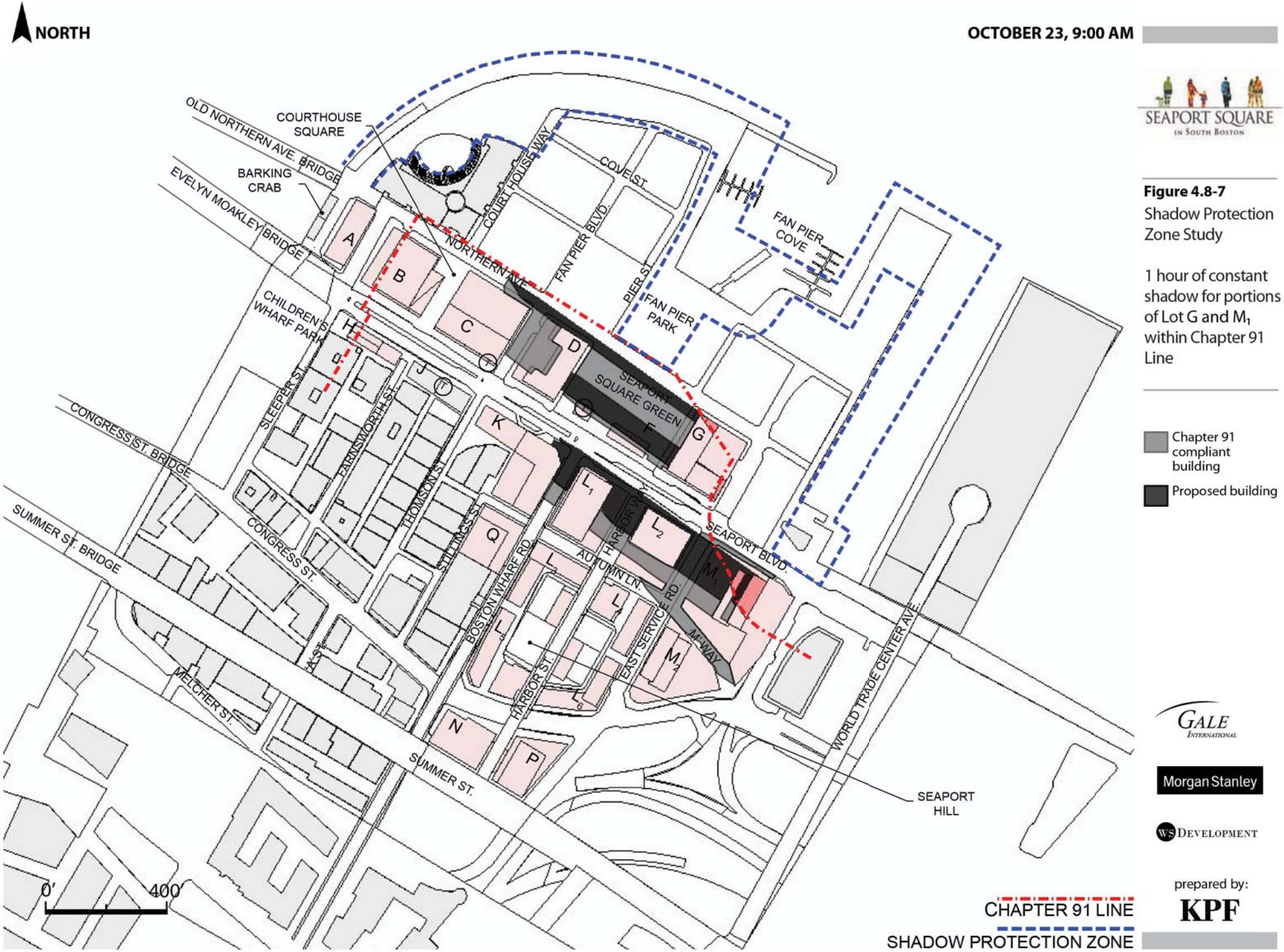
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BARKING CRAB
EVELYN MOAKLEY BRIDGE
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COVE ST.
FAN PIER BLVD.
FAN PIER COVE
NORTHERN AVE.
PIER ST.
FAN PIER PARK
CHILDREN'S WHARF PARK
SEAPORT SQUARE GREEN
SLEEPER ST.
FARNSWORTH ST.
THOMSON ST.
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CONGRESS ST. BRIDGE
CONGRESS ST.
SUMMER ST. BRIDGE
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MELCHER ST.
BOSTON WHARF RD.
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AUTUMN LN.
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CHAPTER 91 LINE
SHADOW PROTECTION ZONE
SEAPORT SQUARE
IN SOUTH BOSTON
Figure 4.8-7
Shadow Protection Zone Study
1 hour of constant shadow for portions of Lot G and M1 within Chapter 91 Line
Chapter 91 compliant building
Proposed building
GALE INTERNATIONAL
Morgan Stanley
WS DEVELOPMENT
prepared by:
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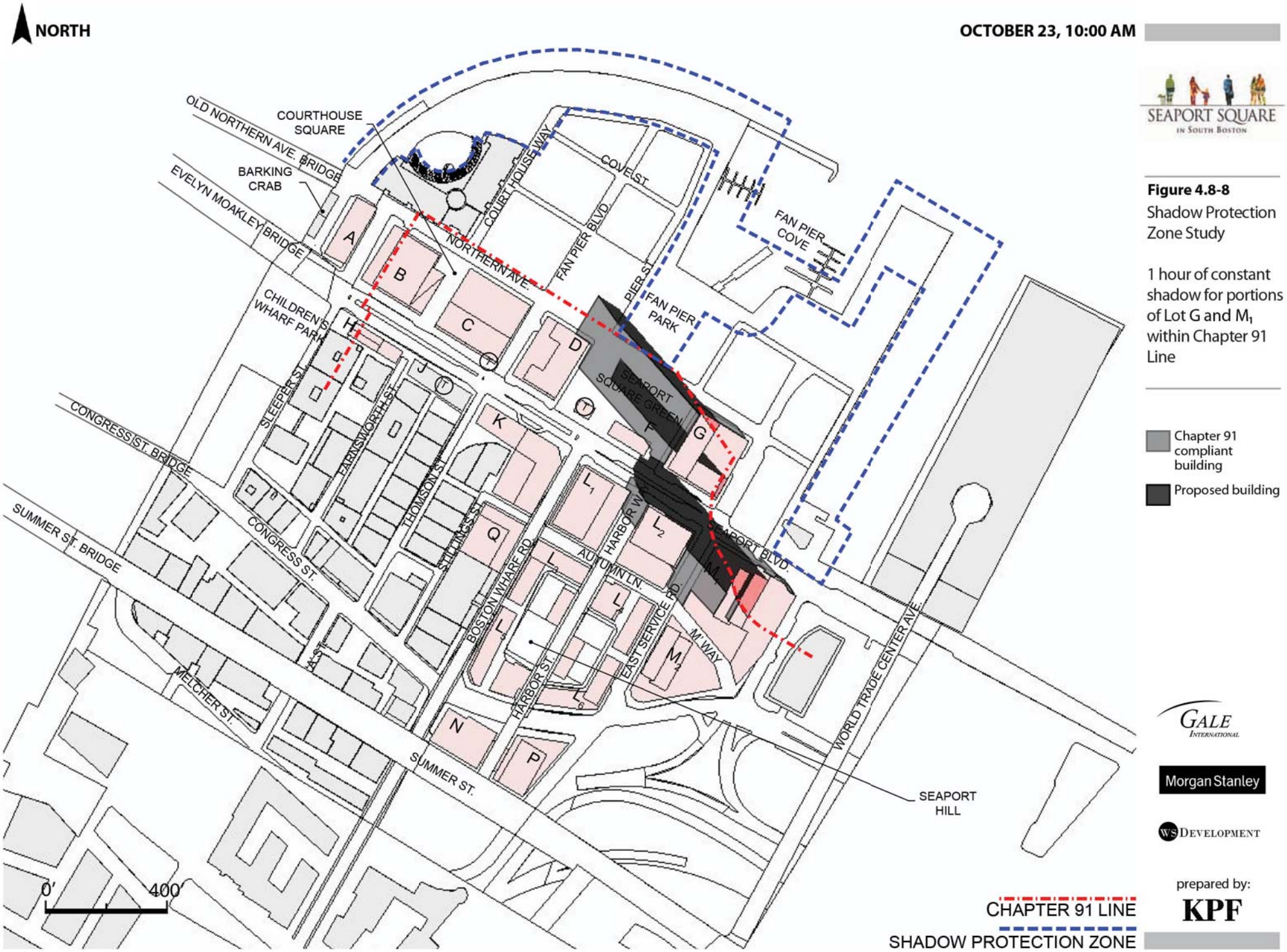
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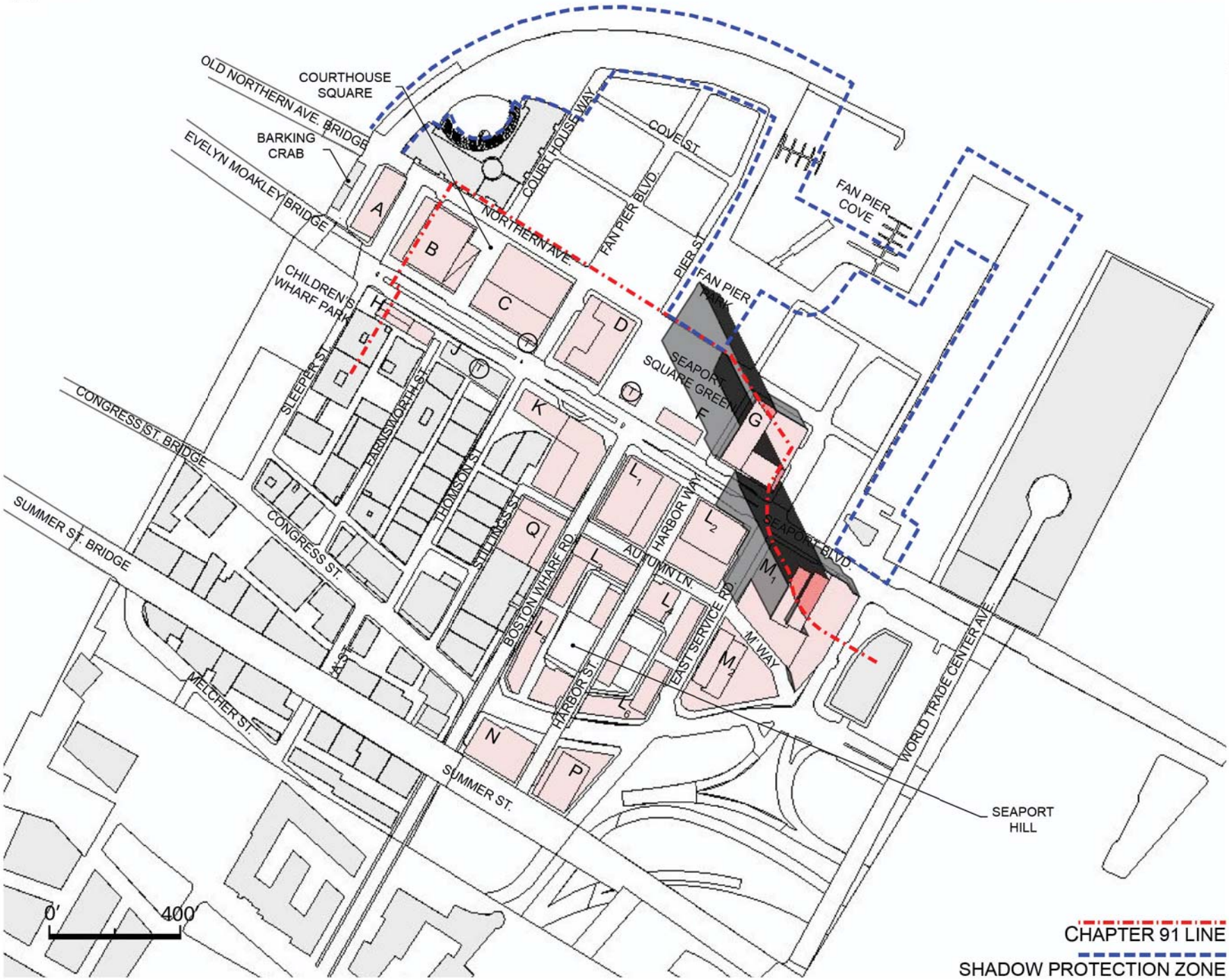
CHAPTER 91 LINE
SHADOW PROTECTION ZONE
SEAPORT SQUARE
IN SOUTH BOSTON
Figure 4.8-8
Shadow Protection Zone Study
1 hour of constant shadow for portions of Lot G and M1 within Chapter 91 Line
Chapter 91 compliant building
Proposed building
GALE INTERNATIONAL
Morgan Stanley
WS DEVELOPMENT
prepared by:
KPF

NORTH

OCTOBER 23,11:00 AM



SEAPORT SQUARE
IN SOUTH BOSTON

Figure 4.8-9
Shadow Protection Zone Study

1 hour of constant shadow for portions of Lot G and M_1 within Chapter 91 Line

Chapter 91 compliant building

Proposed building

GALE INTERNATIONAL

Morgan Stanley

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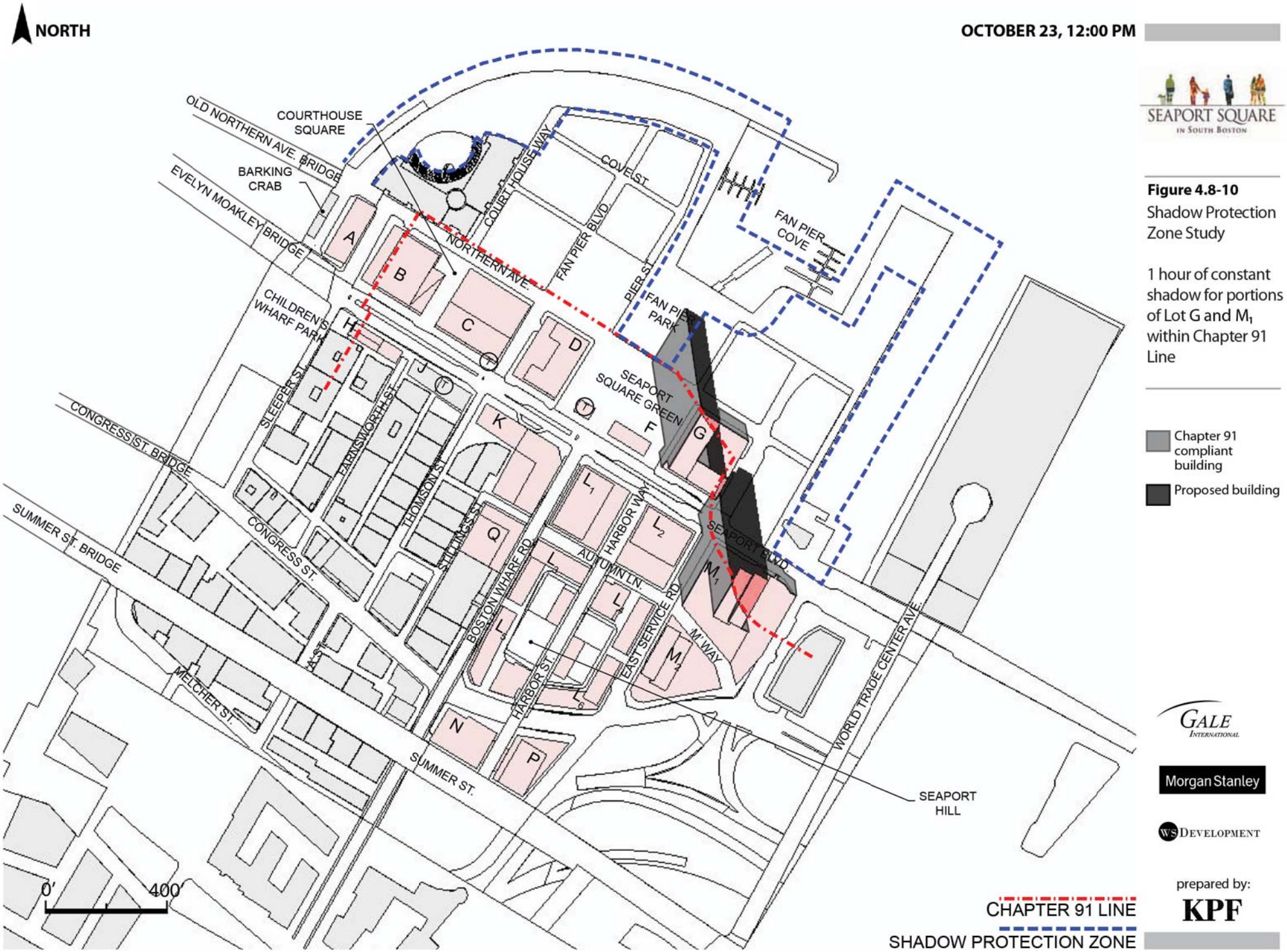
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BOSTON WHARF RD.
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CHAPTER 91 LINE
SHADOW PROTECTION ZONE
SEAPORT SQUARE IN SOUTH BOSTON
Figure 4.8-10
Shadow Protection Zone Study
1 hour of constant shadow for portions of Lot G and M1 within Chapter 91 Line
Chapter 91 compliant building
Proposed building
GALE INTERNATIONAL
Morgan Stanley
WS DEVELOPMENT
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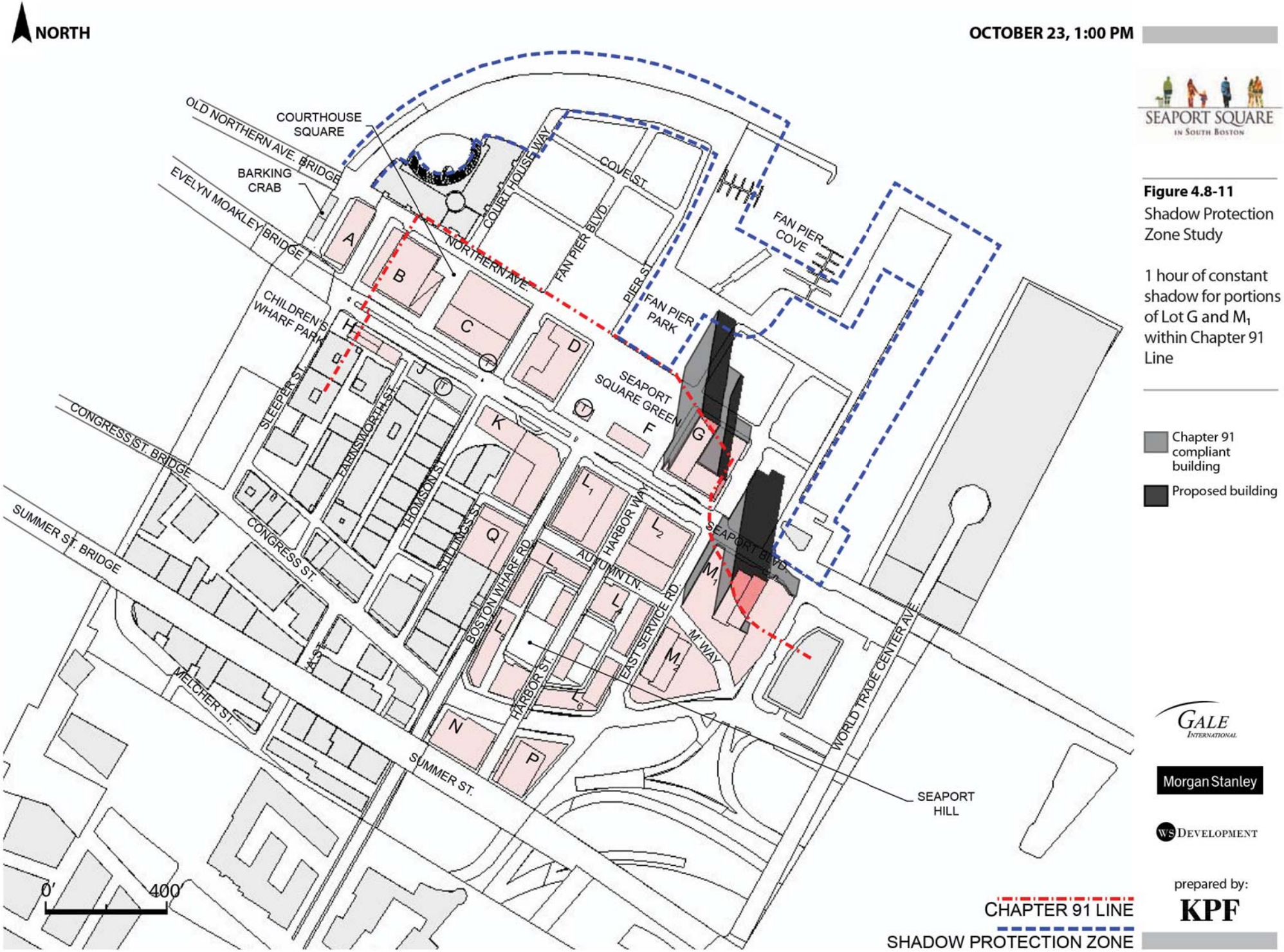
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CHAPTER 91 LINE
SHADOW PROTECTION ZONE
SEAPORT SQUARE
IN SOUTH BOSTON
Figure 4.8-11
Shadow Protection Zone Study
1 hour of constant shadow for portions of Lot G and M1 within Chapter 91 Line
Chapter 91 compliant building
Proposed building
GALE INTERNATIONAL
Morgan Stanley
WS DEVELOPMENT
prepared by:
KPF

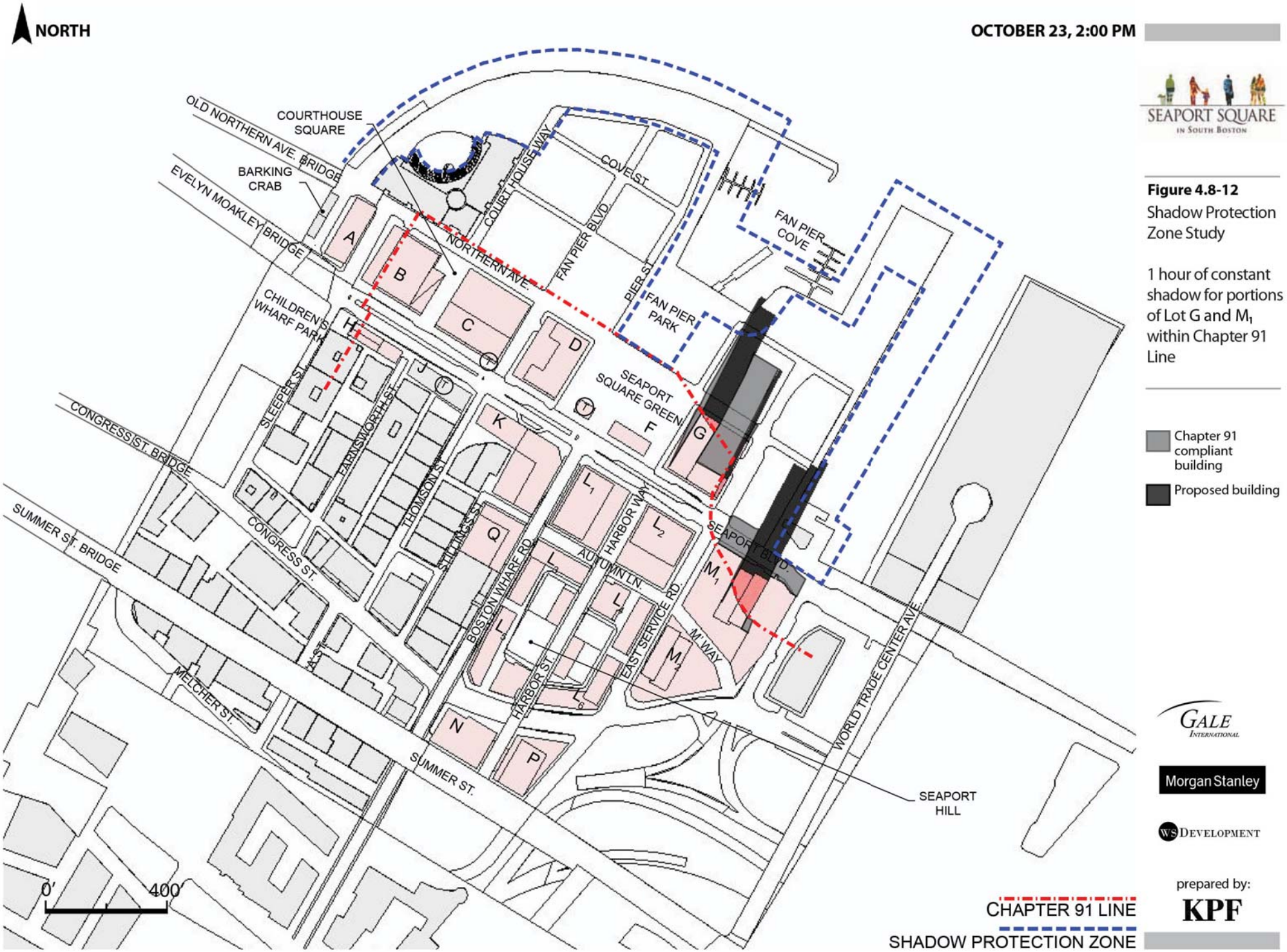
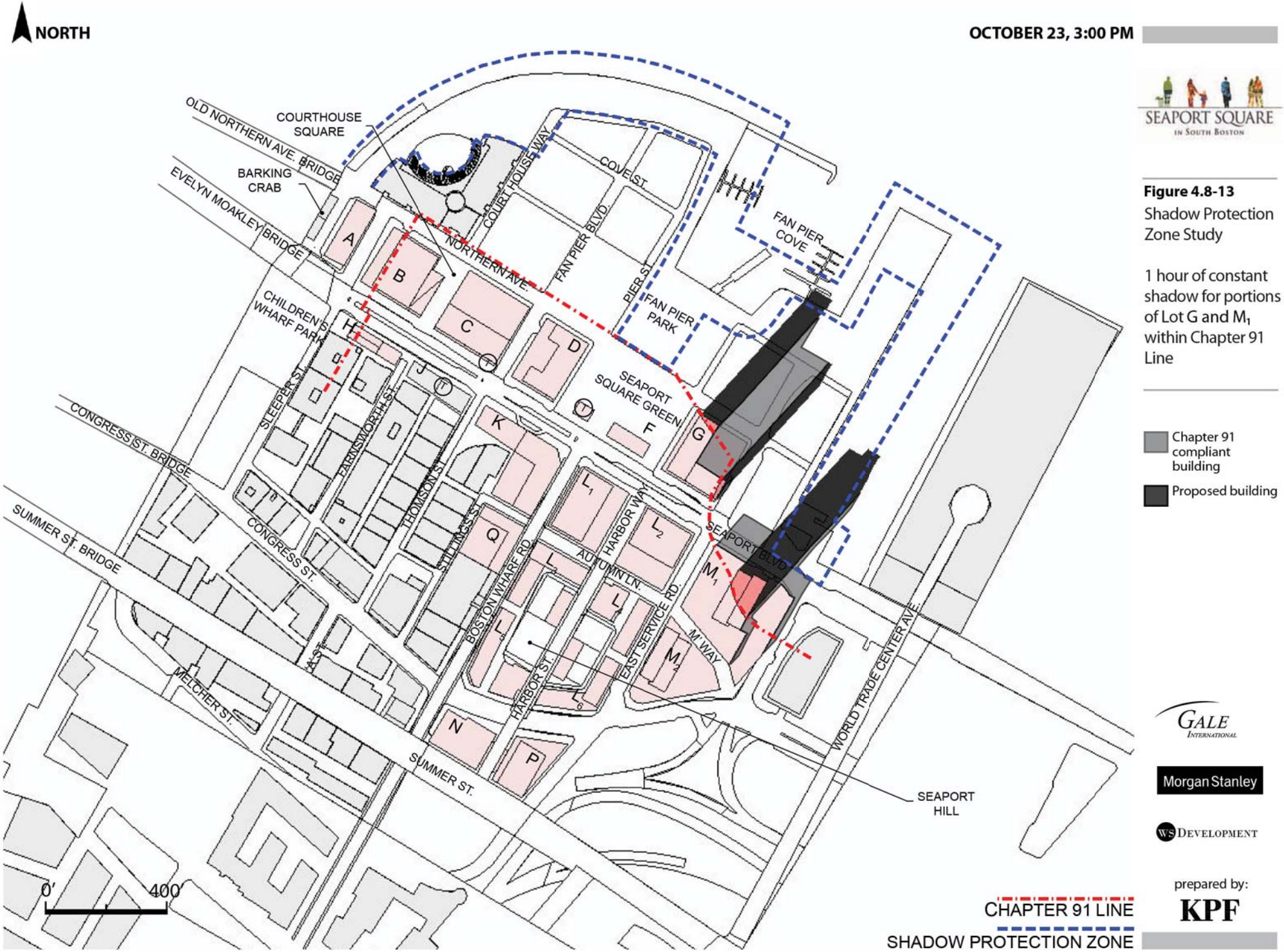


Figure 4.8-12
Shadow Protection Zone Study

1 hour of constant shadow for portions of Lot G and M_1 within Chapter 91 Line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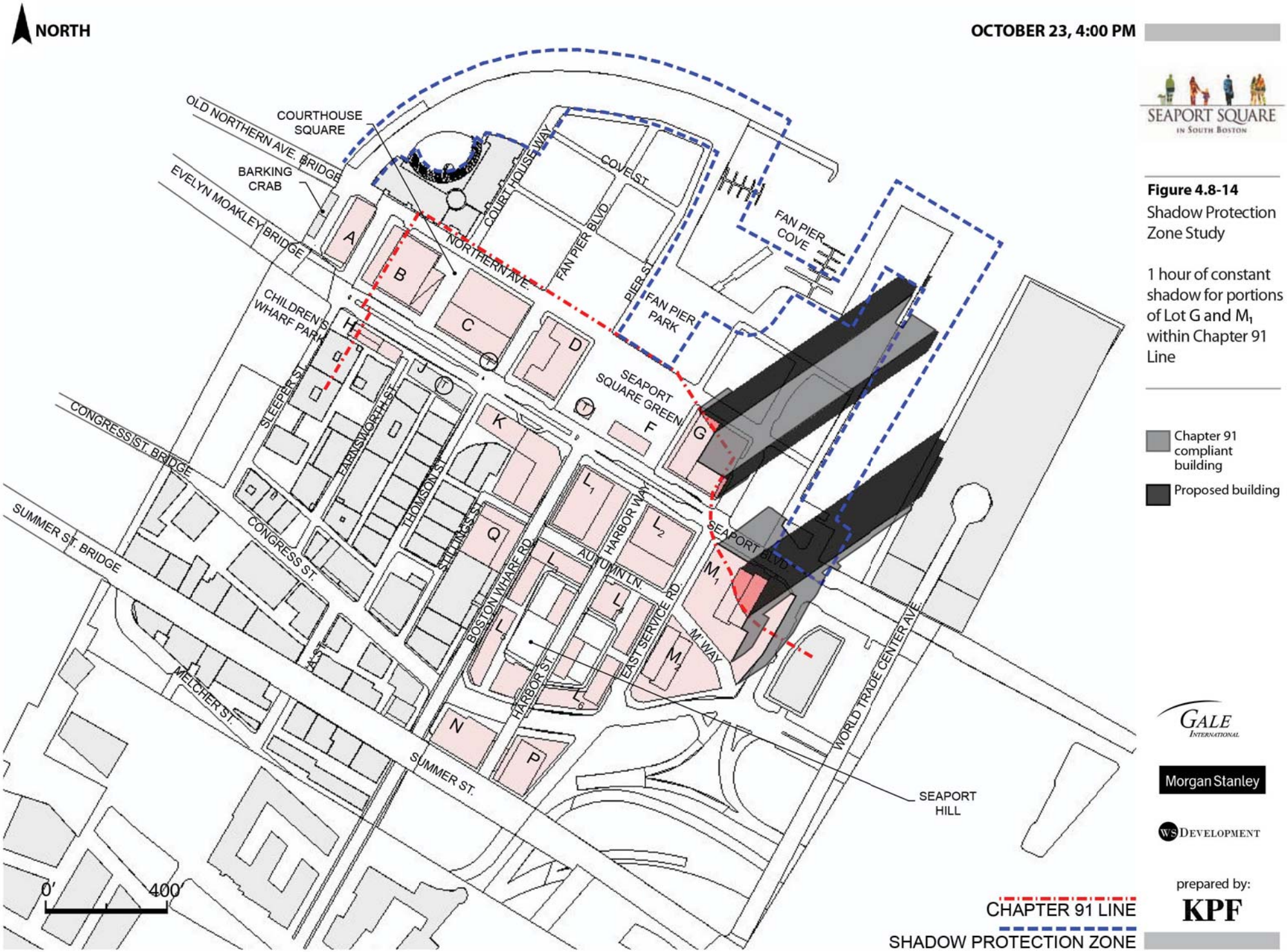
SEAPORT SQUARE GREEN
CONGRESS ST. BRIDGE
CONGRESS ST.
SUMMER ST. BRIDGE
BOSTON WHARF RD.
HARBOR WAY
AUTUMN LN.
SEAPORT BLVD.
EAST SERVICE RD.
M WAY
WORLD TRADE CENTER AVE.
A ST.
MELCHER ST.
HARBOR ST.
SUMMER ST.
SEAPORT HILL
A
B
C
D
E
F
G
H
J
K
L
L1
L2
L3
L4
L5
M1
M2
N
P
Q
0'
400'
CHAPTER 91 LINE
SHADOW PROTECTION ZONE
Chapter 91 compliant building
Proposed building
Figure 4.8-13
Shadow Protection Zone Study
1 hour of constant shadow for portions of Lot G and M1 within Chapter 91 Line
GALE INTERNATIONAL
Morgan Stanley
WS DEVELOPMENT
prepared by:
KPF


NORTH
OCTOBER 23, 4:00 PM
OLD NORTHERN AVE. BRIDGE
COURTHOUSE SQUARE
BARKING CRAB
EVELYN MOAKLEY BRIDGE
COURT HOUSE WAY
COVE ST.
FAN PIER BLVD.
FAN PIER COVE
NORTHERN AVE.
PIER ST.
FAN PIER PARK
CHILDREN'S WHARF PARK
SLEEPER ST.
FARNSWORTH ST.
THOMSON ST.
STILLINGS ST.
SEAPORT SQUARE GREEN
CONGRESS ST. BRIDGE
CONGRESS ST.
SUMMER ST. BRIDGE
BOSTON WHARF RD.
HARBOR WAY
AUTUMN LN.
EAST SERVICE RD.
SEAPORT BLVD.
M WAY
WORLD TRADE CENTER AVE.
A ST.
MELCHER ST.
HARBOR ST.
SUMMER ST.
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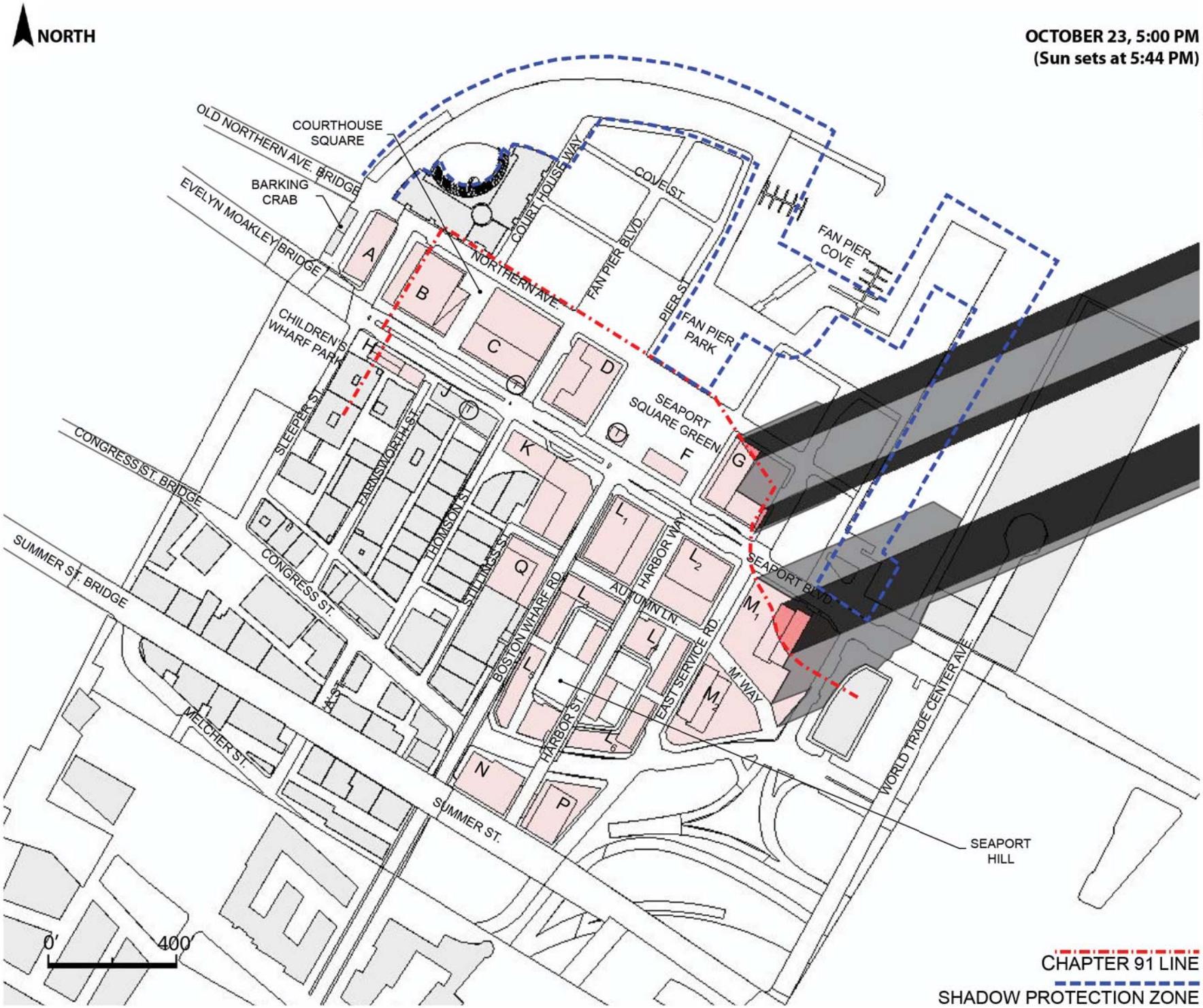
L3
L4
L5
L6
M1
M2
N
P
Q
0'
400'
CHAPTER 91 LINE
SHADOW PROTECTION ZONE
SEAPORT SQUARE IN SOUTH BOSTON
Figure 4.8-14
Shadow Protection Zone Study
1 hour of constant shadow for portions of Lot G and M1 within Chapter 91 Line
Chapter 91 compliant building
Proposed building
GALE INTERNATIONAL
Morgan Stanley
WS DEVELOPMENT
prepared by:
KPF



SEAPORT SQUARE
IN SOUTH BOSTON

Figure 4.8-15
Shadow Protection Zone Study

1 hour of constant shadow for portions of Lot G and M_1 within Chapter 91 Line

Chapter 91 compliant building

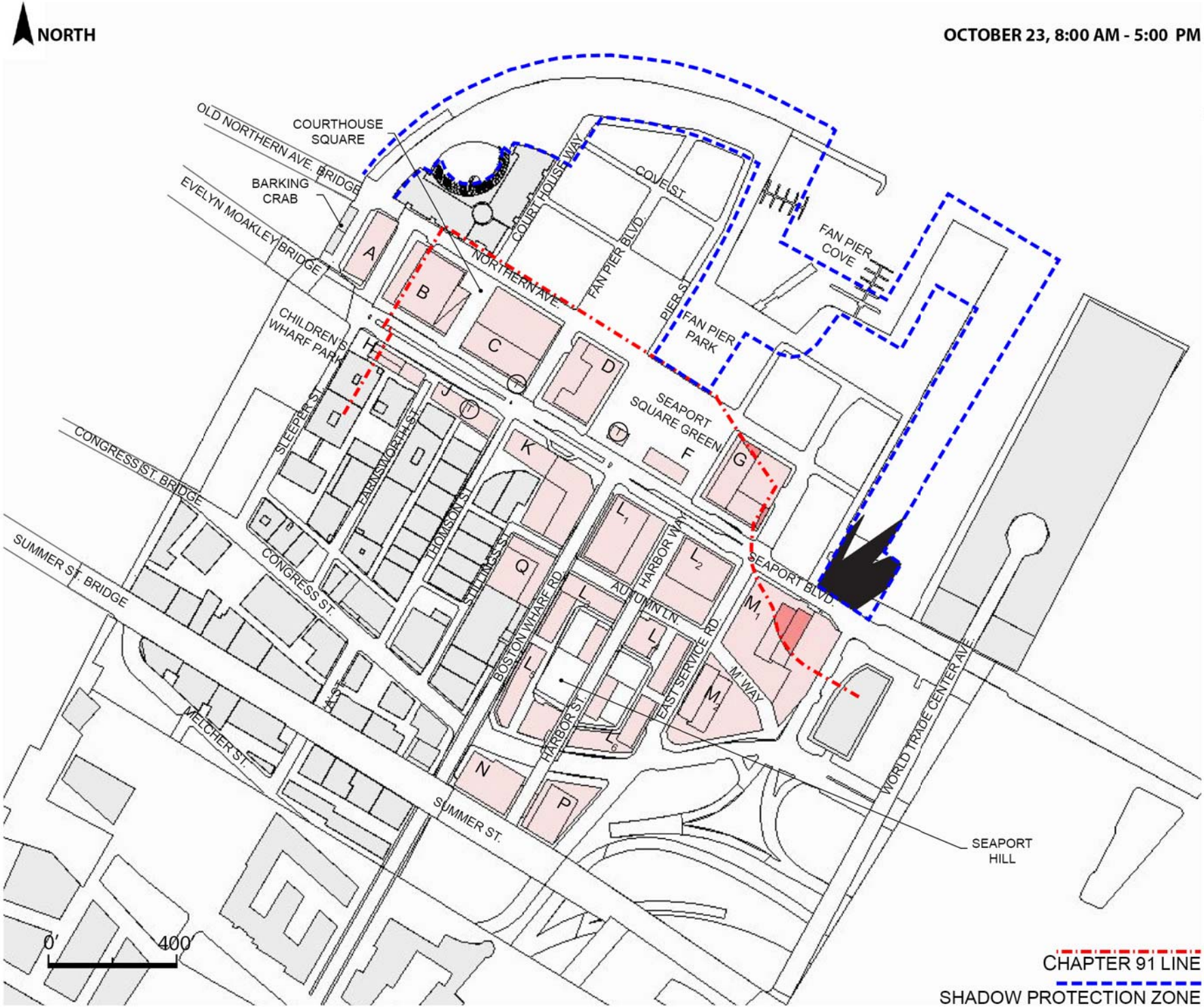
Proposed building

GALE INTERNATIONAL

Morgan Stanley

WS DEVELOPMENT

prepared by:
KPF



SEAPORT SQUARE
IN SOUTH BOSTON

Figure 4.8-16
Shadow Protection Zone Study

Net area (33,000 SF) of shadows from portions of Lot G and M_1 building within the Chapter 91 Line that cast shadows for more than 1 hour in the Shadow Protection Zone

GALE INTERNATIONAL

Morgan Stanley

WS DEVELOPMENT

prepared by:
KPF

The purpose of this analysis is to provide an approximate level of additional offsets associated with increased height. As previously mentioned, shadow impacts associated with individual buildings will be determined during licensing in order to determine level of offsets for individual buildings. Following directly below is the proposed approach to such offsetting measures:

The SBMHP identified preferred locations for additional offsets as outlined below:

1. Parcel E: Currently identified as open space offset for Phase 1 Waiver Blocks A and H.

2. Adjacent to Fan Pier Public Green: Seaport Square Green, a 1.25 acre open space is located immediately adjacent to the Fan Pier Park (or "public green").

3. Adjacent to Federal Courthouse: Courthouse Square is across the street from the Courthouse, as directed by the SBMHP.

Because the Seaport Square Project has already planned open space at the SBMHP preferred locations which meets Commonwealth Tidelands standards, any additional shadow impacts (beyond those offset by credited open space from Phase 1) will be met in a similar manner as provided by the Fan Pier parcels. Further offsets will be met through the provision of additional open space within the Project Site, ground level Facilities of Public Accommodation, provision of Special Public Destination Facilities, provision of civic uses, or provision of infrastructure improvements to the area. The Project will provide offsets concurrent with construction.

§9.52 Utilization of Shoreline for Water-Dependent Purposes

§9.52 of the Chapter 91 regulations require that any non-water-dependent activity or use shall devote a reasonable amount of space to water-dependent uses and public access. Such uses are defined to include waterfront boardwalks and esplanades for public recreation. Projects that include use of the water-dependent use zone are also required to provide appropriate public walkway access for the entire length of the water-dependent use zone. The width of said walkway is to be 10 feet wherever feasible, and should connect to other walkways. The SBMHP accepted the City's amplification for water-dependent use zones and requires a12-foot wide Harborwalk.

Currently there are no water-dependent uses on Blocks B, G or M1, and none of the Blocks include a water-dependent use zone.

§9.53 Commonwealth Tidelands

The Chapter 91 regulations state that a "nonwater-dependent use project that includes fill or structures on Commonwealth Tidelands … must promote public use and enjoyment of such lands to a degree that is fully commensurate with the proprietary rights of the Commonwealth, and which ensures that private advantages of use are not primarily but

merely incidental to the achievement of public purpose. In applying this standard, the Department shall take into account any factor affecting the quantity and quality of benefits provided to the public, in comparison to the detriments to public rights associated with facilities of private tenancy…".

Section 9.53 establishes criteria to meet this standard, which are applicable to those portions of the project that are within Commonwealth tidelands licensing, are non-water-dependent uses, and are subject to licensing. As noted above, Blocks B, G and M1 are all located on Commonwealth Tidelands, although the majority of these three Blocks are beyond licensing jurisdiction. Approximately 5.0 % of the Project Site (excluding Phase 1 Waiver Blocks A and H), is within Chapter 91 licensing jurisdiction.

The development of the portions of Blocks B, G and M1 that are within jurisdiction will meet the provisions of §9.53 as follows:

Baseline Water-Based Activity and Water Transportation Requirements [§9.53(2)(a)]. For sites within a water-dependent use zone, §9.53(2)(a) of the Chapter 91 regulations calls for at least one facility utilizing the water such as *ferries, cruise ships, water shuttles, public landings and swimming/fishing areas, excursion/charter/rental docks, and community sailing centers.*

Blocks B, G and M1 are all located at some distance from the water's edge, and do not have project shorelines or water-dependent use zones.

Space for Active and Passive Public Recreation [§9.53(2)(b)]. Blocks B, G and M1 will meet the requirements of §9.53(2)(a) through the activation of public open space in a year-round manner. Where parking lots currently exist, a new neighborhood will activate the waterfront and provide 24 hour/7 day a week activation of waterfront areas with new residents, visitors, tourist, and office workers. New publicly accessible open spaces will provide areas for public enjoyment, recreation, and rest. These spaces include Seaport Square Green (which connects to Fan Pier Park), Seaport Hill and Courthouse Square, providing a sense of space and respite for those visiting or working in the Moakley Federal Courthouse.

Facilities of Public Accommodation [§9.53(2)(c)]. The Chapter 91 regulations at §9.53(2)(c) require that ground level interior space be devoted to facilities of public accommodation, comprising an area that matches the portion of Commonwealth tidelands that are within the footprint of any non-water-dependent uses on the site (§9.53(2)(c)).

The entire ground floors of Blocks B, G and M1 will be occupied by facilities of public accommodation (no more than 20% of the ground floor will be uses to support upper level residential and other private uses). In addition, these Blocks will provide facilities of public accommodation on the second and third floors, including 5,000 sf for exhibition space.

Management Plan. The Chapter 91 regulations at §9.53(2)(d) require the development and implementation of a management plan for all on-site facilities offering water-related benefits to the public. The Chapter 91 license-holder will be responsible for the maintenance of all public open space areas established. A draft management plan specific to each Chapter 91 site as ultimately designed will be prepared for inclusion in the Chapter 91 license application.

§9.54 Consistency with Coastal Zone Management Policies

Nonwater-dependent use projects located in the coastal zone must be consistent with all policies of the Massachusetts Coastal Zone Management Program. The proposed Project is located within the boundaries of the coastal zone as determined by the regulations of the Massachusetts Coastal Zone Management Program. A review of the Project's consistency with the Coastal Zone Management Program policies is presented in Section 4.9 below.

4.8.5 Public Benefit Review and Determination

In November 2007 the Massachusetts House and Senate passed the "Landlocked Tidelands Legislation." The legislation, among other things, names the Secretary of EEA as the "administrator of tidelands" and requires the Secretary to conduct a "public benefit review" for projects located on tidelands and required to file a MEPA EIR, and to issue a written determination for such projects (the "Public Benefit Determination").

The Landlocked Tidelands Legislation requires analysis of a Project's impacts on the public's rights to access, use and enjoy tidelands that are protected by Chapter 91, as well as identification of measures to avoid, minimize, and mitigate any adverse impacts on such rights. The Seaport Square Project will not only promote public use and enjoyment of tidelands, but will provide year-round activation of the area and will link the Fort Point Channel and the South Boston waterfront.

In making the Public Benefit Determination required under the Landlocked Tidelands Legislation, the legislation requires that the Secretary shall consider the following:

"Purpose and effect of the development, the impacts on abutters and the surrounding community; enhancement to the property, benefits to the public trust rights in tidelands or other associated rights, including but not limited to, benefits provided through previously obtained municipal permits; community activities on the development site; environmental protection and preservation; public health and safety; and the general welfare; provided further that the secretary shall also consider the differences between tidelands and landlocked tidelands and great ponds when assessing the public benefit and shall consider the practical impact of the public benefit on the development."

The following points 1 – 7 address specifically the Project's adherence to the principals and guidelines as identified in the paragraph above:

1. purpose and effect of the development

The purpose and effect of the Seaport Square Project is to create a new neighborhood and provide year-round activation of Commonwealth tidelands by creating a locus of activity along with public amenities. The streetscape improvements and open space activation will draw many residents and visitors to the site and provide a safe and enjoyable route to the waterfront.

To reinforce the mission of Seaport Square as a place for connecting with the South Boston waterfront, shopping, working, living, learning, and recreating, the Project will include a substantial amount of open space that will help create a continuous public realm. More than one-third of the Project area will be unbuilt area, including new streets, green spaces, sidewalks and pedestrian ways connecting the surrounding communities and area attractions. Approximately six acres of the site will be publicly accessible open space, including green space, sidewalks, and pedestrian ways (but not including streets). The two main open spaces are Seaport Square Green and Seaport Hill, at 1.25 acres and 0.75 acres respectively, along with Courthouse Square.

Seaport Square proposes 23 buildings containing approximately 1.17 million sf of ground and second floor facilities of public accommodation, including a performing arts center, a Visitor's Center, a public library branch, exhibition space, public art trail, and restaurant and retail uses. The Project proposes 1.4 million sf of office and research uses, 1.3 million sf of retail/entertainment uses, 2,500 upper level residential units, 600,000 sf of educational, cultural and civic uses, 550 hotel keys, and 6,500 below-grade parking spaces.

The Project will provide a long-awaited gateway to South Boston, creating a vibrant and active 24-hour per day/7 day per week mix of uses along the Fort Point Channel and the South Boston waterfront. The purpose and effect of the Project is consistent with the City of Boston's Seaport Public Realm Plan and the South Boston Municipal Harbor Plan; it will provide public uses that will draw the public to the waterfront with improved pedestrian access and public activities and amenities.

2. impact on abutters and the surrounding community

The Project will improve the quality of life in the area by creating a cohesive neighborhood atmosphere for its residents, workers, and visitors. The combination of residential, commercial, hotel, retail and cultural/civic components will create a vibrant and engaging 24-hour per day/7 day per week neighborhood where only parking lots and fencing exist today. The Project has been designed to be consistent with long-term planning goals for the area, and will provide greatly improved and enhanced waterfront access and quality of life for the surrounding community.

The development of additional residential units in this area is a priority of the surrounding Fort Point and South Boston community as evidenced at Seaport Square community meetings. The Project directly supports this goal by providing 2,500 units of housing. Fifteen percent of this housing will be affordable housing, along with another 15% set aside for workforce housing. In addition, proposed buildings are in scale with adjacent development.

The Proponent will ensure that construction activities or development activities will affect water-dependent uses to the minimum extent possible. Existing functions for these businesses will be maintained or improved through the proposed Project elements. The Proponent will ensure that existing service functions for the adjacent Barking Crab Restaurant and Neptune Marine Services are maintained or improved during both the construction period and post-construction.

3. enhancement to the property

Currently the Project Site is occupied by parking lots, fencing, and the Chapel of Our Lady of Good Voyage. The Project will provide civic and public uses and create a sense of place along the South Boston waterfront. Where asphalt streets and parking lots currently exist, the Project will provide 23 well-designed, sustainable buildings, creating a new neighborhood with wide sidewalks and landscaped areas, and generous and welcoming open space areas for pedestrians and families, office workers and visitors alike.

Currently, the surfaces of these Blocks are essentially mainly impermeable, with little to no infiltration of runoff. Landscaping and the creation of the proposed pedestrian open spaces will result in a significant increase in permeable ground.

4. benefits to the public trust rights in tidelands or other associated rights

The benefits to public trust rights in tidelands are numerous. The Project will create a gateway to the South Boston waterfront, and will substantially increase public access, use and enjoyment of flowed and filled tidelands protected under the provisions of Chapter 91. In summary, the benefits to public trust rights are:

- **Extending the Public Realm to the Waterfront.** The Project will include a substantial amount of open space that will help create a continuous public realm. More than one-third of the Project Site will be unbuilt area, including new streets, green spaces, sidewalks, and pedestrian ways connecting the surrounding communities and area attractions. Approximately six acres or approximately 25 % of the site will be publicly accessible open space other than streets. The two main open spaces are Seaport Square Green and Seaport Hill, at 1.25 and 0.75 acres respectively, as well as the open space at Courthouse Square, while improvements to the Seaport

Boulevard median and sidewalks will provide an aesthetically pleasing connection through the Project to the Financial District and to other areas of the South Boston waterfront and Fort Point Channel.

- **New Pedestrian Connections.** As the Fort Point Channel Watersheet Activation Plan envisions, a new waterfront way will be created along the City-owned Old Sleeper Street to provide a pedestrian connection linking the existing Harborwalk segments at the Children's Museum and the Federal Courthouse. Restaurants and outdoor seating will enliven the area during day and evening hours.

- **New Streets Connecting Landside to Water.** The Proponent plans to spend an estimated $10 million to construct Harbor Street, which will link the elevated Summer Street (constructed to accommodate trains serving Fan Pier) to the ground level. The new street will establish a loop connecting downtown Boston and the Seaport District. Harbor Street will gently slope towards the water from Summer Street, crossing through the new residential neighborhood located within the L Blocks. Harbor Street will then continue as a wide pedestrian path to reach Seaport Boulevard and Seaport Square Green.

- **Provision of Seasonal Programming for Community Events.** The Project includes the commitment to work with community groups and institutions in providing year-round event and exhibit programming in the new and existing open spaces and facilities of public accommodation associated with the Project. The Project intends to coordinate open space activation efforts with the already existing artist community in the Fort Point Channel area and with the adjacent Children's Museum.

- **Cultural Corridor**: Created by a physical link from Summer Street to Seaport Boulevard via Harbor Street, the Cultural Corridor will connect the Institute of Contemporary Art and the Boston Convention and Exhibition Center. With these two buildings, there will be a new cultural destination in the City that will include sculpture gardens on Seaport Hill, a performing arts and education complex on Blocks P and N, exhibit and gallery spaces at Blocks L1 and G, public art and performance venues on Seaport Square Green, and a branch library at Block D. The Cultural Corridor will build on the arts identity of the neighboring Fort Point Channel District, and create a strong cultural component that will activate and provide year-round use of Seaport Square.

- **Provision of New Facilities of Public Accommodation.** This Project will activate ground level pedestrian areas by providing facilities of public accommodation on ground floors on most all of the buildings within the Project (extending even beyond Chapter 91 jurisdiction), surpassing the requirements of the Chapter 91 regulatory provisions for the activation of Commonwealth Tidelands. Facilities of pubic accommodation will also occupy second floors in many of the Blocks.

- **Protection of Adjacent Open Spaces**. The Proponent has designed development within Chapter 91 jurisdiction to protect adjacent open spaces and provide daylight and minimal shadow on public pedestrian areas. Block A will reach a height of 75 feet, protecting adjacent open spaces for pedestrian enjoyment. Block H building height within Chapter 91 licensing jurisdiction is set by the MHP at 75 to 85 feet – more restrictive than would be granted under Chapter 91 regulation for this site. While Block B could reach 200 feet under the SBMHP, the Proponent seeks just 70 feet within licensing jurisdiction. Within jurisdiction, portions of Blocks G and M1 reach up to 250 feet as provided in the SBMHP, with substantially lower podium elements ranging from 42 feet to 70 feet in height.

- **Off-Site Open Space Improvements.** The Proponent will work with the South Boston community to identify an off-site athletic field that can be utilized for athletic events related to the educational facility. As part of this arrangement, the Proponent will fund capital upgrades to the field(s) and fund a portion of the ongoing maintenance. Additional off-site improvements are planned for Northern Avenue, Farnsworth Street, Old Sleeper Street and Parcel E, located near the Children's Museum. The Proponent will also upgrade sidewalks adjacent to the Project Site, as well as improve the median of Seaport Boulevard.

- **Water Transportation Kiosk.** A new kiosk will provide information and schedules for MBTA Silver Line and bus and taxi service providing easy connections to downtown, the airport and surrounding communities. The kiosk will also provide public transportation schedules for all areas service lines creating a central hub for information for riders from the adjacent Fan Pier Marina which offers access to commuter boats and water taxis.

- **Interpretive Signage and Wayfinding**. The Project will work in coordination with the City and area artists to provide signage for the Seaport District. Such signage will create a sense of place within the new neighborhood as well as link adjacent neighborhoods to the Project Site.

5. community activities on the development site

Seaport Square will provide approximately 2,500 residential units, creating year-round activation and use. Numerous active ground-level uses including restaurants, retail and commercial uses will provide activity and interest. The new neighborhood will provide activation during weekend and evening hours. Ground-level restaurant uses will include outdoor seating and pedestrian connections to open space areas and the waterfront. The community will enjoy the arts shows and exhibits, and gathering with neighbors and friends along this site, moving from open space areas to more intimate spaces. A new Cultural Corridor: will create a physical link from Summer Street to Seaport Boulevard via Harbor Street, the Cultural Corridor will be a new cultural destination in the City, connecting the Institute of Contemporary Art on the waterfront and the Boston Convention and Exhibition

Center on Summer Street. Between these two buildings, new attractions will include a performing arts and education complex on Blocks P and N, sculpture gardens on Seaport Hill, exhibit and gallery spaces at Blocks L1 and G, public art and performance venues on Seaport Square Green, and a branch library at Block D. The Cultural Corridor will build on the arts identity of the neighboring Fort Point Channel District, and create a strong cultural component that will activate and provide year-round use of Seaport Square. In addition, as mentioned above, innovative public amenities are planned to further activate the site and create varied user groups. Activities will be programmed such that the Seaport Square Green is activated and provides a space for community involvement.

6. environmental protection and safety

Seaport Square consists of the redevelopment of parking lots that are now mostly vacant at night. The site does not contain any significant natural resources or publicly protected open space or parkland. The majority of the Project (with the exception of Blocks H, J, K and Q) is located outside of the Fort Point Channel Waterfront Subdistrict of the Expanded Groundwater Conservation Overlay District (GCOD) (Article 32 of the Boston Zoning Code). The Fort Point Waterfront Subdistrict is not identified as an area of depressed groundwater levels, but many of the older buildings located south of Seaport Boulevard are supported on wood piles. Groundwater monitoring wells will be installed during future planned subsurface explorations which will be necessary for completed foundation design. The groundwater monitoring wells will also be used to better document existing groundwater levels and hydro geologic conditions. For Blocks H, J, K, and Q, the Proponent will certify that the Project will not negatively impact groundwater levels on the site or on adjacent lots pursuant to the provisions of Article 32, Section 6.

On each Block, an improved stormwater management system will be designed and constructed which meets both MassDEP and BWSC requirements. This system will collect and treat stormwater runoff from the site. Runoff will be primarily from rooftops or pedestrian open space, so pre-treatment will likely be limited to deep sump catchbasins. To the degree necessary, clean roof-top runoff will be discharged to the ground via infiltration trenches or surface gratings. Currently, the surfaces of the development Blocks are essentially impermeable, with little to no infiltration of runoff. Landscaping of the proposed pedestrian open spaces will likely result in a significant increase in permeable ground.

7. public health and safety

The replacement of parking lots with active 24 hour a day/7 day per week residential, retail, commercial and civic uses will promote and increase public safety. In addition, streetscape improvements including lighting, landscaping, and curbing will encourage walking, while nearby MBTA stations encourage public transit, both helping to improve pedestrian safety and health.

4.9 Consistency with Policies of the Office of Coastal Zone Management

The Proponent certifies to the Massachusetts Office of Coastal Zone Management (MCZM) that the Project complies with the program policies of Massachusetts' approved coastal management program and will occur in a manner consistent with such policies. This certification is made in accordance with the requirements of the Federal Coastal Zone Management Act (16 U.S.C. 1451 et seq.) (CZMA) and implementing regulations at 15 CFR Part 930, as amended, and pursuant to 301 CMR 21.00 and relevant statutory and regulatory authorities for the Commonwealth of Massachusetts Coastal Zone Management Plan and Program Policies. The analysis contained herein describes Project compliance with each of the Massachusetts coastal zone program policies.

4.9.1 Jurisdiction for Federal Consistency Certification

The Project Site does not lie within the 100-year floodplain, but it is within the Coastal Zone as defined in 301 CMR 21.05. The Project also requires Federal permits and approvals, including a National Pollution Discharge Elimination System (NPDES) Permit from the U.S. Environmental Protection Agency and a Federal Aviation Administration (FAA) Height Restriction Notice and Section 19 Determination (see Section 1.3.5).

Therefore, all Project elements are within the geographic scope of MCZM's jurisdiction as defined in the regulations set forth in 301 CMR 21.03, and the applicable review procedures are set forth at 301 CMR 21.07 (see 301 CMR 21.04(2)).

The following section describes the Project's compliance with the program policies and management principles of the approved Coastal Zone Management Program Plan for Massachusetts, as set forth in the policy appendix at 301 CMR 21.98.

4.9.2 Certification of Consistency with MCZM Program Policies

The Proponent certifies that the Project complies with the program policies of the Massachusetts approved Coastal Zone Management Plan ("the Plan") and will be conducted in a manner consistent with such policies.

The following section lists each of the Program Policies and Management Principles contained in the Massachusetts Coastal Zone Management Plan and describes in detail how the Project is consistent with the Plan.

4.9.2.1 Water Quality

Water Quality Policy #1

Ensure that point-source discharges in or affecting the coastal zone are consistent with federally-approved state effluent limitations and water quality standards.

The Project does not propose any new point-source discharges. In accordance with the Massachusetts Wetlands Protection Act (MWPA) regulations and the Site Plan Review requirements of the Boston Water and Sewer Commission (BWSC), the proposed stormwater management system will greatly improve the existing management system and will comply with MassDEP's Stormwater Management Policy. As part of the proposed Block improvements, the Proponent will design and construct an improved on-site stormwater management system that meets MassDEP and BWSC requirements.

Water Quality Policy #2

Ensure that non-point source ("NPS") pollution controls promote the attainment of state surface water quality standards in the coastal zone.

The Project will implement structural and non-structural Best Management Practices (BMPs) to treat stormwater runoff and significantly improve the quality of stormwater discharges from the site. Under existing conditions, untreated stormwater runoff from the predominantly impervious site discharges into Boston Harbor; currently, the Project Site is comprised of parking lots, fencing, and the Chapel of Our Lady of Good Voyage. The existing surfaces of Project Site Blocks are essentially impermeable, with little to no infiltration of stormwater. In contrast, the Project design includes placing all off-street surface parking underground which eliminates a significant source of stormwater pollution. Additionally, measures such as landscape design, rainwater capture, and green roofs will increase pretreatment of runoff and result in a net decrease in impervious area on the site. Where asphalt streets and parking currently exist, the Project will provide twenty-three well-designed and sustainable buildings, creating a new neighborhood with wide sidewalks and landscaped areas as well as generous and welcoming open space areas for pedestrians and families, office workers, and visitors alike. Landscaping, the proposed open spaces, and other design elements will result in a significant increase in permeable ground. As a result, the post-construction volume and rate of stormwater runoff will be substantially less than under existing conditions.

For construction-period activities, the Proponent will prepare a Construction Management Plan (CMP) and submit it to the BTD in accordance with the City of Boston's Construction Management Program. The CMP will address a number of issues including construction schedule, staging areas, signage, perimeter protection, material handling, truck routes, air quality, noise, vibration, groundwater, protection of utilities and adjacent structures, and rodent control. The general contractor will be required to comply with conditions of the approved CMP.

The Proponent has incorporated construction-period sedimentation and erosion controls into the Project design and construction practices. An Erosion and Sedimentation Control (ESC) Plan will prevent storm sewer sedimentation, airborne dust, and particulate matter pollution. A standardized set of implementation guidelines applicable to the ESC will ensure operational consistency across Blocks within the Project. The Proponent will work

to ensure that all construction site activities meet applicable state and federal standards for erosion and sedimentation control by ensuring that appropriate Best Management Practices (BMPs) are implemented for each site condition as construction commences on individual Blocks or groups of Blocks. BMPs and the ESC Plan will adhere to the guidelines laid out in the LEED 2009 rating system.

The Proponent will provide a detailed Stormwater Management Plan (SMP) to the Boston Water and Sewer Commission's Engineering Design Division. The SMP will detail construction-period erosion control measures to prevent the discharge of sediment and contaminated groundwater or stormwater runoff into the City's drainage system or harbor waters. As part of the SMP, the Proponent will include a site map showing areas used for storage or treatment of contaminated soil, groundwater, or stormwater, the location of major construction-period control or treatment structures, and existing and proposed drainage patterns. Since the Project will disturb more than one acre of land, the Proponent will submit a Notice of Intent to the U.S. Environmental Protection Agency (EPA) for coverage under the General Permit of the National Pollution Discharge Elimination System (NPDES) General Permit for Stormwater Discharges from Construction Activities. Pursuant to permit requirements, a Storm Water Pollution Prevention Plan (SWPPP) and associated implementation measures pertaining to a variety of items including erosion and sedimentation controls will be prepared and maintained during construction.

Water Quality Policy #3

Ensure that activities in or affecting the coastal zone conform to applicable state and federal requirements governing subsurface waste discharges and sources of air and water pollution and protection of wetlands.

The Project does not propose any subsurface waste discharge; therefore, this policy is not applicable. A sewer connection permit will be filed with the Massachusetts Department of Environmental Protection. The site does not contain any significant natural resources or publicly protected open space or parkland.

4.9.2.2 Habitat

Habitat Policy #1

Protect wetland areas including salt marshes, shellfish beds, dunes, beaches, barrier beaches, salt ponds, eel grass beds, and freshwater wetlands for their role as natural habitats.

The Project is designed to avoid impacts to wetland resource areas to the maximum extent practicable and to minimize and mitigate unavoidable impacts in accordance with applicable state, local, and federal regulations. By complying with performance standards

identified in the WPA, the Project will serve the protected interests identified in the statute. The site does not contain any significant natural resources or publicly protected open space or parkland.

Most Project activities are located outside wetland resource areas and associated 100-foot Buffer Zones. The Project boundary is located within 100 feet of Fort Point Channel. However, the area is previously developed and does not include sensitive elements that would make it inappropriate for redevelopment: the Project Site is not located in a floodplain, it does not contain any known habitat for endangered species, is not designated as "prime farmland", and is not adjacent to wetland areas.

Habitat Policy #2

Promote the restoration of degraded or former wetland resources in coastal areas and ensure that activities in coastal areas do not further wetland degradation but instead take advantage of opportunities to engage in wetland restoration.

The Project is designed to avoid impacts to wetland resource areas to the maximum extent practicable and to minimize and mitigate unavoidable impacts in accordance with applicable state, local, and federal regulations. Most Project activities are located outside wetland resource areas and associated 100-foot Buffer Zones. The Project boundary is located within 100 feet of Fort Point Channel. However, the area is previously developed and does not include sensitive elements that would make it inappropriate for redevelopment: the Project Site is not located in a floodplain, it does not contain any known habitat for endangered species, is not designated as "prime farmland", and is not adjacent to wetland areas.

4.9.2.3 Protected Areas

Protected Areas Policy #1

Assure preservation, restoration, and enhancement of complexes of coastal resources of regional or statewide significance through the Areas of Critical Environmental Concern (ACEC) program.

The Project complies with this standard. Under existing conditions, a significant volume of untreated stormwater runoff flows from the Project area into Boston Harbor. By eliminating at-grade parking and implementing the proposed structural and non-structural BMPs to manage and treat stormwater runoff, the Project will significantly improve the quality of stormwater runoff discharged from the site. In compliance with MassDEP's Stormwater Management Guidelines, stormwater treatment will remove at least 80% of total suspended solids (TSS) from impervious surface runoff prior to discharge into the Harbor. Additionally, care and maintenance of private stormwater infrastructure will be detailed in a

comprehensive maintenance plan with performance and reporting by the owner. Improving the water quality of stormwater runoff from the Project Site will translate into benefits for Boston Harbor.

Protected Areas Policy #2

Protect state and locally designated scenic rivers and state-classified scenic rivers in the coastal zone.

The Project is not located in or near any state or locally designated scenic rivers; therefore, this policy does not apply.

Protected Areas Policy #3

Review proposed developments in or near designated or registered historic districts or sites to ensure that the preservation intent is respected by federal, state, and private activities and that potential adverse effects are minimized.

Chapter 254 review by the Massachusetts Historic Commission (MHC) will be required and a meeting has been requested with the MHC.

4.9.2.4 Coastal Hazards

Coastal Hazard Policy #1

Preserve, protect, restore, and enhance the beneficial functions of storm damage prevention and flood control provided by natural coastal landforms, such as dunes, beaches, barrier beaches, coastal banks, land subject to coastal storm flowage, salt marshes, and land under the ocean.

According to the WPA Regulations (310 CMR 10.03(5)), jurisdictional wetland resource areas are presumed significant in varying capacities to provide flood control, storm damage prevention, prevention of pollution, wildlife habitat, fisheries habitat, protection of public and private water supply, and protection of groundwater supply. The Proponent is not attempting to overcome these presumptions of significance, and a number of measures and Best Management Practices (BMPs) will protect the identified interests and collectively ensure compliance with applicable performance standards.

First, the Project design minimizes the amount of work proposed to occur within wetland resource areas or associated Buffer Zones. Second, appropriate BMPs employed during construction will minimize erosion and manage stormwater. Prior to filing a Notice of Intent (NOI) with the Boston Conservation Commission, the Project will consult with the City regarding activities located in jurisdictional areas.

Coastal Hazard Policy #2

Ensure construction in water bodies and contiguous land areas will minimize interference with water circulation and sediment transport. Approve permits for flood or erosion control projects only when it has been determined that there will be no significant adverse effects on the project site or adjacent or down coast areas.

The Project does not propose any activities that could adversely interfere with water circulation or sediment transport. In addition, a decrease in impervious surface area on the Project Site and the implementation of effective stormwater management controls will decrease both the volume and velocity of stormwater runoff.

Coastal Hazard Policy #3

Ensure that state and federally funded public works projects proposed for location within the coastal zone will: (1) not exacerbate existing hazards or damage natural buffers or other natural resources; (2) be reasonably safe from flood and erosion related damage; (3) not promote growth and development in hazard-prone or buffer areas, especially in Velocity zones and ACECs; and (4) not be used on Coastal Barrier Resource Units for new or substantial reconstruction of structures in a manner inconsistent with the Coastal Barrier Resource/Improvements Acts.

The Project is not a public works project; therefore, this policy does not apply.

Coastal Hazard Policy #4

Prioritize public funds for acquisition of hazardous coastal areas for conservation or recreation use, and relocation of structures out of coastal high hazard areas, giving due consideration to the effects of coastal hazards at the location to the use and manageability of the area.

The Project design reflects a clear and conscious effort to revitalize the area in a manner that produces numerous benefits while simultaneously respecting the potential for coastal hazards and risks. The Project is not located within the 100-year floodplain.

4.9.2.5 Port and Harbor Infrastructure

Ports Policy #1

Ensure that dredging and disposal of dredged material minimize adverse effects on water quality, physical processes, marine productivity and public health.

The Project does not involve dredging or dredged material disposal related to ports or harbors; therefore, this policy is not directly applicable.

Ports Policy #2

Promote the widest possible public benefit from channel dredging, ensuring that designated ports and developed harbors are given highest priority in the allocation of federal and state dredging funds. Ensure that this dredging is consistent with marine environment policies.

The Project does not involve dredging any navigation channels, nor is it located within a designated port or developed harbor; therefore, this policy does not apply.

Ports Policy #3

Preserve and enhance the capacity of Designated Port Areas (DPAs) to accommodate water-dependent industrial uses and prevent the exclusion of such uses from tidelands and any other DPA lands over which a state agency exerts control by virtue of ownership, regulatory authority, or other legal jurisdiction.

The Project is not located in a DPA; therefore, this policy does not apply.

Ports Management Principle #1

Encourage, through technical and financial assistance, expansion of water dependent uses in designated ports and developed harbors, re-development of urban waterfronts, and expansion of visual access.

This Project is not located in a designated port or developed harbor. Seaport Square Project is, however, an important redevelopment Project with implications for activities along Fort Point Channel and Boston Harbor. Recognizing the Project's role and important function in promoting the use and enjoyment of the waterfront, the Project design facilitates public access by enhancing pedestrian connections, improving the quality of open space, and activating the area with a variety of uses. Open space created by the Project will include, but is not limited to, Seaport Square Green, Seaport Hill, and Courthouse Square. Located in three prominent locations, the orientation and design of these open spaces will provide visual and functional connections with the waterfront, thus encouraging active and passive use while establishing a sense of place for the community.

4.9.2.6 Public Access

Public Access Management Principle #1

Improve public access to coastal recreation facilities and alleviate auto traffic and parking problems through improvements in public transportation. Link existing coastal recreation sites to each other or to nearby coastal inland facilities via trails for bicyclists, hikers, and equestrians, and via rivers for boaters.

The redevelopment of this site into an attractive mixed-use development will help create a thriving urban community in the South Boston area. With 2,500 residential units located within a commercial employment core, the site is ideal for promoting walking as a means of commuting. As a mixed-use development within close proximity to the MBTA Red and Silver Lines, the Project embodies the major tenets of transit-oriented development (TOD).

In addition to being located within a quarter-mile of public transit, Seaport Square has planned for and designed a compact, walkable development incorporating approximately 100 retail stores, housing, hotels, offices, educational facilities, a library, a performing arts center and other recreational opportunities for pedestrians. The Proponent also anticipates continuing the bike share program which it has operated successfully at the site for the past three years. A comprehensive car-share program will also operate from the proposed underground parking garage and will be available to neighborhood residents and visitors. By redeveloping an underutilized area of South Boston that has connectivity with Fort Point Channel and Boston Harbor, the Project will create opportunities for a variety of users and thereby activate use of the waterfront and coastal areas.

Public Access Management Principle #2

Increase capacity of existing recreation areas by facilitating multiple uses and by improving management, maintenance and public support facilities. Resolve conflicting uses whenever possible through improved management rather than through exclusion of uses.

The Project design enhances public access to the waterfront by providing pedestrian connections, improving the quality of open spaces, and activating a currently underutilized area. The Proponent or its successors will be responsible for ongoing management and maintenance of improvements proposed for the 1.25-acre Seaport Square Green, 0.75-acre Seaport Hill, and Courthouse Square, an open space adjacent to the Moakley Federal Courthouse. These open spaces, provided coincident with Project impacts, will attract pedestrians to the site and encourage activity along the accessible waterfront. The Proponent does not expect to restrict the hours of use at public open spaces, and there will be no gates or fencing. Informational signage will be in accordance with the license, as will a maintenance plan developed with MassDEP.

The Project will also encourage bicycling as a mode of transportation and recreation. Bicycle storage space will exceed BTD requirements, and changing room areas will be provided for office Blocks.

Public Access Management Principle #3

Provide technical assistance to developers of private recreational facilities and sites that increase public access to the shoreline.

Although the Project is not a recreational facility, it is designed to revitalize an important area of South Boston that has connections to Fort Point Channel and Boston Harbor. The Project will create a vibrant mixed-use neighborhood, establish a significant gateway to the South Boston waterfront, and provide additional pedestrian pathways and connections to the City of Boston's Harborwalk. The Project will introduce year-round use and enjoyment of two new public green spaces, Seaport Square Green and Seaport Hill, and will activate the waterfront with exterior and interior spaces that encourage public waterfront access and use as well as programming to encourage year-round use. Cultural and civic amenities will further activate the South Boston waterfront and will specifically include space for a library and exhibition space, a performing arts center, new Facilities of Pubic Accommodation, landscaping, and public amenities.

Public Access Management Principle #4

Expand existing recreation facilities and acquire and develop new public areas for coastal recreational activities. Give highest priority to expansions or new acquisitions in regions of high need or limited site availability. Assure that both transportation access and the recreational facilities are compatible with social and environmental characteristics of surrounding communities.

The Project is an important component in revitalizing the South Boston waterfront and providing enhanced opportunities for public use and recreation. As a mixed-use development incorporating office, commercial, and residential space, the Project will activate the area adjacent to Fort Point Channel and Boston Harbor for a variety of users. Furthermore, this transit-oriented development is accessible from MBTA Red and Silver lines and will improve the efficiency and functionality of the site as a pedestrian area. This improved pedestrian environment will service not only the direct users of the Project but also MBTA patrons and other users seeking out the South Boston waterfront as a destination.

4.9.2.7 Energy

Energy Policy #1

For coastally dependent energy facilities, consider siting in alternative coastal locations. For non-coastally dependent energy facilities, consider siting in areas outside of the coastal zone. Weigh the environmental and safety impacts of locating proposed energy facilities at alternative sites.

Although the Project will include energy-related components to support its primary uses, the Project is not an energy facility. This Policy does not apply.

Energy Management Principle #1

Encourage energy conservation and the use of alternative sources such as solar and wind power in order to assist in meeting the energy needs of the Commonwealth.

Given the limited solar resource and unpredictable wind resource available on site, the Proponent will evaluate the potential for solar PV or solar hot water system installations on a Block-by-Block basis as design progresses. Given the space constraints on tower rooftops, the ability for large-scale solar installations is not possible on this Project. In order to create a financially viable Project that also meets the environmental goals of the Commonwealth, energy efficiency of MEP systems and building façade optimization will be adopted as prime metrics to guide building design. The Proponent has consciously designed the Project to incorporate measures at a masterplanning level that will encourage the creation of energy efficient buildings to perform above and beyond baseline conditions. These measures include a LEED 2009 target of a Silver rating on individual Blocks, a LEED-ND Silver or greater target for the Project Site, and the creation of Design and Tenant manuals to guide the decision-making process during design, construction, fit-out, and operation.

Building envelopes and energy-related building systems will be designed to exceed the minimum standards outlined in the LEED 2009 rating system. The Project will verify energy savings on each Block through the "whole building energy modeling" process as outlined in Appendix G of the ASHRAE 90.1-2007 standard.

Building utilities will be metered to allow tenants to monitor energy consumption in order to maximize operational efficiencies. Building Management Systems will be installed in each building to facilitate the comprehensive monitoring of primary installed equipment.

The Proponent will designate an independent and qualified commissioning agent to establish commissioning requirements for inclusion in building design, develop and implement a commissioning plan, and verify the installation and performance of commissioned systems. The scope of commissioning will involve MEP-related energy-consuming systems including Heating Ventilation and Air Conditioning (HVAC), lighting controls, renewable energy systems, and hot water systems. Commissioning of building systems will proceed on a Block-by-Block basis, with a separate commissioning plan being developed for each LEED-registered Block or group of Blocks.

4.9.2.8 Ocean Resources

Ocean Resources Policy #1

Support the development of environmentally sustainable aquaculture, both for commercial and enhancement (public shellfish stocking) purposes. Ensure that the review process regulating aquaculture facility sites (and access routes to those areas) protects ecologically significant resources (salt marshes, dunes, beaches, barrier beaches, and salt ponds) and minimizes adverse impacts upon the coastal and marine environment.

The Project does not involve aquaculture; therefore, this policy does not apply.

Ocean Resources Policy #2

Extraction of marine minerals will be considered in areas of state jurisdiction, except where prohibited by the Massachusetts Ocean Sanctuaries Act, where and when the protection of fisheries, air and marine water quality, marine resources, navigation and recreation can be assured.

The Project does not involve extracting marine minerals; therefore, this policy does not apply.

Ocean Resources Policy #3

Accommodate offshore sand and gravel mining needs in areas and in ways that will not adversely affect shoreline areas due to alteration of wave direction and dynamics, marine resources and navigation. Mining of sand and gravel, when and where permitted, will be primarily for the purpose of beach nourishment.

Neither offshore mining nor beach nourishment is involved with the Project; therefore, this policy does not apply.

4.9.2.9 Growth Management

Growth Management Principle #1

Encourage, through technical assistance and review of publicly funded development, compatibility of proposed development with local community character and scenic resources.

The Project design will activate an underutilized area of South Boston that is adjacent to Fort Point Channel and Boston Harbor. Provisions for civic and public uses among this mixed-use development will create a sense of place along the South Boston waterfront. Where existing asphalt streets and parking lots characterize the underutilized area, the Project will provide 23 well-designed, sustainable buildings and will create a new neighborhood with wide sidewalks, landscaped areas, and generous welcoming open spaces for pedestrians and families, office workers, and visitors alike. As such, the Project is a critical component of efforts to revitalize the South Boston waterfront community. This transit-oriented development will provide new services and stimulate the community in an efficient manner by utilizing and enhancing existing transportation infrastructure. In this fashion, the Project will maximize benefits while minimizing potential adverse impacts.

In addition to these benefits, the physical design of the development is consistent with the height, scale, and massing of similar developments in surrounding areas. Buildings proposed as part of the Project will range between 24 and 270 feet in height, which is

typical for urban neighborhoods and consistent with building heights for existing and proposed buildings in the Project vicinity. Located in three prominent locations, the orientation and design of Seaport Square Green, Seaport Hill, and Courthouse Square will provide visual and functional connections with the waterfront, thus encouraging active and passive use while establishing a sense of place for the community.

Growth Management Principle #2

Ensure that state and federally funded transportation and wastewater projects primarily serve existing developed areas, assigning highest priority to projects that meet the needs of urban and community development centers.

The Project is not a state or federally funded transportation or wastewater project; therefore, this principle does not apply.

Growth Management Principle #3

Encourage the revitalization and enhancement of existing development centers in the coastal zone through technical assistance and federal and state financial support for residential, commercial and industrial development.

Seaport Square proposes 23 buildings containing approximately 1.17 million sf of ground- and second-floor facilities of public accommodation including a performing arts center, a Visitor's Center, public library branch, exhibition space, public art trail, restaurant, and retail uses. The Project proposes 1.4 million sf of office and research uses, 1.25 million sf in retail uses, 2,500 upper-level residential units, 550 hotel keys, 600,000 sf of educational, cultural, and civic uses, and 6,500 below-grade parking spaces. This mixed-use transit-oriented development will revitalize the South Boston waterfront community while utilizing existing transportation services. A new transportation kiosk in Seaport Square will establish a central hub for riders to travel between various locations on Boston Harbor and the Fan Pier Marina, which will offer access to commuter boats and water taxis. The kiosk will also enhance connections with downtown Boston, Logan Airport, and surrounding communities by focusing on services provided by the MBTA Silver Line, buses, and taxis.

The Project will provide a long-awaited gateway to South Boston, creating a vibrant and active mix of uses along the Fort Point Channel and the South Boston waterfront around the clock. The intended purpose and anticipated effects from the Project are consistent with the City of Boston's Seaport Public Realm Plan and the South Boston Municipal Harbor Plan; the mix of uses, design elements, improved pedestrian access, and public amenities will draw the public to the waterfront. As a result, the Project will improve the quality of life in the area by creating a cohesive neighborhood atmosphere for residents, workers, and visitors alike.

4.9.3 Conclusion

The purpose and effect of the Seaport Square Project is to create a new neighborhood and provide year-round activation of the South Boston waterfront and coastal area by creating a locus of activity along with public amenities. The streetscape improvements and open space activation will draw many residents and visitors to the site and provide a safe and enjoyable route to the waterfront. To reinforce the Project's mission to function as a connection between the South Boston waterfront and opportunities to shop, work, live, learn, and recreate, a substantial amount of open space will be provided to create a continuous public realm. More than one-third of the Project Site will be un-built, consisting of new streets, green spaces, sidewalks, and pedestrian ways connecting the surrounding communities and attractions. Publicly accessible open space will be headlined by two primary open spaces (Seaport Square Green and Seaport Hill) as well as Courthouse Square and improvements to the Seaport Boulevard median and sidewalks. In aggregate, the open spaces and pedestrian-area improvements will provide an aesthetically pleasing sense of connectivity throughout the Project area as well as with the Financial District and other areas of the South Boston waterfront.

As described herein and in the appended materials, the Project complies with the enforceable policies of Massachusetts' approved Coastal Zone Management Plan and will be conducted in a manner consistent with such policies.

4.10 Geotechnical Impacts / Groundwater

4.10.1 Existing Site and Subsurface Conditions

The Project is located in an area of South Boston that was filled during the 1800s. Historically the area was developed for railroad and other associated uses. The existing Project area is relatively flat and consists primarily of vacant parcels utilized for surface parking.

Available geologic and other subsurface information was collected and reviewed to develop an understanding of subsurface soil, bedrock, and groundwater conditions. The research consisted of information from various sources including historic test boring data, data obtained for MBTA South Boston Transitway design and construction, the Central Artery/Tunnel project, and nearby developments which were compiled to develop an understanding of subsurface conditions.

Subsurface conditions are generally characterized as follows:

Generalized Description	Depth to Top of Layer (ft)	Thickness of Layer (ft)
Fill	--	4 to 9.5
Hydraulic Fill/Organic Silt	4 to 9.5	13 to 25
Silty Sand/Sandy Silt	18 to 29	3 to 21
Marine Clay	29 to 42.5	75 to 111
Glacial Till	109 to 150	0 to 41
Bedrock	117.5 to 166.5	--

Remains of previous structures from former development at the property and other historic uses may remain buried in place within the surficial fill soils.

Several significant infrastructure projects are aligned through or adjacent to the Project. These include utility improvements, and the MBTA South Boston Transitway, which extends from the Fort Point Channel, beneath Seaport Boulevard and south to Congress Street. Sections of the Central Artery Tunnel (CA/T) daylight near the southern portion of the Project at Congress Street. The presence, proximity, condition and potential impacts to these structures and facilities have been reviewed and will be considered in development of the design and construction methodology.

4.10.2 Geotechnical Design and Below Grade Construction Activities

Considering the range of building geometries and basement configurations proposed for the Project, geotechnical design studies will focus on developing appropriate solutions for each situation. A variety of foundation systems and solutions will be required based on proposed structural requirements, site constraints and subsurface conditions.

The surficial fill and organic soils underlying the site are not considered suitable for foundation support. For buildings at Blocks H and J, where no excavation is planned for below grade parking and for Block A where one basement level is planned, pile foundations extending to support below the unsuitable soils will be required. Various types of pile foundation systems have been utilized in the area and there are many proven and commonly utilized pile types available that can be installed for the Project.

In areas where below-grade parking is planned, excavation for the parking will result in the removal of the unsuitable bearing soils, and building foundations will likely bear in the marine clay soils encountered at excavation depth. Special consideration will be required

to support high concentrated loads or at locations within close proximity of existing below grade structures, such as the CA/T, to design adequate systems to not impact foundation performance of adjacent structures. In these cases, high capacity drilled in foundation elements which do not result in ground disturbance and vibration, and will isolate the load from adjacent structures, are anticipated for these foundation support requirements.

4.10.3 Groundwater Conditions

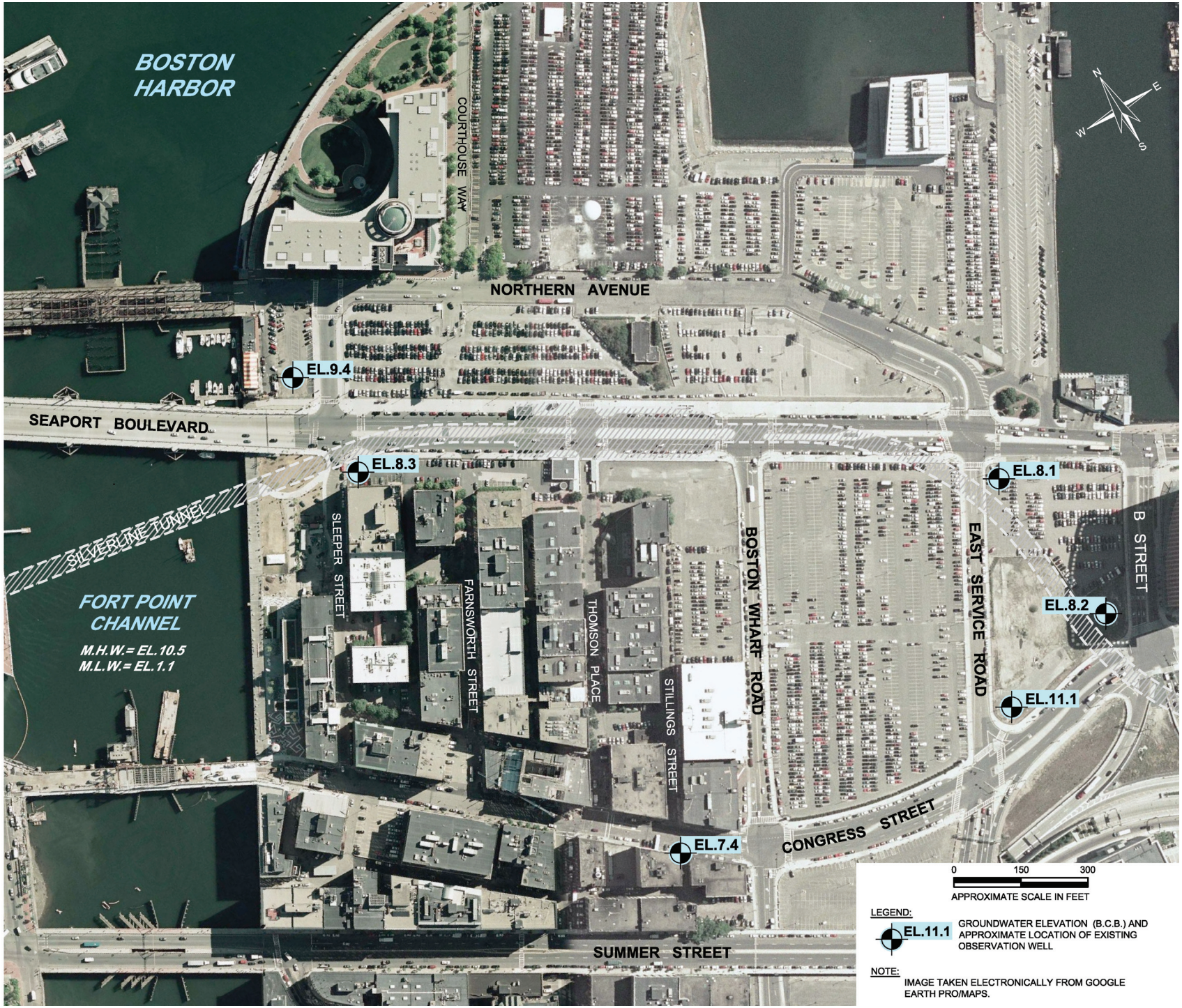
Groundwater level measurements obtained at monitoring wells installed on and in the vicinity of the Project have been reviewed to develop an understanding of groundwater conditions and considerations for below-grade construction design and planning. A plan of the Project area with an inventory of monitoring well locations and water level measurements in provided on Figure 4.10-1. The map also indicates water levels of the nearby Boston Harbor. As illustrated groundwater levels are within the range of typical tidal fluctuation of the harbor.

In general, groundwater levels at the Project Site are anticipated to be encountered within depths of approximately 10 feet below the ground surface. Groundwater was measured at depths of approximately 4 and 14 feet below existing site grades, at existing monitoring wells, corresponding to approximately El. 1 to El. 11 (Boston City Base Datum). Groundwater levels should be expected to reflect tidal fluctuations in Boston Harbor, and will also fluctuate naturally due to seasonal variation in such factors as precipitation and temperature.

4.10.4 Impacts to Groundwater and Mitigation

The Project will utilize specific design criteria and construction methodology which protects groundwater as described in the following section. Many of the older existing buildings located south of Seaport Boulevard are supported on wood piles. The proximity and potential impacts to wood pile-supported buildings will be evaluated in developing specific criteria for each Block depending on planned basement depths. The design criteria established Project-wide will be implemented to ensure that groundwater will not be lowered. No permanent, active dewatering systems, or perimeter drains below groundwater levels, will be allowed. No permanent groundwater treatment or remedial systems due to contaminated groundwater are required so there is no need for groundwater pumping for remediation.

The Project area is underlain by a thick layer of impervious marine clay. The presence of the clay soils are ideal conditions for constructing permanent groundwater cut-off walls around basement areas as the impervious properties limit groundwater seepage rates. These conditions are also considered favorable for temporary construction dewatering.



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SEAPORT SQUARE
IN SOUTH BOSTON

Figure 4-10.1

Plan of Area Groundwater Levels

GALE INTERNATIONAL

Morgan Stanley

WS DEVELOPMENT

prepared by:
Haley & Aldrich, Inc.

During excavation required for basement construction, dewatering will be undertaken within impervious earth support systems while maintaining groundwater levels outside the excavation. Impacts to groundwater are anticipated to be negligible considering the site conditions and proposed methods to be used as described.

4.10.5 Groundwater Conservation Overlay District

The majority of the Project (with the exception of Blocks H, J, K, and Q) is located outside of the Fort Point Waterfront Subdistrict of the Expanded Groundwater Conservation Overlay District (GCOD). The boundaries of the Expanded GCOD extend from Fort Point Channel to the west, to Seaport Boulevard to the north, and to Boston Wharf Road to the east. Collection and infiltration of storm water is not a requirement in this area. The Fort Point Waterfront Subdistrict is not identified as an area of depressed groundwater levels.

For Blocks H, J, K, and Q, the Project design will comply with GCOD and City standards, that the Project will result in no negative impact on groundwater levels, by establishing design and construction methodology which protects groundwater. The Project will demonstrate that the Project results in no negative impacts to groundwater levels through engineering evaluations. An engineers' certification report will be submitted to demonstrate that the standards have been met. Methods to assure these standards include use of fully waterproofed basements (walls and lowest level floor slabs) for structures that extend below groundwater levels and can be designed to resist hydrostatic uplift pressures. In cases where building systems cannot be designed to resist hydrostatic uplift pressures, basement walls will be fully waterproofed and a groundwater cut-off wall and hydrostatic pressure relief will be used below lowest level floor slabs. The installation of the perimeter cut-off system will assure that groundwater levels are maintained and not lowered outside the limits of the below-grade structure. Design criteria for below grade structures will indicate that no active long term groundwater pumping will be allowed.

The Proponent will coordinate with the Boston Groundwater Trust (BGwT) in regard to groundwater monitoring. Groundwater monitoring wells will be installed to document existing groundwater levels and hydrogeologic conditions. The wells will be installed prior to the start of construction and in accordance with City and BGwT standards for permanent monitoring wells. The wells will be installed at locations where they will be accessible for long-term monitoring and will be turned over to the BGwT when no longer required for the Project, thereby increasing the inventory of wells available to the BGwT for their on-going monitoring program. The water level measurement data will be made available to the BRA and BGwT.

4.11 Hazardous Materials and Solid Wastes

4.11.1 Hazardous Materials

4.11.1.1 Previous Environmental Studies

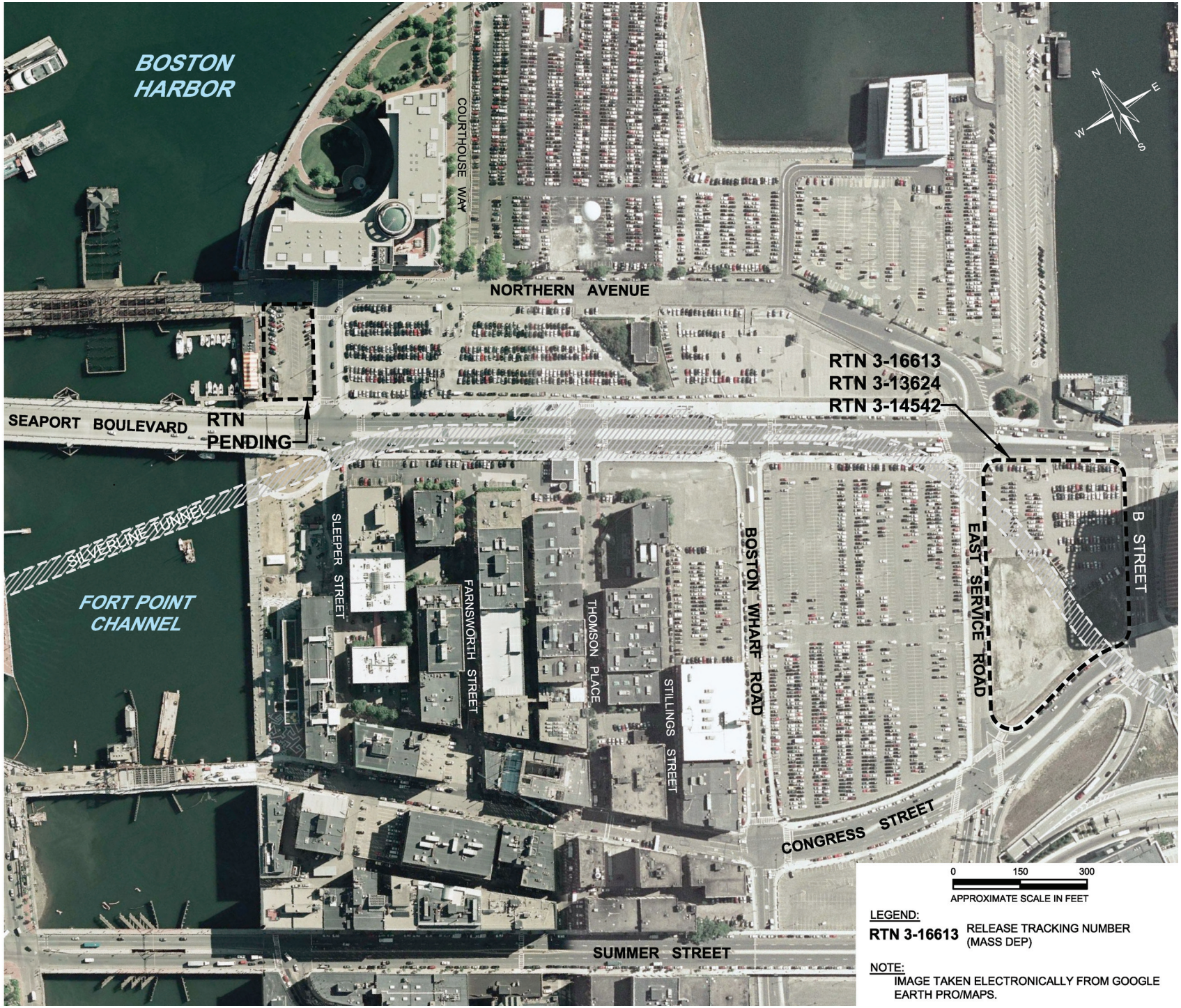
Environmental studies, including chemical testing of soil and groundwater for the presence of Oil and Hazardous Materials (O&HM), have been conducted at several locations in the vicinity of the Project Site for previous work completed in the area. Chemical test results on soil samples indicate the presence of contaminants, typical of urban fill material at some locations. Contaminants include petroleum, metals, and volatile organic compounds. Groundwater testing has not indicated elevated concentrations of contaminants in groundwater. Further testing of soil and groundwater is planned in advance of construction to characterize materials to be excavated.

Previous environmental reporting to the Massachusetts Department of Environmental Protection (MassDEP) of releases at and near the Project Site includes the following. A map indicating the previous listed site locations and status is provided as Figure 4.10-2.

- RTN 3-14542: Release is related to Seafood Center Site (Block M); Status: Response Actions completed, closed with MassDEP. This release was associated with No. 2 fuel oil from an underground storage tank (UST) and MassDEP files indicate that Immediate Response Action (IRA) activities were completed and a Class A-1 Response Action Outcome (RAO) was submitted in January 1997 indicating a permanent solution has been achieved.

- RTN 3-16613: Release is related to Seafood Center Site (Block M); Status: Response Actions completed, closed with the MassDEP. During demolition of the New England Seafood structure, an abandoned UST was discovered beneath the floor slab. Remediation of an "unknown petroleum product" was completed. Activities included excavation and off-site disposal of approximately 250 cy of impacted soil. An IRA Completion Report was submitted to the MassDEP in May 1998 which stated that RTN 3-16613 had been closed, and further response actions would be performed under RTN 3-13624.

- RTN 3-13624: Release was identified on Block M1/M2 during MBTA South Boston Transitway Investigations; Status: Partially-closed with MassDEP, ongoing response actions to finalize site closure are nearing completion. RTN 3-13624 was to act as an "umbrella" RTN for over 14 releases associated with the MBTA South Boston Transitway project. MassDEP records indicate that a partial RAO was filed for Courthouse Station in July 2005. Other properties along the Transitway alignment are classified as Tier II sites and are at various phases filing RAO statements.



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SEAPORT SQUARE
IN SOUTH BOSTON

Figure 4.10-2

Plan of Previous or Current State Listed Sites (Mass DEP)

GALE INTERNATIONAL

Morgan Stanley

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- RTN Pending: An RTN for Block A has not yet been assigned by the MassDEP at the time of preparation of this document. A Release Notification Form (RNF) was submitted to the MassDEP by MS Seaport LLC in mid-June. The RNF was submitted due to elevated concentration of a chemical compound, tetrachloroethylene, detected in a soil sample which exceeded the applicable reporting threshold. The compound was detected as a result of chemical testing of soil to be excavated for construction at Block A, to characterize the chemical quality of the material to be transported off-site from the one level basement excavation. Additional environmental assessment and Response Actions will be undertaken associated with the planned construction.

Excavation at these Blocks will be conducted in accordance with a Soil Management Plan developed Project wide and included as part of the Construction Documents. The Soil Management Plan will describe procedures for identification management and off-site transport of any contaminated soils. Off-site disposition of excavated material will be in accordance with applicable regulations.

4.11.1.2 Future Environmental Studies

The Project area consisted of tidal flats prior to filling in the 1800s. Site filling along the South Boston waterfront occurred in various stages during the 1860s through the 1880s. Historically the area has been used for railroad yards, associated facilities and other commercial uses prior to the current paved parking areas. The fill often contain residuals of various contaminants present in the materials used for site filling. Chemical testing of the fill materials at each Block will be undertaken as part of the planned subsurface exploration programs during Project design, prior to construction. This is to identify any contaminants that may be present, characterize the material to be excavated as required by landfills, develop appropriate soil management protocols and identify regulatory requirements. The work will be coordinated with the proposed construction.

4.11.1.3 Proposed Soil Management Plan

Excavation at each Block will be conducted in accordance with a Soil Management Plan developed Project wide and included as part of the Construction Documents. The Soil Management Plan will describe procedures for identification management and off-site transport of any contaminated soils. Off-site disposition of excavated material will be in accordance with applicable regulations.

Site history research and known environmental conditions indicate that no long-term remedial systems are expected for the Project.

4.11.2 Solid Waste

The Project will generate solid waste typical of other residential/mixed-use projects. Solid waste generated by the Project will be approximately 13,216 tons per year, based on the number of bedrooms and hotel rooms proposed at a generation rate of four pounds (lbs) per bedroom per day, office, cultural and education space at a generation rate of 1.3 tons per 1,000 square feet per year, and commercial, retail, and restaurant space proposed at a generation rate of 5.5 tons per 1,000 square feet per year as shown in Table 4.11-1.

Table 4.11-1 Solid Waste Generation*

Type	Program	Number of Rooms	Generation Rate	Solid Waste (tons per year)
Studio / One Bedroom Units	1,125 units	1,125 bedrooms	4 lbs/bedroom/day	821
Two Bedroom Units	875 units	1,750 bedrooms	4 lbs/bedroom/day	1,278
Three Bedroom Units	500 units	1,500 bedrooms	4 lbs/bedroom/day	1,095
Hotel	550 units	550 rooms	4 lbs/bedroom/day	402
Office / Cultural	1,900,000 sf	--	1.3 tons/1,000 sf/year	2,470
Commercial / Retail / Restaurant	1,300,000 sf	--	5.5 tons/1,000 sf/year	7,150
Total Solid Waste Generation				13,216

* The breakdown of the program is approximate and may vary as the Project evolves.

A loading area provided on the ground flow of the residential and hotel components. For the residential component of the Project, recycling and trash chutes will be provided on each floor. Trash will be collected in a dedicated area in a ground floor loading area until pick up by licensed contractor.

4.11.3 Recycling

Recycling by residents and tenants of the Project will be encouraged and coordinated. To encourage recycling, the Proponent will implement a recycling program throughout the Project that focuses on the specific needs of each use type.

Recycling areas will be implemented within each individual Block, and will be sized appropriate to building use type and anticipated waste streams. Due to the size of the buildings on individual Blocks, the recycling collection areas are anticipated to be at least

250 sf per building. At a minimum, plastic, glass, metal, cardboard, and paper recycling will be required for office, retail, cultural, and educational areas. Cardboard balers are being investigated for installation in buildings. Specialized recycling equipment size and location will be decided as the design of individual Blocks progresses. For larger office buildings, intermediate recycling staging areas may be required. As design of individual commercial Blocks progresses, the recycling collection area and location will be optimized to meet anticipated waste flows and coordinated with waste collection activities in order to centralize and minimize waste material impacts to occupied portions of buildings.

The residential recycling program will be conducted in accordance with the City of Boston's recycling regulations, which currently provides recycling services to collect mixed paper, metal, plastic, and glass. As residential buildings come online, occupants will be informed of the City of Boston Recycling resources available to them.

4.11.4 Waste Removal

The following is a proposed plan for waste and recycling removal for the Project for each of the proposed Project uses.

Retail

Retail waste has large bulky items such as damaged fixtures and displays which can be combined into one time 30 cubic yard roll-off containers for temporary service. There is typically a high volume of cardboard and stretch plastic that are valuable recyclables when properly baled. The use of down stroke balers for baling cardboard and for stretch plastic is being considered. Baling these materials will allow for recycling rebate revenue and will also reduce the cost of waste removal as these items will no longer be part of the waste stream. The balers will be placed near a compactor that is designated for waste removal.

Entertainment / Restaurant

Entertainment and restaurant waste typically includes similar items as retail waste, as well as food and liquid waste. Food and liquid waste will be properly bagged and brought to closed, self-contained compactors that offer a non-leakage seal to reduce odors and spillage. All cardboard and stretch plastic will be placed in baler barrels.

Hotel

Hotel waste typically includes recyclable material such as newspapers, magazines and cardboard, as well as commingled materials such as glass, plastic and aluminum. There is a high volume of food and liquid waste also. This waste will be properly bagged and brought to closed, self-contained compactors that offer a non-leakage seal to reduce odors and spillage. All cardboard and stretch plastic will be placed in baler barrels. Gaylord boxes for the collection of loose mixed paper will be used.

Residential

Residential waste consists of food waste and other perishable items. Materials such as glass, plastic and aluminum can be commingled and recycled separately from the mix paper material (combining news, magazines and junk mail). Residents will use barrels (for recyclable materials) in hallways that will be emptied on designated collection days. All other waste will be bagged and loaded into a self contained compactor for removal.

Office

Office waste consists of liquid waste and paper. The bulk of the waste volume will include items such as coffee, soda, salads and other lunch material. Offices with vending machines will need barrels for recycling bottles and cans. All other waste is perishable and will be bagged for removal. Paper is the largest recycling material found in an office's waste stream. Computer paper, white and colored paper, manila folders, junk mail, shred, newspapers, catalogs and magazines can be collected as sorted office paper and recycled together in the same barrels. All other waste will be bagged and removed separately.

Cultural / Educational

Cultural and Educational wastes will include food and liquid waste. Materials such as glass, plastic and aluminum can be commingled and recycled separately from the mix paper material (combining computer paper and white and colored paper). All other waste will be bagged and removed separately.

In general, programs (above) that use barrels or gaylord boxes will be swapped with empties or be tipped into a larger collection container on a regular basis. All bales will be placed on pallets and loaded through docking locations. Self contained compactors designated for trash will be provided with a 24 hour/7 day a week on-call service. These compactors will include pressure gauges that will indicate when waste removal is necessary.

4.12 Construction Impacts

4.12.1 Construction Methodology

Construction methodologies that ensure public safety and protect nearby tenants will be employed. Techniques such as barricades and signage will be used. Construction management and scheduling will minimize impacts on the surrounding environment and will include plans for construction worker commuting and parking, routing plans for trucking and deliveries, and control of noise and dust. Construction staging methodology is further described below.

As the design of the Project progresses, the Proponent and its construction team will meet with the BTD to discuss the specific location of barricades, the need for lane closures, pedestrian walkways, and truck queuing areas. This will be incorporated into the Construction Management Plan which will be submitted to BTD for approval prior to the commencement of the each phase of construction work.

4.12.2 Construction Air Quality

Short-term air quality impacts from fugitive dust may be expected during the early phases of construction and during excavation. Plans for controlling fugitive dust during demolition, construction and excavation include mechanical street sweeping, wetting portions of the site during periods of high wind, and careful removal of debris by covered trucks. The construction contract will provide for a number of strictly enforced measures to be used by contractors to reduce potential emissions and minimize impacts. These measures are expected to include:

- Using wetting agents on areas of exposed soil on a scheduled basis;
- Using covered trucks;
- Minimizing spoils on the construction site;
- Monitoring of actual construction practices to ensure that unnecessary transfers and mechanical disturbances of loose materials are minimized;
- Minimizing storage of debris on the site; and
- Periodic street and sidewalk cleaning with water to minimize dust accumulations.

Demolition activities will comply with Air Pollution Control regulations, pursuant to M.G.L. Chapter 40, Section 54.

4.12.3 Construction Noise

The Proponent is committed to mitigating noise impacts from the construction of the Project. Increased community sound levels, however, are an inherent consequence of construction activities. Construction work will comply with the requirements of the City of Boston Noise Ordinance. Every reasonable effort will be made to minimize the noise impact of construction activities.

Mitigation measures are expected to include:

- Instituting a proactive program to ensure compliance with the City of Boston noise limitation policy;

- Using appropriate mufflers on all equipment and ongoing maintenance of intake and exhaust mufflers;
- Muffling enclosures on continuously running equipment, such as air compressors and welding generators;
- Replacing specific construction operations and techniques by less noisy ones where feasible;
- Selecting the quietest of alternative items of equipment where feasible;
- Scheduling equipment operations to keep average noise levels low, to synchronize the noisiest operations with times of highest ambient levels, and to maintain relatively uniform noise levels;
- Turning off idling equipment; and
- Locating noisy equipment at locations that protect sensitive locations by shielding or distance.

4.12.4 Construction Staging and Construction Worker Parking

The proposed construction staging plan will be designed to isolate the construction while providing safe access for pedestrians and vehicles during normal day-to-day activity and emergencies. The staging areas will be secured by chain-link fencing to protect pedestrians from entering these areas.

Although specific construction and staging details have not been finalized, the Proponent will work with the construction contractor and the City of Boston to ensure that staging areas will be located to minimize impact to pedestrian and vehicular flow. Secure fencing and barricades will be used to isolate construction areas from pedestrian traffic. In addition, public safety for pedestrians on abutting sidewalks will also include covered pedestrian walkways when appropriate and, as required, the suspension of the use of certain sidewalks during the most hazardous periods of overhead work activity during the construction of the superstructure. If required by the Boston Transportation Department and the Boston Police Department, police details will be provided to facilitate traffic flow. The Project will include debris nets on various levels of the building elevations to protect the public and the abutters. All construction procedures will be designed to meet all OSHA safety standards for specific site construction activities.

The number of workers required during the construction period will vary, dependant on the stage of construction. The estimated average daily work force will be approximately 25 to 40 during the preparatory phases, increasing to 400 workers during typical periods, and up to approximately 600 workers during the peak period of construction. The Proponent will

make reasonable good-faith efforts to have at least 50% of the total employee work hours be allocated for Boston residents, at least 25% of total employee work hours be allocated for minorities and at least 10% of the total employee work hours be allocated for women.

Because the construction workers will arrive and depart prior to peak traffic periods, the construction trips are not expected to impact local traffic conditions. To reduce vehicle trips to and from the construction site, no construction worker parking will be permitted on the site and all workers will be strongly encouraged to use public transportation. The building is being constructed close to the existing MBTA Silver Line directly adjacent to the Project, and proximate to South Station. The contractor will establish a designated drop-off area for workers, tools, and equipment. The established time frame for the drop-off area will be 6:00 am to 7:00 am. The drop-off area will include posted "No Idling" signs.

4.12.5 Construction Schedule

Construction of the Project is expected to be completed in phases, and is anticipated to commence in 2011 and be substantially complete in 2019.

Table 4.12-1 outlines the construction schedule and duration of tasks. A master schedule is provided in Appendix F.

Table 4.12-1 Construction Schedule

Activities	Approximate Duration
Phase 1	15 months
Phase 2	47 months
Phase 3	33 months
Phase 4	24 months
Phase 5	36 months
Phase 6	37 months
Phase 7	29 months

Typical construction hours during construction will be from 7:00 am to 5:00 pm, Monday through Friday, with occasional work taking place on Saturday. The Proponent understands that City of Boston ordinances do not allow construction on Sundays without a permit; therefore no construction is expected to take place on Sunday.

The Proponent plans to retain the services of a General Contractor who will be responsible for coordinating construction activities during all phases of construction with the City of Boston agencies in order to minimize potential scheduling and construction conflicts with other ongoing construction projects in the area.

4.12.6 Construction Truck Traffic and Deliveries

The construction team will manage deliveries to the site during morning and afternoon peak hours in a manner that minimizes disruption to traffic flow on adjacent streets. The construction team will provide subcontractors and vendors with Construction Vehicle & Delivery Truck Route Brochures in advance of construction activity. "No Idling" signs will be included at the loading, delivery, pick-up and drop-off areas.

The Proponent will coordinate with BTD to designate access routes for truck deliveries and truck routes which will be established in the Construction Management Plan (see Section 4.13.10). Truck traffic will vary throughout the construction period, depending on the activity. Construction truck routes to and from the Project Site for contractor personnel, supplies, materials, and removal of excavations required for the Project will be coordinated with BTD. Truck access during construction will be determined by the BTD as part of the Construction Management Plan. These routes will be mandated as a part of all subcontractors' contracts for the Project. Traffic logistics and routing are planned to minimize community impacts.

4.12.7 Excavation

Excavation for the proposed below-grade parking will be conducted within an earth support system designed to meet specified criteria. The system will be designed and installed to retain soil and groundwater, result in minimal ground movement, protect adjacent facilities and not impact area groundwater levels. An impervious, interlocking sheet pile wall will be used for perimeter excavation support. Other types of impervious earth retention systems will also be evaluated depending on specific Block conditions and needs. The wall will be braced as excavation advances, providing additional rigidity. Monitoring of performance will be undertaken to demonstrate adherence to the specified design criteria.

The monitoring program will include reference points on the earth support system to provide early warning of performance that may result in off-site impacts. This will allow for early corrective action to mitigate further movement before issues develop. The monitoring program will include installation and movement monitoring of reference points on adjacent facilities such a utilities, walls and accessible structures, and adjacent buildings to document impacts of construction.

4.12.7.1 Dewatering

Temporary construction dewatering will be required for planned below-grade excavation and parking garage construction. Temporary construction dewatering will be managed through compliance with the U.S. Environmental Protection Agency (EPA) NPDES General Permit for Stormwater Discharges from Construction Activities, and with local permits from the Boston Water and Sewer Commission. A Massachusetts Water Resources Authority (MWRA) temporary Construction Dewatering permit is not required since storm drains discharge into outfalls in the Fort Point Channel and Boston Harbor water bodies, and not the MWRA system. Based on specific requirements of the NPDES permit, analytical testing of the construction dewatering effluent will be conducted and reported to the EPA.

Temporary dewatering will be undertaken within the limits of impervious excavation support systems which will mitigate the volume of water and impacts outside the limits of the excavation.

4.12.7.2 Monitoring and Mitigation Plan

The specified design criteria for foundation and below-grade construction activities will be developed to minimize off-site impacts, or impacts to adjacent facilities. The presence, proximity, condition and potential impacts to adjacent structures and facilities have been reviewed and will be considered in development of the design and construction methodology.

Activities which could potentially result in impacts will be monitored during construction, conditions will be documented, and the Proponent and its construction manager will make adjustments if necessary to limit impacts (see Table 4.12-2). A comprehensive monitoring program is planned. The monitoring program will include noise, vibration, ground movement and groundwater level monitoring.

Table 4.12-2 Foundation Construction Activity and Potential Impact

Activity	Potential Impact	Method of Monitoring
Excavation for below grade parking garage construction	Ground Movement	Installation of reference points and movement monitoring of earth retention systems and adjacent facilities (buildings, utility lines etc.)
Temporary Construction Dewatering	Groundwater Lowering	Groundwater Monitoring Wells
Pile Foundation Installation	Noise, Vibration	Noise and vibration monitoring for sensitive facilities near the work area
Sheet Pile Installation for Earth retention System	Noise, Vibration	Noise and vibration monitoring for sensitive facilities near the work area

The information collected will be used to identify modifications to construction procedures and methodology to mitigate further impact. Conditions surveys of adjacent structures will be conducted, where applicable, to establish conditions prior to construction.

Performance criteria will be established in contract documents. Some standards will be applicable Project–wide, while other criteria will need to be established on the basis of specific conditions and proposed construction for each Block. The program will be implemented prior to the start of work at each Block and periodically monitored. The frequency of monitoring will be dependent on the work underway and what is necessary to monitor contractor performance and impacts. The construction manager will make timely adjustments if necessary.

4.12.8 Construction Solid Waste and Recycling

4.12.8.1 Solid Waste

The Proponent will take an active role with regard to the reprocessing and recycling of construction and building demolition waste. All demolition materials from buildings and site materials will be removed from the site.

The Proponent will work with a master Construction Management firm to outline, develop, and implement a comprehensive construction staging and phasing plan. Part of this plan will involve the creation of a comprehensive construction waste management plan. As development and construction of multiple Blocks may occur in parallel, possible synergies may develop between adjacent sites wherein the burden of construction debris separation can be more effectively managed at a Project, as opposed to individual site level.

The disposal contract will include specific requirements that will ensure that construction procedures allow for the necessary segregation, reprocessing, reuse and recycling of materials when possible. For those materials that cannot be recycled, solid waste will be transported in covered trucks to an approved solid waste facility, per MassDEP Regulations for Solid Waste Facilities, 310 CMR 16.00. This requirement will be specified in the disposal contract. Construction will be conducted so that materials that may be recycled are segregated from those materials not recyclable to enable disposal at an approved solid waste facility.

The Project is currently targeting at least a 50% reduction in construction debris diverted to landfill (by weight) and will work towards achieving a Project-wide 75% reduction by weight in construction waste debris sent to the landfill.

Demolition activities will comply with both Solid Waste and Air Pollution Control regulations, pursuant to M.G.L. Chapter 40, Section 54.

4.12.8.2 Recycling

The Proponent will take an active role with regard to the reprocessing and recycling of construction waste. The disposal contract will include specific requirements that will ensure that construction procedures allow for the necessary segregation, reprocessing, reuse and recycling of materials when possible. For those materials that cannot be recycled, solid waste will be transported in covered trucks to an approved solid waste facility, per MassDEP Regulations for Solid Waste Facilities, 310 CMR 16.00. This requirement will be specified in the disposal contract. Construction will be conducted so that materials that may be recycled are segregated from those materials not recyclable to enable disposal at an approved solid waste facility. As development and construction of multiple Blocks may occur in parallel, possible synergies may develop between adjacent sites wherein the burden of construction debris separation can be more effectively managed at a Project, as opposed to individual site level.

The Project is currently targeting at least a 50% reduction in construction debris diverted to landfill (by weight) and will work towards achieving a Project-wide 75% reduction by weight in construction waste debris sent to the landfill.

Individual Blocks will encourage the specification of recycled-content materials wherever possible. Specifications will be written into Project documents requiring contractors and subcontractors to evaluate materials not only by cost, but also report recycled-materials content in relevant submittals provided to the owner or Construction Manager. Concrete aggregate/cement, wood, glass/glazing products, metals, masonry, and drywall will be evaluated for cost effectiveness of locally-sourced alternatives. As part of the LEED effort on the Project, individual Blocks will target 10% recycled-content materials as a fraction of overall construction materials cost (per LEED 2009 definitions, which excludes Mechanical, Electrical and Plumbing/Furniture Fixtures and Equipment (MEP/FF+E)/Specialty Equipment and finishes from cost totals).

4.12.9 Erosion Control

The Proponent will provide a detailed Stormwater Management Plan (SMP) to the Boston Water and Sewer Commission's Engineering Design Division. The SMP will detail erosion control measures to be implemented during construction to prevent the discharge of sediment and contaminated groundwater or stormwater runoff into the City's drainage system or harbor waters. As part of the SMP, the Proponent will include a site map showing areas used for storage or treatment of contaminated soil, groundwater or stormwater, the location of major control or treatment structures to be used during construction, and existing and proposed drainage patterns.

4.12.10 Construction Coordination and Management Plan

All construction activities will be coordinated with the appropriate departments or agencies within the City of Boston in order to minimize potential scheduling and construction conflicts.

The Proponent will follow the guidelines of the City of Boston which direct the evaluation and mitigation of construction impacts. In accordance with the City of Boston's Construction Management Program, a Construction Management Plan (CMP) will be prepared and submitted to the BTD. The CMP will address a number of issues including construction schedule, staging areas, signage, perimeter protection, material handling, truck routes, air quality, noise, vibration, groundwater, protection of utilities and adjacent structures and rodent control. Once the plan is approved, the general contractor will be required to comply with the conditions of the CMP.

4.12.11 Rodent Control

A rodent extermination certificate will be filed with the building permit application to the City. Rodent inspection monitoring and treatment will be carried out before, during, and at the completion of all construction work for the proposed Project, in compliance with the City's requirements. Rodent extermination prior to work start-up will consist of treatment of areas throughout the site. During the construction process, regular service visits will be made.

4.12.12 Public Safety/Access

Secure fencing and barricades will be used to isolate construction areas from pedestrian traffic adjacent to the site. In addition, sidewalk areas and walkways near construction activities will be well marked and lighted to protect pedestrians and ensure their safety. Public safety for pedestrians on abutting sidewalks will also include covered pedestrian walkways when appropriate and, if required, the suspension of the use of certain sidewalks during the most hazardous periods of overhead work activity during the construction of each superstructure. If required by BTD and the Boston Police Department, police details will be provided to facilitate traffic flow. All construction procedures will be designed to meet all Occupational Safety and Health Administration (OSHA) safety standards for specific site construction activities.

4.13 Sustainable Design

The Seaport Square Project endeavors to be a world-class example of a sustainably-designed and constructed urban infill neighborhood. Energy efficiency, pedestrian-oriented activation of the streetscape, and utilization of alternative transportation modes are cornerstones of the design of the Project.

Guidance will be provided to design teams, construction teams, and future tenants/residents on optimizing the various stages of the Project to minimize energy consumption, and to facilitate a lifestyle that is less dependent on automobile-based transportation.

In order to quantify and certify the proposed gains in efficiency and sustainability, the US Green Building Council's (USGBC) LEED rating system will be utilized on both an overall basis and for individual Blocks.

Individual Blocks will pursue LEED certification under the LEED-NC, LEED-CS, or LEED-Schools rating systems as published by the USGBC. The Seaport Square Project as a whole will attempt certification under the LEED-ND rating system when that new rating system is released to the general public.

LEED checklists are provided in Appendix G.

4.13.1 LEED-ND

The Seaport Square Project will be registering for LEED-ND after the full rating system is approved and released by the U.S. Green Building Council (USGBC), and will be targeting the Silver or higher level certification. As of the filing of the Draft PIR/EIR for the Project, the full rating system for LEED-ND has not been approved, nor released by the USGBC. Accordingly, the draft scorecard created by the Proponent reflects the most recent version of the LEED-ND rating system available to the public.

Specific commitments to LEED-ND credits cannot be made at this time because changes to the credit language in the final rating system review phase may make certain credits unachievable for the Project Site. Accordingly, the LEED-ND scorecard and credit explanations presented are meant as a guideline for the primary metrics the Project aspires to achieve.

Smart Location and Linkages (SLL)

SLLp1: Smart Location

The Project will be considered an "infill" site under the current definition of the LEED-ND rating system.

SLLp2: Proximity to Water and Wastewater Infrastructure

The Project will be located in an area with existing water and wastewater infrastructure.

SLLp3: Imperiled Species and Ecological Communities

The Project consists of paved parking lots and, as such, is not supporting habitat for endangered species.

SLLp4: Wetland and Water Body Conservation

The Project boundary is located within 100 feet of an existing water body (Fort Point Channel). Per the current language in the ND rating system;

> "previously developed land…is not considered wetlands, water bodies, or 100-foot buffer land that must be protected for the purposes of this prerequisite."

The Project's proximity to the Fort Point Channel does not mandate a restriction in development because the area is previously developed.

SLLp5: Agricultural Land Conservation

The Project Site does not contain any agricultural land, and is not located within any agricultural preservation district.

SLLp6: Flood Plain Avoidance

The Project is not located within the 100-year flood plain.

SLLc1: Preferred Locations

The Project Site is categorized as a "previously developed infill site", and is located in a Federal Empowerment Zone. Calculations have not yet been completed to document the "intersections per square mile" metric to determine whether all ten points can be achieved on this credit.

SLLc3: Reduced Automobile Dependence

Given the Project's proximity to Silver Line routes SL1, SL2, and SL3, along with local bus service and ferry service from Commonwealth Pier and Rowes Wharf, it is anticipated that the Project will achieve all possible points for this credit. Final calculations will determine ultimate compliance.

SLLc5: Housing and Jobs Proximity

The Project will be located in an area such that existing jobs equivalent to the number of dwelling units provided will be located within a one-half mile walk. It remains to be seen whether the Project will qualify for the "affordable residential" component guidelines as outlined in the LEED-ND standard.

SLLc6: Steep Slope Protection

The Project is located on an existing flat site with less than a five-foot total elevation change from one end of the Project to the other. The Proponent will connect Summer Street to Autumn Lane via the new Harbor Street. Harbor Street will not reach a 15% incline in its steepest areas. It is anticipated that this credit will be achieved for the Project.

Neighborhood Pattern and Design (NPD)

NPDp1: Walkable Streets

The Project will meet the pre-requisite requirements by locating building entrances facing public streets or plazas, by maintaining a streetwall ratio of at least 1:3 (building height:street width) for at least 15% of Project street frontage, and by providing pedestrian sidewalks or pathways along both sides of existing or planned streets.

NPDp2: Compact Development

The Project will surpass the minimum density of 12 dwelling units per acre, and non-residential density at greater than 0.8 FAR as per the minimum performance levels stated in the credit standard.

NPDp3: Connected and Open Community

The Project is anticipated to meet this pre-requisite by providing motorized and non-motorized rights-of-way at appropriate intervals along the Project boundary. Internal streets will connect to existing adjacent streets and will be open to the public.

NPDc1: Walkable Streets

The Project anticipates achieving several points within this credit. The Project will target points in the "Façades and Entries" section, as well as the "Ground Level Use and Parking" section. The Proponent will study the Project's compliance with the requirements in the "Safe Pedestrian and Bicycle Travel" section of this credit as the Project progresses.

NPDc2: Compact Development

Due to the high-density urban infill nature of this Project, it is anticipated that the Project will meet the maximum density levels of greater than 60 residential dwelling units per acre and non-residential FAR density greater than 3.0.

NPDc3: Diversity of Uses

Given the extensive retail component of the Project, coupled with adjacent existing retail/commercial space, it is anticipated that the Project will perform well in this category. The final point total achieved will be calculated as design progresses and tenants for retail spaces are identified.

NPDc4: Mixed-Income Diverse Communities

A mix of dwelling units of various sizes in buildings of different heights is anticipated. Additionally, a workforce and affordable housing component is planned for the Project. Point totals achieved under this credit cannot be finalized until the anticipated unit mix is determined for the various Blocks.

NPDc6: Street Network

A high number of internal intersections per square mile, as per the credit standard requirements, are anticipated.

NPDc7: Transit Facilities

There will be both public bus and subway stops located within the Project boundary. It is anticipated that the design of bus stops and transit stops will be compliant with the requirements of the credit. Final achievement of the credit will be determined as discussions with public transit officials continue.

NPDc8: Transportation Demand Management

The programs and commitments required to meet this credit are still under investigation by the Proponent. As details on the car-sharing program and Transportation Demand Management program are developed, and residential leasing/purchase guidelines are created, the Project's ability to achieve this credit will be better defined.

NPDc9: Access to Public Spaces

Given the Project's proximity to Children's Wharf Park, the Courthouse Square Plaza, and the planned Fan Pier Park, as well as the planned construction of Seaport Square Green and Seaport Hill, it is anticipated that all Blocks within the Project will be within a one-quarter mile walking distance of an outdoor space of at least one-sixth of an acre in size. The average size of these five open space areas is anticipated to be at least one-half acre.

NPDc12: Community Outreach and Involvement

The Proponent has engaged in a public outreach process to solicit comments from neighborhood groups for the Project. Additionally, comments have been received from local, city, and state groups through the PNF/ENF and NPC filings. The Proponent continues to address concerns raised by these comments. The Project anticipates achieving this credit based on the remaining activities required in the permitting process.

Green Infrastructure and Buildings (GIB)

GIBp1: Certified Green Building

At least one building will be certified under the LEED rating system.

GIBp2: Minimum Building Energy Efficiency

All buildings will be required to meet City of Boston Zoning Code requirements under Article 37. Individual Blocks registered with the USGBC under LEED 2009 will achieve a minimum of 10% energy savings beyond the ASHRAE 90.1-2007 baseline. Block A is currently targeting a minimum of 14% energy savings beyond the ASHRAE 90.1-2004 baseline. The Proponent will evaluate how best to achieve the required energy savings for each individual Block based on the level of "LEED Certifiable" documentation required from the City at the time of permitting. Energy efficiency measures implemented in individual buildings will also meet or exceed "Case II" commitments to GHG reduction as detailed in Section 4.6.1.2.

GIBp3: Minimum Building Water Efficiency

Given that the majority of Blocks will be registered under the LEED 2009 rating system (only Block A is registered under LEED-NC v2.2), the requirements for meeting this pre-requisite will be met through the individual Block LEED certification efforts.

GIBp4: Construction Activity Pollution Prevention

All Blocks will comply with the requirements outlined in the pre-requisite. All applicable state and local codes will be adhered to when creating Erosion and Sedimentation Control plans for each Block, and for the site as a whole (where construction does not fall within a specific Block's LEED boundary).

GIBc1: Certified Green Buildings

The Project anticipates pursuing LEED certification for each building over 30,000 sf within the Project Site.

GIBc3: Water Efficient Landscaping

The Proponent is working with a landscape consultant to determine a landscape plan for the Project that utilizes drought-tolerant species and native plantings. Potable water irrigation demand for the Project is anticipated to be reduced by more than 50% as a result of species selection, efficient irrigation practices, and appropriate siting of vegetation within the Project area. The use of reclaimed water sources is being investigated for the Project.

GIBc8: Heat Island Reduction

The Project anticipates placing more than 50% of parking underground. The site will incorporate green roofs as well as investigate the incorporation of high-albedo roofing surfaces for non-MEP building roof areas.

GIBc15: Waste Management Infrastructure

The Project will incorporate recycling areas into every building, as per LEED requirements. The Project is also investigating the other strategies mentioned in the LEED-ND credit standard in order to achieve this credit.

Innovation and Design Process (ID)

IDc1.1: LEED Certified Buildings

The Project anticipates pursuing LEED certification for each building within the Project Site. Final requirements for ID credit achievement under the full ND version have not been released yet. The Project anticipates that the total square footage of buildings pursuing LEED certification (compared to the total Project build-out) will be sufficient to earn an ID credit.

IDc1.2: Exemplary Performance, Underground Parking

The Project anticipates placing 100% of Project parking underground or under cover. It is anticipated that this extensive provision of underground parking will warrant an ID credit. Parking spaces on public streets are not currently anticipated to be included in this tabulation. If the 100% threshold is not met, another ID credit will be selected for implementation on the Project.

Regional Priority Credits (RP)

The interplay of LEED-NC and LEED-CS based regional priority credits are still being determined for application to LEED-ND projects. Given that individual Blocks are targeting at least two RP credits under LEED 2009 for NC or CS, it is anticipated that the ND certification effort may also be able to take advantage of several RP credits. These can only be determined after the full rating system is released.

4.13.2 LEED-NC / LEED-CS / LEED-Schools

The City of Boston Zoning Code under Article 37 already creates a mandate for projects to demonstrate compliance to the "LEED Certifiable" level, while not specifically requiring projects to file with the USGBC. The Project will take several steps beyond this code mandate and is proposing that all Blocks will be registered with the USGBC under the LEED-NC, LEED-CS or LEED-Schools rating systems, and that each Block (or group of Blocks under a similar use type) will target a rating of at least LEED-Silver. Block A has already been registered with the USGBC under the LEED-NC v2.2 rating system. All other Blocks are anticipated to be registered under the new LEED 2009 rating system. Blocks will attempt certification under the rating system most appropriate to the base building construction contract. For residential mixed-use and hotel mixed-use buildings, it is anticipated that the LEED-NC 2009 rating system will be applied. For office buildings, the LEED-CS 2009 rating system is anticipated to be applied. For educational facilities, the LEED-Schools 2009 rating system is anticipated to be applied. Given the build-out timeline of the Project, it is possible that an updated LEED rating system will be available for Blocks in later phases. As the metrics of future rating systems are not currently known, it is presumed for the purposes of this discussion that all remaining Blocks will be registered and will attempt Certification under the LEED 2009 rating system.

Retail core and shell spaces in buildings will not be required to perform fit-outs to LEED-CI levels, but guidance will be provided to any tenants wishing to do a green fit-out of their retail spaces. Tenant manuals will be provided at building hand-over, as detailed in Section 4.6.1.2 and in Appendix D2.

Sustainable Sites (SS)

SS Pre-requisite 1: Construction Activity Pollution Prevention (erosion & sedimentation control plan):

An Erosion and Sedimentation Control (ESC) Plan will be implemented to prevent storm sewer sedimentation, airborne dust, and particulate matter pollution. To ensure consistency of approach across Blocks within the Project, a standardized set of guidelines for producing and adhering to an ESC Plan is being investigated for potential application across all Blocks within the Project. The Proponent will work to ensure that all construction site activities meet applicable state and federal standards for erosion and sedimentation control by ensuring that appropriate Best Management Practices (BMP's) are implemented for each site condition encountered as construction commences on individual Blocks or groups of Blocks. The creation of the BMP's and ESC Plan will adhere to the guidelines laid out in the LEED 2009 rating system.

SS Credit 1: Site Selection

The Project Site is a previously developed location suitable for redevelopment. The site does not include sensitive elements that would make it inappropriate for development. The Project Site is not located in a floodplain, it does not contain any known habitat for endangered species, is not designated as "prime farmland", and is not adjacent to wetland areas. Accordingly, it is anticipated that all Blocks on the Project Site will achieve this credit.

SS Credit 2: Development Density & Community Connectivity

The Project will focus development on an existing urban infill area with existing infrastructure, and will therefore qualify for this credit. Existing densities and available basic services within a one-half mile radius of the Project will be analyzed for conformance with this credit. It is anticipated that all Blocks will meet the requirements of this credit. Existing businesses at the Seaport World Trade Center, Summer Street, Convention Center, Courthouse, South Station, Fort Point Channel, and Seaport Boulevard can contribute to achievement of this credit. Nearby residential projects within one-half mile provide the required residential density outlined in the LEED 2009 credit standard.

SS Credit 4.1: Alternative Transportation: Public Transportation Access

The Project Site includes the Courthouse station on the MBTA's Silver Line. The World Trade Center station on the Silver Line is within a one-half mile walk of several Blocks within the Project, as is South Station (serviced by the Red and Silver Lines, as well as the Commuter Rail). Additionally, one local service bus line runs through the Project on Seaport Boulevard, and other local service bus lines run along Summer Street to the south of the Project Site. As such, each individual Block within the Project is anticipated to qualify for this credit.

SS Credit 4.2: Alternative Transportation: Bicycle Storage & Changing Rooms

Office Blocks B, L1, L2, and Q will provide adequate bicycle storage space and changing room areas to achieve LEED credit SSc4.2 under the LEED 2009 rating system requirements. Block A will also provide adequate room and access for on-site bicycle storage, as well as access to shower facilities for non-residential applications. Residential mixed-use and hotel mixed-use Blocks will evaluate this credit on a Block-by-Block basis to support the commuting patterns of retail staff or hotel staff. The decision to pursue this credit in residential mixed-use and hotel mixed use Blocks will be evaluated as the design of each Block progresses. The educational facility Block will also evaluate this credit as design progresses.

SS Credit 4.4 Alternative Transportation: Parking Capacity

Parking capacities for all Blocks in the Project Site are still being finalized and are subject to Boston Transportation Department approval and negotiation. Defining exactly what the "Code Required Parking" number is, as this Project is not previously entitled, will require ultimate sign-off and discussion during the final permitting stage. Accordingly, this credit cannot be committed to until final parking allocations are agreed upon with permitting entities.

SS Credit 6.1: Stormwater Design: Quantity Control

The Project has run preliminary calculations and anticipates achieving this credit when viewed from a "campus approach" as permitted by the LEED rating system. Whether the campus approach will be used or not for the entire Project has not yet been determined, and therefore the achievement of SSc6.1 is still undetermined. The calculations were run for aggregate performance of the entire Project. It has not yet been determined whether individual Blocks will be able to achieve the SSc6.1 credit as stand-alone LEED projects.

SS Credit 7.1: Heat Island Effect: Non-Roof

It is anticipated that vehicular parking for all Blocks will be located below grade. More than 50% of the parking spaces provided will be located below ground. It is anticipated that this credit will be pursued under the "campus approach" allowed by the LEED rating system. All Blocks are currently anticipated to comply with the requirements of this credit.

SS Credit 7.2: Heat Island Effect: Roof

The various Blocks within the Project anticipate achieving this credit through the installation of green roofs and SRI-compliant roofing material. As MEP spaces and skylight areas are not included in aggregate calculations, it is anticipated that 75% of non-MEP roof space will be covered with SRI-compliant roofing or green roof systems.

Water Efficiency (WE)

WE Pre-requisite 1: 20% Water Reduction

All Blocks will be registered under the LEED 2009 rating system (except for Block A, which has already been registered under LEED-NC v2.2). Accordingly, all Blocks (except for Block A) will be required to meet 20% water savings as a pre-requisite under the LEED 2009 rating system requirements. It is anticipated that Block A will achieve 20% water savings through a combination of efficient retail fixtures and water-efficient fixtures in the condominium units; but the 20% savings metric has not been finalized on Block A.

WE Credit 1.1: Water Efficient Landscaping: Reduce by 50%

The Proponent is investigating the reduction of irrigation demand through the use of native or drought-tolerant species as well as the elimination of permanent irrigation systems altogether for all Blocks. As landscaping design decisions are further developed, the Project team hopes to achieve at least one of the WEc1 credits on each of the Blocks. As design of each Block progresses, the required strategies for achieving this credit will be outlined in more detail. It is anticipated that all Blocks will achieve at least a 50% reduction in potable water consumption compared to the "baseline" case by employing a mix of drought-tolerant landscaping, efficient irrigation, and appropriately located planted areas.

WE Credit 3: Water Use Reduction: 30% Reduction

The use of low-flow devices will be evaluated for implementation in retail, residential, hotel, office, cultural, and educational facility plumbing designs. Of particular interest are low-flow aerators on residential lavatories, dual-flush water closets in residential, retail, and office areas, waterless or ultra-low flow urinals in retail and office areas, and water-efficient showerheads of varying efficiency in residential, retail, and office Blocks. Specific commitments for achieving 30% water reduction are not made on residential Blocks at this time. Office and retail Blocks, along with cultural and educational facility Blocks, will target 30% or more savings compared to the EPAct baseline with modifications as outlined in the LEED 2009 rating system. Block A (under LEED-NC v2.2) will attempt WEc3.1, which requires a 20% reduction in potable water consumption compared to the EPAct baseline.

Energy and Atmosphere (EA)

EA Pre-requisite 1: Fundamental Commissioning of the Building Energy Systems

The Project will designate an independent and qualified commissioning agent to be responsible for establishing commissioning requirements to be incorporated into construction documents by the design team, developing and implementing a commissioning plan, verifying installation and performance of commissioned systems, and completing a summary report. The scope of commissioning will involve energy-related systems, including Heating Ventilation and Air Conditioning (HVAC), lighting controls, renewable energy systems, and hot water systems. Commissioning of building systems will proceed on a Block-by-Block basis, and a separate commissioning plan will be implemented for each Block.

EA Pre-requisite 2: Minimum Energy Performance (ASHRAE 90.1-2004)

The building envelopes and the energy related building systems will be designed to comply with the minimum standards referenced in this pre-requisite, including the mandatory provisions of ASHRAE 90.1-2007, sections 5.4, 6.4, 7.4, 8.4, 9.4, and 10.4. Buildings will be modeled according to Appendix G requirements, as outlined in the LEED 2009 rating system.

EA Pre-requisite 3: Fundamental Refrigerant Management (no CFC-based refrigerants)

All Project mechanical and refrigeration systems will commit to the elimination of all chlorofluorocarbon (CFC) -based refrigerants in Heating Ventilation Air Conditioning and Refrigeration (HVAC+R) systems, as well as all fire suppression systems.

EA Credit 1: Optimize Energy Performance

These credits will be pursued through the "whole building energy modeling" process as outlined in Appendix G of the ASHRAE 90.1-2007 standard. The appropriate balance for building envelope and building systems design will be evaluated for optimal building performance and cost effectiveness, while still meeting the recent USGBC mandate for achieving a minimum 10% energy performance beyond ASHRAE 90.1-2007 standards. Block A is registered under LEED-NC v2.2, and therefore will be required to achieve energy savings of 14% or more beyond the ASHRAE 90.1-2004 baseline.

EA Credit 3: Enhanced Commissioning:

This credit will be targeted for achievement in office and educational facility buildings. It will be evaluated for residential and hotel mixed-use Blocks and all other Blocks.

EA Credit 4: Enhanced Refrigerant Management

Individual Blocks will be evaluated to determine which refrigerants are designed into each Block's HVAC+R components, as well as fire suppression systems. Inclusion of the most appropriate refrigerants with a reduced contribution to ozone depletion and reduced greenhouse gas equivalent concentrations will be evaluated based on the specific mechanical systems selected for inclusion in the individual Blocks. It is anticipated that all Blocks will be able to achieve this credit through the appropriate selection of refrigerants and efficient refrigeration systems.

Materials & Resources (MR)

MR Pre-requisite 1: Storage and Collection of Recyclables

Recycling areas will be implemented within each individual Block, and will be sized appropriate to building use type and anticipated waste streams. The Project will design recycling collection staging areas into all buildings. The initial metric used to meet this requirement will be the LEED 2009 rating system, which requires the provision of collection facilities for paper, cardboard, metal, glass, and plastic. Block A will be designed to meet appropriate LEED-NC v2.2 performance metrics under this pre-requisite.

MR Credit 2.1 & 2.2: Construction Waste Management

The Proponent will work with a master Construction Management firm to outline, develop, and implement a comprehensive construction staging and phasing plan. Part of this plan will involve the creation of a comprehensive construction waste management plan. As development and construction of multiple Blocks may occur in parallel, possible synergies may develop between adjacent sites wherein the burden of construction debris separation can be more effectively managed at a Project, as opposed to individual site level.

The Project is currently targeting at least a 50% reduction in construction debris diverted to landfill (by weight) and anticipates achieving a Project-wide 75% reduction by weight in construction waste debris sent to the landfill.

MR Credit 4.1: Recycled Content: 10% by Cost (post consumer + ½ pre consumer)

Individual Blocks will encourage the specification of recycled-content materials wherever possible. Specifications will be written into Project documents requiring contractors and subcontractors to evaluate materials not only by cost, but also report recycled-materials content in relevant submittals provided to the owner or Construction Manager. Concrete aggregate/cement, wood, glass/glazing products, metals, masonry, and drywall will be evaluated for cost effectiveness of locally-sourced alternatives. As part of the LEED effort on the Project, individual Blocks will target 10% recycled-content materials as a fraction of overall construction materials cost (per LEED 2009 definitions, which excludes Mechanical, Electrical and Plumbing/Furniture Fixtures and Equipment (MEP/FF+E)/Specialty Equipment and finishes from cost totals).

MR Credit 5.1: Regional Materials Content: 10% by Cost

Individual Blocks will encourage the specification of regionally-sourced materials wherever possible. Specifications will be written into Project documents requiring contractors and subcontractors to evaluate materials not only by cost, but also by distance from extraction point and manufacturing source. Pertinent submittals provided by the contractor/supplier to the Construction Manager or owner will be required to report regional content of materials per LEED/USGBC definitions. Concrete aggregate/cement, wood, glass/glazing products,

metals, masonry, and drywall will be evaluated for comparing the cost effectiveness of locally-sourced alternatives. As part of the LEED effort on the Project, individual Blocks will target 10% regional materials content by overall construction materials cost (per LEED 2009 definitions, which excludes MEP/FF+E/Specialty Equipment and finishes from cost totals).

Indoor Environmental Quality (EQ)

Pre-requisite 1: Minimum IAQ Performance (ASHRAE 62.1-2004)

All Blocks will be designed to meet the ventilation standards referenced for this pre-requisite, ASHRAE 62.1-2007. Additionally, the garage area will comply with the required ventilation rates noted in the ASHRAE 62.1-2007 standard.

EQ Pre-requisite: 2.0 Environmental Tobacco Smoke (ETS) Control

The Project will determine specific strategies for "tobacco smoke transference mitigation" on a Block-by-Block basis based on the use type of the building. Retail, office, cultural, and educational facility buildings/areas will be designated as non-smoking. The Project will designate residential common areas and residential corridors as non-smoking. Pathways for ETS transference will be controlled within individual residential units by installing deck-to-deck partitioning, enclosing and sealing off chase and conduit/cable penetrations, weatherstripping unit entry doors from residential common hallways (if required), and pressurizing hallway corridors with respect to the residential units. Blower door testing will be performed on individual units as per the requirements laid out in the LEED 2009 rating system to confirm residential unit compliance. Alternatively, condominium CCR's may be written to restrict smoking within all areas of residential buildings. Exterior smoking areas near buildings will be located at least 25 feet from building entrances, windows, or air intakes.

EQ Credit 1: Outdoor Air Delivery Monitoring

Individual Blocks will be evaluated for the opportunity to install airflow monitoring devices at outdoor air intakes and CO_2 sensors in densely-occupied spaces in order to improve the quality of ventilation air delivered to buildings. It is anticipated that office buildings, residential mixed-use, hotel mixed-use, and cultural/educational facility buildings will be targeting this credit.

EQ Credit 3.1: Construction IAQ Management Plan: During Construction

The intent of the credit is to reduce indoor air quality problems resulting from the construction process in order to help sustain the comfort and well-being of construction workers during the construction phase, and building occupants in the post-occupancy phase of building operation. This is primarily achieved by protecting all building materials from moisture/dirt until installed, by protecting installed components from site-generated dirt/moisture, and by encouraging Project Site teams to take responsibility for the

cleanliness of the site during construction. As all construction work will consist of 100% new construction (no renovations to existing buildings), a master guideline will be developed for implementation across all Blocks as the master plan design work is completed and construction begins on individual Blocks. The Proponent will work with all teams on-site to ensure a consistent application of the construction-phase indoor IAQ plan for all Blocks. Additional requirements and restrictions may be required for construction-phase activities on Blocks abutting existing buildings in order to ensure that no detrimental materials or behaviors negatively affect the existing adjacent sites.

EQ Credit 3.2: Construction IAQ Management Plan: Before Occupancy

Blocks attempting certification under LEED-NC 2009 will target this credit (residential, hotel, cultural, educational facility). These Blocks will attempt to achieve the credit under either the "flush-out" procedure as outlined in the credit standard, or under the "air quality monitoring" option outlined in the credit standard. Flexibility will be left with the site teams to determine the most effective pathway to compliance given the construction schedule and the season of completion of the Block (summer vs. winter, or shoulder seasons). If no viable solution can be found to implement this credit, an alternative credit will be allowed for substitution into the Project's LEED scorecard to maintain the minimum required rating.

Credit 4.1: Low-Emitting Materials: Adhesives and Sealants

The use of low volatile organic compounds (VOC) products will be tracked by the Project team from specifications to installation. These products are readily available for most applications. It is anticipated that all Blocks will attempt this credit.

Credit 4.2: Low-Emitting Materials: Paints & Coatings

The use of low VOC products will be tracked by the Project team from specifications to installation. Low VOC paint products are readily available for most application conditions. It is anticipated that all Blocks will attempt this credit.

Credit 4.3: Low-Emitting Materials: Carpet Systems

The use of carpeting adhering to Carpet and Rug Institute (CRI) Green Label Plus standards and/or flooring adhering to "FloorScore" standards will be tracked by the Project team on residential mixed-use and hotel mixed-use Blocks from specification to installation. Blocks pursuing this credit under the LEED 2009 rating system will also be required to have non-carpet flooring achieve the requirements outlined in the "FloorScore" rating system. Not all Blocks are committing to the installation of carpeting in the quantity required as per the LEED 2009 rating system requirements. Office buildings are not currently committing to this credit, and cultural/educational facility Blocks will retain the option of targeting this

credit at the owner's or designer's discretion. If no viable solution can be found to implement this credit on residential Blocks, an alternative credit will be allowed for substitution into the Project's LEED scorecard to maintain the minimum required LEED rating.

Credit 5: Indoor Chemical & Pollutant Source Control

The installation of building entryways that contain grate and/or grille systems at a minimum of ten feet long in the direction of primary travel will be encouraged for all Blocks. As design progresses on individual Blocks, advanced air filtration (MERV 13/14 or better) technologies will be investigated for central ventilation systems on a case-by-case basis. Any chemical storage areas will be separately exhausted, negatively pressurized, and separated with deck-to-deck partitions to eliminate toxic fume buildup within the building envelope. While this credit is not specifically being targeted or committed to in preliminary LEED checklists for residential mixed-use, hotel mixed-use, office, or cultural Blocks, it is anticipated that Blocks may target this credit for implementation as the design process progresses on individual Blocks. The educational facility Block will initially be targeting this credit as part of the Project's overall LEED compliance strategy.

Credit 6.1: Controllability of Systems: Lighting

The Project team will utilize individual occupant controls for lighting within residential mixed-use and hotel mixed-use Blocks to provide individual lighting for over 50% of building occupants. Apartment/condominium units and hotel units will be outfitted with fully controllable lighting designs that give individual users control over the lighting levels within the space. Lighting system controls will integrate with overall lighting design for condo/apartment/hotel multi-occupant spaces wherever feasible. Office, educational facility, and cultural Blocks will evaluate this credit during the design phase, but are not currently targeting this credit.

Credit 7.1: Thermal Comfort: Design

The Thermal Comfort criteria as outlined in the LEED Reference Guide will be consulted as a baseline for all piping and ductwork sizing and all equipment selections/performance on each Block. The ASHRAE 55 standard will be referenced for all Blocks. It is anticipated that all Blocks will be able to achieve the thermal comfort criteria outlined in the LEED 2009 credit standard.

Credit 8.2: Views for 90% of Regularly Occupied Areas

The Project team will attempt to design floor plates on individual residential and hotel mixed-use Blocks to maximize the availability of a direct line of sight to the exterior from occupied spaces. The criteria for this credit will be analyzed for the various use types

within a Block, including its applications within spaces to be fit out and occupied in the future by building tenants (in the case of office, cultural, and educational facility buildings and retail Blocks in residential and hotel Blocks).

Innovation & Design Process (ID)

Credit 1.1: Innovation in Design

The Project will attempt to incorporate elements of a Green Housekeeping program into the final facilities and operations contracts of various Blocks.

Credit 1.2: Innovation in Design

The Project team will pursue the Exemplary performance credit within SSc7.2 for placing 100% of the entire Project's parking underground. It is anticipated that any surface-level parking (excluding on-street parking) will be shaded by trees or covered with an SRI-compliant roof in order to meet the requirements of this ID credit. It is anticipated that this credit will be pursued under the "campus approach" available within the LEED rating system.

Credit 1.3: Innovation in Design

The Project team will identify additional ID credits to pursue as the design of individual Blocks takes shape. No commitments are made to pursuing or implementing any ID credit-based programs or systems at this time.

Credit 2: LEED Accredited Professional

The Project team will include at least one LEED accredited professional for each Block.

Regional Priority (RP) – Credits designated for ZIP Code 02210

RP1: LEED Credit SSc6.1 Stormwater Management: Quantity Control

The Project has run preliminary calculations and anticipates achieving this credit when viewed from a "campus approach" as permitted by the LEED rating system. Whether the campus approach will be used or not for the entire Project has not been determined, and therefore the bonus credit for achieving SSc6.1 is still undetermined.

RP2: SS Credit 7.1: Heat Island Effect: Non-Roof

The Project anticipates achieving this additional Regional Priority credit for Heat Island Effect: Non-Roof through the use of extensive underground parking garages to provide at least 50% underground parking.

RP3: SS Credit 7.2: Heat Island Effect: Roof

The Project intends to install a combination of green roofs and/or Solar Roof Index (SRI) - compliant roofing on building roofs in order to meet this credit.

4.14 Open Space Impact Assessment

The Open Space Impact Assessment proceeds as follows: an introduction (Section 4.14.1); a discussion of the existing conditions (Section 4.14.2), including demographics and existing open space resources; a discussion of open space resources in the future no action condition which includes other projects in the area, but does not include the Seaport Square Project (Section 4.14.3); a discussion of open space resources in the future condition which includes the Seaport Square Project (Section 4.14.4); and a conclusion summarizing the assessment (Section 4.14.5).

4.14.1 Introduction

An Open Space Impact Assessment has been undertaken as requested in the City of Boston Parks and Recreation Department's comment letter on the PNF/ENF and Phase 1 Waiver. The Project will not result in any direct impacts to existing open space, and will introduce new open space in an area that is presently used almost exclusively for surface parking. The City has long envisioned redevelopment of this section of South Boston as a means of transforming vast tracts of underutilized and predominantly industrial/transportation land uses by introducing mixed-use developments and increased activity to the area and adjacent waterfront at varying times of day. The impact assessment Study Area (defined by the Boston Parks and Recreation Department methodology) for residents includes Census Block Groups 606001 and 701001, and for non-residents includes Census Block Group 606001. These Census Block Groups include land well beyond the half-mile distance (for residents) and one-quarter-mile distance (for non-residents). The Open Space Impact Assessment Guidelines define the half-mile and one-quarter-mile distances as "a reasonable walking distance that users would travel to reach local open space and recreation area." The resident Study Area includes resident populations in South Boston south of West First Street (more than one-half mile from the Project Site), and the non-resident Study Area includes workers east of D Street (more than on-quarter-mile from the Project Site), including those that work at the Boston Marine Industrial Park, and therefore significant residential and non-residential populations are included in the analysis, even though these populations would be unlikely to use the open spaces within the one-half mile and one-quarter mile radii of the Project Site. Due to limitations of demographic and economic data for small areas, a completely accurate view of the open space capacity within one-half and one-quarter mile radii from the Project Site is not possible.

Overall, the open space ratio after completion of the Project, using data based on Census Block Groups, will close to the City's planning goal of 2.5 acres of open space per 1,000 residents, with a total of 2.41 acres per 1,000 residents. For non-residents (i.e. students,

employees, visitors, etc.), the passive open space (areas for relaxation, such as strolling or sitting) ratio after completion of the proposed Project is above the City's planning goal of 0.15 acres per 1,000 non-residents. The active open space (areas for sports, exercise, or active play) ratios per 1,000 residents and 1,000 non-residents for the impact assessment Study Area, which are currently below the City's planning goal of having 80% of total open space be active space for residents and having 0.5 acres per 1,000 non-residents, will continue to be below the City's goal. However, the Project proposes substantial new open spaces, and as discussed below, residents, workers and visitors to the Project Site have access to a number of regionally significant open space resources a short distance beyond the Study Area. The activity associated with the Project's new resident and non-resident populations will help to activate the area in general and will likely serve to increase the safety of existing underutilized opens spaces in the vicinity.

The Project, in addition to other approved and planned developments in the vicinity, includes an array of connected open spaces and streetscapes to serve future resident and non-resident populations. The Project includes both active and passive recreational spaces within its own development footprint, while also proposing open space improvements beyond the limits of the Project Site. The Project will increase the area of open space within the Study Area with areas designed to provide a variety of experiences for different types of users. The Project's open space will complement the several significant public open spaces within relative proximity to the Project, most notably, Castle Island Park to the southeast, and the Boston Common to the northwest, as well as a myriad of small parks and open spaces. Because of the value of and interest in these nearby open spaces, many residents and non-residents will utilize them.

4.14.2 Existing Conditions / Definition of Study Area for Open Space Impact Assessment

4.14.2.1 Resident Population Demographics/Socioeconomics

The Open Space Impact Assessment Study Area (the "Study Area") was based on the guidelines developed by the Boston Parks and Recreation Department, which require analysis of only those census block groups with at least 50% of their area within one-quarter mile of commercial/non-residential projects and within one-half mile of residential projects. The Project includes both residential and commercial/non-residential uses. To develop the generalized Study Area, the appropriate radii were plotted to a map based on the uses in individual buildings (see Figure 4.14-1). The resultant Study Area includes portions of the South Boston and Central Boston neighborhoods, specifically Census Block Group 606001, which includes the area east of the Fort Point Channel, and Census Block Group 701001, which includes the area to the west of the Fort Point Channel. According to the 2000 U.S. Census, the total residential population of the Study Area is 2,381.

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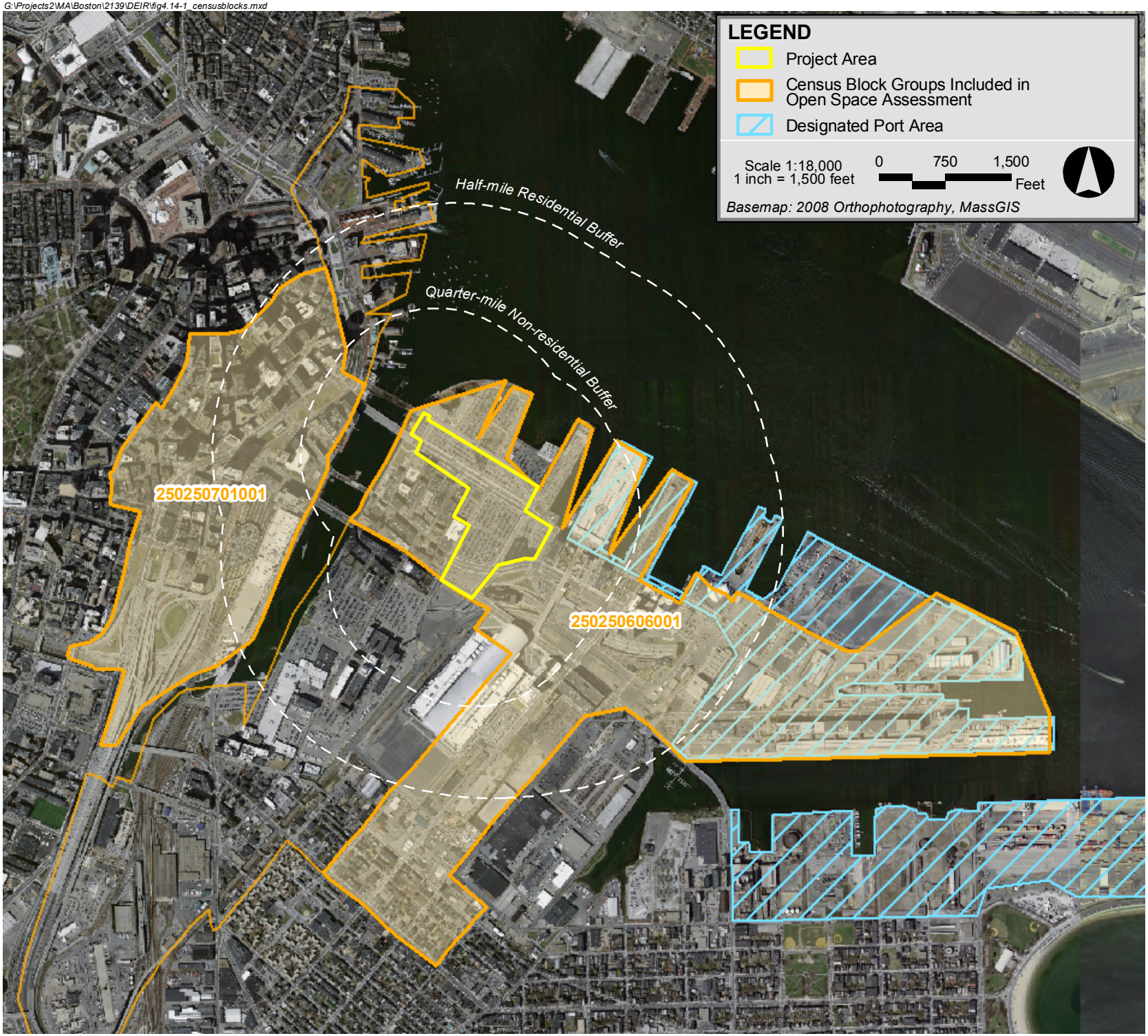

SEAPORT SQUARE
IN SOUTH BOSTON

Figure 4.14-1

Identification of Open Space Impact Assessment Study Area

GALE INTERNATIONAL

Morgan Stanley

WS DEVELOPMENT

prepared by:
Epsilon Associates, Inc.

These Census Block Groups include land well beyond the half-mile distance (for residents) and one-quarter-mile distance (for non-residents). The Open Space Impact Assessment Guidelines define the half-mile and one-quarter-mile distances as "a reasonable walking distance that users would travel to reach local open space and recreation area." The resident Study Area includes resident populations in South Boston south of West First Street (more than one-half mile from the Project Site), where approximately 68% of the population of Census Block Group 606001 lives. This resident population also lives more than one-half mile away from all but one of the open spaces considered in this assessment. This population is closer to other open spaces, including Orton Field, Sweeney Playground, Joe Moakley Park, and Carson Beach, than to the Study Area open spaces, and therefore, this population's use of the Study Area open spaces is presumed to be minimal. The open space ratios presented in Sections 4.14.2.4, 4.14.3 and 4.14.4 include the approximately 68% of the population that is distanced from the Study Area open spaces. If this portion of the Study Area population was excluded from this assessment, since their use of the spaces is presumed to be minimal due to access to open spaces closer than the Study Area's, the open space ratios (i.e. the amount of open space per 1,000 residents) would be higher than presented in the following sections, and the open spaces in the Study Area would have fewer users. Detailed demographic information by Census Block Group is provided in Appendix H.

Generally, the population in the Study Area has a lower proportion of 0-24 year olds, and a higher proportion of 45-64 year olds, than Boston as a whole, and South Boston as a whole. The Study Area is racially diverse.

Industrial and commercial land uses dominate the Study Area. Residential uses, presently concentrated in the Fort Point District and southern portions of South Boston south of West First Street, are principally centered in multifamily structures. Housing around Fort Point Channel and closer to Downtown generally consists of high- and mid-rise buildings that often include commercial and retail uses at the ground level. Where the Study Area overlaps with the residential portion of South Boston, housing generally consists of low-rise buildings and triplexes. Across the Study Area, 40% of the housing units are in buildings with 20 or more units.

The median income in both Census Block Groups is greater than $52,000, which is significantly higher than the median incomes in Boston ($39,629) and South Boston ($40,311). However, the Study Area's poverty rate is approximately 21% higher than in Boston (19.5%) and South Boston (17.3%). Vehicle ownership is proportionally higher in Study Area households (42%) than in Boston (35%) or South Boston (32%).

4.14.2.2 Non-resident Population

Since non-residents generally travel shorter distances to access open space(s), the Open Space Impact Assessment only considered non-residents from within Census Block Group 606001 (see Figure 4.14-1). Therefore, the Study Area for non-residents is only a subset of

the total Study Area, and the open space ratios provided in this analysis are only in comparison to the non-resident Study Area. The non-resident population was calculated using job data from InfoUSA (provided by the BRA's Research Division), the number of hotel rooms and vacancy data, and annual attendance data for conventions and other events. The non-resident population includes workers, such as those that work at the Boston Marine Industrial Park, that are more than the quarter-mile distance that the Open Space Impact Assessment Guidelines define as "a reasonable walking distance that users would travel to reach local open space and recreation area," from most of the open spaces in the non-resident Study Area. The estimated non-resident population within the Study Area is 21,300.

As mentioned above for the resident population, if non-residents more than one-quarter-mile from the open spaces were excluded from the analysis, the open space ratios would be higher than presented in Sections 4.14.2.4, 4.14.3 and 4.14.4.

4.14.2.3 Major Open Space Constraints and Limitations in the Vicinity of the Project

The Boston Parks and Recreation Department guidelines for open space impact assessments recommend analysis of a set buffer zone around the limits of a project site (e.g., one-quarter and one-half mile radii). However, the availability of and ability to develop open space at the Project Site and within its vicinity is significantly constrained by geography and past and present uses in the immediate environs, as evidenced by Figure 4.14-2. To a degree, the Project Site and its surroundings are virtually an island, in part defined by water (much of which is actively used for marine industrial purposes), and in part isolated by extensive transportation infrastructure and industrial land uses, including the South Boston Designated Port Area (DPA), which is set aside by statute for industrial purposes. Regulations pertaining to DPAs generally prohibit public access that may interfere with industrial uses. Whereas other areas of Boston may be able to access open space along all sides of the perimeter of any given neighborhood, a large percentage of the Study Area defined by the Department's guidelines is either entirely devoid of open space as it is commonly defined (e.g., parks), or constrained from being developed for open space purposes in the future by virtue of how much area is either watersheet, transportation infrastructure, or DPA.

4.14.2.4 Publicly-Accessible Open Spaces within the Study Area

Thirty-six publicly-accessible open spaces were identified in the Study Area considered in this impact assessment as shown in Figure 4.14-2. These include properties under both public and private ownership, the majority of which are protected. For the purposes of this assessment, open spaces within the Study Area are identified as "protected" not only when presumptively subject to Article 97, but also when their ongoing existence is safeguarded by other regulatory mechanisms such as Chapter 91 licenses, Wetlands Protection Act conditions, or other factors related to their creation, such as those established as part of the overall Central Artery mitigation package. The majority of the open spaces in the Study

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SEAPORT SQUARE
IN SOUTH BOSTON

Figure 4.14-2

Study Area Open Space

GALE INTERNATIONAL

Morgan Stanley

WS DEVELOPMENT

prepared by:
Epsilon Associates, Inc.

Area are relatively new, and are outfitted with high quality materials, furnishings, and landscaping. The quality and extent of such furnishings appears to be an important influence on the usability of the open spaces. It should be noted that the qualitative experience of urban open spaces, including those within the Study Area, are impacted by traffic and associated noise, as well as shadow from nearby buildings at particular times of day; however, the level of activity and types of land uses in the immediate vicinity clearly have a more significant influence on the level of use. In addition, shadow can be a benefit to open space, by providing users a choice of sun and shade. Open spaces located near housing, commercial and office uses benefit from activity generated by residents, workforce and visitors; those that are located amid primarily industrial areas have comparatively little activity. As an example, Post Office Square Mall is surrounded by busy streets and tall buildings, and nonetheless experiences heavy use by both passersby and those who seek out the park as a destination. Details about each resource within the Study Area are provided in Table 4.14-1, and are discussed below in the context of their attributes and limitations.

The largest open space resource in the area is the Boston Harborwalk (#1), which extends along and across the Fort Point Channel, numerous piers, and down to the industrial port area. Many segments of the Harborwalk are protected through various mechanisms, while other portions may technically have no protection, but are likely to remain in open space use given the strong support for the continued implementation of the Harborwalk concept and enhancement of those segments that currently exist. This resource provides opportunities for public enjoyment and is appropriate for walking, jogging, and bicycling along many segments. A critical attribute of the Harborwalk is its function as a public link between other open spaces. This enhances access and encourages public activation of localized areas while also encouraging interconnectedness with adjacent neighborhoods. The Harborwalk segments within the Study Area are part of a larger network that leads to the North End, Charlestown, South Boston, and to other open spaces and waterfront areas.

The Marine Industrial Park, zoned as a DPA and thereby reserved by the City of Boston primarily for marine industrial uses, is located in the easternmost portion of the Study Area and hosts five public viewing areas and segments of the Harborwalk. While the public is allowed to walk, jog or cycle through the industrial area, the area is better suited to public viewing areas along the Harborwalk as it traverses industrial areas, so that industrial activities can continue with minimal potential conflicts with the general public. The Harborwalk in this area is not as well marked, and has little retail use and no residential uses to activate it. As a result there is little pedestrian activity, especially during the weekend. Dry Dock Plaza (#2) provides a viewing platform with benches and often a food vendor during the weekdays. Pier 10 Plaza (#3) contains benches, a small grass lawn, and a wood deck; located immediately north of large silos, shadows cover portions of this open space during most of the year. Although the Boston Design Center Plaza (#4) and Marine Industrial Park Entrance / Harbor Gateway (#5) both contain benches, the Plaza is dominated by shrubs. The Park contains a fenced-in parking lot and its pieces are

discontinuous. The plaza on FID Kennedy Avenue (#6) is generally hidden from view, and due to minimal Harborwalk signage and lack of pedestrian activity ordinarily associated with retail and residential uses, is currently underutilized. With little night and weekend activity, safety at these open spaces might be a concern of some potential users.

Eight open spaces exist within the South Boston waterfront, which, for the purpose of this assessment, extends from the Marine Industrial Park west to Fort Point Channel. South Boston Maritime Park (#7) is adjacent to hotel and retail uses, and includes art displays, benches, and a grassy area large enough for active uses. The adjacent Eastport Park (#8), with more art displays and benches, is suitable for passive uses. Both are thoughtfully designed with high quality hardscape and extensive landscaping. A small open space between the West Office Building and the Seaport Hotel (#9) provides benches that are used by hotel visitors and workers from nearby office buildings. It is primarily used during midday, particularly for outdoor lunch seating. Along D Street is Portal Park (#10), which includes pathways and landscaping, although is directly above I-90, and therefore is impacted by noise. Courthouse Plaza (#11), located north of the John Joseph Moakley U.S. Courthouse at the tip of Fan Pier, includes benches and large grassy areas appropriate for events and active uses. The adjacent Fan Pier Plaza and Harborwalk (#12) will ultimately accommodate active uses, but are limited at the present time by current construction. South of the Courthouse is the Children's Museum and nearby open spaces, including a segment of the Harborwalk (#13) containing benches and tables, Children's Museum Plaza (#14) and Children's Wharf Park (#15). The Plaza, immediately adjacent to Fort Port Channel, is used extensively by the general public for outdoor seating, although a portion of it is reserved for outdoor dining associated with the museum food service and the Museum entrance. The adjacent Park provides benches and grassy areas suitable for active uses and particularly appealing for children given its location adjacent to the Museum.

Along the western shore of Fort Point Channel, open spaces include segments of the Harborwalk at Russia Wharf (#16), Tufts Wharf (#17), and the Federal Reserve Bank (#18). These Harborwalk segments are suitable for pedestrian activity, passive recreation, and active uses such as jogging. The Russia Wharf Harborwalk segment presently appears to be impacted by nearby construction, but is expected to experience considerable activity associated with workforce use. The Tufts Wharf Harborwalk segment is adjacent to grassy areas associated with the Intercontinental Boston Waterfront Hotel (#19) suitable for active uses. Travelling north on the Harborwalk requires going through a tunnel underneath a building to the street. The Federal Reserve Bank Harborwalk segment is somewhat secluded and appears to attract less activity than the adjacent segments.

Table 4.14-1 Publicly Accessible Open Space Resources within the Study Area

Map No.	Name	Address	Owner	Protection*	Acres	Type	% Active/ % Passive	Features
1	Harborwalk	N/A	Various	Mechanisms Vary	3.60**	Pedestrian	90/10	None
2	Dry Dock Plaza	Design Center Place	BRA	Chapter 91	0.24	Mall, Square, or Plaza	0/100	Viewing Platform, Benches
3	Pier 10 Park	600 Summer Street	BRA	Article 97	0.4	Mall, Square, or Plaza	0/100	Benches, Grass Area
4	Boston Design Center Plaza	666 Summer Street	BRA	Chapter 91	0.61	Mall, Square, or Plaza	0/100	Benches
5	Marine Industrial Park Entrance / Harbor Gateway	600 Summer Street	BRA	Article 97	1.24	Mall, Square, or Plaza	0/100	None
6	Unnamed Plaza	FID Kennedy Ave	MTA	CAT Mitigation	0.2	Mall, Square, or Plaza	0/100	Benches
7	South Boston Maritime Park	Seaport Boulevard & D Street	Massport	Chapter 91	1.1	Mall, Square, or Plaza	20/80	Benches, Grass Area, Café
8	Eastport Park	2 Seaport Lane	Massport / Private	Chapter 91	1.2	Mall, Square, or Plaza	0/100	Benches, Grass, Pathways
9	Podium Park	1 Seaport Lane	Massport / Private	Chapter 91	0.6	Mall, Square, or Plaza	0/100	Benches, Pathways

* Means of protection were identified through various sources, including the City of Boston Open Space Plan 2002-2006, the City of Boston Open Space Plan 2008-2012, Open Space GIS layer from the Parks and Recreation Department and BRA, and MassGIS, not all of which reported consistent information.

** Although much of the Harborwalk is wider, to be conservative, the acreage is estimated as an average 6-foot wide swath for length of completed sections.

Table 4.14-1 Publicly Accessible Open Space Resources within the Study Area (Continued)

Map No.	Name	Address	Owner	Protection*	Acres	Type	% Active/ % Passive	Features
10	Portal Park	D Street	Massport	Unprotected	0.3	Mall, Square, or Plaza	20/80	Benches, Pathways
11	Courthouse Plaza (Fan Pier Plaza)	12 Northern Avenue	Federal	Chapter 91 / WPA	2.37	Mall, Square, or Plaza	40/60	Benches, Grass Area
12	Fan Pier Harborwalk and Plaza	28-70 Northern Avenue	Private	Chapter 91	NA†	Pedestrian	100/0	None
13	Children's Wharf Harborwalk	308-316 Congress Street	Private	Article 97	0.25†	Pedestrian	100/0	Benches
14	Children's Museum Plaza	308-316 Congress Street	Private	Chapter 91 / WPA	0.14	Mall, Square, or Plaza	20/80	Open Area, Outdoor Seating and Tables
15	Children's Wharf Park	64 Sleeper Street	BRA	Article 97	0.93	Park or Playground	80/20	Benches, Grass Area
16	Russia Wharf Harborwalk	Behind 480-516 Atlantic Avenue	Private	CAT mitigation	NA†	Pedestrian	100/0	None
17	Tufts Wharf Harborwalk	Behind 510 Atlantic Avenue	Private	CAT mitigation	NA†	Pedestrian	100/0	Benches, Grass Area
18	Federal Reserve Bank Harborwalk	Dorchester Avenue & Congress Street	Private	Unprotected	NA†	Mall, Square, or Plaza	100/0	Benches, Grass Areas
19	Unnamed Plaza	Behind 510 Atlantic Avenue	Private	Unprotected	0.7	Mall, Square, or Plaza	20/80	Seating, Grass Area

* Means of protection were identified through various sources, including the City of Boston Open Space Plan 2002-2006, the City of Boston Open Space Plan 2008-2012, Open Space GIS layer from the Parks and Recreation Department and BRA, and MassGIS, not all of which reported consistent information.

† These areas are included in the Harborwalk acreage.

Table 4.14-1 Publicly Accessible Open Space Resources within the Study Area (Continued)

Map No.	Name	Address	Owner	Protection*	Acres	Type	% Active/ % Passive	Features
20	Rose Fitzgerald Kennedy Greenway II	Purchase Street & Pearl Street	MTA	Assumed	0.9	Mall, Square, or Plaza	50/50	Benches, Pathways, Grass Area
21	Rose Fitzgerald Kennedy Greenway III	Purchase Street & Oliver Street	MTA	Assumed	1.8	Mall, Square, or Plaza	50/50	Benches, Pathways, Grass Area
22	Rose Fitzgerald Kennedy Greenway IV	Purchase Street & Congress Street	MTA	Assumed	1.3	Mall, Square, or Plaza	50/50	Benches, Pathways, Grass Area
23	Dewey Square Plaza	Purchase Street & Summer Street	MTA	Assumed	1.0	Mall, Square, or Plaza	20/80	Seating, Open Area
24	Unnamed Plaza	556-624 Atlantic Avenue	Private	Unprotected	1.1	Mall, Square, or Plaza	0/100	Seating
25	Unnamed Plaza on Summer Street	Atlantic Avenue & Summer Street	Private	Unprotected	0.3	Mall, Square, or Plaza	0/100	Seating
26	Atlantic Avenue Plantings	Atlantic Avenue	MBTA	Assumed	1.0	Mall, Square, or Plaza	0/100	Benches
27	I-90 Interchange	Atlantic Avenue & Kneeland Street	MTA	Assumed	0.2	Parkway	0/100	None
28	Pagoda Park	185 Kneeland Street	MTA	Assumed	1.4	Park or Playground	100/0	Basketball Courts, Grass Field
29	Summer Street Park	171 Summer Street	MTA	CAT mitigation	0.7	Mall, Square, or Plaza	0/100	Seating

* Means of protection were identified through various sources, including the City of Boston Open Space Plan 2002-2006, the City of Boston Open Space Plan 2008-2012, Open Space GIS layer from the Parks and Recreation Department and BRA, and MassGIS, not all of which reported consistent information.

Table 4.14-1 Publicly Accessible Open Space Resources within the Study Area (Continued)

Map No.	Name	Address	Owner	Protection*	Acres	Type	% Active/ % Passive	Features
30	Leather District Park	29 South Street	MTA	CAT mitigation	0.3	Mall, Square, or Plaza	0/100	Seating
31	Chinatown Park	Tufts Street & Essex Street	MTA	CAT mitigation	1.0	Mall, Square, or Plaza	20/80	Benches, Pathway, Open Area
32	China Gate Park	51 Albany Street	PRD	Article 97	0.3	Mall, Square, or Plaza	20/80	Benches, Open Play Area
33	Oxford Place Playground	Oxford Street	Private	Unprotected	0.03	Park or Playground	100/0	Open Play Area
34	Winthrop Square	Devonshire Street & Otis Street	City of Boston	Unprotected	0.15	Mall, Square, or Plaza	0/100	Benches
35	Post Office Square Mall	13-158 Congress Street	Private	Article 97	1.55	Park or Playground	0/100	Extensive Furnishings, Pathways, and Plantings
36	Buckley Playground	Bolton Street & D Street	City	Article 97	0.65	Park or Playground	90/10	Basketball Court, Playground Equipment, Grass Area, Benches

* Means of protection were identified through various sources, including the City of Boston Open Space Plan 2002-2006, the City of Boston Open Space Plan 2008-2012, Open Space GIS layer from the Parks and Recreation Department and BRA, and MassGIS, not all of which reported consistent information.

Further inland from the Fort Point Channel, the Study Area includes three sections of the Rose Fitzgerald Kennedy Greenway (#20-22). These open spaces generally consist of tree-lined pathways especially well-suited for walking and jogging, and also support lawn areas that could be used for other forms of active exercise.

Connected to the south of these open spaces is the Dewey Square Plaza (#23), which is suitable for passive recreation, with the majority of space provided as open hardscape supplemented by some available seating. It is located at the nexus of several major roadways and a tunnel entrance to the Central Artery. Across Atlantic Boulevard, a plaza in front of the Federal Reserve Bank of Boston (#24) contains pathways and plantings that make it suitable for passive recreation. A pedestrian plaza (#25) located around the corner provides seating amid art displays and plantings.

Further south along Atlantic Avenue, the Atlantic Avenue Plantings (#26) area provides numerous benches and a spacious sidewalk generally suitable for passive recreation near the bus terminal. Just to the south of this open space is an area of trees and grass associated with the I-90 Interchange (#27); no other pedestrian-friendly amenities are provided in this area, and its usability as a public open space is constrained by its location adjacent to the I-90 ramp, its seclusion from buildings, and the general occurrence of traffic, noise, and vehicle exhaust.

West of the I-90 Interchange area is Pagoda Park (#28). This park includes basketball courts and a grassy field suitable for various uses. Although the park is separated from residential areas by existing roadways, this active recreation space is used regularly (particularly in the evenings).

Several blocks to the north, four plazas along Surface Artery South/John F. Kennedy Surface Road are generally suitable for passive recreation and as pedestrian ways. Similar to other open spaces in the general vicinity, Summer Street Park (#29), Leather District Park (#30), Chinatown Park (#31), and China Gate Park (#32) are relatively new, thoughtfully-designed spaces. China Gate Park and Chinatown Park both include open areas suitable for active uses. To the west of this area is Oxford Place Playground (#33), which provides an open area with small patches of grass and a central hardscape. It does not include any equipment.

Winthrop Square (#34) and the Post Office Square Mall (#35) are both located in the northwestern corner of the Study Area. Winthrop Square provides benches and is suitable for passive recreation. Post Office Square Mall is a highly popular destination as well as a desirable pleasant thoroughfare. The extraordinary quality of its design, furnishings and plantings serve to provide a tranquil experience in spite of traffic and noise associated with adjacent streets. As noted above, Post Office Square Mall demonstrates that shadow alone is not a deterrent to open space usability, as it is often shadowed, yet is generally acknowledged as one of the most popular open spaces in the City.

Buckley Playground (#36) in South Boston, technically in the Study Area as defined by the Department's guidelines, is considerably removed from the Project Site, located in a residential section of South Boston. The Playground includes jungle-gym equipment and basketball courts, as well as a grassy area and pathways with benches. Due to its location, it may not be frequented by individuals from the Project or by individuals that live, work, or visit the South Boston waterfront, while other active open spaces outside of the Study Area per se may be more attractive to residents and other users of Seaport Square (e.g., Lee Playground and Independence Square).

The existing protected open space ratio for residents in the Study Area is approximately 11.29 acres per 1,000 residents, which is more than four times the City of Boston's planning goal of 2.5 acres per 1,000 residents. This high ratio results in part from the significant open spaces associated with the Greenway, and reflects the underdeveloped nature of the area, which has few residents and includes industrial development and transportation infrastructure. The City's planning goal of having 80% of all open spaces be active is not met in the Study Area. The existing open space ratios for non-residents are approximately 0.35 acres per 1,000 non-residents for passive space, and approximately 0.24 acres per 1,000 non-residents for active space. The passive open space ratio for non-residents is above the City's planning goal of 0.15 acres per 1,000 residents, while the active open space ratio for non-residents is below the City's planning goal of 0.5 acres per 1,000 residents.

Within both the resident and non-resident Study Areas, the acreage available for passive use exceeds that provided for active use. Much of the Study Area contains low-density commercial uses, however, and these characteristics generally make the area more suited to passive spaces. With the existing mix of users and activities, it is likely that active spaces would be underutilized. All open space ratios for the Study Area exceed the Boston City planning goals with the exception of the active space for non-residents.

It is worth noting that the Fort Point Channel is not included as an open space in this assessment. The Fort Point Channel Watersheet Activation Plan from May 2002 seeks to transform the Fort Point Channel into a new public space that includes water-based recreation. It is unclear when the vision of this plan will be realized, and use of the watersheet itself is based on the introduction of recreational equipment and facilities. Therefore this space has not been included in this analysis. However, if this space is developed as envisioned, it would be a significant addition to the quantity and quality of open space experience available to residents and visitors, adding approximately 50 acres of area with unique attractions.

4.14.2.5 Major Regional Facilities Proximate to the Project

While technically outside of the Study Area, several major regional open space facilities are less than two miles from the Project: Strandway/Castle Island Park, Marine Park, M Street Beach, L Street Beach, Carson Beach and Joe Moakley Park and the Boston Harbor Islands

National Recreation Area (see Figure 4.14-3). Strandway/Castle Island and Marine Park are a 64.9-acre facility managed by the Massachusetts Department of Conservation and Recreation, and support a wide variety of active open space uses extending across a three mile segment of parkland and beach along the South Boston shoreline of Dorchester Bay. Given its abundant active recreational facilities, including ballfields, swimming, and walking, jogging, and running paths, it is anticipated that residents of Seaport Square will become regular users of Strandway/Castle Island. Similarly, M Street Beach, L Street Beach and Carson Beach provide approximately 34.7 acres suitable for both active and passive recreation along Dorchester Bay in close proximity to the Project. The Joe Moakley Park, at 58.77 acres, also provides numerous ballfields, a track, and other amenities for active recreation. Boat access to the Boston Harbor Islands, a resource not only of regional, but national significance, is within approximately one-half mile of the Project, although beyond the limits of the open space impact assessment Study Area itself.

In addition to these facilities, a number of other significant open spaces reasonably proximate to the Study Area are readily accessible by foot, bike, or public transportation. These include various parcels along the Rose Kennedy Greenway, Christopher Columbus Park and the Boston Public Garden and Common.

4.14.3 Future No Action Condition

There are 14 projects in the residential Study Area and nine projects in the nonresidential Study Area listed on the BRA website as "Under Construction" or "Board Approved."[14] Collectively, these projects will have a residential population of approximately 8,200 and a non-residential population of approximately 12,500. Due to the current economy, however, it is unclear how soon the residential units, hotels, and project-related jobs will be realized.

New open spaces will be created within the Study Area through the development of Fan Pier, which includes a new public green and Fan Pier Park along the waterfront, creating approximately 3.6 acres of open space. It is anticipated that most of the public green, equal to approximately 30% of the collective new open space, will likely be appropriate for active uses, although the actual facilities and features of the new open spaces have yet to be determined. Plaza and boardwalk areas associated with the Fan Pier project will provide an additional estimated 0.5 acres of open space. All of these new open spaces will be suitable for general use by the new residential, office, and tourist populations drawn to the area. In addition, the Pier 4 development will include approximately one acre of open space.

[14] Additional projects are at various stages, most of which are not advanced to the point where information about the resident and non-resident population can be estimated (see Section 1.5.1), and therefore they are not included in this analysis.

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SEAPORT SQUARE
IN SOUTH BOSTON

Figure 4.14-3

Regional Open Space

GALE INTERNATIONAL

Morgan Stanley

WS DEVELOPMENT

prepared by:
Epsilon Associates, Inc.

In addition to the open spaces associated with the Fan Pier development, it is anticipated that measures to improve accessibility and signage along underutilized portions of the Harborwalk will enhance its use and activity at some point in the future, although the Proponent is not aware of any plans for specific improvements.

Under the Future No Action condition, the active open space ratio will be approximately 1.14 acres per 1,000 residents and approximately 0.22 acres per 1,000 non-residents, both lower that the City's planning goal of 80% of total space as active open space for residents and 0.5 acres of active open space per 1,000 non-residents. The future passive open space ratio will be approximately 2.0 acres per 1,000 residents and approximately 0.33 acres per 1,000 non-residents, above the City's planning goal of 20% passive open space and 0.15 acres per 1,000 non-residents. Overall, the open space ratio for residents will be approximately 3.14 acres per 1,000 residents, above the City's planning goal of 2.5 acres per 1,000 residents.

4.14.4 Future Action Condition

The Seaport Square Project will add approximately 20,000 jobs and 5,000 residents to the area. In addition, approximately 1,800 students, some of whom may also be residents of the development, as well as tourists and visitors will be part of the non-resident population of the area.[15] The Project will create several significant new open spaces including Seaport Hill, Seaport Square Green, Parcel E (upgraded by the Project, but outside of the Project Site), Courthouse Square, M Way, and other pedestrian ways (see Figure 4.14-4). Seaport Hill and Seaport Square Green are the largest of the new open spaces that will be created, and will accommodate facilities suitable for active uses, including playground equipment and large grass areas. The pedestrian ways – mid-block corridors connecting to streets and open spaces at various locations throughout the Project - will be suitable for passive recreation uses. In total, the Project Site will add approximately 4.38 acres of open space (not including sidewalks adjacent to public roadways, some of which will be wide corridors with furnishings and landscaping), including Parcel E and Old Sleeper Street, with approximately 30% of that area suitable for active uses. Seaport Square's open spaces will be constructed using high quality materials and landscaping, providing highly desirable surroundings for residents and visitors. Seaport Square Green will be buffered from traffic noise by kiosks along Seaport Boulevard, while still being visually and physically open to the street. Seaport Hill will provide a more intimate experience, buffering its users from traffic noise with buildings. Wide pedestrian corridors leading to Seaport Hill will encourage the public to access this open space.

Wind and shadow impacts on these open spaces are discussed in Sections 4.1 and 4.2, respectively.

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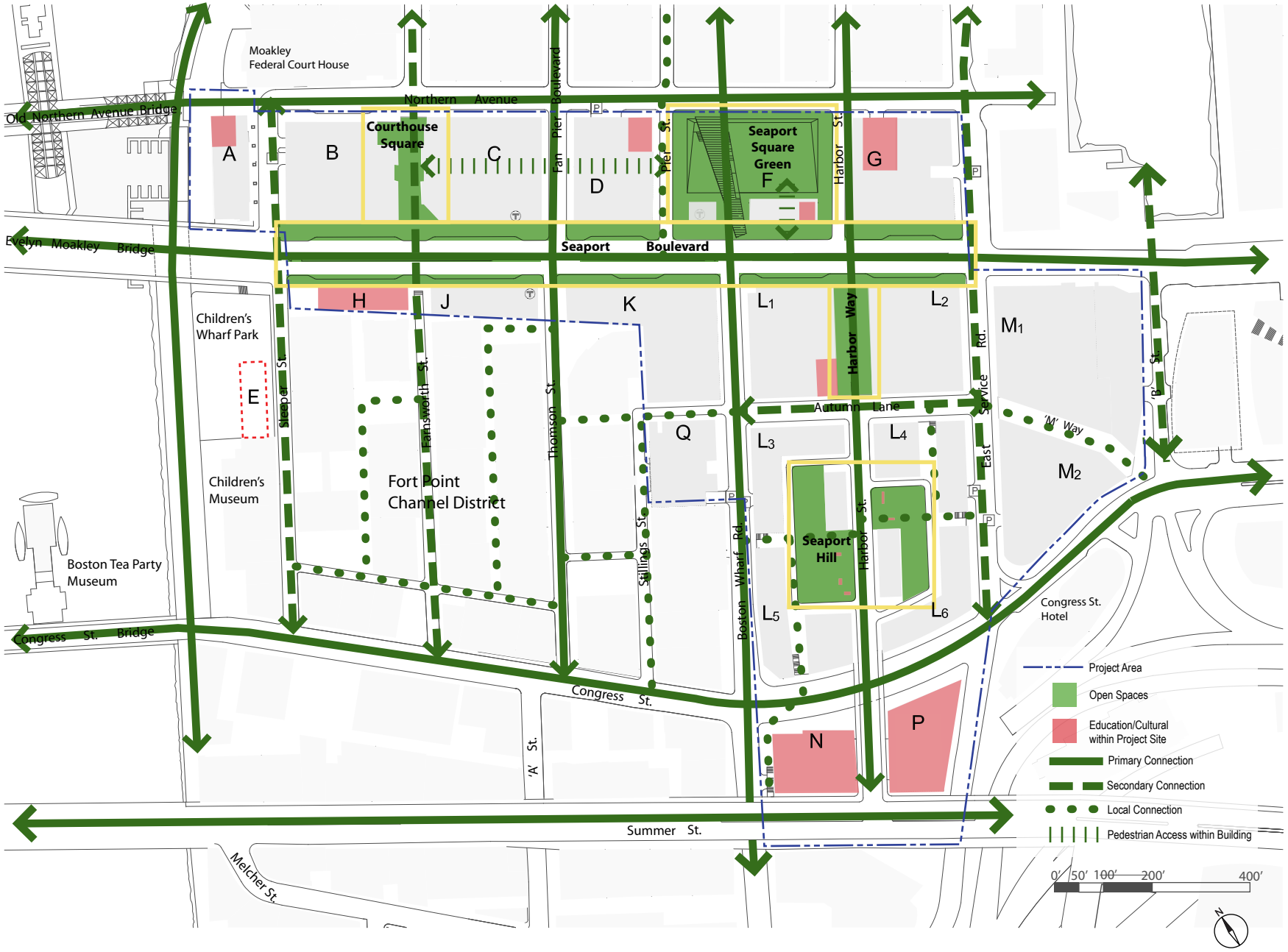
[15] Including information that is available for jobs and students, and a conservative estimate of tourists and visitors to the area, the total non-resident population has been estimated at 59,000.



SEAPORT SQUARE
IN SOUTH BOSTON

Figure 4.14-4

Open Spaces

GALE INTERNATIONAL

Morgan Stanley

WS DEVELOPMENT

prepared by:
KPF

The new open spaces proposed as part of the Project will enhance the functionality and availability of active and passive spaces in the Study Area. Overall, the open space ratio for residents will be approximately 2.41 acres per 1,000 residents, slightly below the City's planning goal of 2.5 acres per 1,000 residents, and approximately 0.39 acres per 1,000 for non-residents. The passive open space ratio will be approximately 1.55 acres per 1,000 residents and approximately 0.24 acres per 1,000 non-residents. Therefore, the passive open space ratio for residents will be above the City's planning goal of 20% of total open space for passive use. The passive open space ratio for non-residents is also above the City's Planning goal, which is 0.15 acres per 1,000 non-residents. Under the Future Action condition, the active open space ratio for the Study Area will be approximately 0.86 acres per 1,000 residents and approximately 0.15 acres per 1,000 non-residents, which is still below the City's planning goal of 80% active open space for residents and 0.5 acres per 1,000 non-residents.

According to the City of Boston's *Open Space Plan 2008-2012*, the South Boston neighborhood has a total open space ratio of 7.03 acres per 1,000 residents. The open space ratio for residents in South Boston will continue to be well above the City's planning goal of 2.5 acres per 1,000 residents after the addition of the Project's resident population. In contrast to the rest of South Boston, however, the Project and surrounding area's urban fabric is relieved by the distribution of open spaces throughout the Project Site and the surrounding area, rather than concentrated at the edges. In addition, the density of the Project is similar to that of the Central Boston and the South End neighborhoods. These areas have resident open space ratios of 1.83 and 1.03 per 1,000 residents, respectively, below the open space ratio of the Study Area.

4.14.5 Conclusion

The Project is not anticipated to have a direct adverse effect on any existing open space. The Project itself promises to create functional open spaces that are thoughtfully designed and constructed with high quality materials suitable for active and passive uses. The Project will enhance the pedestrian experience and improve active and passive recreational opportunities and experiences by creating a vibrant community and activating the public landscape. By introducing large resident and non-resident populations into the Study Area, the Project will have an indirect effect on the open space ratio relative to existing conditions and the future no build condition. The total open space ratio for the Study Area will be just below the City's overall planning goal of 2.5 acres per 1,000 residents. This ratio, however, is above the open space ratios for similarly dense neighborhoods, such as Central Boston and the South End. In addition, if the Study Area excluded resident and non-resident populations that are unlikely to use the open spaces within the Study Area because they are beyond one-half mile and one-quarter mile (considered reasonable walking distances that users would travel to reach local open space and recreation areas) from the open spaces,

the ratio would be above 2.5 acres per 1,000 residents. Looking at South Boston as a whole, the open space ratio will continue to be well above the City's planning goal of 2.5 acres per 1,000 residents, even with the addition of the Project.

For active open space compared to the amount of total open space, the percentage in the Study Area is lower than the City's planning goal of 80% of total open space due to the dense nature of the area, which generally does not allow for large open spaces suitable for active uses. Also, if the Fort Point Channel becomes a new public space as envisioned in the Fort Point Channel Watersheet Activation Plan, the open space ratios, especially the active open space ratio, will be significantly higher. The Proponent is also planning to work with the South Boston community to identify an off-site athletic field that can be utilized for athletic events related to the educational facility. As part of this arrangement, the Proponent will fund capital upgrades to the field(s) and fund a portion of the ongoing maintenance.

Financial and physical constraints limit the amount of open space that is feasible to include in the Project. However, the Proponent seeks to maximize the amount of open spaces the Project will create. One sign of this commitment is the inclusion of green roofs in the Project design, which will increase the amount of open space available for individuals living or working in certain buildings. The Proponent will explore potential opportunities to include space suitable for active uses on some of the proposed green roofs and will continue to study options for incorporating active and passive open spaces into the Project.

The Project's consistency with the City of Boston's *Open Space Plan 2008-2012* is discussed in Section 1.6.2. Consistency with Chapter 91 and the South Boston Municipal Harbor Plan is addressed in Section 4.9.

3.0 TRANSPORTATION

3.1 Introduction

This chapter presents the transportation issues associated with the proposed Seaport Square Project, located in South Boston. Figure 3-1 shows the location of the Project site and surrounding area. While multiple parcels will be redeveloped as part of the Project, the area is bounded generally by Northern Avenue, East Service Road, Seaport Boulevard, B Street, Congress Street, elevated Summer Street, Boston Wharf Road, Stillings Street, and Sleeper Street.

3.1.1 Description of the Project

The proposed Project will redevelop a 23-acre area in South Boston, currently largely devoted to surface parking lots totaling 3,647 spaces.

The Seaport Square proposed building program is presented in detail in Section 1.2 of this report. The 6.5-million-square-foot, mixed-use Project will include residential, office, retail, hotel, and cultural/educational land uses, as well as parking garages, as summarized in Table 3-1.

Table 3-1 Build Program for Transportation Analysis

Land Use	Build Program (approx.)
Residential Apartments	1,575 units
Residential Condominiums	925 units
Hotel Rooms	550 rooms
Retail	1,300,000 sf
Cultural/Educational/Arts	600,000 sf
Office	1,300,000 sf
Parking Spaces[1]	6,500 spaces

[1] The Project will displace 3,647 public surface parking spaces and 91 private spaces, for a net increase of 2,762 spaces. Vehicle trips associated with the existing spaces are currently traveling on the adjacent roadway network.

The Project also includes parking for up to 6,500 vehicles in new, below-grade parking garages. Off-street loading will be provided for each Block. The locations of proposed access/egress driveways for proposed garages and proposed loading docks are shown in Figure 3-2.

Although certain land use components of the Project will be phased in and be subject to change based on market conditions, the transportation analysis represents a highest-impact, 6.5-million-square-foot "Full-Build" Condition.

Not to scale.

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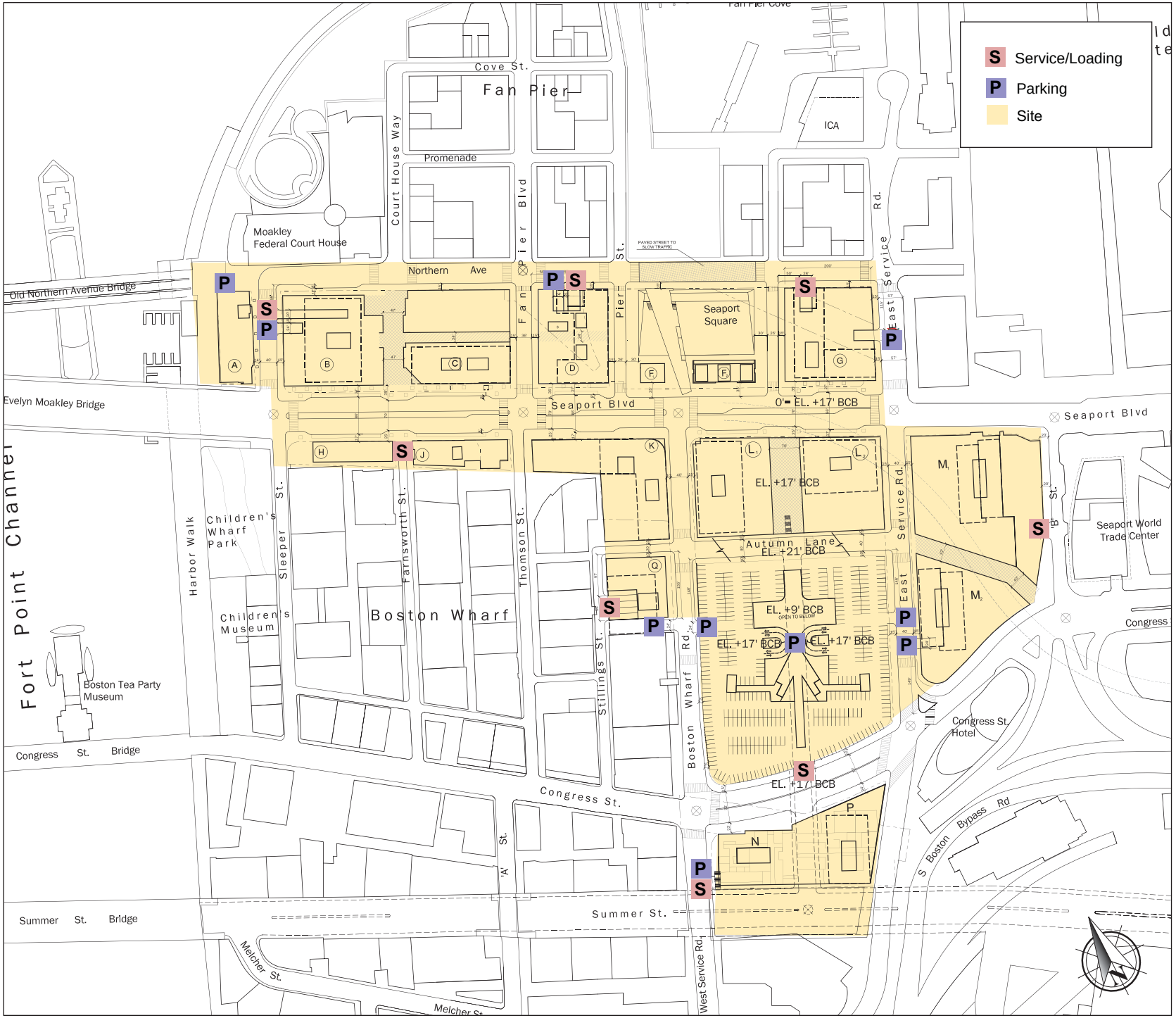
Morgan Stanley

WS DEVELOPMENT

prepared by: Howard/Stein-Hudson Associates, Inc.

SEAPORT SQUARE
IN SOUTH BOSTON

Figure 3-1
Locus Map



SEAPORT SQUARE
IN SOUTH BOSTON

Figure 3-2

Site Plan Showing Proposed Parking and Service/Loading Entrances

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Morgan Stanley

WS DEVELOPMENT

prepared by:
Howard/Stein-Hudson Associates, Inc.

3.1.2 Summary of Major Study Findings

Transportation conditions in the Seaport Square study area were analyzed under the following scenarios:

- Existing Conditions;
- Mid-term No-Build Conditions, generally reflecting planned projects (other than the Seaport Square Project) and associated transportation improvements that are likely to proceed within the next 5 to 10 years;
- Seaport Square Build Conditions, within the same Mid-term time frame, includes the net new trips generated by the Project overlaid on the Mid-term No-Build network;
- Seaport Square Build with Mitigation shows that the overall impact from the Project can largely be mitigated by altering the signal timings, altering phasing plans and/or changing designated travel lane use; and
- South Boston Waterfront Long-term Conditions includes all projects planned or proposed over a long-term (40 or more years) horizon.

While the scope of the transportation study has been extensive, several key findings can be drawn from the analysis:

- Today, the Seaport Square site is almost wholly used for commuter parking lots and already generates a significant volume of peak hour vehicle trips. As these lots are replaced with Project buildings with underground parking to support on-site uses, the net increase in traffic activity associated with the Project will be disproportionately lower than if the Project was built on vacant land.
- While some intersections operate poorly under Existing and Mid-term No-Build Conditions, Seaport Square itself contributes relatively less traffic to these intersections than other area developments. With mitigation improvements, composed primarily of signal timing phasing changes and travel lane use changes, only three of the 33 study intersections during the a.m. peak hour, two of the 33 study intersections during the p.m. peak hour, and one of the 33 study intersections during both the a.m. and p.m. peak hours will experience a relevant change in level of service between Mid-Term No-Build conditions and Seaport Square Build with Mitigation conditions.
- In addition, it is likely that trips will be redirected from overburdened intersections like Seaport Boulevard/Sleeper Street to those with excess capacity, like Seaport Boulevard/Boston Wharf Road, so as to eventually achieve balance in the network.

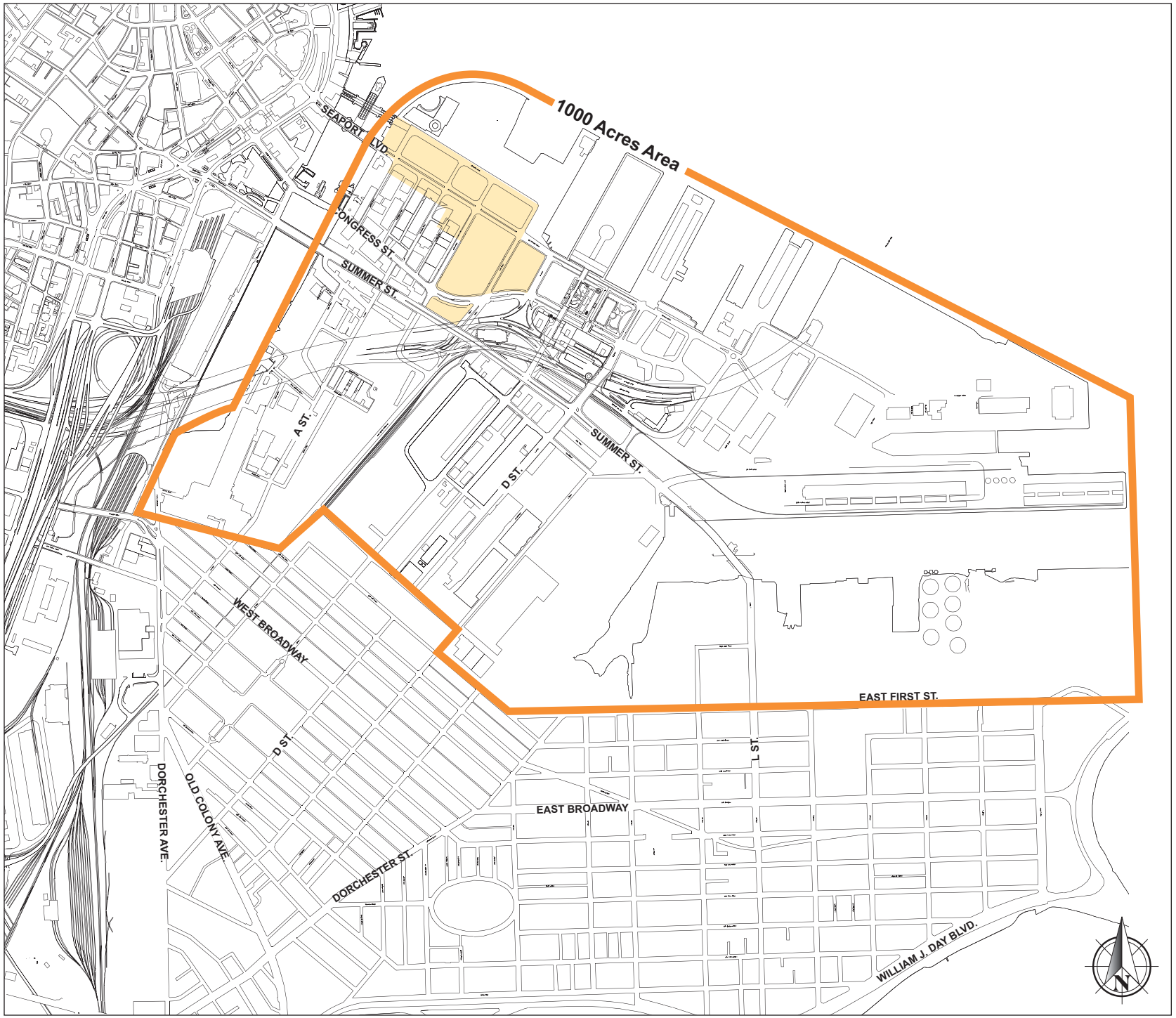
- This is the first major transportation study in South Boston based on actual post-Central Artery/Tunnel (CA/T) traffic conditions and not on the Tranplan travel demand model sets. Thus, some of the findings may differ from earlier studies based on the Tranplan regional model. Since the substantial completion of the CA/T highways and surface roadways some four years ago, the Tranplan model has become outdated and need not be relied on for detailed traffic assignments for individual development projects.

- The South Boston waterfront 1,000 Acres area is shown in Figure 3-3. The land use in this area has changed significantly since the 1990 CA/T model sets were constructed, with considerably less office use and considerably more residential use, reducing peak-hour area traffic. In recent years, the pace of development has also slowed. While the CA/T South Boston land use projections were good approximations at the time, they have now been revised in light of the actual current development proposals and incorporated into the Seaport Square analysis model.

- The Seaport Square location immediately adjacent to the regional highway access opened up by the CA/T in South Boston has both advantages and disadvantages. The primary advantage is that regional traffic destined for Seaport Square is in close proximity to the highway ramping system and does not have to travel on other sub-area street systems. The primary disadvantage is that regional traffic destined for other development in this area somewhat inhibits traffic destined for Seaport Square. All in all, the Seaport Square location immediately adjacent to the regional access system provides for better accessibility.

- The Boston Transportation Department is engaged in a signal improvement plan for 16 of the 33 study area intersections. These timing improvements and adjustments, coupled with existing signal equipment, will address current traffic volumes now that the CA/T network of ramps and streets in South Boston has been in operation for some months. These changes are reflected in the Mid-term No-Build case, which improves conditions at some locations. These changes also provide for better capacity and operations in the first several years of the Seaport Square development, which would then be under construction.

- Given the longer-term time frame over which all projects in the 1,000 Acres area will be developed, continued monitoring of traffic conditions along the Seaport Boulevard, Congress Street, and Summer Street corridors will be important. It is likely that the type of BTD signal upgrade projects currently in progress will need to occur again as both Seaport and non-Seaport development progresses to tailor intersection operations to revised 1,000 Acre trip origins, destinations, and travel patterns. The City should consider developing a mechanism by which developers and other interested parties could begin to develop monitoring procedures—perhaps under the aegis of the Seaport TMA.



SEAPORT SQUARE
IN SOUTH BOSTON

Figure 3-3

South Boston Waterfront 1,000 Acres Area

GALE INTERNATIONAL

Morgan Stanley

WS DEVELOPMENT

prepared by:
Howard/Stein-Hudson Associates, Inc.

- The schedule for Silver Line service improvements has been delayed. At the same time, Seaport Square and other area projects will not require as much capacity as initially envisioned, since the trip generation rates are lower because of the land use types and mixed uses; transit/walk/bike trips account for approximately 60% to 75% of Project-generated peak-hour trips. To some extent, development **must** occur along the Silver Line corridor so that Silver Line patronage will increase and follow the development patterns.

- Given long-term demand projections for conditions along Seaport Boulevard, Congress Street, and Summer Street on the Downtown side of Fort Point Channel, it is clear that enhanced use of public transportation, walking, and cycling is important. The City will be implementing policies for these crossroad streets over the next several years.

- The following mitigation measures are proposed by the Proponent:

  - An aggressive Transportation Demand Management Plan to encourage the use of alternative modes of transportation;
  - Parking fee structure, constrained supply (overall one space per 1,000 sf), and management to encourage the use of alternative modes;
  - Creation of a new, freestanding headhouse for Courthouse Station on the Silver Line within Seaport Square Green;
  - Creation of a sloping Harbor Street to provide a direct pedestrian/bicycle connection from Summer Street down to the waterfront, and to divert local Seaport Square traffic away from D Street; and
  - Intersection improvements along the Old Northern Avenue, Seaport Boulevard, Summer Street, and Congress Street corridors, including modifications to geometry, layout, lane use, median breaks, pavement markings, and signal phasings/timings.

Suggested Seaport Square transportation mitigation is presented fully in Section 3.3.3 of this chapter.

3.1.3 Purpose and Methodology of the Transportation Analysis

The Boston Transportation Department issued comments on the original June 2, 2008, PNF/ENF/Phase 1 Waiver Request submission in a letter to the Boston Redevelopment Authority (BRA) dated August 11, 2008, directing the Proponent to address the specific transportation-related issues of the Project. The study team conducted the current transportation study and supporting analysis in accordance with the BTD comments, as well as general BTD and Massachusetts Environmental Policy Act (MEPA) guidelines. This chapter includes:

- A discussion of existing 2009 transportation conditions, including roadway capacities, parking, transit, pedestrian and bicycle circulation, loading, and site conditions.

- Evaluation of future transportation conditions and assessment of the potential transportation impacts associated with the Project and other neighboring projects. Impacts are evaluated for a Mid-term year, based generally on a six-year horizon from the existing year (2009). Expected roadway, parking, transit, pedestrian, and loading capacities and deficiencies are identified. The focus of future conditions includes:

  - A **Mid-term No-Build Scenario**, which includes general background growth and additional vehicular and pedestrian traffic associated with specific planned developments (other than the Seaport Square Project) in the vicinity of the Project and associated transportation improvements;

  - A **Seaport Square Build Scenario**, which includes new trips generated by the Project overlaid on the Mid-term No-Build network;

  - A **Seaport Square Build with Mitigation Scenario** that shows that the overall impact from the Project can largely be mitigated by altering the signal timings, altering phasing plans and/or changing designated travel lane use. With mitigation improvements, only six of the 33 study intersections will experience a relevant change in level of service between Mid-Term No-Build conditions and Seaport Square Build with Mitigation conditions; and

  - A fourth, longer term scenario, entitled **South Boston Waterfront Long-term Conditions**, including Seaport Square and additional projects and improvements determined after careful consultation with BTD and the BRA. The BRA requested that the analysis include all known development plans in South Boston, regardless of whether they could feasibly be implemented within the typical time frame required for analysis. Thus, this Long-term scenario covers the entire list of projects known at this time. It is unclear what the exact year of this scenario will be. As noted in BTD's 2000 *South Boston Transportation Study*, the degree of development analyzed in this Long-term case…

    > "…can be expected to take up to 40 years, depending on economic conditions. Although this extends beyond the typical 20-year planning horizon, this projection was considered helpful in planning the South Boston waterfront's future and in evaluating currently proposed master development plans."

- A section on the short-term traffic impacts associated with construction activities.

3.1.4 Study Area

The study area defined by BTD comprises the following 33 intersections, categorized by their current traffic control devices. The corresponding intersection numbers are shown in Figure 3-4.

3.1.4.1 Signalized Intersections

- Seaport Boulevard/Atlantic Avenue (1);
- Seaport Boulevard/Sleeper Street (2);
- Seaport Boulevard/Boston Wharf Road (3);
- Seaport Boulevard/East Service Road/Old Northern Avenue (4);
- Seaport Boulevard/B Street (5);
- Seaport Boulevard/Northern Avenue/D Street (southbound)/Fish Pier Street (6);
- Northern Avenue/D Street (northbound) (7);
- Congress Street/Dorchester Avenue (8);
- Congress Street/A Street/Thomson Place (9);
- Congress Street/West Service Road/Boston Wharf Road (10);
- Congress Street/Off-ramp C/Off-ramp I/East Service Road (11);
- Congress Street/On-ramp D/Off-ramp F/B Street (12);
- Congress Street/D Street (13);
- D Street/Silver Line Way (14);
- Summer Street/Dorchester Avenue (15);
- Summer Street/Melcher Street (16);
- Summer Street/World Trade Center Avenue/Convention Center Drive (17);
- Summer Street/D Street (18);
- Summer Street/Dry Dock Avenue/Pappas Way (19);
- Dorchester Avenue/West Broadway (20);

SEAPORT SQUARE
IN SOUTH BOSTON

Figure 3-4

Study Area Intersections

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- Dorchester Avenue/West Fourth Street (21);
- Dorchester Avenue/A Street (22);
- Dorchester Avenue/Old Colony Avenue (23);
- A Street/West Broadway (24);
- A Street/West Second Street (25);
- West Broadway/D Street (26);
- West Broadway/East Broadway/Dorchester Street (27);
- Summer Street/L Street/East First Street (28); and
- L Street/East Broadway (29).

3.1.4.2 Unsignalized Intersections

- A Street/Melcher Street (30);
- L Street/William J. Day Boulevard—signal on flashing (31);
- South Boston Bypass Road (Massport Haul Road)/West Service Road —signal on flashing (32); and
- Seaport Boulevard/Thomson Place (33).

3.2 Existing (2009) Transportation Conditions

This section describes existing study area roadway geometry, intersection traffic control, peak-hour vehicular and pedestrian volumes, average daily traffic levels, transit availability, parking supply, and loading conditions.

3.2.1 Existing Roadway Conditions

The study area includes the following roadways, which are categorized according to the Massachusetts Executive Office of Transportation Office of Transportation Planning (EOT-OTP) functional classifications:

Seaport Boulevard is an urban extension of a minor arterial and generally runs east–west from Purchase Street in downtown Boston across the Evelyn Moakley Bridge to D Street in South Boston. East of D Street, Seaport Boulevard becomes Northern Avenue. Seaport Boulevard consists primarily of two lanes in each direction. Metered parking is available on both sides of Seaport Boulevard east of Sleeper Street to D Street. Parking is also allowed

east of B Street. Sidewalks along Seaport Boulevard are in good condition and vary in width from six to 30 feet. Seaport Boulevard will be the main street of Seaport Square, providing the spine for much of its mixed-use development.

"Old" Northern Avenue is a public local connector roadway that extends from 408 Atlantic Avenue across a pedestrian bridge to Seaport Boulevard. While most vehicular traffic was removed from this street when the new Evelyn Moakley Bridge was constructed, Old Northern Avenue still serves as the primary corridor for local vehicular access into the proposed Fan Pier development, as well as the Moakley United States Courthouse, Institute of Contemporary Art, and Pier 4 parcels. In the future, the easterly segment of the street, which now intersects with Seaport Boulevard and East Service Road in an oblique intersection, will be realigned to the north to connect with an extension of East Service Road in a right-angled intersection.

Atlantic Avenue is an urban extension of a minor arterial that is one-way northbound from Kneeland Street in Chinatown to Fleet Street in the North End, running with southbound Purchase Street as a one-way pair. Atlantic Avenue consists primarily of three lanes northbound. No parking is allowed along Atlantic Avenue; sidewalks on both sides of the street are newly constructed.

Sleeper Street is an urban collector that runs north–south from Northern Avenue to Congress Street. It consists of one lane in each direction. Residential parking is allowed along the east side of Sleeper Street south of Seaport Boulevard. In the study area, sidewalks on both sides of Sleeper Street vary from five to 15 feet wide.

Boston Wharf Road (formerly West Service Road) is a local street running north–south from Seaport Boulevard to below the elevated Summer Street. The street then curves toward the east and intersects with South Boston Bypass Road. North of Congress Street, West Service Road is called Boston Wharf Road. The road consists primarily of one lane in each direction. Parking is allowed only on Boston Wharf Road north of Congress Street. The entire length of the road is newly constructed, so sidewalks are in good condition and vary from six to 13 feet wide.

East Service Road is a one-way, northbound urban collector running from Congress Street to Seaport Boulevard. The road consists of two northbound travel lanes with parking on both sides until it nears the Seaport Boulevard intersection. Near that intersection, East Service Road has three lanes, with no parking allowed. East Service Road was recently constructed, so sidewalks are in good condition and are seven feet wide on the east side and 11 feet wide on the west side of the road.

B Street is an urban minor arterial in the study area running north–south from Congress Street to Northern Avenue. B Street generally consists of two travel lanes in each direction, with a raised median and no parking on either side of the street.

D Street is an urban minor arterial south of Summer Street and an urban extension of a minor arterial north of Summer Street. D Street runs generally north–south between Seaport Boulevard to the north and Dorchester Avenue to the south. D Street generally consists of two lanes in each direction separated by a raised median north of Summer Street. North of Congress Street, the D Street north- and southbound approaches diverge into two one-way sections in what is known as the "D Street Couplet." At Northern Avenue, the north- and southbound roadways are separated by a 150-foot median. Parking is allowed only between Ramp DB and Congress Street on the east side and is unrestricted on the east side of D Street, south of Summer Street. Sidewalks are located on both sides of D Street throughout the study area and are generally in good condition. At the northeast corner of the intersection of D Street and Congress Street, the sidewalk on the east side of D Street is currently (Spring 2009) closed due to construction.

Congress Street is an urban minor arterial extending from New Sudbury Street in Boston to Northern Avenue in South Boston. In the study area, Congress Street runs east–west and generally comprises two lanes in each direction. It functions as a major access point for ramp system connections to I-90 and I-93. West of Atlantic Avenue, Congress Street is four lanes in the eastbound direction only. Throughout most of the study area, the roadway and sidewalks are newly constructed and in good condition. Between Sleeper Street and Boston Wharf Road, the road and sidewalk are in poor condition. Parking is allowed on the north side of Congress Street in most of the study area, and on the south side between West Service Road and East Service Road.

Dorchester Avenue is an urban extension of a minor arterial between Congress Street and Summer Street that runs north–south in the study area. Dorchester Avenue continues south of Summer Street as a private roadway, providing access to the United States Postal Service (USPS) General Mail Facility. South of Fort Point Channel, Dorchester Avenue is open to public travel and crosses Broadway and West Fourth Street, where it continues down to Dorchester Lower Mills and Milton. Between Fort Point Channel and West Broadway, Dorchester Avenue generally consists of one lane in each direction; parking is prohibited on each side of the roadway. Between West Broadway and West Fourth Street, Dorchester Avenue generally consists of two lanes in each direction; additional turning lanes are provided at the intersections. Metered on-street parking is provided on each side of the roadway between West Broadway and West Fourth Street. Parking is generally prohibited south of West Fourth Street. Sidewalks are in good condition. There has been discussion of reopening the discontinued section of Dorchester Avenue for public travel should the USPS facility site be redeveloped.

Thomson Place is a local road that runs north–south from Congress Street to Seaport Boulevard. Access to Seaport Boulevard is currently blocked by barricades and a construction trailer. Sidewalks of variable width run along the length of Thomson Place and are in poor

condition. The east side of Thomson Place near Congress Street has private perpendicular parking spaces for the adjacent building. In the future, Thomson Place will connect to Seaport Boulevard and be known as Thomson Street.

Off-ramp C is an off-ramp from the Massachusetts Turnpike (Masspike) eastbound at Exit 25. Ramp C splits into Off-ramp C and Off-ramp CT when it emerges from under ground. Off-ramp C terminates at an intersection with Off-ramp I, East Service Road, and Congress Street. Off-ramp CT terminates at an intersection with the Massport Haul Road. Parking and pedestrian traffic are prohibited along Off-ramp C.

Off-ramp I comes from I-93 northbound, Exit 20, and terminates at its intersection with Off-ramp C, Congress Street, and East Service Road. No parking or pedestrians are allowed along Off-ramp I.

On-ramp D provides access from Congress Street and B Street to I-93 north- and south-bound. On-ramp D begins at its intersection with Congress Street, B Street, and Off-ramp F. Parking and pedestrian traffic are prohibited along On-ramp D.

Off-ramp F, Exit 25 from the Masspike westbound, terminates at its intersection with Congress Street, B Street, and On-ramp D. Parking and pedestrian traffic are prohibited along Off-ramp F.

Silver Line Way runs east–west and is a local road east of D Street and an exclusive MBTA busway west of D Street. East of D Street, Silver Line Way has newly constructed sidewalks. West of D Street, it is controlled by gates and is reserved for Silver Line buses only. No pedestrian traffic is allowed on the west side of D Street. No parking is allowed along Silver Line Way in the study area.

Summer Street is an urban principal arterial that runs generally east–west between Washington Street in Downtown Crossing to the west and East Second Street in South Boston to the east, where it then becomes L Street within the study area. Summer Street has two lanes in each direction. On-street parking is allowed on various sections of Summer Street throughout the study area. Sidewalks are provided on both sides of the street. Pavement markings on Summer Street are in good condition in the study area.

Melcher Street is a local road that begins at Summer Street and curves southeast to A Street. It consists of one travel lane in each direction, with parking on both sides of the street. Sidewalks along Melcher Street are 10 feet wide and in good condition.

World Trade Center Avenue is an elevated ramp that runs north–south from Summer Street to the World Trade Center. The ramp has one lane in each direction and 12-foot sidewalks on each side.

West Broadway is an urban minor arterial running east–west from City Point to Herald Street across Fort Point Channel. Within the study area, West Broadway is a two-way street, functioning as one to two lanes per direction due to the variable width. Parking is allowed on both sides of the street throughout the study area. The sidewalk conditions and width vary along West Broadway throughout the study area. At Dorchester Street, West Broadway becomes East Broadway.

Dry Dock Avenue is a local street located within the Boston Marine Industrial Park and running east from Summer Street to Boston Harbor. It provides two-way traffic flow in the study area. At the harbor, the roadway loops around to run west—parallel to itself—as Black Falcon Avenue and Terminal Street before connecting back to itself just east of the Summer Street intersection. Parking restrictions vary from no parking to parking on one or both sides of the street. A single travel lane is generally provided in each direction except at the Summer Street intersection, where Dry Dock Avenue has two lanes: a left-turn/through lane and a right-turn lane.

Pappas Way is a local street that connects Summer Street in the north with East First Street in the south. It provides two-way traffic flow within the study area. Parking is prohibited on Pappas Way, although some private parking lots exist on its western side. A single travel lane is provided in each direction. Pappas Way is generally in poor condition in the study area.

West Fourth Street is a local street that traverses Fort Point Channel connecting Albany Street in the west and Dorchester Street to the southeast. One segment of West Fourth Street between A Street and B Street is classified as an urban minor arterial. From A Street to Dorchester Avenue, the roadway is again classified as a local street, and from Dorchester Avenue to Albany Street as an urban principal arterial. West Fourth Street is generally in good condition in the study area.

From Dorchester Street to D Street, West Fourth Street provides two-way traffic flow, with parking on both sides of the street. In this segment, a single travel lane is provided in each direction. Between B Street and Dorchester Avenue, West Fourth Street provides two-way traffic flow, with a travel lane in each direction. Parking restrictions vary from no parking to parking on one or both sides of the street. Between Dorchester Avenue and Albany Street, the West Fourth Street Bridge provides a single travel lane in each direction. Parking is not permitted in that segment.

Old Colony Avenue is an urban principal arterial that connects Kosciuzsko Circle on its southerly end to Dorchester Avenue in the north. It provides two-way traffic flow within the study area. Parking restrictions vary from no parking to parking on one or both sides of the street. Two travel lanes are provided in each direction. Old Colony Avenue is generally in good condition in the study area.

West Seventh Street is a local street that connects Dorchester Avenue in the north with Dorchester Street in the south. It provides two-way traffic flow within the study area. Parking restrictions vary from no parking to parking on one or both sides of the street. A single travel lane is provided in each direction. West Seventh Street is generally in good condition in the study area.

A Street is a collector street that connects Congress Street in the north with Dorchester Avenue in the south. It provides two-way traffic flow within the study area, with parking restrictions varying from no parking to parking on one or both sides of the street. One 12-foot travel lane is provided in each direction. A Street is generally in poor condition in the study area.

East First Street runs two-way from Farragut Road in the east to D Street, where it becomes West First Street. From Farragut Road to Summer Street, East First Street is classified as an urban principal arterial; from Summer Street to West First Street it is an urban minor arterial. Parking restrictions vary from no parking to parking on one or both sides of the street. A single travel lane is provided in each direction. East First Street is generally in fair to good condition in the study area.

L Street, an urban principal arterial, runs two-way from Summer Street in the north to William J. Day Boulevard in the south. Parking restrictions vary from no parking to parking on one or both sides of the street. A single travel lane is provided in each direction, with the exception of the segment between Summer Street and East Broadway, where two travel lanes are provided in each direction. L Street is generally in good condition in the study area.

William J. Day Boulevard runs along Pleasure Bay and Carson Beach from Castle Island to Kosciuszko Circle. It is classified as an urban minor arterial from Castle Island to L Street and as an urban principal arterial from L Street to Kosciuszko Circle. Parking restrictions vary from no parking to parking on one or both sides of the street. In general, two travel lanes are provided in each direction, although in the segment bordering Pleasure Bay a single travel lane is provided in each direction. Day Boulevard is generally in good condition in the study area.

Columbia Road parallels William J. Day Boulevard from Farragut Road to G Street. While Columbia Road stretches through Dorchester, in this segment it is classified as an urban minor arterial. Parking restrictions vary from no parking to parking on one or both sides of the street. In general, a single travel lane is provided in each direction. Columbia Road is generally in good condition in the study area.

South Boston Bypass Road (Haul Road) is a local road that runs from Frontage Road near I-93 to the intersection with Ramp A and the Massport Haul Road. South of the West Service Road, its use is restricted to commercial vehicles. The roadway consists of one lane

in each direction; however, near the West Service Road intersection the northbound side has two lanes. There are no sidewalks along the road; no parking is allowed. Signage prohibits pedestrian access north of the intersection with West Service Road.

3.2.2 Existing Intersection Conditions

The following descriptions of the study area intersections, which BTD identified in the Transportation Access Plan Scope, include geometry, pedestrian facilities, and intersection traffic control. (Note that in these descriptions, an exclusive pedestrian phase refers to a phase where all vehicular traffic is stopped and pedestrians in all crosswalks can proceed. A concurrent pedestrian phase permits some pedestrian crossings to occur concurrent with vehicular movements.)

3.2.2.1 Signalized Intersections

Seaport Boulevard/Atlantic Avenue is a five-leg, signalized intersection with three approaches. The eastbound approach of Seaport Boulevard consists of a 13-foot left-turn/through lane and a 13-foot through lane. The westbound approach consists of an 11-foot through/bear-right lane toward Seaport Boulevard and the I-93 on-ramp; a 10-foot shared bear-right/right-turn lane accessing both the I-93 on-ramp and Atlantic Avenue; and a 13-foot right-turn lane to Atlantic Avenue only. The northbound Atlantic Avenue approach consists of a 17-foot, shared left-turn/bear-left lane; a 12-foot through lane; and a 13-foot, shared through/right-turn lane. The north side of the intersection has two receiving legs: at the northwest side of the intersection, a 27-foot-wide, two-lane ramp to I-93 northbound; and on the northeast side of the intersection, a continuation of Atlantic Avenue as two northbound travel lanes. All approaches have crosswalks and handicapped-accessible ramps. Located across Fort Point Channel from downtown Boston, this intersection is influenced much more by downtown development than by South Boston waterfront projects.

Seaport Boulevard/Sleeper Street is a signalized intersection with four approaches. The eastbound Seaport Boulevard approach consists of an 11-foot, shared left-turn/through lane, an 11-foot through lane, and a 12-foot, exclusive right-turn lane. The westbound Seaport Boulevard approach consists of a 12-foot, exclusive left-turn lane, a 12-foot through lane, and a 13-foot, shared through/right-turn lane. Metered parking is provided along both sides of Seaport Boulevard east of the intersection; no parking is allowed along Seaport Boulevard west of the intersection. The northbound approach of Sleeper Street consists of an 11-foot left-turn/through/right-turn lane and an eight-foot lane for residential parking only. The Sleeper Street southbound approach has an 11-foot, shared left-turn/through lane and a 10-foot right-turn lane. All approaches have sidewalks, handicapped-accessible ramps, and crosswalks.

Seaport Boulevard/Boston Wharf Road is a signalized T intersection. The eastbound approach, Seaport Boulevard, consists of a 12-foot through lane and a 14-foot, shared through/right-turn lane. The westbound Seaport Boulevard approach consists of a 12-foot, exclusive left-turn lane, an 11-foot through lane, and a 12-foot through lane. The north-bound approach of Boston Wharf Road consists of an 11-foot left-turn lane and a 13-foot, shared left-turn/right-turn lane. Metered parking is provided along both sides of Seaport Boulevard; no parking is allowed along Boston Wharf Road. All approaches have cross-walks and handicapped-accessible ramps.

Seaport Boulevard/East Service Road/Old Northern Avenue is a signalized intersection with four approaches. The eastbound Seaport Boulevard approach consists of a 12-foot left-turn lane and two 12-foot through lanes. The westbound Seaport Boulevard approach consists of a 13-foot through lane and a shared, 14-foot through/right-turn lane. Metered parking is provided along both sides of Seaport Boulevard west of the intersection; no parking is allowed along Seaport Boulevard east of the intersection. The northbound approach of East Service Road is one-way northbound and consists of a 14-foot left-turn lane, a 13-foot through lane, and a 12-foot right-turn lane. The Old Northern Avenue southbound approach consists of a 16-foot left-turn lane and a 20-foot, shared left-turn/ right-turn lane. All approaches have sidewalks, handicapped-accessible ramps, and crosswalks. The Mid-term No-Build and Seaport Square Build conditions reflect the realignment of Old Northern Avenue to the north to intersect with East Service Road in a right-angled intersection. In those cases, only the major intersection of Seaport Boulevard/East Service Road is analyzed.

Seaport Boulevard/B Street is a signalized T intersection. The eastbound Seaport Boulevard approach consists of a 12-foot through lane and an 11-foot exclusive right-turn lane. The westbound Seaport Boulevard approach consists of a 13-foot, shared left-turn/through lane and a 13-foot through lane. The northbound approach of B Street consists of 11-foot and 12-foot left-turn lanes and a 12-foot right-turn lane. Metered parking is provided along both sides of Seaport Boulevard east of the intersection; no parking is allowed along B Street or on Seaport Boulevard west of the intersection. All approaches have crosswalks and handicapped-accessible ramps.

Seaport Boulevard/Northern Avenue/D Street (southbound)/Fish Pier Road is a four-leg, signalized intersection with three approaches. The eastbound Seaport Boulevard approach consists of a 12-foot left-turn/through lane and an 11-foot through/right-turn lane. Due to adjacent construction, the westbound Northern Avenue approach is currently limited to a single, 15-foot, shared left-turn/through/right-turn lane. The southern leg of the intersection, D Street, is one-way southbound and consists of two receiving lanes. The southbound approach provides access to Fish Pier and consists of a shared, 16-foot left-turn/through/ right-turn lane. Parking is allowed on the south side of Seaport Boulevard west of the inter-section. Crosswalks and handicapped-accessible ramps are located across the north, south, and west sides of the intersection.

Northern Avenue/D Street (northbound) is a signalized T intersection. The eastbound Northern Avenue approach consists of a 10-foot through lane and a 19-foot through lane. The westbound Northern Avenue approach consists of a 19-foot through lane but is currently impacted by construction. The northbound D Street approach is one-way northbound and consists of a 14-foot left-turn lane and a 14-foot right-turn lane. Parking is allowed on the south side of Northern Avenue east of the intersection. Crosswalks and handicapped-accessible ramps are located across the south and east sides of the intersection. The sidewalk along the north side is closed due to adjacent construction.

Congress Street/Dorchester Avenue is a signalized T intersection. The northbound Dorchester Avenue approach consists of a shared, 20-foot left-turn/right-turn lane with ongoing construction along the right side of the approach. The eastbound approach of Congress Street consists of two 11-foot lanes: one through lane and one through/right-turn lane. The Congress Street Bridge over Fort Point Channel is situated immediately east of the intersection. The westbound Congress Street approach consists of a single, 16-foot, shared left-turn/through lane and a five-foot shoulder. Sidewalks and crosswalks are located along the west side of Dorchester Avenue and the south side of Congress Street. The east Dorchester Avenue sidewalk and the north Congress Street sidewalk are closed due to construction activities.

Congress Street/A Street/Thomson Place is a four-leg, signalized intersection. The eastbound Congress Street approach consists of an 11-foot, shared left-turn/through lane, an 11-foot through lane, and a 10-foot exclusive right-turn lane. Parking is provided along Congress Street west of the intersection prior to the right-turn lane. The westbound Congress Street approach consists of an 11-foot, exclusive left-turn lane and an 11-foot, shared through/right-turn lane. The north–south approaches are offset, with the southern approach 23 feet to the west of the northern approach. The northbound A Street approach is striped as a single 20-foot lane but operates as a shared left-turn/through lane and an exclusive right-turn lane. The southbound Thomson Place approach operates as a single, 18-foot left-turn/through/right-turn lane. Private, angled parking is located on the east side of Thomson Place. A bus stop is located south of the Thomson Place approach, just to the east of the A Street approach. Pavement markings and lane markings are in excellent condition along Congress Street but in poor condition along A Street and Thomson Place. Sidewalks on the northwest side of the intersection were recently reconstructed and in excellent condition. Other sidewalks are in fair condition. Crosswalks are provided across all approaches, and each crossing has handicapped-accessible ramps. One traffic signal controls traffic operations at the intersection.

Congress Street/West Service Road/Boston Wharf Road is a four-way, signalized intersection. The eastbound Congress Street approach consists of a 12-foot, shared left-turn/through lane and a 12-foot, exclusive right-turn lane. The westbound Congress Street approach consists of a 12-foot left-turn lane, an 11-foot through lane, and a 14-foot, shared through/right-turn lane. Parking is provided along both sides of Congress Street east of the

intersection, but no parking is allowed along Congress Street west of the intersection. The northbound West Service Road approach consists of a 16-foot left-turn lane and an 11-foot through/right-turn lane. The Boston Wharf Road southbound approach consists of an 11-foot left-turn/through lane and an 11-foot right-turn lane. Parking is allowed along Boston Wharf Road north of the intersection on the east side only. All approaches have sidewalks, handicapped-accessible ramps, and crosswalks.

Congress Street/Off-ramp C/Off-ramp I/East Service Road is a five-leg, signalized intersection with four approaches. The eastbound Congress Street approach consists of an 11-foot left-turn lane, a 12-foot through lane, and a 13-foot through lane. The westbound Congress Street approach consists of a13-foot through lane and 14-foot through lane with a channelized right turn. Parking is allowed along both sides of Congress Street west of the intersection, but no parking is allowed along Congress Street east of the intersection. The northbound approaches are Off-ramp C and Off-ramp I. Off-ramp C is the western of the two northbound approaches and consists of a 12-foot through lane and a 12-foot, shared through/right-turn lane. The Ramp I approach consists of a 12-foot, shared left-turn/though lane, a 15-foot through lane, and a 12-foot right-turn lane that is channelized at the intersection. On the north side of the intersection, East Service Road consists of two northbound receiving lanes. Parking is allowed on East Service Road north of the intersection on the east side only. All approaches have sidewalks, handicapped-accessible ramps, and crosswalks.

Congress Street/On-ramp D/Off-ramp F/B Street is a five-leg, signalized intersection with four approaches. The eastbound Congress Street approach consists of a 12-foot, shared left-turn/through lane, a 12-foot, exclusive through lane, and an 11-foot right-turn lane. The westbound Congress Street approach consists of a 12-foot left-turn lane; an 11-foot, shared left-turn/through lane; and a 13-foot, shared through/right-turn lane. Parking is provided along the north side of Congress Street west of the intersection, but no parking is allowed along Congress Street east of the intersection. On-ramp D and Off-ramp F are both located on the south side of the intersection. On-ramp D is one-way southbound with access to I-93 north- and southbound. The off-ramp F approach, which provides access from I-90 westbound, consists of a 15-foot exclusive left-turn lane, a 14-foot through lane, and a 21-foot channelized right-turn lane. The southbound B Street approach consists of two 11-foot through lanes and an 11-foot, exclusive right-turn lane. Left turns are not allowed from the B Street approach. No parking is allowed along B Street or the ramps. All approaches have sidewalks, handicapped-accessible ramps, and crosswalks.

Congress Street/D Street is a signalized intersection with four approaches. The eastbound Congress Street approach consists of a 13-foot, shared left-turn/through lane, a 12-foot, shared through/right-turn lane, and a 12-foot, exclusive right-turn lane. The westbound Congress Street approach consists of a 12-foot, shared left-turn/through lane and a 13-foot, shared through/right-turn lane. Parking is provided along the north side of Congress Street west of the intersection, but no parking is allowed along Congress Street east of the

intersection. D Street runs north–south through the intersection with the directions separated by a wide median. The median is planted and widens gradually as D Street travels northward from the south. The median is 45 feet wide on the south side of the intersection and 85 feet wide on the north side. The northbound D Street approach consists of a dual left turn comprising an 11-foot lane and a 12-foot lane, and an 11-foot, shared through/right-turn lane. The southbound D Street approach consists of a 13-foot left-turn/through lane and a 14-foot through/right-turn lane. Parking is allowed on the east side of D Street south of the intersection, but no parking is allowed on D Street north of the intersection. All approaches have sidewalks, handicapped-accessible ramps, and crosswalks.

D Street/Silver Line Way is a four-leg, signalized intersection. The eastbound Silver Line Way approach is a gated, exclusive way for the MBTA Silver Line busway and consists of a 14-foot through lane. No private vehicles or pedestrians are allowed on the eastbound approach. The westbound approach, the Transitway, consists of a shared, 14-foot left-turn/ through/right-turn lane. The through maneuver is for the Silver Line and authorized MBTA vehicles. The northbound D Street approach consists of a 13-foot through lane, a 12-foot through lane, and a 13-foot, shared through/right-turn lane. The southbound approach consists of a 12-foot, shared left-turn/though lane and a 14-foot through lane. Parking is located on the east side of D Street. Crosswalks are located across the eastbound and west-bound approaches only. Sidewalks are located along all approaches except the eastbound approach. Both Silver Line Way approaches are actuated, but no signal preemption or priority is currently in place for Silver Line vehicles.

Summer Street/Dorchester Avenue is a signalized, four-leg intersection. The Summer Street eastbound approach consists of an 11-foot, shared left-turn/through lane and a 15-foot through/right-turn lane. The Summer Street westbound approach consists of a 16-foot, shared left-turn/through lane and a 17-foot through/right-turn lane. Dorchester Avenue northbound consists of a 19-foot, shared left-turn/through/right-turn lane. USPS customer 15-minute parking is designated along this approach, but not immediately adjacent to the intersection. The Dorchester Avenue southbound approach operates as a 14-foot left-turn lane and a 14-foot through/right-turn lane with no parking allowed. Sidewalks are provided along all approaches; crosswalks cross both Summer Street approaches and the Dorchester Avenue southbound approach.

Summer Street/Melcher Street is a signalized T intersection with three approaches. The eastbound Summer Street approach is 32 feet wide and has no visible pavement markings, but operates as a through lane and a shared through/right-turn lane. The westbound Summer Street approach consists of a 17-foot, shared left-turn/through lane and a 14-foot through lane. No parking is allowed on Summer Street west of Melcher Street. Bus stops are located on both east- and westbound Summer Street just east of the intersection. Melcher Street, the northbound approach, is marked as a single lane but operates as a 12-

foot left-turn lane and a 12-foot right-turn lane. Parking is allowed on both sides of Melcher Street. Crosswalks and handicapped-accessible ramps are located across the northbound and eastbound approaches.

Summer Street/World Trade Center Avenue/Convention Center Drive is a four-leg, signalized intersection. The Summer Street eastbound approach consists of a 10-foot, exclusive left-turn lane, an 11-foot through lane, a 14-foot through lane, and an 11-foot right-turn lane. Summer Street westbound consists of an 11-foot left-turn lane, an 11-foot through lane, and a 15-foot through/right-turn lane. Parking is allowed on the north side of Summer Street east of the intersection. A bus stop is located at the northwest corner of the intersection on Summer Street. Convention Center Drive, the northbound approach, is a two-lane approach with a 15-foot, exclusive left-turn lane and a 16-foot, shared through/ right-turn lane. World Trade Center Avenue, the southbound approach, has an 11-foot, exclusive left-turn lane and a 13-foot through/right-turn lane. No parking is allowed adjacent to the intersection on the north- and southbound approaches. Crosswalks and ramps are located at all approaches.

Summer Street/D Street is a four-leg, signalized intersection at the southeasterly corner of the Seaport Square Project area. The Summer Street eastbound approach consists of an 11-foot, exclusive left-turn lane, an 11-foot, exclusive through lane, and a 15-foot, shared through/right-turn lane. Summer Street westbound consists of a 12-foot, shared left-turn/ through lane, a 16-foot through lane, and a channelized, 24-foot, exclusive right-turn lane. D Street northbound is a three-lane approach with a 12-foot, exclusive left-turn lane, a 12-foot through lane, and a 12-foot, shared through/right-turn lane with an eight-foot adjacent parking lane. Southbound D Street is a three-lane approach with one 11-foot, exclusive left-turn lane, an 11-foot, shared left-turn/through lane, and a 15-foot through/right-turn lane. Parking is allowed along the north side of Summer Street west of the intersection and along both sides of D Street south of the intersection. All approaches have crosswalks and handicapped-accessible ramps. Pedestrian pushbuttons activate concurrent pedestrian phases at the intersection.

Summer Street/Dry Dock Avenue/Pappas Way is a four-way, signalized intersection located directly northwest of the Boston Harbor Reserve Channel. The eastbound Summer Street approach consists of a 12-foot left-turn lane, a 12-foot through lane, and a 16-foot through/right-turn lane. Summer Street westbound also consists of three lanes: a 15-foot exclusive left-turn lane; a 12-foot through lane; and a 13-foot, exclusive right-turn lane. The northbound Pappas Way approach consists of a single, shared left-turn/through/right-turn lane approximately 16 feet wide. The southbound Dry Dock Avenue approach consists of a 12-foot, shared left-turn through lane and a 12-foot, exclusive right-turn lane. Summer Street and Dry Dock Avenue have raised medians separating the lanes by direction. MBTA bus stops are located on the north and south sides of Summer Street immediately east of the intersection. Crosswalks with handicapped-accessible ramps are provided across all approaches. Concrete sidewalks are provided along all approaches at the intersection, with

the exception of the west side of Pappas Way, and are in good condition. Pavement in and around the intersection is in good condition, with the exception of Pappas Way. Pavement markings are in fair condition, though some crosswalks are heavily worn.

Dorchester Avenue/West Broadway is a four-leg, signalized intersection. The eastbound West Broadway approach consists of a 13-foot, exclusive left-turn lane, a 12-foot through lane, and a 16-foot right-turn lane channelized at the intersection. The westbound West Broadway approach consists of an 11-foot, shared left-turn/through lane and a 20-foot right turn that operates as one through lane and one right-turn lane. The northbound Dorchester Avenue approach consists of a 12-foot left-turn lane and a 22-foot right lane that operates as one through lane and one right-turn lane. The southbound approach is marked as a single lane but operates as a 13-foot, shared left-turn/through lane and a 16-foot right-turn lane that is channelized at the intersection. Handicapped-accessible ramps and crosswalks are located across all approaches. The signal consists of four phases: the first, for the Dorchester Avenue north- and southbound movements; the second, an exclusive pedestrian phase; the third, for the West Broadway east- and westbound movements; and the last, a protected phase for the northbound movements and the eastbound right-turn movement. Parking is allowed along West Broadway east of the intersection.

Dorchester Avenue/West Fourth Street is a four-leg, signalized intersection. The eastbound West Fourth Street approach consists of a single, 24-foot wide lane but operates as a shared left-turn/through lane and a right-turn lane. The westbound approach consists of a 12-foot, shared left-turn/through/right-turn lane and an eight-foot parking lane. The northbound Dorchester Avenue approach consists of a 12-foot left-turn lane, two 10-foot through lanes, and an 11-foot right-turn lane. The southbound approach consists of a 10-foot, shared left-turn/through lane, an 11-foot through lane, and a 10-foot right-turn lane. Wheelchair ramps and crosswalks are located across all approaches. The signal consists of three phases: the first, for the Dorchester Avenue north- and southbound movements; the second, for the West Fourth Street east- and westbound movements; and the last, a protected phase for the northbound movements.

Dorchester Avenue/A Street is a three-leg, signalized intersection. The northbound Dorchester Avenue approach consists of two 10-foot through lanes and an 11-foot right-turn lane. The southbound approach consists of three 12-foot lanes: one shared left-turn/ through lane and two through lanes. The southwest-bound A Street approach consists of an 11-foot left-turn lane and an 11-foot right-turn lane. Handicapped-accessible ramps and crosswalks are located across A Street and Dorchester Avenue. The signal operates in three phases: the first, for the Dorchester Avenue north- and southbound movements; the second, an exclusive pedestrian phase; and the third, for the A Street southwest-bound movements and northbound right-turn movement.

Dorchester Avenue/Old Colony Avenue is a signalized intersection with three approaches. The northbound and southbound approaches of Dorchester Avenue are separated by a raised median. The northbound approach of Dorchester Avenue is 24 feet wide and oper-

ates as a through lane and a shared through/right-turn lane. The Dorchester Avenue southbound approach consists of a 25-foot wide, two-lane left-turn and a 15-foot through lane. The Old Colony Avenue northwest-bound approach consists of two 10-foot lanes and an adjacent parking lane. Vehicles approaching from Old Colony Avenue northwest-bound must continue onto Dorchester Avenue northbound. Both West Seventh Street and B Street intersect Dorchester Avenue just north of this intersection. Additionally, two driveways intersect the Dorchester Avenue southbound approach: one located at the unsignalized portion of the intersection and the other at the signal. Neither driveway has a traffic control device. Crosswalks with handicapped-accessible ramps are provided across all approaches of this intersection except Dorchester Avenue southbound. Handicapped-accessible ramps on four corners of the intersection fail to meet ADA/AAB standards. Only the ramps across the Dorchester Avenue northbound approach are compliant. Concrete sidewalks along all the approaches are generally in fair condition. Pavement and pavement markings at the intersection are in good condition, except for patched pavement areas along Dorchester Avenue. North of the intersection, the pavement along Dorchester Avenue is generally in poor condition. The traffic signal operates in three phases. The first allows the Old Colony Avenue northbound movements to proceed, as well as those vehicles traveling on Dorchester Avenue and bearing left onto Old Colony Avenue. The second allows Old Colony Avenue northbound and Dorchester Avenue southbound traffic to proceed. The third allows all Dorchester Avenue northbound movements and Dorchester Avenue southbound through movements. Pedestrian phases run concurrently with vehicle phases and have pedestrian countdown indications.

A Street/West Broadway is a four-leg, signalized intersection. Both the West Broadway eastbound and westbound approaches consist of a single, wide travel lane with an adjacent parking lane; however, vehicles passing through or turning right have sufficient space to pass a short queue of left-turning vehicles. Southbound A Street is marked as a single, 15-foot travel lane but operates as one left-turn/through lane and one right-turn lane. The northbound A Street approach consists of a 22-foot wide lane operating as a left-turn/through lane and a right-turn lane. Parking is prohibited on both sides of A Street. Crosswalks, handicapped-accessible ramps, and pedestrian buttons are available on all approaches.

A Street/West Second Street is a four-leg, signalized intersection. The West Second Street eastbound approach consists of a 19-foot, shared left-turn/right-turn lane and adjacent parking. The West Second Street westbound approach is one-way and operates as an 11-foot left-turn lane, a 12-foot through lane, and an 11-foot right-turn lane. The northbound A Street approach is marked as a single 16-foot lane, but through-traffic has space to pass vehicles waiting to make a left turn. The A Street southbound approach consists of a single, 13-foot, shared through/right-turn lane. Handicapped-accessible ramps and crosswalks are located across all approaches. The signal consists of two phases: the first for the A Street north- and southbound movements, and the second for the West Second Street east- and westbound movements. This intersection has no pedestrian indicators.

West Broadway/D Street is a signalized, four-leg intersection. The West Broadway east-bound approach is marked as a single, 19-foot, shared left-turn/through/right-turn lane with an adjacent parking lane. The West Broadway westbound approach is marked as a single, 25-foot, shared left-turn/through/right-turn lane. Parking is not allowed along this approach immediately adjacent to the intersection. On both the eastbound and the westbound approaches, vehicles have sufficient space to continue through or take a right turn at the intersection around vehicles waiting to turn left onto D Street. The D Street northbound approach consists of a 16-foot, shared left-turn/through/right-turn lane with an adjacent parking lane. The D Street southbound approach consists of a 12-foot, shared left-turn/ through/right-turn lane, with no parking allowed. Sidewalks and 10-foot crosswalks are provided at all approaches.

West Broadway/East Broadway/Dorchester Street is a signalized intersection with four approaches. The southeast-bound West Broadway is 23 feet wide and operates as an exclusive left-turn lane and a shared through/right-turn lane. The westbound East Broadway approach includes a 10-foot left-turn lane and an 11-foot, shared through/right-turn lane. Parking is allowed along West and East Broadway. The northbound Dorchester Street approach consists of an 11-foot, shared left-turn/through lane and an 11-foot right-turn lane. Through-traffic is able to pass vehicles waiting to make a left turn. The southbound Dorchester Street approach consists of a 12-foot, shared left-turn/through/right-turn lane. Parking is allowed along Dorchester Street. Crosswalks are provided across all approaches.

Summer Street/East First Street is the first major intersection on Summer Street south of the Boston Harbor Reserved Channel; it is a signalized intersection with four approaches. The eastbound East First Street approach consists of an eight-foot, shared left-turn/through/right-turn lane. The East First Street westbound approach is marked as one 23-foot lane but functions as an exclusive left-turn lane and shared through/right-turn lane. The northbound Summer Street approach is marked as a single, 27-foot lane but operates as a shared left-turn/through lane, a shared through/right-turn lane, and a parking lane. Summer Street southbound consists of a 12-foot, shared left-turn/through lane and a 14-foot, shared through/right-turn lane. An MBTA bus stop is located on the east side of Summer Street immediately adjacent to the intersection. Crosswalks with handicapped-accessible ramps are provided across all approaches to this intersection. Concrete or asphalt sidewalks are provided along approaches of this intersection. Sidewalks along the approaches to this intersection are in fair condition. Pavement and pavement markings are in fair condition, although the crosswalks are heavily worn. During field observations, a large number of trucks used this intersection.

L Street/East Broadway is a signalized, four-leg intersection. The eastbound East Broadway approach operates as a 10-foot left-turn lane, a 12-foot, shared through/right-turn lane, and an eight-foot bus stop. The westbound East Broadway operates as an eight-foot, shared left-turn/through lane and an eight-foot, shared through/right-turn lane with an additional eight-foot parking lane. L Street northbound operates as a nine-foot, shared left-turn/through lane,

a nine-foot, shared through/right-turn lane, and an eight-foot cab stand lane. L Street southbound operates as a nine-foot, shared left-turn/through lane, a 9-foot, shared through/ right-turn lane, and an eight-foot parking lane. Sidewalks and 11-foot crosswalks are provided at all approaches.

3.2.2.2 Unsignalized Intersections

A Street/Melcher Street is a four-leg, unsignalized intersection. The eastbound Melcher Street approach is stop-controlled and functions as a 12-foot, shared left-turn/through/right-turn lane with an eight-foot parking lane for resident parking. The westbound approach is a parking lot driveway that is 40 feet wide with no striping. Left turns, through movements, and right turns are allowed from this approach. Northbound A Street is marked as a single, 17-foot lane but operates as two lanes: a left-turn lane and a shared through/right-turn lane. No parking is allowed along this approach immediately adjacent to the intersection. The A Street southbound approach operates as a 12-foot, shared left-turn/through/right-turn lane and an eight-foot parking lane. Crosswalks are provided across the southbound and east-bound approaches, but are worn. While analyzed as unsignalized in Existing Conditions, this location is analyzed as a signalized intersection under Mid-term No-Build, Seaport Square Build, and South Boston Waterfront Long-term Conditions; a signal will be installed by the Channel Center developers as mitigation for that project.

L Street/William J. Day Boulevard is a three-approach intersection. Signal equipment is present at this location and is generally set to flashing red for the L Street approach and flashing green for the Day Boulevard approaches. Pedestrian calls cause the light to show a combined red-yellow indication to signify an exclusive pedestrian phase. This intersection is analyzed as an unsignalized intersection with stop-control on the L Street southbound approach to most accurately reflect Existing Conditions. Immediately north of this intersection, L Street is intersected by Columbia Road, which is also controlled by the same set of signals. The signals for Columbia Road approaches are set on red flash. Day Boulevard eastbound consists of a 10-foot, shared left-turn/through lane and an 11-foot, exclusive through lane. Day Boulevard westbound consists of one 11-foot, shared through/right-turn lane. Parking is allowed on the north side of the Day Boulevard westbound approach. L Street southbound is wide enough at the intersection to allow right-turning vehicles to pass vehicles waiting to turn left. With the exception of L Street southbound, ramps and crosswalks are provided across all approaches. Concrete sidewalks are provided along all approaches. Sidewalks are in good condition, as are pavement and pavement markings.

South Boston Bypass Road (Haul Road)/West Service Road is an unsignalized T intersection. Traffic signal equipment located at the existing intersection currently functions in flash mode. The West Service Road eastbound approach is controlled by a flashing red and consists of a 12-foot, exclusive left-turn lane and a 12-foot, shared left-turn/right-turn lane. South Boston Bypass Road runs north–south through the intersection. The northbound approach consists of an 11-foot left-turn lane and a 13-foot through lane. The southbound approach consists of a 12-foot through lane and a 12-foot, exclusive right-turn lane.

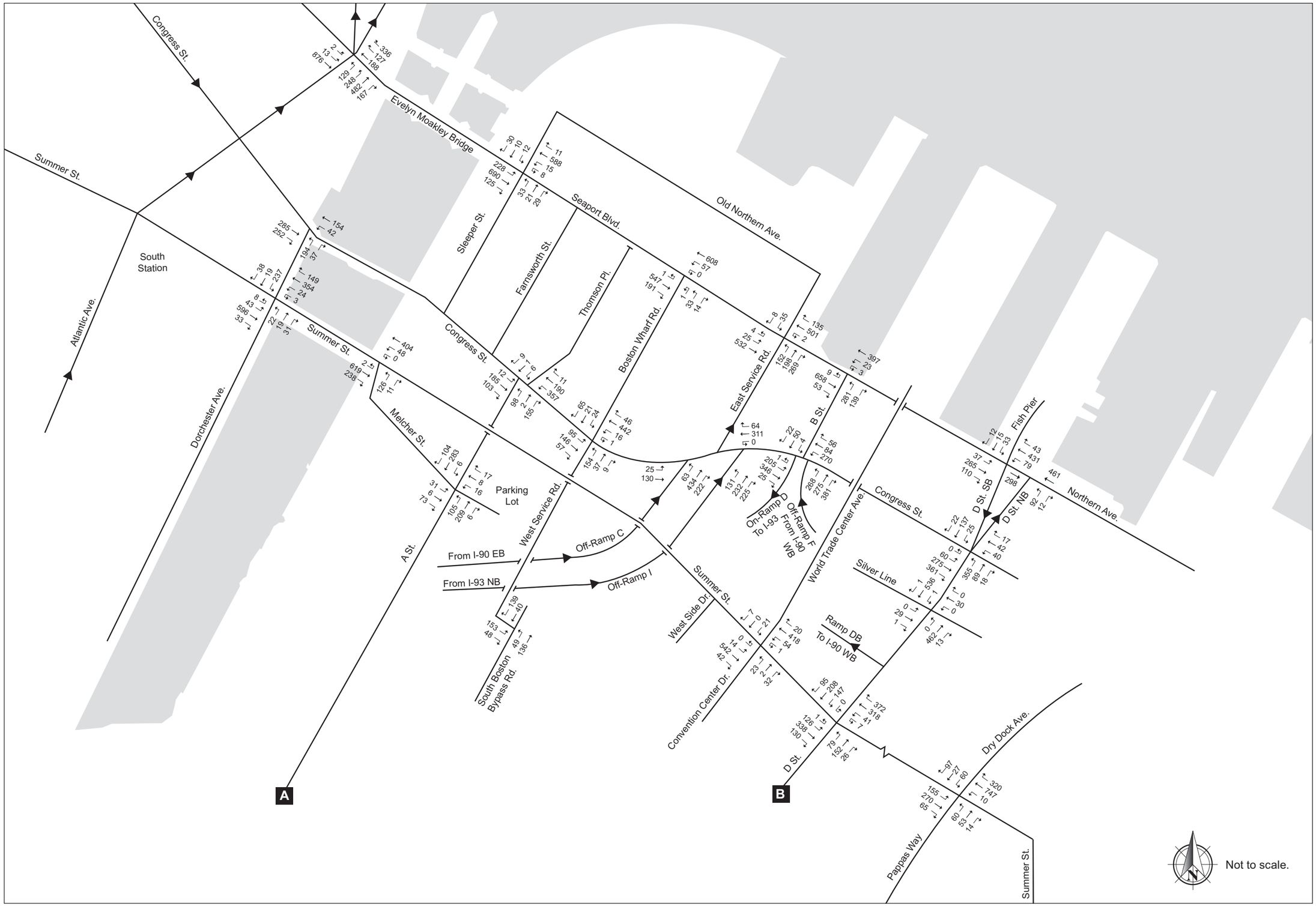
Sidewalks are provided along West Service Road, but no sidewalks are located along the South Boston Bypass Road; signage prohibits pedestrian traffic north of the intersection. Parking is not allowed adjacent to the intersection. Crosswalks and handicapped-accessible ramps are located across the eastbound approach only.

Seaport Boulevard/Thomson Place is an unsignalized intersection with three approaches, but the northbound approach is not currently open to traffic. The eastbound Seaport Boulevard approach consists of a 10-foot U-turn lane, a 12-foot through lane, and a 14-foot through lane. The westbound Seaport Boulevard approach consists of one 13-foot through lane and one 14-foot through lane. Metered parking is provided along both sides of Seaport Boulevard east of the intersection, and on the south side west of the intersection. No parking is permitted along the north side of Seaport Boulevard west of the intersection. Since the northbound approach of Thomson Place is currently not in use, this location is not analyzed under Existing Conditions. Sidewalks are provided along Seaport Boulevard and the northbound approach of Thomson Place. Crosswalks with handicapped-accessible ramps are located across both approaches of Seaport Boulevard. Under Mid-term No-Build Conditions, this location is analyzed as a signalized, three-way intersection to reflect the opening of Thomson Place. At that time, Thomson Place will be known as Thomson Street. Under the Seaport Square Build Conditions, the fourth leg of this intersection, the south-bound approach, will be created through the present-day parking lot to connect Seaport Boulevard to Old Northern Avenue. The southbound approach will be named Fan Pier Boulevard and the intersection will be analyzed as a signalized, four-way intersection.

3.2.3 Existing Traffic Volumes

Vehicular and pedestrian counts were conducted at the study area intersections between March 2007 and April 2009. Vehicle turning movements and pedestrian volumes were collected on weekdays from 7:00 to 9:00 a.m. and from 4:00 to 6:00 p.m., and on Saturdays (for intersections north of Summer Street) from 11:00 a.m. to 1:00 p.m. Based on the vehicle counts, the weekday morning and evening peak hours were identified as 8:00 to 9:00 a.m. and 4:45 to 5:45 p.m., respectively. The Saturday mid-day peak hour occurs between 11:30 a.m. and 12:30 p.m. The weekday counts were compared and balanced to create a 2009 Existing Conditions network. The existing a.m. peak-hour volumes are shown in Figure 3-5 and Figure 3-6 for the areas north of Summer Street and south of Summer Street, respectively. The existing p.m. peak-hour volumes are shown in Figure 3-7 and Figure 3-8 for the areas north of Summer Street and south of Summer Street, respectively. Saturday mid-day peak-hour volumes were collected in the Project vicinity at locations north of Summer Street only and are shown in Figure 3-9. Traffic count data are provided in Appendix B-1.

It is of note that the Seaport Square analysis will be the first analysis of a major project on the South Boston waterfront to use actual post-Central Artery/Tunnel (CA/T) traffic counts, rather than the 2010 CA/T regional transportation model, as the basis for analysis. Because



SEAPORT SQUARE
IN SOUTH BOSTON

Figure 3-5

Existing Conditions (2009) Turning Movement Volumes, a.m. Peak Hour (8:00-9:00 a.m.), North of Summer Street

GALE INTERNATIONAL

Morgan Stanley

WS DEVELOPMENT

prepared by:
Howard/Stein-Hudson Associates, Inc.

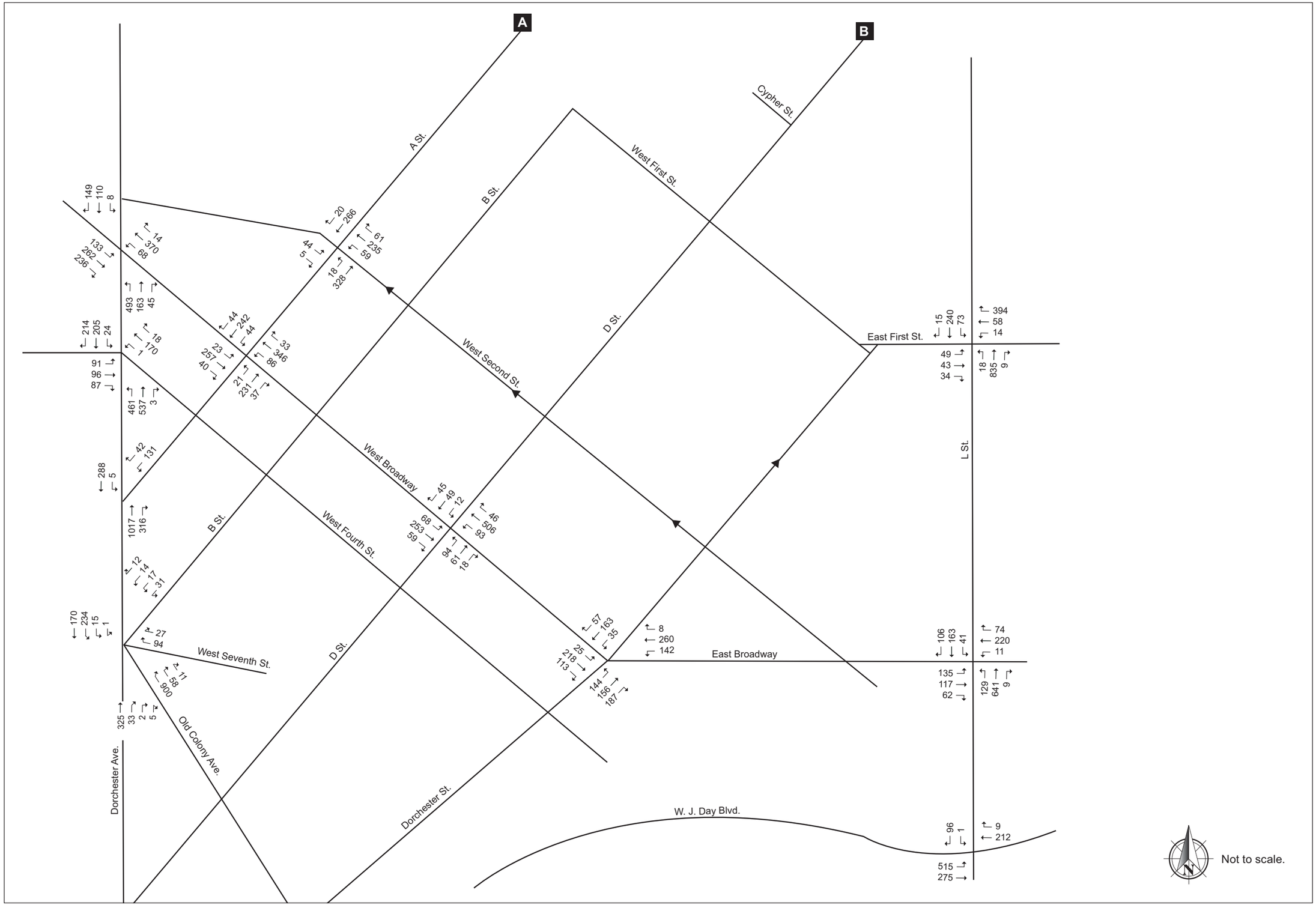


Figure 3-6

Existing Conditions (2009) Turning Movement Volumes, a.m. Peak Hour (8:00-9:00 a.m.), South of Summer Street

SEAPORT SQUARE
IN SOUTH BOSTON

GALE INTERNATIONAL

Morgan Stanley

WS DEVELOPMENT

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Figure 3-7

Existing Conditions (2009) Turning Movement Volumes, p.m. Peak Hour (4:45-5:45 p.m.), North of Summer Street

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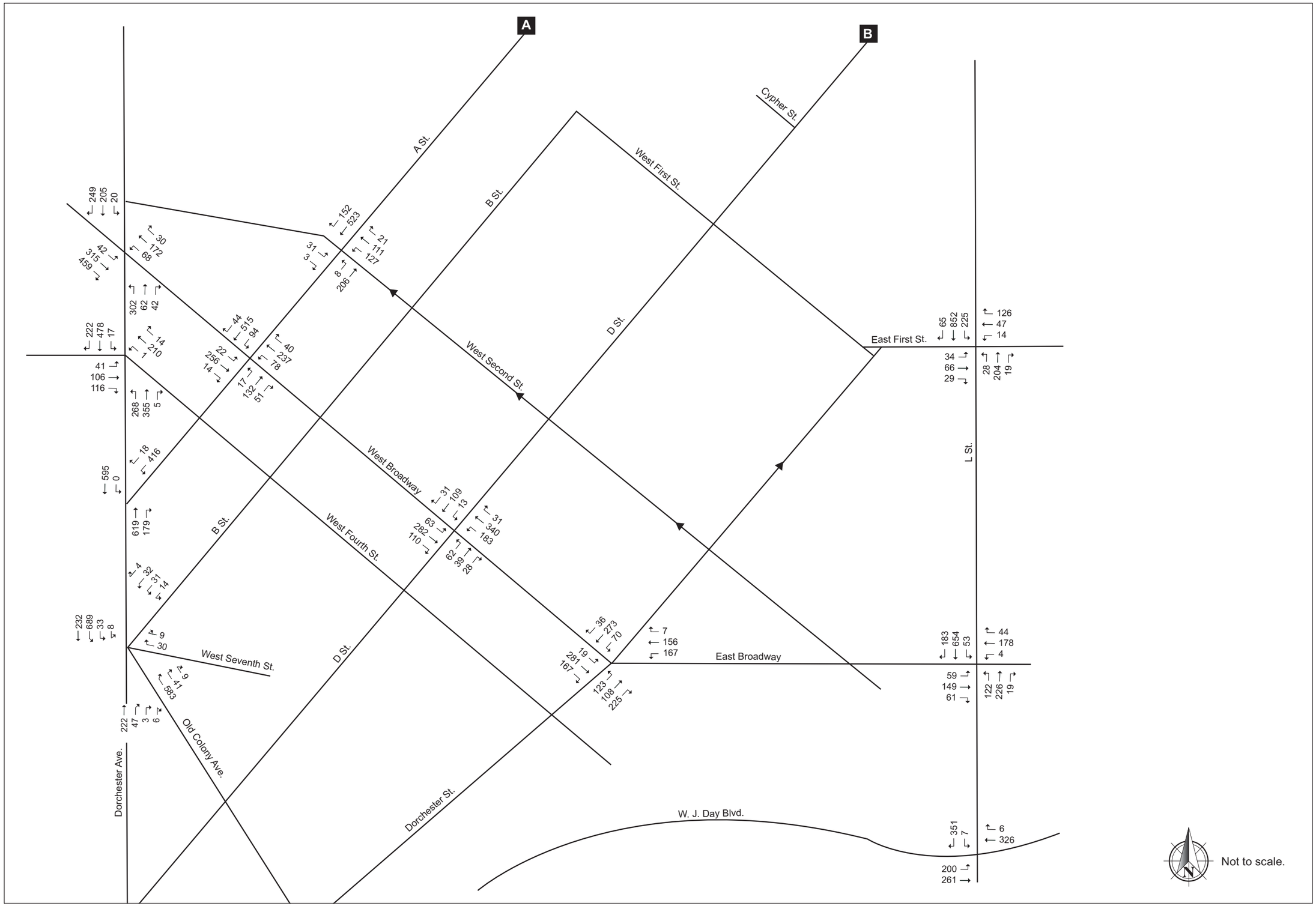
Howard/Stein-Hudson Associates, Inc.



SEAPORT SQUARE
IN SOUTH BOSTON

Figure 3-8

Existing Conditions (2009) Turning Movement Volumes, p.m. Peak Hour (4:45-5:45 p.m.), South of Summer Street

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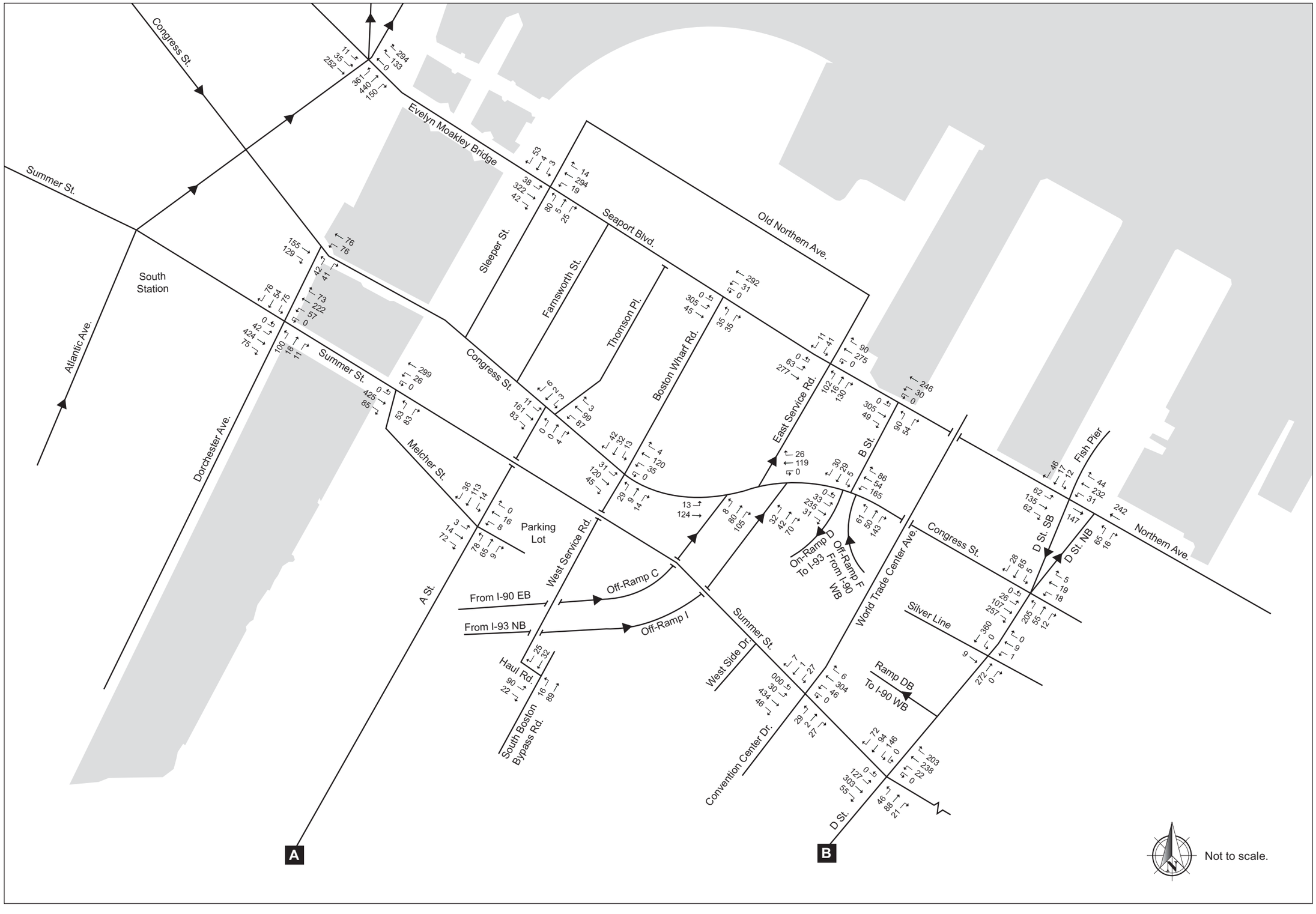
SEAPORT SQUARE
IN SOUTH BOSTON

Figure 3-9

Existing Conditions (2009) Turning Movement Volumes, Saturday Mid-day Peak Hour (11:30 a.m.-12:30 p.m.), North of Summer Street



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Morgan Stanley

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prepared by:
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the CA/T roadway network is now complete, actual counts now reflect the improvements in access and transportation patterns afforded by the new regional roadway connections. In addition, the new counts reflect full or partial completion of a number of South Boston development projects that were not yet complete when the CA/T modeling process was on-going.

3.2.4 Crash Data

Motor vehicle crash data from the MassHighway Crash Records System were compiled from available data for the most recent three-year period (2005–07). Crash rates for the study area intersections were calculated and compared to the district averages for signalized and unsignalized intersections. In MassHighway District 4, where Seaport Square is located, the average number of crashes at a signalized intersection is 0.88 crashes per million entering vehicles (MEV). For unsignalized intersections, the average is 0.63 crashes per MEV. Of the 26 intersections studied, only one location—L Street/William J. Day Boulevard—has an average crash rate greater than the District average; its crash rate is 1.11 crashes per MEV. Although signal heads are in place at this intersection, it continuously operates on flash operation—effectively as if were an unsignalized intersection. Of the 15 crashes that have occurred at this location in the past three years, none involved a fatality.

A summary of crash data for all locations is included in Appendix B-2.

3.2.5 Existing Traffic Operations

The criterion for evaluating traffic operations is Level of Service (LOS). LOS is determined by assessing average delay incurred by vehicles at intersections and along intersection approaches. The study team calculated average delay and associated level of service at study area intersections using Trafficware's Synchro 6 software, which also evaluates the impact on traffic operations from closely spaced intersections. This software is based on the traffic operational analysis methodology of the Transportation Research Board's *2000 Highway Capacity Manual* (HCM). Level of service and delay (in seconds) are determined based on intersection geometry and available traffic data for each intersection. BTD provided the intersection signal timing and phasing used in this analysis.

Table 3-2 summarizes the delay and LOS thresholds for signalized and unsignalized intersections, as defined in the HCM. LOS A defines the most favorable condition, with minimum traffic delay. LOS F represents the worst condition (unacceptable), with significant traffic delay. The threshold at LOS E/LOS F indicates that the intersection, or intersection approach, is theoretically at capacity. LOS D is generally considered acceptable in an urban environment such as the Project study area, and below the maximum theoretical operating capacity.

Table 3-2 Intersection Level of Service Criteria (HCM excerpt)

Level of Service	Average Stopped Delay (sec./veh.)	
	Signalized Intersection	Unsignalized Intersection
A	≤10	≤10
B	>10 and ≤20	>10 and ≤15
C	>20 and ≤35	>15 and ≤25
D	>35 and ≤55	>25 and ≤35
E	>55 and ≤80	>35 and ≤50
F	>80	>50

To accurately evaluate existing traffic operations, the Synchro model was calibrated by taking field observations into account. Of particular concern in the calibration process was the actual operation of traffic flow at certain study area intersections. The study team conducted observations at several study area intersections to determine pedestrian activity and its influence on vehicle flow at signalized intersections.

Table 3-3 summarizes the Existing Conditions levels of service for study area intersections for the weekday a.m. and weekday p.m. peak hours. Because traffic volumes on weekends are much lower than on weekdays, no operational analysis was conducted for the Saturday peak hour. Due to their length, all the detailed Synchro reports are provided in Appendix B-3. Also because of length, detailed LOS tables by approach are provided in Appendix B-4.

Table 3-3 Existing Conditions (2009) Peak-hour Level of Service Summary

Intersection	a.m. Peak	p.m. Peak
Signalized Intersections		
Seaport Boulevard/Atlantic Avenue	D	E
Seaport Boulevard/Sleeper Street	C	B
Seaport Boulevard/Boston Wharf Road	B	C
Seaport Boulevard/East Service Road/Old Northern Avenue	C	C
Seaport Boulevard/B Street	F	C
Seaport Boulevard/Northern Avenue/D Street (southbound)/ Fish Pier Street	B	C
Northern Avenue/D Street (northbound)	C	B
Congress Street/Dorchester Avenue	C	C
Congress Street/A Street/Thomson Place	C	B
Congress Street/West Service Road/Boston Wharf Road	C	D
Congress Street/Off-ramp C/Off-ramp I/East Service Road	E	D
Congress Street/On-ramp D/Off-ramp F/B Street	E	C
Congress Street/D Street	D	D
D Street/Silver Line Way	A	A
Summer Street/Dorchester Avenue	C	C

Table 3-3 Existing Conditions (2009) Peak-hour Level of Service Summary (Continued)

Intersection	a.m. Peak	p.m. Peak
Signalized Intersections		
Summer Street/Melcher Street	B	C
Summer Street/World Trade Center Avenue/ Convention Center Drive	A	B
Summer Street/D Street	D	C
Summer Street/Dry Dock Avenue/Pappas Way	C	E
Dorchester Avenue/West Broadway	D	D
Dorchester Avenue/West Fourth Street	B	B
Dorchester Avenue/A Street	B	B
Dorchester Avenue/Old Colony Avenue	B	B
A Street/West Broadway	C	C
A Street/West Second Street	B	B
West Broadway/D Street	C	C
West Broadway/East Broadway/Dorchester Street	F	F
Summer Street/East First Street	E	C
L Street/East Broadway	E	F
Unsignalized Intersections		
A Street/Melcher Street	—	—
Melcher EB left/thru/right	D	E
Melcher WB left/thru/right	D	C
A NB left	A	A
A NB thru/right	A	A
A SB left/thru/right	A	A
South Boston Bypass Road (Haul Road)/West Service Road	—	—
West Service EB left	B	B
West Service EB right	B	B
Haul Road NB left	A	A
Haul Road NB thru	A	A
Haul Road SB thru	A	A
Haul Road SB right	A	A
L Street/William J. Day Boulevard	—	—
William J. Day EB left/thru | thru	A	A
William J. Day WB thru/right	A	A
L SB left	F	C
L SB right	B	C

Gray shading indicates undesirable LOS.

While some individual intersection approaches operate poorly during peak hours, the Existing Conditions analysis shows only a few locations that have an overall poor level of service:

In the ***a.m. peak hour,*** the following ***signalized*** intersections operate at overall LOS E or F:

- Seaport Boulevard/B Street;
- Congress Street/Off-ramp C/Off-ramp I/East Service Road;
- Congress Street/On-ramp D/Off-ramp F/B Street;
- West Broadway/East Broadway/Dorchester Street;
- Summer Street/East First Street; and
- L Street/East Broadway.

For ***unsignalized*** locations, the only intersection with a movement operating at LOS E or LOS F is L Street/William J. Day Boulevard, where the southbound left turn from L Street onto William J. Day Boulevard operates at LOS F.

In the ***p.m. peak hour,*** the following ***signalized*** intersections operate at overall LOS E or LOS F:

- Seaport Boulevard/Atlantic Avenue;
- Summer Street/Dry Dock Avenue/Pappas Way;
- West Broadway/East Broadway/Dorchester Street; and
- L Street/East Broadway.

For unsignalized locations, the only intersection with a move operating at LOS E or LOS F is A Street/Melcher Street, where the eastbound Melcher Street approach operates at LOS E. In the future, signals will be installed at this intersection.

It is important to note that BTD is in the process of evaluating signal timing and other improvements that can be made in the short term to reflect current travel patterns with the CA/T ramps and street system in place. These improvements are discussed below in the Mid-term No-Build Conditions section.

3.2.6 Existing Parking

This section documents the existing on- and off-street parking operations in the study area.

3.2.6.1 Existing Off-street Parking

Seaport Square is located within the City of Boston Air Pollution Control Commission (APCC) South Boston Parking Freeze area. The APCC maintains an inventory and "bank" of parking spaces subtracted or added within the district. Currently, 3,647 parking spaces are

inventoried by APCC in the surface lots that currently occupy the various Seaport Square development parcels. In total, more than 10,000 public parking spaces are within one-quarter mile, or a five-minute walk, from the Project Site. These spaces are available on an hourly basis at market rates. Public surface lots and garages within a quarter-mile of Seaport Square are shown in Table 3-4 and Figure 3-10.

Table 3-4 Off-street Parking within a Quarter-mile of the Site

Map #	Address	Facility	Private Capacity	Public Capacity
A	25 Northern Avenue	LAZ Parking	0	922*
B	Sleeper Street	Sleeper Street Lot	24	0
C	51 Sleeper Street	Lincoln Place Parking	26*	0
D	Farnsworth Street	LAZ Parking	65*	0
E	29–49 Stillings Street[1]	LAZ Parking	0	299*
F	390 Congress Street Lot	LAZ Parking	0	1,417*
G	145 Seaport Boulevard	LAZ Parking	0	579*
H	321 Congress Street	Stanhope Parking	0	85
I	338 Congress Street	Stanhope Parking	0	18
J	381 Congress Street	Stanhope Parking	0	28
K	391 Congress Street	LAZ Parking	0	375*
L	284 A Street	Channelside Parking Lot	0	1,256
M	309 A Street	USPS Employee Parking	1,787	0
N	28 Northern Avenue	Pilgrim Parking	0	1,026
O	140 Northern Avenue	Pier 4 Inc.	0	300
P	Northern Avenue	Bullard Parking	0	300
Q	66 Sleeper Street	LAZ Parking	0	55*
		Parking Lot Subtotal	**1,902**	**6,660**
1	17 Farnsworth Street	Farnsworth Parking Garage	0	361
2	29–49 Stillings Street	Stillings Street Garage	0	500
3	30–60 Necco Street	Necco Street Garage	0	585
4	One Seaport Lane	Seaport Hotel Garage	0	2,390
5	425 Summer Street	Westin Boston Waterfront Garage	0	400
		Parking Garage Subtotal	**0**	**4,236**
		One-quarter-mile Radius Subtotal	**1,902**	**10,896**
		One-quarter-mile Radius Total Capacity	**12,798**	

*These lots will be displaced by Project development.

[1] The lot at 29–49 Stillings Street (License #405) has a capacity of 299 vehicles. It is the result of the merger of two lots: 29–49 Stillings Street (License #44.01a – capacity 150) and 55 Thomson Place (License #44.03. capacity 149). This merger occurred in December 2007.

It is important to note that the Seaport Square site itself comprises 3,647 public parking spaces and 91 private spaces in eight surface lots, noted with asterisks in the above table. These spaces will be removed when construction on each Block proceeds. At completion

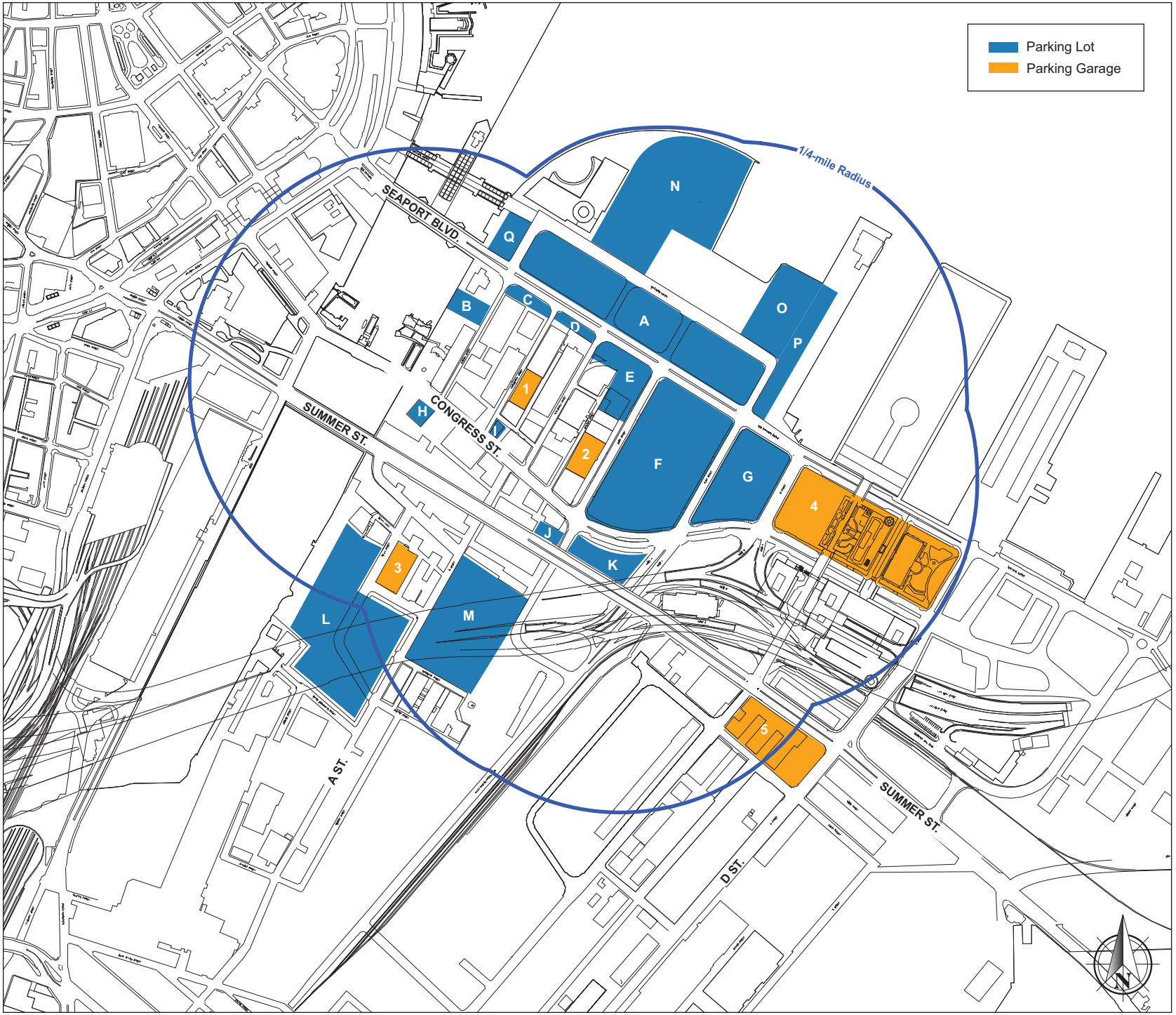

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Figure 3-10

Existing Off-Street Parking in the Study Area

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of Seaport Square, there will be a remaining study area total of up to 3,013 public lot spaces, 4,326 public garage spaces, and 1,811 private garage spaces, depending on the order in which adjacent developments are phased in.

3.2.6.2 Existing On-street Parking

Figure 3-11 shows parking regulations within a quarter-mile radius, or five-minute walk, of the outside corners of the Seaport Square development. Large portions of the study area do not permit on-street parking, including along the Summer Street, Congress Street, and Seaport Boulevard bridges, the approach roads and ramps to I-93 and I-90, segments of Old Northern Avenue near the Moakley Courthouse, and on the north side of Northern Avenue near the Seaport World Trade Center. Resident parking for South Boston permit holders is available on the east side of Sleeper Street between Seaport Boulevard and Congress Street. Resident parking is also available on the south side of Melcher Street, on portions of A Street north and south of its intersection with Melcher Street, and on Summer Street west of where it crosses A Street. Resident parking on Summer Street is metered. Two-hour parking is available on Summer Street west of where it crosses A Street. Metered parking is available along Seaport Boulevard, on segments of Congress Street east of Boston Wharf Road, along Boston Wharf Road, on East Service Road, and on the south side of Northern Avenue around the Seaport World Trade Center.

The study area also has substantial private permit parking underneath the Boston Convention and Exhibition Center (BCEC), on the east side of Stillings Street, around the Federal Reserve Bank, and in the area around Necco Street. Several alleys and driveways in the study area are also designated for private permit parking.

3.2.7 Existing Public Transportation

This section highlights the transportation routes, schedules, and capacity of public transportation within the study area.

The Project site is within one-half mile (a 10-minute walk) of South Station, a transportation hub that provides access to the MBTA Red Line, Silver Line, and eight commuter rail branches. In addition, the MBTA Silver Line Courthouse and World Trade Center stations are located within the Project area. Several MBTA local and express bus routes operate near the proposed site as well. South Station is also the terminus for Amtrak train service along the Northeast Corridor. Greyhound and Peter Pan provide regional and commuter bus service from South Station. Several smaller bus companies have recently introduced service between Boston and New York as well.

Weekday bus and subway service is provided between approximately 5:00 a.m. and 1:00 a.m. Actual service times vary by route or line. MBTA public transportation services, exclusive of commuter rail lines, are shown in Figure 3-12. Table 3-5 summarizes current rapid transit service and peak load point capacity.

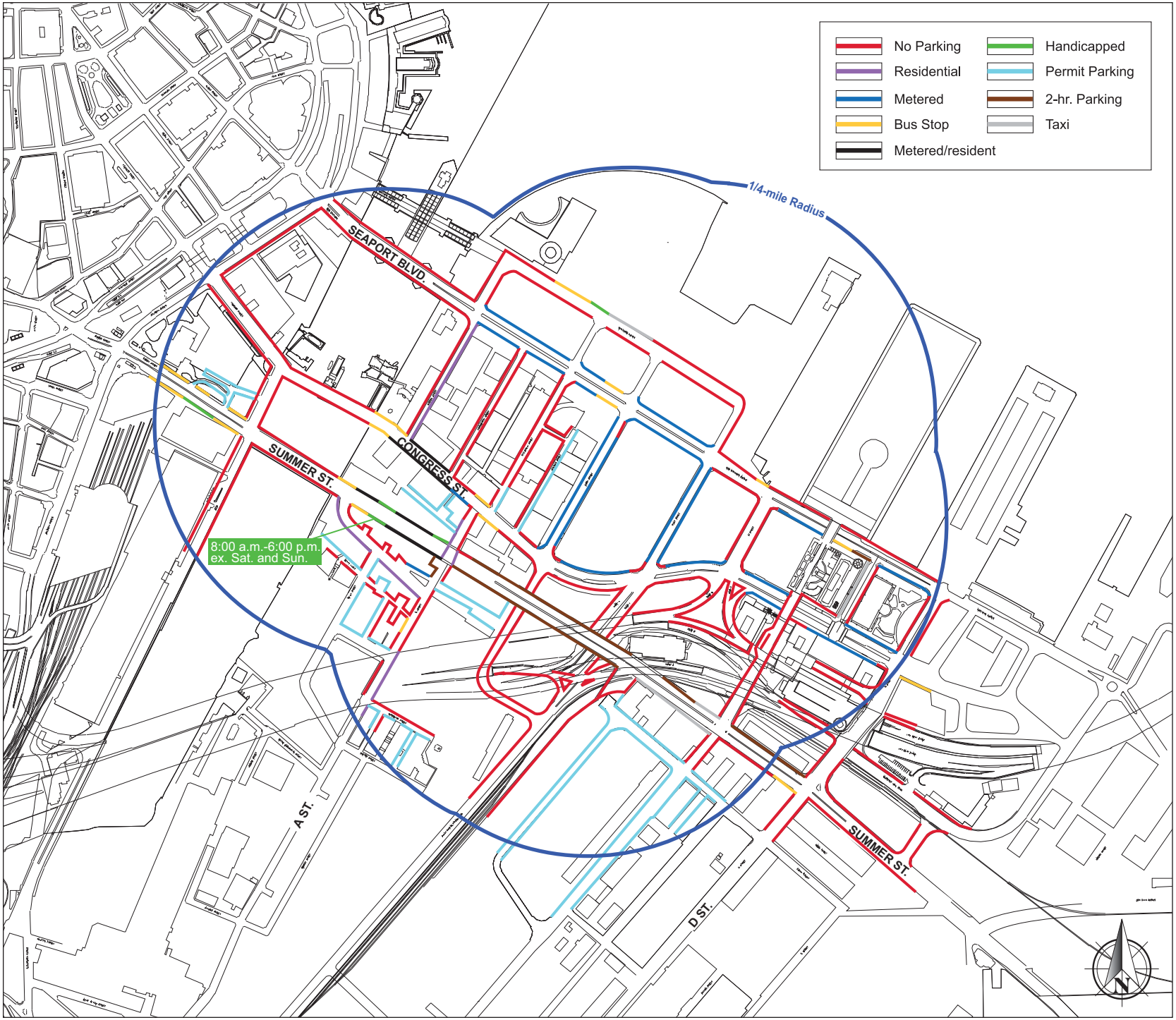

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Figure 3-11

Existing On-Street Parking in the Study Area

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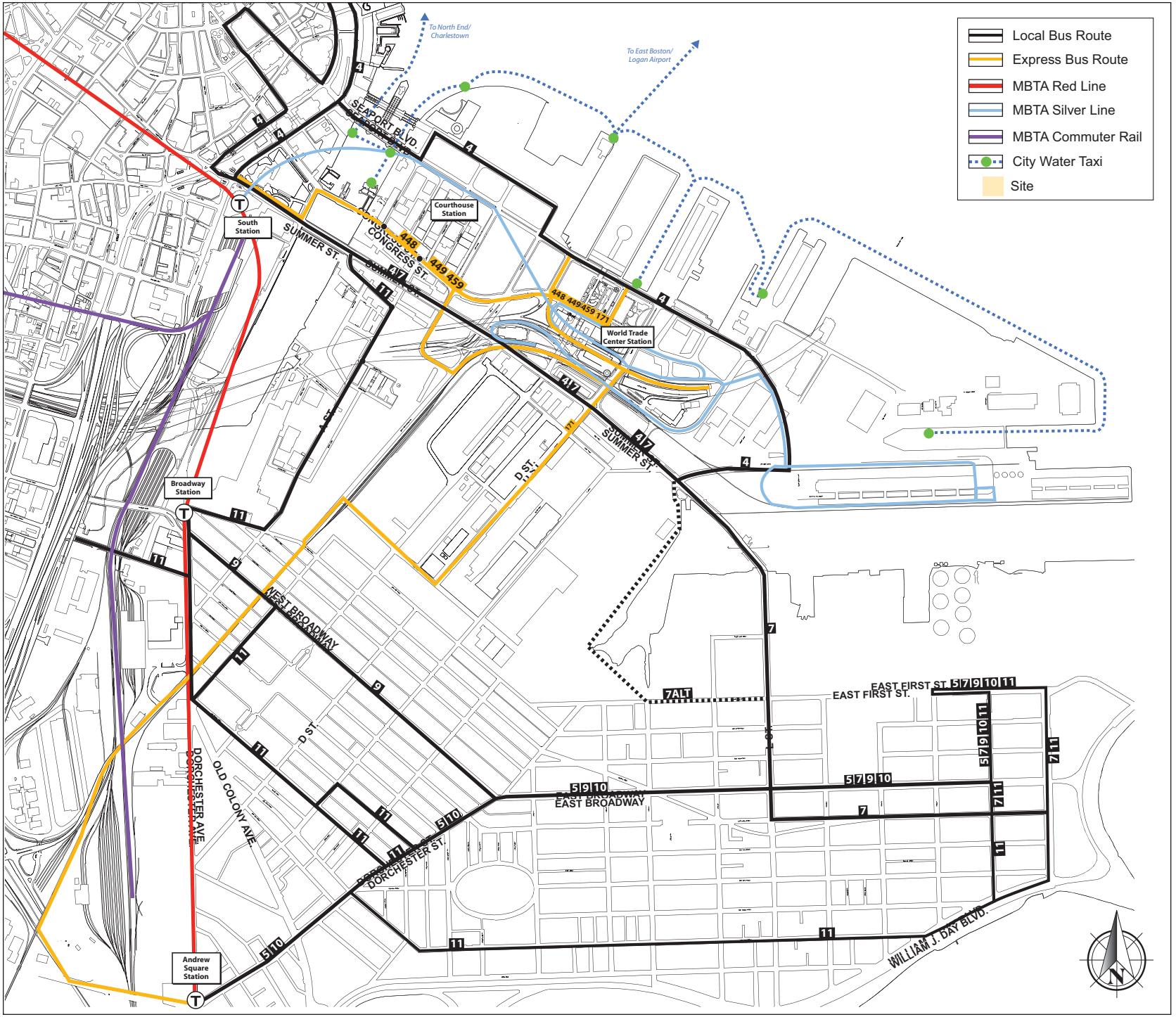

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Figure 3-12

Existing Public Transportation in the Study Area

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Table 3-5 Existing MBTA Rapid Transit

Subway Line	Origin–Destination	Car Capacity[1]	Cars Per Train[2]	Train Capacity	Trains Per Hour*	Hourly One-way Capacity
Red	Alewife–Braintree/Ashmont	167	6	1,002	13	13,026
Orange	Forest Hills–Oak Grove	131	6	786	8	6,288
Green	Lechmere–Boston College, Cleveland Circle, Riverside, Heath Street	101	2	202	36	7,272
Silver (SL1)	South Station to Logan Airport/South Boston	97	1	97	7	679
Silver (SL2/3)	Logan Airport/South Boston to South Station	97	1	97	13	1,261
Silver	Transitway Tunnel (#746)	97	1	97	13	1,261
Blue	Wonderland–Bowdoin	95	6	570	6	3,420

[1] Per MBTA service policy for peak-hour service. "Crush loaded" capacity is 1,602 for a 6-car Red Line train, 1,344 for a 6-car Orange Line train, 538 for a 2-car Green Line train, 104 for a Silver Line bus, and 954 for a 6-car Blue Line train. Table does not include Run As Directed trains added in peak hours.

[2] Three-car trains will be put into service on the Riverside Branch once accessibility improvements are complete at Arlington and Copley stations.

* Sources: MBTA Office of Service Planning and MBTA Web site, 5/09.

Based on the MBTA service policy calculation of capacity, the Red Line has a scheduled peak-hour capacity of about 13,000 passengers. The Silver Line has a combined peak-hour capacity of up to 3,201 passengers eastbound on the three routes from Courthouse Station to South Boston and Logan Airport, and up to 3,201 passengers westbound from Silver Line Way to South Station. This service is enhanced by the #746 shuttle runs that operate only in the tunnel between South Station and Silver Line Way at peak times. This calculation is based on occupancy of all seats and comfortable conditions for standees.

Maximum capacity or "crush loading" is much higher, as shown in Table 3-5, Footnote 1, above. Crush loading conditions may occur during the 15-minute "peak of the peak" or if there is a disabled train, a special event, or a major service disruption. Typically, however, these conditions do not occur over the course of an entire peak hour. Peak load points, or locations where trains are at their highest occupancy, occur on weekday evenings between South Station and Broadway Station on the Red Line outbound service, between Arlington and Copley stations on the Green Line, between New England Medical Center and Back Bay stations on the Orange Line, and between South Station and Courthouse stations on the Silver Line. Additional capacity is available during peak hours at the peak load points on the Red, Green, Silver, and Orange lines (forecasts based on 1997 passenger counts by the Central Transportation Planning Staff [CTPS] for MBTA).

According to the MBTA *2007 Blue Book,* the Silver Line has an average of 6,000 total weekday boardings. Peak load/peak direction passenger counts are 506 and 629 between Courthouse Station and South Station.

Many local and express bus routes operate near the Project Site. Table 3-6 lists the route numbers, origins–destinations of the routes, and peak-hour frequency. A Route 4 bus stop is located on Northern Avenue adjacent to the Moakley Courthouse and across from Blocks A and B.

Table 3-6 Existing MBTA Bus Service in the Study Area

Route	Route Description	Rush Hour Headway (minutes)
4	North Station–World Trade Center	15
7	City Point–Otis & Summer Streets	4–7
11	City Point–Downtown	6
171	Dudley Station–Logan Airport (Sunrise)	Limited
448	Marblehead–Downtown Crossing	Limited
449	Marblehead–Downtown Crossing	Limited
459	Salem Depot–Downtown Crossing	Limited

3.2.7.1 Commuter Rail Services

The Project Site is located about a half-mile (a 10-minute walk) from South Station, a transportation hub that provides access to eight commuter rail branches serving communities to the west and south of Boston. Commuter trains from South Station serve Plymouth, Kingston, Middleborough/Lakeville, Stoughton, Providence, Forge Park-495, Needham Heights, and Worcester. South Station is also the terminus for Amtrak train service along the Northeast Corridor.

Commuter rail service to communities north of Boston operates out of North Station, located farther from the Project Site. Five commuter rail lines operate from North Station, including Rockport, Newburyport, Haverhill, Lowell, and Fitchburg. While North Station is fairly distant from the Project Site, the Orange Line also provides a direct transit connection from Downtown Crossing station to North Station.

3.2.7.2 Water Transportation

The MBTA Water Shuttle Route F1 operates from Rowe's Wharf to Hingham. Routes F2 and F2H operate from Hull to Logan Airport to Long Wharf. Route F4 runs between Charlestown and Long Wharf. Two water taxi services also serve Fan Pier directly. City Water Taxi provides year-round water shuttle service in Boston's inner harbor. Water taxi pick-up and drop-off locations in the Seaport area include Anthony's Pier Four, Fan Pier, the Barking Crab restaurant, the Children's Museum, the Seaport World Trade Center, the Bank of America Pavilion, and the Black Falcon Cruise Terminal. Water taxis serve seven locations along the downtown waterfront, three in Charlestown, and two in East Boston, including Logan Airport. Project area water taxi stops are shown in Figure 3-12.

3.2.8 Existing Pedestrian Conditions

Seaport Square is located in an area of South Boston that has experienced significant new street construction as a result of both the Central Artery/Tunnel project and projects undertaken by developers. Today, sidewalks are provided on all streets within the study area. Since many of the streets were newly created as part of the CA/T project, most sidewalks and crosswalks are in good condition. This section presents information on pedestrian operations throughout the study area.

Pedestrian level of service (LOS) is determined through analysis of crosswalk geometry, signal timing, and pedestrian volumes. The methodology for conducting the LOS analysis is based on the Transportation Research Board's *2000 Highway Capacity Manual* (HCM). For signalized intersections, pedestrian LOS is based on the waiting time or delay pedestrians experience as they wait to enter the crosswalk (delay LOS) and how much crowding exists in the crosswalk (space LOS). According to the HCM, the method for unsignalized intersections does not apply to zebra-striped crosswalks, because pedestrians (by Massachusetts state law) have the right-of-way. Pedestrian LOS at an unsignalized intersection is computed for approaches where pedestrians do not have the right-of-way or any stop control device. Pedestrian LOS for unsignalized intersections is based on the critical gap, the vehicular flow rate, and the mean vehicle headway. Input includes pedestrian volumes, vehicular volumes, walking speed, crosswalk width, and street width.

Table 3-7, an excerpt from the HCM, provides LOS criteria for delay experienced by pedestrians at signalized and unsignalized intersections. As the delay increases, pedestrians are likely to become less compliant at a signalized intersection. If traffic volumes are low and delay high, pedestrians, in reality, will not wait. The delay experienced does not take into account the pedestrian volumes; it is the average delay that is or would be experienced by pedestrians waiting to cross, regardless of volume. At unsignalized intersections, the LOS is based on average delay per pedestrian, obtained from the vehicular volumes and potential gaps. LOS A defines the most favorable condition, with minimum delay to cross. LOS F represents the worst condition, with significant delay and the highest likelihood that pedestrians will not wait for the signal to change. Similar to vehicular traffic, LOS D is generally considered acceptable for urban environments such as downtown Boston.

Table 3-7 Level of Service Criteria for Pedestrian Delay at Intersections

LOS	Signalized (Seconds/Ped.)	Unsignalized (Seconds/Ped.)	Likelihood of Ped. Non-compliance
A	<10	<5	Low
B	$\geq$10–20	$\geq$5–10	
C	$\geq$20–30	$\geq$10–20	Moderate
D	$\geq$30–40	$\geq$20–30	
E	$\geq$40–60	$\geq$30–45	High
F	>60	>45	Very high

*NOTE: These levels of service reflect low to moderate conflicting vehicle volumes.

Figure 3-13 and Table 3-8 show LOS criteria for average flow of pedestrians on crosswalks used to determine the space LOS. Space LOS is only calculated for signalized intersections and does take pedestrian volumes into account. Crosswalk space LOS is obtained from pedestrian walking speed, pedestrian start-up time, and pedestrian space requirements. If insignificant hourly pedestrian volumes result in an average of zero pedestrians per cycle, the amount of space yielded per pedestrian is characterized as "unlimited" or "maximized." LOS A defines the most favorable condition, with maximum crosswalk space per pedestrian. LOS F represents the worst condition, with minimum crosswalk space. LOS D is generally considered acceptable for urban environments, such as the study area.

Table 3-8 LOS Criteria (Space) for Average Flow for Walkways and Sidewalks

LOS	Space (Square Ft./Ped.)	Flow Rate (Ped/Minute/Ft.)	Speed (Feet per Second)	V/C Ratio
A	>60	≤5	>4.25	≤0.21
B	>40–60	>5–7	>4.17–4.25	>0.21–0.31
C	>24–40	>7–10	>4.00–4.17	>0.31–0.44
D	>15–24	>10–15	>3.75–4.00	>0.44–0.65
E	>8–15	>15–23	>2.50–3.75	>0.65–1.0
F	≤8	Variable	≤2.50	Variable

Pedestrian counts at study area intersections were conducted at the same time vehicle turning movement counts were collected. Existing pedestrian volumes are shown in Figure 3-14 through Figure 3-16 for weekday a.m. and weekday p.m. peak hours, as well as for the Saturday mid-day peak hour for selected intersections north of Summer Street.

Because most of the pedestrian activity associated with the Project will occur near to the Project, rather than at outlying intersections, pedestrian conditions were assessed at locations north of Summer Street only. The study team conducted level of service analysis to evaluate existing pedestrian delay and space per pedestrian at study area intersections. BTD provided signal timings and phasing information used in this analysis. Table 3-9 summarizes existing pedestrian LOS for weekday a.m. and weekday p.m. peak hours. Because both pedestrian and automobile volumes are lower on Saturday afternoons than in the weekday peak hours, no quantitative analysis was performed for the Saturday time period. The analysis worksheets are provided in Appendix B-5.

LEVEL OF SERVICE A

Pedestrian Space: > 60 sq. ft./ped.
Flow Rate: < 5 ped./min./ft.

At walkway LOS A, pedestrians basically move in desired paths without altering their movements in response to other pedestrians. Walking speeds are freely selected, and conflicts between pedestrians are unlikely.

LEVEL OF SERVICE B

Pedestrian Space: > 40-60 sq. ft./ped.
Flow Rate: > 5-7 ped./min./ft.

At LOS B, sufficient area is provided to allow pedestrians to freely select walking speeds, bypass other pedestrians, and avoid crossing conflicts with others. At this level, pedestrians begin to be aware of other pedestrians and respond to their presence in the selection of the walking path.

LEVEL OF SERVICE C

Pedestrian Space: > 24-40 sq. ft./ped.
Flow Rate: > 7-10 ped./min./ft.

At LOS C, sufficient space is available to select normal walking speeds and bypass other pedestrians in primarily unidirectional streams. Where reverse-direction or crossing movements exist, minor conflicts will occur, and speeds and volume will be somewhat lower.

LEVEL OF SERVICE D

Pedestrian Space: > 15-24 sq. ft./ped.
Flow Rate: > 10-15 ped./min./ft.

At LOS D, freedom to select individual walking speed and bypass other pedestrians is restricted. Where crossing or reverse-flow movements exist, the probability of conflict is high, and its avoidance requires frequent changes in speed and position. The LOS provides reasonably fluid flow; however, considerable friction and interaction between pedestrians is likely to occur.

LEVEL OF SERVICE E

Pedestrian Space: >8-15 sq. ft./ped.
Flow Rate: > 15-23 ped./min./ft.

At LOS E, virtually all pedestrians would have their normal walking speed restricted, requiring frequent adjustment of gait. At the lower range of this LOS, forward movement is possible only by "shuffling." Insufficient space is provided for passing of slower pedestrians. Cross- or reverse-flow movements are possible only with extreme difficulty. Design volumes approach the limit of walkway capacity, with resulting stoppages and interruptions to flow.

LEVEL OF SERVICE F

Pedestrian Space: < 8 sq. ft./ped.
Flow Rate: variable ped./min./ft.

At LOS F, all walking speeds are severely restricted, and forward progress is made only by "shuffling." Contact with other pedestrians is frequent and unavoidable. Cross- and reverse-flow movements are virtually impossible. Flow is sporadic and unstable. Space is more characteristic of queued pedestrians than of moving pedestrian streams.

Source: *Highway Capacity Manual 2000*

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Figure 3-13
Illustration of Walkway Levels of Services

Figure 3-14

Existing Conditions (2009) Pedestrian Volumes, a.m. Peak Hour (8:00-9:00 a.m.), North of Summer Street

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Figure 3-15

Existing Conditions (2009) Pedestrian Volumes, p.m. Peak Hour (4:45-5:45 p.m.), North of Summer Street

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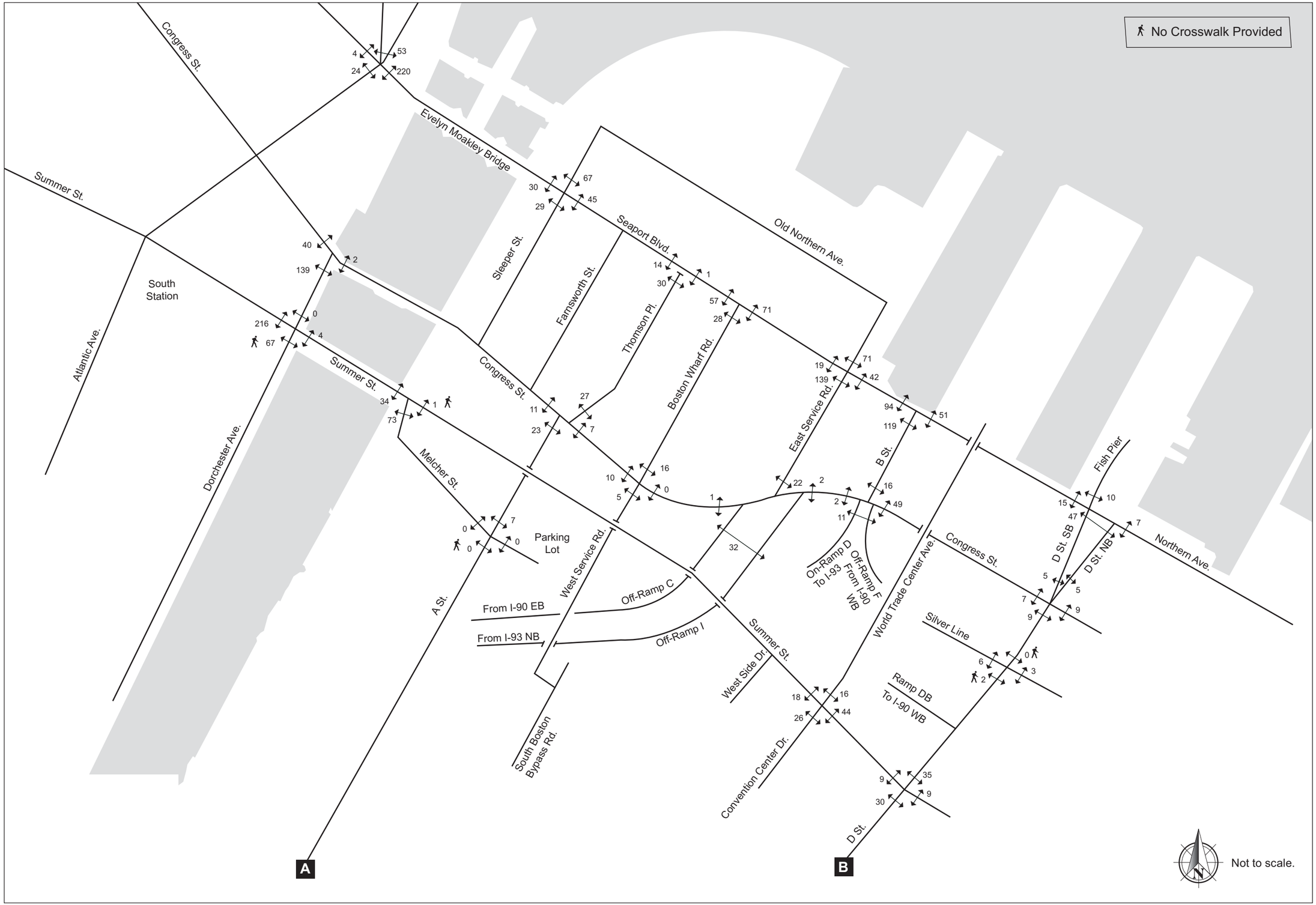

Figure 3-16

Existing Conditions (2009) Pedestrian Volumes, Saturday Mid-day Peak Hour (11:30 a.m.-12:30 p.m.), North of Summer Street

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Table 3-9 Existing Conditions (2009) Pedestrian Levels of Service

Intersection	Delay LOS		Space LOS	
	a.m.	p.m.	a.m.	p.m.
Signalized Intersections				
Seaport Boulevard/Atlantic Avenue				
Seaport East Crosswalk	D	D	F	E
Seaport West Crosswalk	B	B	A	A
Atlantic North Crosswalk	D	D	C	B
Atlantic South Crosswalk	B	B	A	A
Seaport Boulevard/Sleeper Street				
Seaport East Crosswalk	D	D	A	A
Seaport West Crosswalk	D	D	A	A
Sleeper North Crosswalk	D	D	A	A
Sleeper South Crosswalk	D	D	A	A
Seaport Boulevard/Boston Wharf Road				
Seaport East Crosswalk	C	C	A	A
Seaport West Crosswalk	C	C	A	A
Boston Wharf South Crosswalk	C	C	A	A
Seaport Boulevard/East Service Road/ Old Northern Avenue				
Seaport East Crosswalk	D	D	A	A
Seaport West Crosswalk	D	D	A	A
Old Northern North Crosswalk	D	D	A	B
East Service South Crosswalk	D	D	A	A
Seaport Boulevard/B Street				
Northern East Crosswalk	D	D	A	A
Northern West Crosswalk	D	D	A	A
B South Crosswalk	D	D	A	A
Seaport Boulevard/Northern Avenue/ D Street (southbound)/Fish Pier Road				
Northern West Crosswalk	D	D	A	A
Fish Pier North Crosswalk	D	D	A	A
D (SB) South Crosswalk	D	D	A	A
Northern Avenue/D Street (northbound)				
Northern East Crosswalk	D	D	A	A
D (NB) South Crosswalk	D	D	A	A
Congress Street/Dorchester Avenue				
Congress East Crosswalk	D	D	A	A
Congress West Crosswalk	D	D	A	C
Dorchester South Crosswalk	D	D	C	C
Congress Street/A Street/Thomson Place				
Congress East Crosswalk	D	D	A	A
Congress West Crosswalk	D	D	A	A
Thompson North Crosswalk	D	D	B	B
A South Crosswalk	D	D	A	A

Table 3-9 Existing Conditions (2009) Pedestrian Levels of Service (Continued)

Intersection	Delay LOS		Space LOS	
	a.m.	p.m.	a.m.	p.m.
Signalized Intersections				
Congress Street/West Service Road/ Boston Wharf Road				
Congress East Crosswalk	D	D	A	A
Congress West Crosswalk	D	D	A	A
Boston Wharf North Crosswalk	D	D	A	A
West Service South Crosswalk	D	D	A	A
Congress Street/Off-ramp C/Off-ramp I/ East Service Road				
Congress East Crosswalk	D	D	A	A
Congress West Crosswalk	D	D	A	A
East Service North Crosswalk	D	D	A	A
Ramps C&I South Crosswalk	C	C	A	A
Congress Street/On-ramp D/Off-ramp F/B Street				
Congress East Crosswalk	D	D	A	A
Congress West Crosswalk	D	D	A	A
B North Crosswalk	D	D	A	A
Ramps D&F South Crosswalk	D	D	A	A
Congress Street/D Street				
Congress East Crosswalk	D	D	A	A
Congress West Crosswalk	D	D	A	A
D North Crosswalk	C	C	A	A
D South Crosswalk	D	D	F	F
D Street/Silver Line Way				
Silver Line East Crosswalk	D	D	A	A
Silver Line West Crosswalk	D	D	A	A
Summer Street/Dorchester Avenue				
Summer East Crosswalk	D	D	A	A
Summer West Crosswalk	D	D	A	A
Dorchester North Crosswalk	D	D	A	A
Summer Street/Melcher Street				
Summer West Crosswalk	C	C	A	A
Melcher South Crosswalk	B	B	A	A
Summer Street/World Trade Center Avenue/ Convention Center Drive				
Summer East Crosswalk	C	C	A	A
Summer West Crosswalk	C	C	A	A
World Trade Center North Crosswalk	C	C	A	A
Convention Center South Crosswalk	C	C	A	A

Table 3-9 Existing Conditions (2009) Pedestrian Levels of Service (Continued)

Intersection	Delay LOS		Space LOS	
	a.m.	p.m.	a.m.	p.m.
Signalized Intersections				
Summer Street/D Street				
Summer East Crosswalk	D	D	A	A
Summer West Crosswalk	D	D	A	A
D North Crosswalk	C	C	A	A
D South Crosswalk	C	C	A	A
Summer Street/Dry Dock Avenue/Pappas Way				
Summer East Crosswalk	C	C	A	A
Summer West Crosswalk	C	C	A	A
Dry Dock North Crosswalk	C	C	A	A
Pappas South Crosswalk	C	C	A	A
Unsignalized Intersections				
A Street/Melcher Street				
A North Crosswalk	F	F	—	—

* Gray shading indicates undesirable LOS.

As shown above, most locations operate at acceptable levels for both delay and space, with the following exceptions:

- The east crosswalk across Seaport Boulevard at Atlantic Avenue, which operates at LOS F and LOS E for space in the a.m. and p.m. peak hours, respectively;
- The south crosswalk across D Street at Congress Street, which operates at LOS F for space in the a.m. and p.m. peak hours; and
- The north crosswalk across Melcher Street at A Street, which operates at LOS F for delay in the a.m. peak hour. This location will be signalized in the Mid-term No-Build and Seaport Square Build analyses.

3.2.9 Existing Bicycle Conditions

Bicycle counts at selected area intersections were conducted at the same time vehicle turning movement counts were collected. Existing bicycle volumes are shown in Figure 3-17 and Figure 3-18 for weekday a.m. and p.m. peak hours.

Bicycle accommodations in the Project area currently consist of three components: local streets, the Harborwalk, and the South Bay Harbor Trail, as follows:

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Figure 3-17
Existing Conditions (2009) Bicycle Volumes, a.m. Peak Hour (8:00-9:00 a.m.), North of Summer Street

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Figure 3-18

Existing Conditions (2009) Bicycle Volumes, p.m. Peak Hour (4:45-5:45 p.m.), North of Summer Street

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Rubel's Urban Bike Map identifies several major local streets in the Project area as good routes for cycling, including Summer Street, L Street, A Street, Dorchester Avenue, and East Broadway. Specific bicycle accommodations such as bike lanes or "sharrows" are not present on these streets. Rubel includes them as suitable for cycling because of elements such as their width, the speed and density of automotive traffic, and pavement conditions. Some segments of these streets may be signed with bicycle route or "Share the Road" signs.

The Boston Harborwalk and South Bay Harbor trails are recreational pathways for the exclusive use of cyclists and pedestrians. In the Project area, the Harborwalk has two branches, one following the shoreline from Fan Pier south to Old Harbor Reservation, and another that follows the east side of Fort Point Channel south to South Bay Park. The South Bay Harbor Trail begins at Fan Pier and runs south along the east side of Fort Point Channel to South Bay Park. This trail terminates at the MBTA Orange Line Ruggles Station and provides a connection to the Pierre Lallement Bicycle Trail, which runs down the Southwest Corridor.

Figure 3-19 shows designated bicycle routes in the study area.

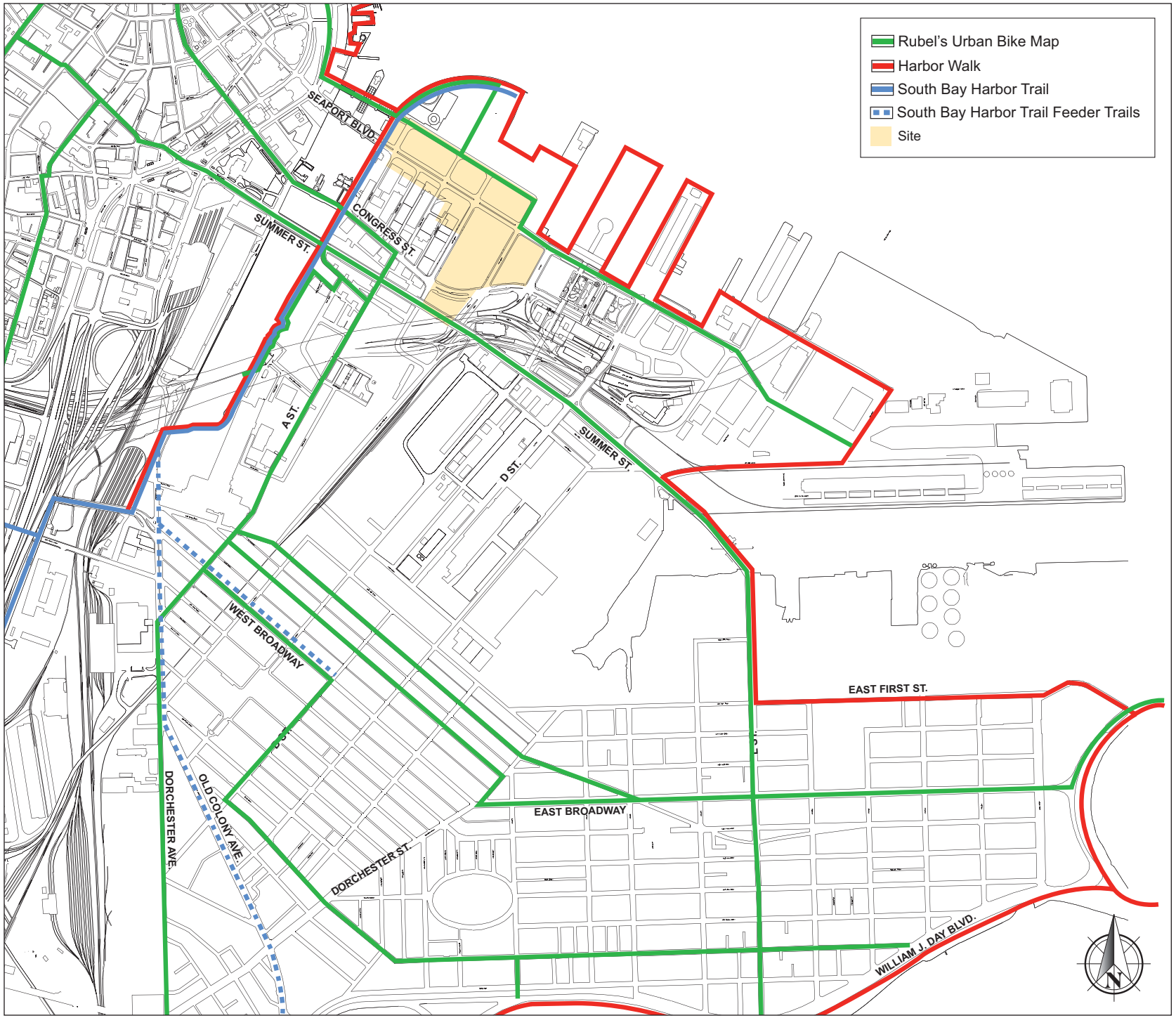
3.2.10 Loading and Service

Since the land use on all Seaport Square Blocks is parking lots, with the exception of the Chapel of Our Lady of Good Voyage, there is virtually no loading or building service activity within the area today. Trucks serving facilities located in the Designated Port Area, including the Boston Marine Industrial Park, use the designated routes shown in Figure 3-20. The proposed Seaport Square Project will not alter these truck routes.

3.3 Evaluation of Long-term Impacts

Because the time frame for all proposed projects is uncertain at this time, the analysis in this section presents a description and evaluation of four future scenarios:

- **Mid-term No-Build Conditions**, generally reflecting planned projects (other than the Seaport Square Project) and associated transportation improvements that are likely to proceed within the next 5 to 10 years;
- **Seaport Square Build Conditions** within the same Mid-term time frame, includes the net new trips generated by the Project overlaid on the Mid-term No-Build network;
- **Seaport Square Build with Mitigation**, incorporating measures that reduce intersection delay; and
- **South Boston Waterfront Long-term Conditions**, including all projects planned or proposed over a long-term horizon.



SEAPORT SQUARE
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Figure 3-19

Existing Designated South Boston Bicycle Routes

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prepared by:
Howard/Stein-Hudson Associates, Inc.

Source: *Notice of Project Change/Single Environmental Impact Report/Draft Project Impact Report EOEA #13367*: *Waterside Place.* Core Development Group, LLC. Boston, MA. February 26, 2007.

SEAPORT SQUARE
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Figure 3-20
Current South Boston Truck Routes

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Specific years are attached to neither set of conditions; rather, the projects more likely to advance sooner are included in Mid-term Conditions, while those less defined are included in South Boston Waterfront Long-term Conditions. The entire Seaport Square program is included in both Seaport Square (Mid-term) Build Conditions and South Boston Waterfront Long-term Conditions.

3.3.1 Mid-term No-Build Conditions

As stated above, the Mid-term No-Build traffic conditions include existing traffic volumes, new traffic resulting from background growth and development projects in the area, and any anticipated changes and/or improvements to roadway and intersection circulation, capacity, and traffic control expected in the next round of development. The following sections outline the methodology and assumptions used to develop and analyze the Mid-term No-Build Conditions.

3.3.1.1 Mid-term No-Build Development Projects and Background Growth

Two procedures are generally used in combination to determine background traffic growth. The first is to estimate traffic generated by planned new major developments and anticipated roadway changes. The second is to apply a general growth rate to account for changes in demographics, overall area development, auto usage, and auto ownership.

For the Mid-term No-Build scenario, the study team included in the traffic network projects within the entire "1,000 Acres" planning area, as well as some projects outside the 1,000 Acres identified by BRA. The 1,000 Acres encompasses the South Boston land area east of Fort Point Channel, north of the Reserved Channel, and north of West First Street, as shown in Figure 3-3, above. Seaport Square impacts were added to this traffic for the Seaport Square Build Conditions analysis. In addition to these scenarios, a South Boston Waterfront Long-term Conditions scenario was developed to reflect an even larger group of projects that have been proposed or identified as possible.

The starting point for the land use summary was the CA/T 1990 existing conditions as set forth in the document known as the "Green Book".[1] Traffic impacts of those projects, as well as those listed under the heading "Projects Built Since 1990," are included in the current count data that that were used to create the traffic model used for the Seaport Square Project. For the projects in three categories, "Projects under Construction," "Projects with BRA Board Approval," and "Projects under Review," trips were estimated according to the information in each project's filing. For the remaining two categories contained in the 1,000 Acres area, "Projects Not Yet in Review–Planned by 2015" and

[1] *Land Use Projections for the Expanded Boston Metropolitan Core 1990–2010: Central Artery/Third Harbor Tunnel Project.* Prepared for Massachusetts Highway Department by Cambridge Systematics, Inc. December 1992.

"Projects Planned by 2020," the trips were generated based on the BRA's assumptions of land use and density. The spreadsheet model of land use and density has been configured so that these projects can be updated easily for input into the Synchro micro-scale model.

In addition to the 1,000 Acres land use, the model also includes other projects outside the 1,000 Acres that BRA staff has identified. These include a number of projects in residential South Boston, as well as several along Fort Point Channel west of the 1,000 Acres. It should be noted that this model covers local streets but does not look at potential Long-term capacity issues related to the I-90 main line or ramps.

A complete listing of all projects included in each group is found in Appendix B-6.

To make the complex traffic analysis workable and understandable, projects were divided into two groups:

- *Key Area Projects Added Specifically to the Network* – Includes six key projects with the largest peak-hour trip generation, whose volumes accounted for approximately 86% of Mid-term No-Build trip generation. The study team developed a unique vehicular trip distribution pattern for each of the six projects based on the CA/T model overall trip distribution pattern for travel into and out of the waterfront area and the specific project location. Vehicle trips associated with these projects were then assigned to the study area intersections using their respective distributions. These large-scale projects have already cleared permitting; some have actually begun construction. Their projected traffic volumes are added specifically to the network.

    - *Channel Center Phases 2–4 –* When complete, Channel Center, a mixed-use project, will include 101,400 square feet of retail space, 525,400 square feet of office space, and 400 residential units. Access is from A Street to Channel Center Street.

    - *Fan Pier –*The Fan Pier project, a mixed-use development, will include 2.9 million square feet of built space. The first phase of this work includes the Institute of Contemporary Art, completed in 2006, and ongoing construction at Parcel F. When completed, Parcel F will include an 18-story office building of 493,000 square feet. Access is from Old Northern Avenue.

    - *Waterside Place* – The Waterside Place project, a mixed-use development, includes 640,000 square feet of retail space comprising small shops, a grocery store, and restaurants. The project also includes 200 residential units, 300 hotel rooms, a 20,000-square-foot visitor center, and 2,350 parking spaces. Access will be from Congress Street.

- *South Station Air Rights* – The South Station Air Rights project, a mixed-use development, includes 1.375 million square feet of office space, a 200-room hotel, 170 residential units, and 934 parking spaces. Access to this project is via the South Station Connector or Atlantic Avenue. Trip generation and distribution information was obtained from the *South Station Final Environmental Impact Report/Project Impact Report,* prepared in 2005.

- *Boston Cargo Terminal* – The Boston Cargo Terminal is a proposed waterfront project that calls for creation of an intermodal freight facility on the North Jetty site, north of FID Kennedy Street. Access will be from Tide Street.

- *100 Acres* – The 100 Acres area includes various parcels along A Street in South Boston. The area has an approved Planned Development Agreement that allows a mixed-use project of approximately 6,000,000 square feet. For planning purposes, trips generated by the space that has not yet been developed have been analyzed in two groups. Analyzed in the Mid-term No-Build network is the expected near-term buildout, estimated at two-thirds of the total approved square feet, including 1.6 million square feet of office space, 262,000 square feet of retail, 33,000 square feet of cultural/recreational space, 528,000 square feet of hotel space, and 1.6 million square feet of residential space, consistent with the assumptions used in analyzing A Street traffic in the100 Acres area.

♦ *Additional Projects Included in Background Growth* – The impacts from the remaining 18 projects account for about 14% of the additional overall area-wide trip generation and were accounted for using background growth rates developed on the basis of added floor space. Due to the breadth of the land area that encompasses these projects and the large variance in land use intensity associated with each, the modelers developed annualized growth rates for three distinct zones within the study area:

- Zone 1 – Waterfront Area, 1.7% per year. This zone includes study area intersections generally bounded by Northern Avenue to the north, Melcher Street to the south, Dry Dock Avenue to the east, and Atlantic Avenue to the west.

- Zone 2 – A Street Corridor Area, 0.8% per year. Zone 2 includes study area intersections generally bounded by Necco Street to the north, Old Colony Avenue to the south, South Boston Bypass Road to the east, and Dorchester Avenue to the west.

- Zone 3 – D Street and L Street Corridors (south of Summer Street), 0.4% per year. Zone 3 includes study area intersections generally bounded by East First Street to the north, William J. Day Boulevard to the south, L Street to the east, and D Street to the west.

It should be noted that these annualized growth rates were calibrated over a six-year horizon specific to the 18 projects included in this category assumed to be constructed within the Mid-term time frame.

3.3.1.2 Project Traffic Added to the Mid-term No-Build Network

Projects that were added specifically to the Mid-term No-Build network or incorporated into the background growth rate are illustrated in Figure 3-21 and summarized in Table 3-10. Together, these projects account for about 15 million square feet of space.

3.3.1.3 Combined Mid-term No-Build Land Use Scenario

As shown in Table 3-10, the combined list of Mid-term No-Build projects adds approximately 15 million square feet of land use to the South Boston 1,000 Acres area beyond what has been constructed and occupied since 2000. The overall mix of new land use expected to be developed in the 1,000 Acres area in the Mid-term time frame is 34% residential, 19% hotel, 35% office, 8% retail, and 4% other. Because there is a high proportion (53%) of residential/hotel uses, traffic generation estimates are generally reduced from prior forecasts that were more heavily oriented to commercial uses.

Table 3-10 South Boston Mid-term No-Build Land Use

Project[1]	Hotel (sf)	Retail (sf)	Office (sf)	Residential (sf)	Other[2] (sf)	TOTAL[3] (sf)
Projects Added Specifically to Network						
1. Channel Center, Phases 2–4		101,376	525,407	483,874		1,110,657
2. Fan Pier	678,000	134,420	1,223,380	900,000		2,935,800
3. Waterside Place	300,000	640,000		305,000	20,000	1,265,000
4. South Station Air Rights	415,000		1,360,000			1,775,000
5. Boston Cargo Terminal					510,552	510,552
6. 100 Acres Buildout (2/3 of total)	528,000	262,231	1,568,384	1,568,384	33,000	3,959,999
Subtotal	**1,921,000**	**1,138,027**	**4,677,171**	**3,257,258**	**563,552**	**11,557,008**
Projects Included in Growth Factor						
7. 154 West Second Street				75,000		75,000
8. 316–322 Summer Street		3,000	132,600			135,600
9. 346–354 Congress Street (FP3)		3,000		97,000		100,000
10. Channel Wharf				86,045		86,045
11. 3 Dorchester Street, Ph. II				34,320		34,320
12. Old Colony Square		2,035		26,885		28,920
13. 311 Summer Street		9,500	48,500			58,000
14. Emerald Court		3,670		245,000		248,670
15. Pier 4	310,000			240,700		550,700

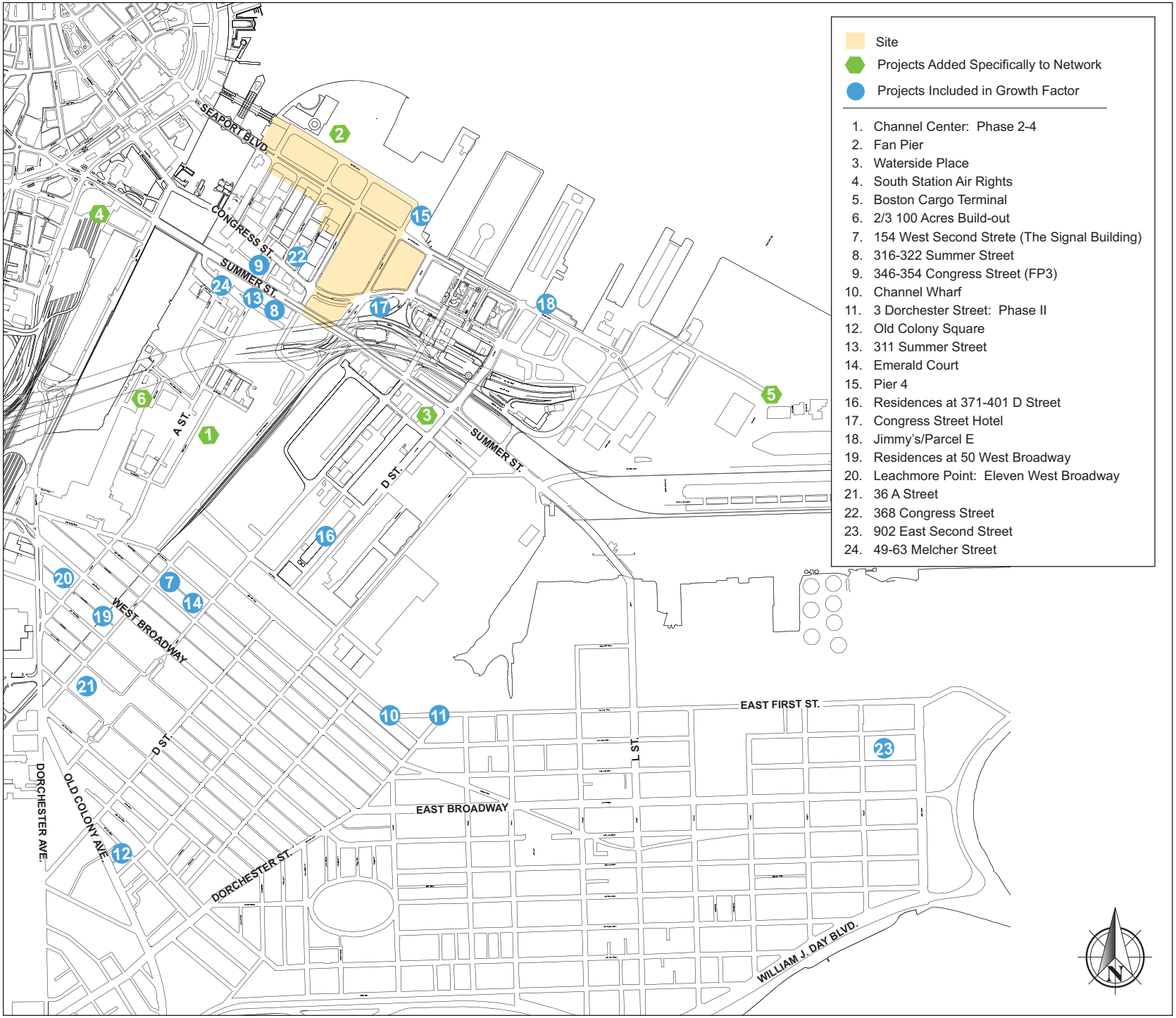

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Figure 3-21

Key Area Projects in Mid-term No-Build Network

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Table 3-10 South Boston Mid-term No-Build Land Use (Continued)

Project[1]	Hotel (sf)	Retail (sf)	Office (sf)	Residential (sf)	Other[2] (sf)	TOTAL[3] (sf)
Projects Included in Growth Factor						
16. Residences at 371–401 D Street				690,000		690,000
17. Congress Street Hotel	532,489					532,489
18. Jimmy's/Parcel E		30,000	15,000			45,000
19. The Residences at 50 West Broadway		3,546		145,358		148,904
20. Leachmore Point, 11 West Broadway				64,000		64,000
21. 36 A Street				39,000		39,000
22. 368 Congress Street		9,000	91,451			100,451
23. 902 East Second Street				45,000		45,000
24. 49–63 Melcher Street		36,000	199,400			235,400
Subtotal	**842,489**	**99,751**	**486,951**	**1,788,308**		**3,217,499**
Total Added for Mid-term Case	**2,763,489**	**1,237,778**	**5,164,122**	**5,045,566**	**563,552**	**14,774,507**
Land Use % of Total	**19%**	**8%**	**35%**	**34%**	**4%**	**100%**

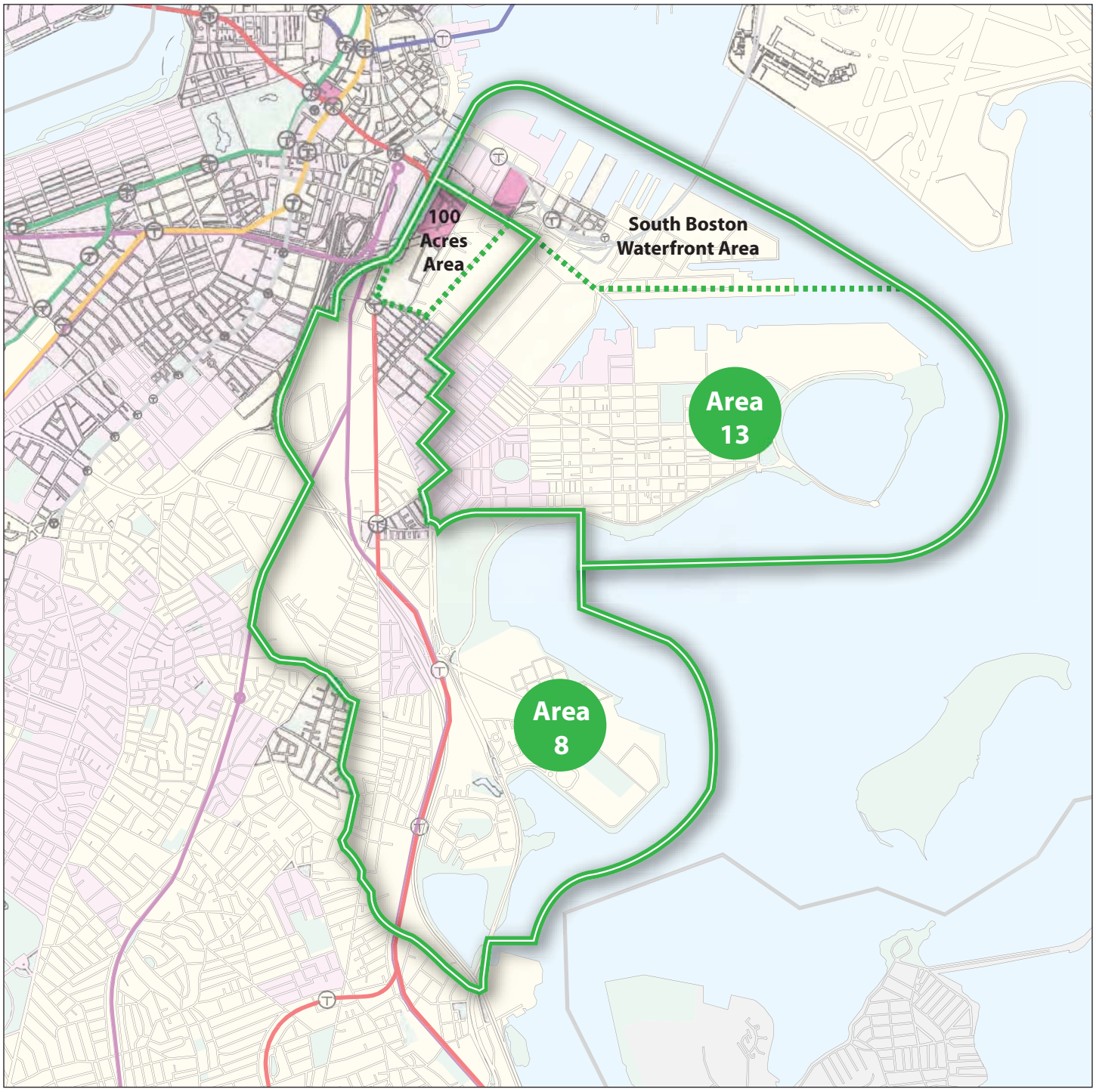
[1] Numbering does not reflect sequence in which projects will be implemented.
Total square footage does not take into consideration existing public parking spaces located within the 1,000 Acres area that will be displaced with the proposed developments.
"Other" includes recreational, cultural, manufacturing, and industrial uses.

3.3.1.4 Mode Split

For transportation analyses in Boston, the standard practice is to adopt vehicle, transit, and bicycle/walk mode splits published by BTD. The two BTD areas that encompass South Boston are Area 8 (Harbor Point) and Area 13 (South Boston), as shown in Figure 3-22.

The current BTD mode shares, however, do not specifically reflect the 2004 opening of Phase II of the Silver Line or the proposed future expansion of the Silver Line through Downtown. As a result, several studies have assessed future mode shares in the South Boston area, including:

- 100 Acres;
- Massport's Commonwealth Flats Development Area;
- Fan Pier;
- Pier 4; and
- Boston Convention and Exhibition Center.



Not to scale.

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Figure 3-22

Mode Split Analysis Areas in South Boston

For projects located in Area 8, this analysis uses BTD mode shares for Area 8 with the exception of the 100 Acres parcels, for which the analysis uses the mode shares developed by others as part of the 100 Acres master planning effort.

For Area 13, mode shares for the South Boston waterfront sub-area were developed to accurately reflect transit options of the future and to maintain consistency with previous studies. These mode shares, which both BTD and the BRA have reviewed and deemed appropriate, have been applied to the trip generation for all Mid-term No-Build projects located in the South Boston waterfront sub-area. For comparison, BTD Area 13 mode shares are also included in Table 3-11.

Table 3-11 Mode Shares by Time of Day

		South Boston Waterfront Area			BTD Area 13		
		Walk/Bike Share	Transit Share	Vehicle Share	Walk/Bike Share	Transit Share	Vehicle Share
Daily							
Residential	In	39%	35%	26%	34%	19%	47%
	Out	39%	35%	26%	34%	19%	47%
Hotel	In	41%	22%	37%	43%	5%	52%
	Out	41%	22%	37%	43%	5%	52%
Cultural	In	28%	42%	30%	43%	5%	52%
	Out	28%	42%	30%	43%	5%	52%
School	In	28%	42%	30%	43%	5%	52%
	Out	28%	42%	30%	43%	5%	52%
Office	In	20%	49%	31%	22%	21%	57%
	Out	20%	49%	31%	22%	21%	57%
Retail/Restaurant	In	27%	34%	39%	43%	5%	52%
	Out	27%	34%	39%	43%	5%	52%
a.m. Peak Hour							
Residential	In	39%	35%	26%	36%	16%	49%
	Out	39%	35%	26%	42%	24%	34%
Hotel	In	43%	20%	37%	43%	4%	53%
	Out	48%	15%	37%	54%	6%	40%
Cultural	In	0%	62%	38%	43%	4%	53%
	Out	0%	62%	38%	54%	6%	40%
School	In	29%	41%	30%	43%	4%	53%
	Out	31%	40%	29%	54%	6%	40%
Office	In	12%	55%	33%	23%	17%	60%
	Out	48%	25%	27%	29%	27%	44%
Retail/Restaurant	In	0%	62%	38%	43%	4%	53%
	Out	15%	46%	39%	54%	6%	40%
p.m. Peak Hour							
Residential	In	39%	35%	26%	42%	24%	34%
	Out	39%	35%	26%	36%	16%	49%
Hotel	In	48%	15%	37%	54%	6%	40%
	Out	44%	19%	37%	43%	4%	53%

Table 3-11 Mode Shares by Time of Day (Continued)

		South Boston Waterfront Area			BTD Area 13		
		Walk/Bike Share	Transit Share	Vehicle Share	Walk/Bike Share	Transit Share	Vehicle Share
p.m. Peak Hour							
Cultural	In	25%	44%	31%	54%	6%	40%
	Out	28%	42%	30%	43%	4%	53%
School	In	31%	40%	29%	54%	6%	40%
	Out	28%	42%	30%	43%	4%	53%
Office	In	34%	37%	29%	29%	27%	44%
	Out	11%	56%	33%	23%	17%	60%
Retail/Restaurant	In	23%	38%	39%	54%	6%	40%
	Out	23%	38%	39%	43%	4%	53%

3.3.1.5 Trip Generation

The study team estimated trip generation for each of the six key development projects using the building program information obtained from the City, as previously shown in Table 3-11. The trip generation was based on rates derived from ITE's *Trip Generation* (7th edition, 2003) fitted curve equations and/or average trip rates, as appropriate, using the following ITE land use codes (LUCs):

LUC 110 — General Light Industrial. Light industrial facilities emphasize activities other than manufacturing and typically have minimal office space. Calculations of the number of trips use ITE's average rate per 1,000 square feet.

LUC 220 — Residential Apartment. Apartments are defined as rental dwelling units in the same building as at least three other such units. Calculations of the number of trips use ITE's average rate per number of dwelling units.

LUC 230 — Residential Condominium/Townhouse. This land use code refers to units with single-family ownership that have at least one other single-family-owned unit within the same building structure. Calculation of the number of vehicle trips uses ITE's average rate per dwelling unit.

LUC 310 — Hotel. The hotel land use code is defined as a place of lodging that provides sleeping accommodations and supporting facilities such as restaurants, cocktail lounges, meeting and banquet rooms or convention centers, limited recreational facilities (e.g., pool, fitness room), and/or other retail services or shops. Calculation of the number of vehicle trips uses ITE's average rate per room.

LUC 710 — General Office. General office is defined as an office building containing multiple tenants. An office building typically contains a mixture of professional services. Calculations of the number of vehicle trips use ITE's average rate per 1,000 square feet.

LUC 820 — Retail/Shopping Center. A shopping center is an integrated group of commercial establishments that is planned, developed, owned, and managed as a unit. A shopping center's composition is related to its market area in terms of size, location, and type of store. Due to the Project's downtown location, the retail activity is expected to exhibit the trip generation characteristics of a portion of a shopping district. Therefore, LUC 820 is the most comparable category for trip generation. Calculations of the number of vehicle trips uses ITE's average rate per 1,000 square feet. While it is too early in the planning and design process to differentiate the varied types of retail stores, transportation studies for individual phases of the Project will be based on more detailed characterization of the retail use.

Land Use — Cultural Center. This land use is based on local, empirical data obtained by the study team. No equivalent ITE trip generation was available for this type of use.

Trip generation tables for each project are shown in Appendix B-7.

3.3.1.6 Displaced Trips

Existing vehicle trips that will be displaced by the proposed Mid-term No-Build development projects that are currently included in the 2009 Existing Conditions traffic networks (excluding the Seaport Square Project) were also taken into account. While most of the existing parcels are generally underutilized in terms of land use, several parcels within the study area contain a sizable amount of public parking that will be replaced by the Mid-term No-Build projects (see Table 3-12); these public parking spaces generate a substantial volume of weekday peak-hour vehicle trips.

Table 3-12 Displaced Off-street Parking under Mid-term No-Build Conditions

Address	Affected Facility	Mid-term No-Build Project	Type	Public Capacity
284 A Street	Channelside Parking Lot	100 Acres	Public	1,256
309 A Street	USPS Employee Parking	100 Acres	Private	1,787
28 Northern Avenue	Pilgrim Parking	Fan Pier	Public	1,026
140 Northern Avenue	Pier 4 Inc.	Pier 4	Public	300
			Parking Lot Subtotal	**4,369**

NOTES:

Lots will be displaced by Seaport Square Project development.

Weekday peak-hour utilization at 140 Northern Avenue and 309 A Street was noted by the study team to be significantly below the capacity at the time of the existing traffic counts.

Typical weekday peak-hour utilization at all of the lots listed above was taken into consideration when developing trip generation estimates; vehicle trip generation for 309 A Street was based on existing peak-hour driveway counts performed by the study team.

Consistent with the methodology used for the Seaport Square PNF/ENF, the study team calculated the existing peak-hour trip generation for the public parking spaces to identify the net new trip generation associated with Mid-term No-Build Conditions. Trip generation estimates for the approximately 4,369 surface parking spaces were based on a combination of data collected by the study team at existing similar public parking facilities and from driveway count data. Typical existing peak-hour utilization of each of these parking lots was considered when developing trip generation rates. No credit was taken for other existing displaced land uses.

3.3.1.7 Mid-term No-Build Roadway Improvements

Independent of the Seaport Square Project, the following additional improvements were assumed to have been implemented by others:

- *Central Artery/Tunnel South Boston Intersection Optimization Project*. BTD monitors traffic operations throughout the City at the Traffic Operations Center and adjusts timings and phasings, as needed, to improve traffic flow. As part of a city-wide contract, BTD is studying 16 intersections in the Seaport Square study area. The goals are to improve reliability and predictability of travel along arterial routes, air quality, and safety. The improvements, especially important here as they will "fine tune" signal operations for the first time since the CA/T changes are complete in this area, will use existing traffic signal equipment. Methods will include changes to background cycle length, split adjustments, offset adjustments, removal of exclusive and/or concurrent pedestrian phases, changes to curbside use, and evaluation of the impact of pedestrian recall operations on overall signal operations. Since these improvements are slated for short-term implementation, the study team evaluated the study intersections with improved, or optimized, signal timings for Mid-term No-Build Conditions.

- *Foundry Street Connector.* Foundry Street is currently a surface street that runs north–south between Dorchester Avenue at Gillette's Gate 3 to a point under the West Fourth Street Bridge, where it continues south into an MBTA-owned facility. The street also passes under the Broadway Bridge and has an intersection with Greenbaum Street that provides a connection to Dorchester Avenue. The proposed Foundry Street connector will start on the West Fourth Street Bridge (elevated section) and continue down to the existing surface street level of Foundry Street at a point south of the Broadway Bridge. It will continue north, as today, under the Broadway Bridge to Dorchester Avenue at Gate 3. A new intersection at Foundry Street and West Second Street will provide a more direct connection for traffic on West Second Street to the West Fourth Street Bridge, allowing some local traffic to bypass the intersections of Broadway/ Dorchester Avenue and West Fourth Street/ Dorchester Avenue. Trips have been assigned to this connector in keeping with overall CA/T trip distribution assumptions. The connector and associated impact on trip distribution are incorporated into the Mid-term No-Build traffic networks.

- *A Street Widening.* As part of 100 Acres project implementation, A Street will be widened to two lanes in each direction between Melcher Street and West Second Street. This widening is incorporated into the Mid-term No-Build traffic networks.

- *Melcher Street/A Street Traffic Signal Installation and Circulation Changes.* A new traffic signal will be installed at this currently unsignalized intersection in future-year conditions. In an effort to simplify signal phasing and improve traffic operations at this intersection, the USPS will convert its currently two-way driveway (i.e., the eastern leg of the intersection) to a one-way-in-only operation. Vehicles will then exit the site via an existing, but currently closed, curb-cut on West Service Road. At the completion of this signal project, the Melcher Street eastbound approach and the A Street northbound and southbound approaches will each consist of a single, shared left-turn/through/right-turn lane. Crosswalks and handicapped-accessible ramps will be provided across all approaches. However, with the future widening of A Street as described above, the northbound approach and southbound receiving lanes at this location will each consist of two lanes. This signal and circulation change is incorporated into the Mid-term No-Build traffic networks.

- *Congress Street and Summer Street Crossroads Project.* Plans for these streets are part of a larger improvement effort being undertaken by the City for streets that intersect with the Rose Fitzgerald Kennedy Greenway. Corridor-wide improvements have been proposed for both Congress and Summer streets, including reconstruction of roadways and sidewalks and other streetscape improvements. These improvements are currently in the planning stage and were therefore not included in the Synchro analyses for future conditions. Proposed improvements include:

  - Summer Street at Melcher Street: Proposals include sidewalk widening and streetscape improvements on both sides of Summer Street, as well as the addition of bicycle lanes—all east of Melcher Street. Shorter and realigned crosswalks and signal timing improvements are also proposed for the intersection. The current lane use configuration at the intersection will be maintained. These improvements are incorporated into the Mid-term No-Build traffic networks.

  - Congress Street at A Street and Thomson Place: Proposed improvements include upgraded pavement markings and limited sidewalk widening to shorten pedestrian crossings and better define on-street parking areas. Signal timing improvements are also proposed. The current lane use at the intersection will be maintained. These improvements are incorporated into the Mid-term No-Build traffic networks.

  - Congress Street at Boston Wharf Road: Proposed improvements include changing the lane use at the Congress Street eastbound approach to provide an exclusive left-turn lane and a through/right-turn lane. Upgraded signage and

pavement markings at the Congress Street eastbound approach (west of Boston Wharf Road) will be implemented to reinforce the lane use change at the Congress Street eastbound approach. Updated signage and pavement markings will also provide better definition of the pedestrian crossing at this approach, as well as provide an on-street parking area along the southerly side of Congress Street during off-peak hours; this area is currently a no-parking zone. Peak-hour parking restrictions will be put in place to allow this parking lane to operate as a third eastbound travel lane during peak hours. Signal phasing and timing improvements supporting the change in lane use at the Congress Street eastbound approach are also proposed for the intersection. The current lane use at the other three intersection approaches will be maintained. It is assumed that these changes to this intersection, if made, would be made on an interim basis prior to the conversion of Boston Wharf Road from a two-way to a one-way southbound roadway. Because the proposed improvements at this intersection will occur in the near-term, and do not reflect the longer-term plan to convert Boston Wharf Road to one-way southbound, they were not incorporated into the Mid-term No-Build traffic networks

- Summer Street at Dorchester Avenue and Congress Street at Dorchester Avenue: No infrastructure improvements are currently planned for these locations, but signal timing improvements are proposed to accommodate the additional volumes associated with the expected future development of the Fort Point Channel District. These signal timing improvements are incorporated into the Mid-term No-Build traffic networks.

- *Other Area Improvements*: Other improvements include the following:

  - A proposed bus drop-off area is planned along the northerly edge of Congress Street, west of Sleeper Street and adjacent to the Boston Children's Museum. This bus drop-off area will be identified by special pavement markings. In addition, the proposed geometry on Congress Street in the vicinity of the bus drop-off area has been designed to include improved sight lines for vehicles and pedestrians at this location. This improvement is incorporated into the Mid-term No-Build traffic networks.

  - A redesigned and relocated mid-block pedestrian crossing has been requested by BTD for Summer Street at its overpass with A Street. The pedestrian signal warrant analysis and potential design is currently underway. If warranted, this mid-block crossing will be included in future plan submissions. This pedestrian signal is not explicitly incorporated into the Mid-term No-Build traffic networks.

  - A redesigned and relocated mid-block pedestrian crossing has been requested by BTD for Congress Street in front of the Boston Children's Museum. The pedestrian signal warrant analysis and potential design are currently underway. If

warranted, this mid-block crossing will be included in future plan submissions. This pedestrian signal is not explicitly incorporated into the Mid-term No-Build traffic networks

- *A Street/West Broadway Traffic Signal and Intersection Improvements.* As part of its mitigation commitments, the Channel Center developer is funding an upgrade of the existing traffic signal at the intersection of A Street and West Broadway, as well as installation of a Pan-Tilt-Zoom traffic camera to help reduce traffic delays at the intersection, allowing the location to be monitored from BTD's Traffic Operations Center. A second project, 50 West Broadway, is implementing a widening of south-bound A Street between Athens Street and West Broadway, and installation of new handicapped-accessible ramps in compliance with the Americans with Disabilities Act. In addition, "No Turn on Red" restrictions will be added to the northbound and southbound A Street approaches as a safety measure. These improvements are reflected in the Mid-term No-Build traffic networks.

- *Boston Wharf Road Circulation Changes.* The City plans to convert Boston Wharf Road, which is currently two-way, to a one-way, southbound-only roadway between Congress Street and Seaport Boulevard. Operations at the intersections that will be impacted by this circulation change include:

  - *Congress Street/West Service Road (Boston Wharf Road)* will continue to operate as a four-leg, signalized intersection. The Congress Street eastbound approach will consist of a through lane and a shared through/right-turn lane. The Congress Street westbound approach will consist of a left-turn lane and two through lanes. Parking will be allowed along both sides of Congress Street east of the intersection; west of the intersection, however, parking will be prohibited along Congress Street. The West Service Road northbound approach will comprise a left-turn lane and a right-turn lane. The Boston Wharf Road southbound approach will change from a two-way to a one-way circulation pattern southbound and will consist of an exclusive left-turn lane, a through lane, and an exclusive right-turn lane. Parking will be allowed on Boston Wharf Road north of the intersection on the east side only. All approaches will have sidewalks, handicapped-accessible ramps, and crosswalks. The changes described above are incorporated into the Mid-term No-Build traffic networks.

  - *Seaport Boulevard/Boston Wharf Road* will continue to operate as a signalized T intersection. The Seaport Boulevard eastbound approach will consist of one through lane and one shared through/right-turn lane. The Seaport Boulevard westbound approach will consist of one exclusive left-turn lane and two through lanes. The Boston Wharf Road northbound approach will be converted to one-way southbound travel only. The change to a one-way pattern opens up significant capacity at this intersection and has been incorporated into the Mid-term No-Build traffic networks.

- *Construction of Wormwood Street and Fort Point Avenue* – As part of the 100 Acres project, Wormwood Street and Fort Point Avenue are proposed to be constructed as a one-way pair. Wormwood Street will run one-way eastbound with two lanes running from Necco Street to Haul Road, intersecting with Haul Road at the same location as the existing intersection of West Service Road/Haul Road. For purposes of this analysis, it is assumed that the intersection will continue to operate on flash with stop control for the Wormwood Street eastbound approach only. Fort Point Avenue will run one-way westbound, with two lanes from Haul Road to Necco Street. Sidewalks will be provided on each of the two streets. This change is incorporated into the Mid-term No-Build traffic networks.

- *Extension of Thomson Street to Seaport Boulevard.* Currently, Thomson Place runs from Congress Street to a point south of Seaport Boulevard, where it serves a parking lot. Jersey barriers currently prevent Thomson Place traffic from traveling through to Seaport Boulevard. Now that construction of the MBTA's Silver Line tunnel is complete under Seaport Boulevard, the City and the MBTA plan to reopen Thomson Place to through traffic by removing the barriers, creating a T intersection with Seaport Boulevard. The street would then be renamed to "Thomson Street." The Silver Line Courthouse Station has a headhouse on Seaport Boulevard, on the southwest corner of the intersection. For purposes of this analysis, it is assumed that the intersection will be signalized to accommodate the expected increase in pedestrian and traffic volumes and that crosswalks will be provided across both Thomson Street and Seaport Boulevard. The Seaport Boulevard eastbound approach will consist of one through lane and a shared through/right-turn lane. The Seaport Boulevard westbound approach will consist of one shared left-turn/ through lane and one through lane. The Thomson Street northbound approach will consist of one exclusive left-turn lane and one exclusive right-turn lane. An exclusive, pushbutton-activated pedestrian phase will be provided. This change is incorporated into the Mid-term No-Build traffic networks.

- *Dorchester Avenue/B Street/West 7th Street/Old Colony Avenue Improvements.* As part of the Dorchester Avenue Reconstruction project, the City of Boston will replace handicapped-accessible ramps, change clearance interval and phasing split lengths, and signalize the driveway on the west side of the intersection. The project will replace the existing flush cobble median along Dorchester Avenue with a raised island to enhance safety at the intersection. With the median in place, vehicles will no longer be able to turn left from B Street or West Seventh Street onto Dorchester Avenue southbound. These changes are incorporated into the Mid-term No-Build traffic networks.

3.3.1.8 Traffic Analysis Factor Assumptions and Adjustments

Due to the large number of development projects within and near the area that are included in the Mid-term No-Build Conditions, the study team adjusted peak-hour factors (PHFs) and heavy vehicle percentages (HV %s) to take into account anticipated changes in traffic volume characteristics and travel patterns as a result of the new traffic generated by these projects.

A PHF reflects the pattern of vehicle activity at an intersection over the course of an hour. A very marked peak in traffic flow due to, for example, a large number of employees traveling to a shift start, results in a low PHF, indicating that flow is not uniform throughout the hour. Steady traffic flows throughout the hour result in a higher PHF. Due to low traffic demand at many of the intersection approaches within the study area, small fluctuations in demand can easily skew PHFs, often resulting in very low PHFs. As the nature of land use changes over time, and as intersections near and/or reach capacity, demand will become more uniform throughout the peak hour, resulting in PHFs closer to 1.0. However, to avoid losing the travel characteristics of low-volume approaches within the network that are not expected to change significantly in the South Boston Waterfront Long-term Conditions, a global change to PHFs was avoided; a tiered, volume-based method was developed to set minimum PHFs. The volume-based method was used to reflect the more uniform traffic demand that is anticipated with the associated increase in volume.

Similarly, heavy vehicle percentages were recalculated based on the projected change in volume by intersection approach associated with the Mid-term No-Build projects; it was assumed that the number of heavy vehicles in the study area would increase on average by 0.25% per year.

3.3.1.9 Pedestrian Growth

As new development projects are completed in the study area, pedestrian activity will increase. Existing weekday a.m. and p.m. peak-hour pedestrian trips were increased for Mid-term No-Build and Seaport Square Build Conditions based on the percentage of increase in floor area accounted for above. In an effort to simplify the process, a pedestrian growth factor was calculated based on the projected net increase in overall square footage, trip generation, and mode share data for the area. The resulting growth factor was estimated at 1.5 (or 50% increase), which corresponds to an annualized growth rate of approximately 8.5% per year specific to the six-year horizon. This growth factor was then applied to the existing pedestrian volumes to create the Mid-term No-Build pedestrian volumes. The increased pedestrian volumes were incorporated into the Mid-term No-Build traffic operations analysis, where applicable.

3.3.1.10 Mid-term No-Build Traffic Operations

The Mid-term No-Build analysis uses the same analysis methodology described in Section 3.2.5 for Existing Conditions.

Mid-term No-Build traffic volumes are shown in Figure 3-23 through Figure 3-26 for the a.m. and p.m. peak hours. The resulting intersection operations are shown in Table 3-13. Complete Synchro reports are provided in Appendix B-3.

Table 3-13 Mid-term No-Build Conditions Level of Service Summary

Intersection	a.m. Peak	p.m. Peak
Signalized Intersections		
Seaport Boulevard/Atlantic Avenue	E	F
Seaport Boulevard/Sleeper Street	F	C
Seaport Boulevard/Boston Wharf Road	A	A
Seaport Boulevard/East Service Road	D	D
Seaport Boulevard/B Street	E	D
Seaport Boulevard/Northern Avenue/ D Street (southbound)/Fish Pier Street	C	C
Northern Avenue/D Street (northbound)	E	D
Congress Street/Dorchester Avenue	C	C
Congress Street/A Street/Thomson Place	D	E
Congress Street/West Service Road/Boston Wharf Road	D	C
Congress Street/Off-ramp C/Off-ramp I/East Service Road	D	C
Congress Street/On-ramp D/Off-ramp F/B Street	F	E
Congress Street/D Street	C	E
D Street/Silver Line Way	A	A
Summer Street/Dorchester Avenue	E	E
Summer Street/Melcher Street	D	E
Summer Street/World Trade Center Avenue/ Convention Center Drive	B	B
Summer Street/D Street	D	E
Summer Street/Dry Dock Avenue/Pappas Way	E	D
Dorchester Avenue/West Broadway	D	D
Dorchester Avenue/West Fourth Street	B	C
Dorchester Avenue/A Street	A	B
Dorchester Avenue/Old Colony Avenue	C	B
A Street/West Broadway	C	F
A Street/West Second Street	B	B
West Broadway/D Street	D	D
West Broadway/East Broadway/Dorchester Street	E	F
Summer Street/East First Street	E	C

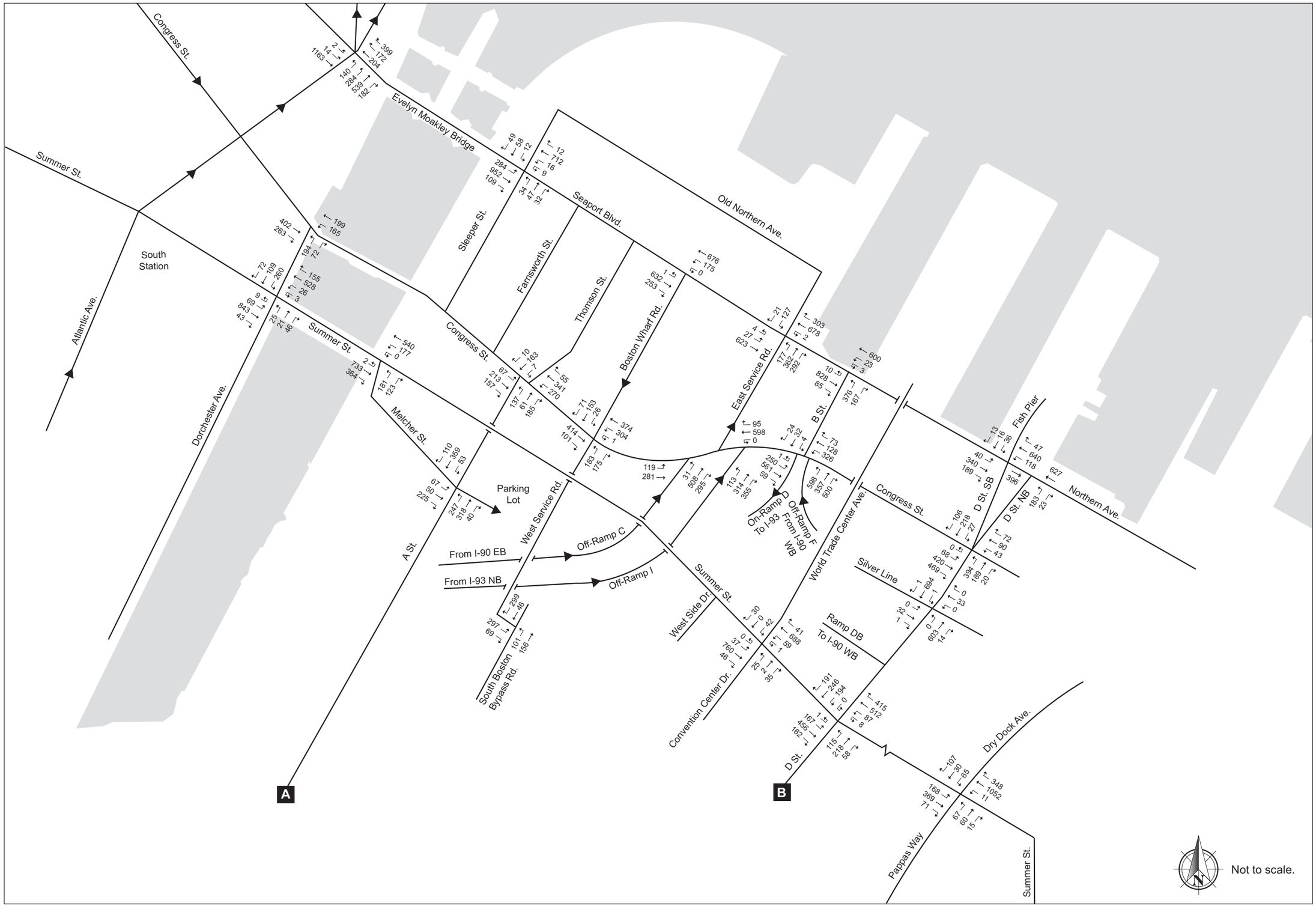


Figure 3-23

Mid-term No-Build Conditions Turning Movement Volumes, a.m. Peak Hour, North of Summer Street

SEAPORT SQUARE
IN SOUTH BOSTON

GALE INTERNATIONAL

Morgan Stanley

WS DEVELOPMENT

prepared by:
Howard/Stein-Hudson Associates, Inc.

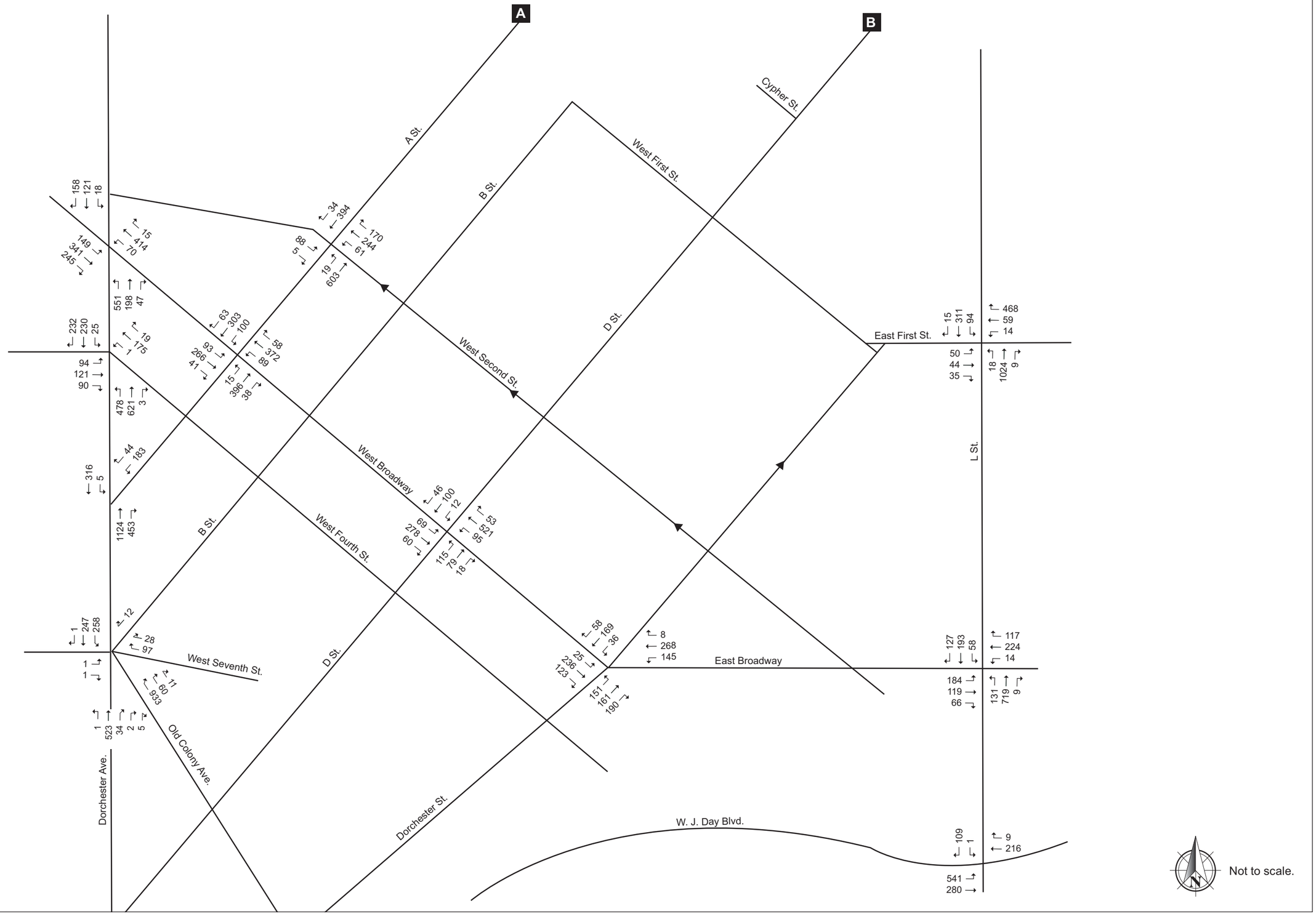


Figure 3-24
Mid-term No-Build Conditions Turning Movement Volumes, a.m. Peak Hour, South of Summer Street

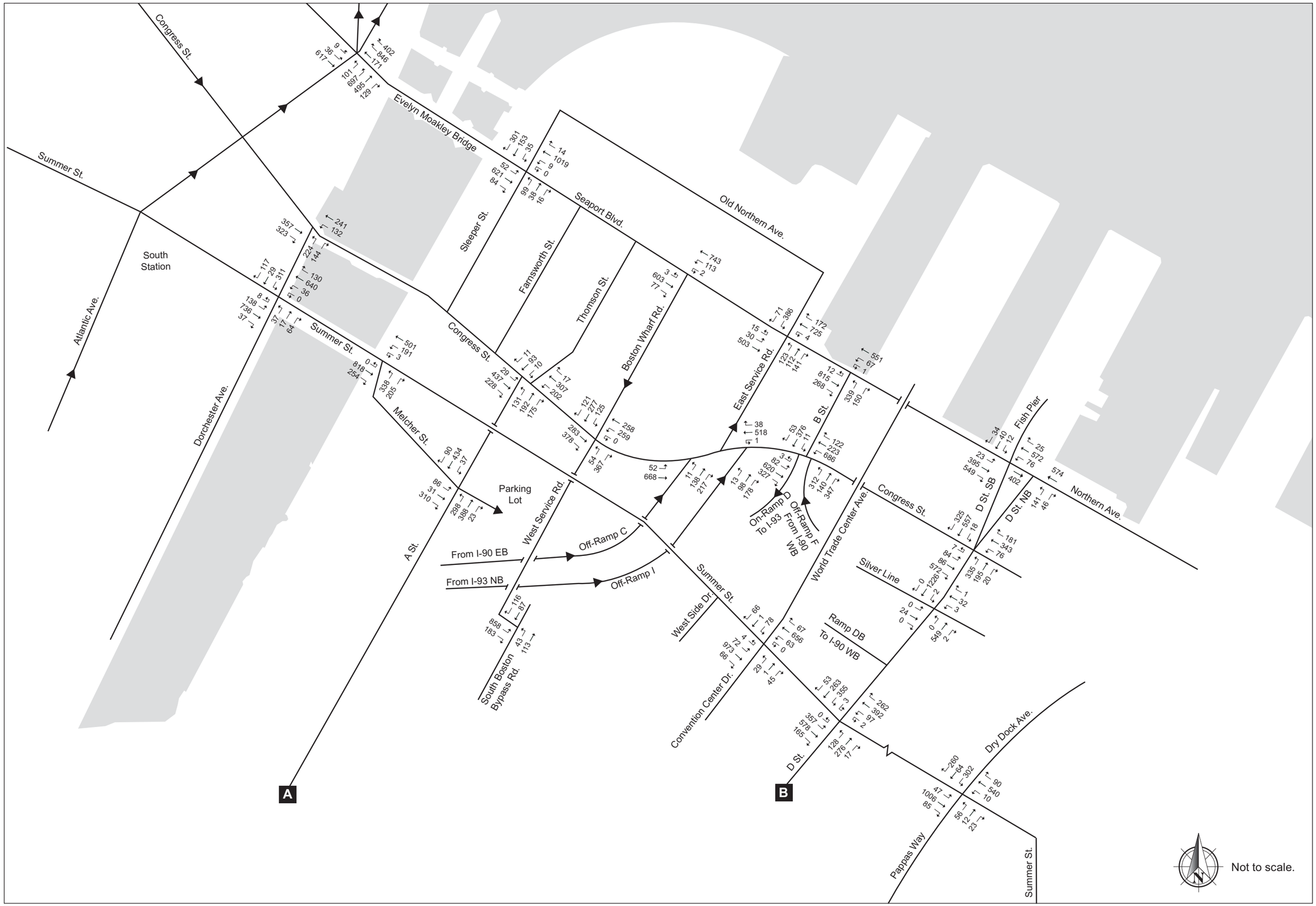
SEAPORT SQUARE
IN SOUTH BOSTON

GALE INTERNATIONAL

Morgan Stanley

WS DEVELOPMENT

prepared by:
Howard/Stein-Hudson Associates, Inc.



SEAPORT SQUARE
IN SOUTH BOSTON

Figure 3-25

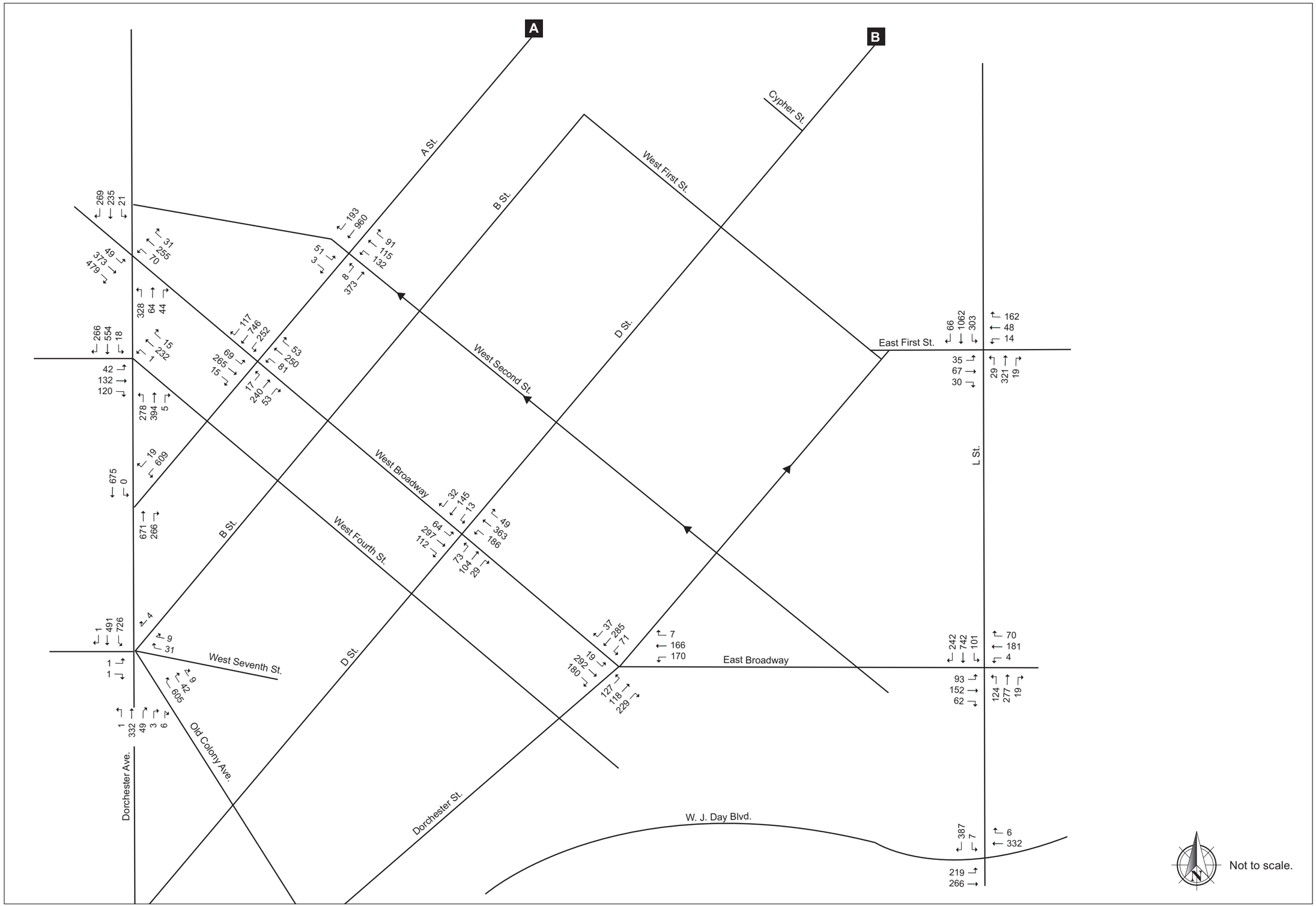
Mid-term No-Build Conditions Turning Movement Volumes, p.m. Peak Hour, North of Summer Street

GALE INTERNATIONAL

Morgan Stanley

WS DEVELOPMENT

prepared by:
Howard/Stein-Hudson Associates, Inc.



SEAPORT SQUARE
IN SOUTH BOSTON

Figure 3-26

Mid-term No-Build Conditions Turning Movement Volumes, p.m. Peak Hour, South of Summer Street

GALE INTERNATIONAL

Morgan Stanley

WS DEVELOPMENT

prepared by:
Howard/Stein-Hudson Associates, Inc.

Table 3-13 Mid-term No-Build Conditions Level of Service Summary (Continued)

Intersection	a.m. Peak	p.m. Peak
Signalized Intersections		
L Street/East Broadway	D	F
A Street/Melcher Street	E	F
Seaport Boulevard/Thomson Street	A	B
Unsignalized Intersections		
South Boston Bypass Road (Haul Road)/Wormwood Street	—	—
Wormwood EB left	C	F
Wormwood EB left/right	B	C
Haul Road NB left	A	A
Haul Road NB thru	A	A
Haul Road SB thru	A	A
Haul Road SB right	A	A
Intersection	**a.m. Peak**	**p.m. Peak**
L Street/William J. Day Boulevard	—	—
William J. Day EB left/thru | thru	A	A
William J. Day WB thru/right	A	A
L SB left	F	C
L SB right	B	C

Light grey cell shading indicates a worsening in LOS from Existing Conditions that brings operations to LOS E or LOS F.
Black shading indicates an improvement from the previous condition.

As shown above, the Mid-term No-Build scenario includes a number of additional intersections with LOS E or LOS F operations in both the a.m. and the p.m. peak hours. The area including Summer Street and north of Summer Street, which accommodates the most development and a majority of the I-90 and I-93 ramp traffic, again operates more poorly than the area south of Summer Street.

In the ***a.m. peak hour***, seven ***signalized*** intersections will worsen to overall LOS E or LOS F:

- Seaport Boulevard/Atlantic Avenue;
- Seaport Boulevard/Sleeper Street;
- Northern Avenue/D Street (northbound);
- Congress Street/On-ramp D/Off-ramp F/B Street;
- Summer Street/Dorchester Avenue;
- Summer Street/Drydock Avenue/Pappas Way; and
- A Street/Melcher Street.

For *unsignalized* locations, all intersection approaches will continue to operate at the same LOS as under Existing Conditions during the a.m. peak hour.

In the *p.m. peak hour,* the following *signalized* intersections will worsen to overall LOS E or LOS F:

- Seaport Boulevard/Atlantic Avenue;
- Congress Street/A Street/Thomson Place;
- Congress Street/On-ramp D/Off-ramp F/B Street;
- Congress Street/D Street;
- Summer Street/Dorchester Avenue;
- Summer Street/Melcher Street;
- Summer Street/D Street;
- A Street/West Broadway; and
- A Street/Melcher Street.

For *unsignalized* locations, the only intersection with a movement operating at LOS E or LOS F during the p.m. peak hour is South Boston Bypass Road (Haul Road)/Wormwood Street, where the eastbound Wormwood Street approach will operate at LOS F. Note that the through-movements on the Bypass Road, which are restricted to commercial vehicles, operate at LOS A.

It should be noted that the signal optimization project recently undertaken by BTD helps accommodate the added No-Build development as well as to improve existing deficiencies in intersection operations at seven locations.

3.3.1.11 Mid-term No-Build Public Transportation

The following MBTA service improvements were assumed to be in place as part of the Mid-term No-Build Conditions.

Silver Line. The Silver Line is being completed in three phases, the first of which—Silver Line Washington Street—opened in July 2002. It travels as a bus rapid transit ("BRT") route along Washington Street between Dudley Square and Downtown. The second phase, Silver Line Waterfront, opened in December 2004 and runs as a BRT underground from South Station to Silver Line Way. It then continues through the South Boston waterfront above-ground to the Boston Convention and Exhibition Center, the Boston Marine Industrial Park, South Boston residential neighborhoods, and Logan International Airport. Silver Line

Phase III, which is currently in design, is a tunnel linking Downtown and South Station via the Boylston Street and Chinatown stations; it will connect Silver Line Phase I (Dudley Square to Downtown) and Silver Line Phase II (South Station to the South Boston waterfront.)

When the final phase has been completed, all three segments will connect to become the "Silver Line"—the MBTA's fifth rapid transit line, offering a seamless link between the communities of Roxbury, the South End, Chinatown, Downtown, and South Boston. This new transit line will connect passengers quickly and easily to the T's other rapid transit lines—the Orange, Green, and Red—to South Station, where they can board the T's south side commuter rail lines and Amtrak trains, and to Logan International Airport. The MBTA expects the Silver Line to accommodate some existing Green, Orange, and Red Line commuters, and to provide additional service to those who currently do not utilize the public transit system.

Mid-term No-Build Conditions assume that current Silver Line service is operating, without the Phase III downtown connection. It is assumed, however, that new cars will be added to the Silver Line fleet, enabling a more frequent headway than is allowed today. Currently, the Silver Line operates with 13 trains per hour, but this would increase to 41 trains per hour in the peak direction under Mid-term No-Build conditions.

For the Mid-term time frame, ridership and v/c ratios for the Silver Line are anticipated to change from Existing Conditions as follows:

- In the a.m. peak hour, peak-direction ridership is anticipated to increase from 506 to 2,292 under Mid-term No-Build Conditions. When compared to a peak-hour, peak-direction seated capacity of 3,977, the Mid-term No-Build ridership accounts for 58% of available capacity (47% of crush loaded capacity).

- In the p.m. peak hour, peak-direction ridership is anticipated to increase from 629 to 2,680 riders under the Mid-term No-Build case. Given the peak-hour, peak-direction seated capacity of 3,977, the No-Build ridership accounts for 67% of available capacity (or 54% of crush loaded capacity).

Urban Ring. In the Long-term future, the Urban Ring is projected to expand MBTA service outside downtown Boston. This service will include East Boston and Logan International Airport, Charlestown, Longwood Medical and Academic Area, Mission Hill, the Dudley Square/Uphams Corners neighborhoods of Roxbury, the University of Massachusetts Boston campus at Columbia Point, and the Seaport/Convention Center area. The MBTA expects this planned improvement to "substantially reduce Green Line congestion and commuter through-traffic." The Urban Ring will offer many commuters an alternate route to destinations surrounding the City without having to make connections downtown.

Although several exclusive lane and tunnel options are under consideration at present, Urban Ring service assumed under Mid-term No-Build Conditions is Bus Rapid Transit service operating in mixed traffic between Courthouse Station and Broadway Station along A Street.

In addition to the Urban Ring development, which is expected to free up capacity along the Green Line, the MBTA has made a commitment to provide additional three-car trains during peak hours to increase Green Line capacity, once accessibility improvements at Copley and Arlington Stations are completed. This added capacity has been assumed to be available within the Mid-term No-Build time frame.

- In the a.m. peak hour, peak-direction ridership is anticipated to increase from 506 to 2,292 under Mid-term No-Build Conditions. When compared to a peak-hour, peak-direction seated capacity of 3,977, the Mid-term No-Build ridership accounts for 58% of available capacity (47% of crush loaded capacity).

- In the p.m. peak hour, peak-direction ridership is anticipated to increase from 629 to 2,680 riders under the Mid-term No-Build case. Given the peak-hour, peak-direction seated capacity of 3,977, the No-Build ridership accounts for 67% of available capacity (or 54% of crush loaded capacity).

3.3.1.12 Mid-term No-Build Pedestrian Operations

As discussed above, the existing pedestrian volumes were factored up by a growth rate and assigned to study area intersections in order to estimate the Mid-term No-Build pedestrian volumes. Figure 3-27 and Figure 3-28 show the Mid-term No-Build pedestrian volumes for the a.m. and p.m. peak hours. Table 3-14 summarizes Mid-term No-Build pedestrian operations at study area intersections for the a.m. and p.m. peak hours.

Table 3-14 Mid-term No-Build Conditions Pedestrian Levels of Service

Intersection	Delay LOS		Space LOS	
	a.m.	p.m.	a.m.	p.m.
Signalized Intersections				
Seaport Boulevard/Atlantic Avenue				
Seaport East Crosswalk	D	D	F	F
Seaport West Crosswalk	B	B	A	A
Atlantic North Crosswalk	D	D	C	C
Atlantic South Crosswalk	B	B	A	A
Seaport Boulevard/Sleeper Street				
Seaport East Crosswalk	D	D	A	A
Seaport West Crosswalk	D	D	A	A
Sleeper North Crosswalk	D	D	A	B
Sleeper South Crosswalk	D	D	A	A

Figure 3-27

Mid-term No-Build Conditions Pedestrian Volumes, a.m. Peak Hour, North of Summer Street

prepared by:
Howard/Stein-Hudson Associates, Inc.

Figure 3-28

Mid-term No-Build Conditions Pedestrian Volumes, p.m. Peak Hour, North of Summer Street

prepared by:
Howard/Stein-Hudson Associates, Inc.

Table 3-14 Mid-term No-Build Conditions Pedestrian Levels of Service (Continued)

Intersection	Delay LOS		Space LOS	
	a.m.	p.m.	a.m.	p.m.
Signalized Intersections				
Seaport Boulevard/Boston Wharf Road				
Seaport East Crosswalk	C	C	A	A
Seaport West Crosswalk	C	C	A	A
Boston Wharf South Crosswalk	C	C	A	A
Seaport Boulevard/East Service Road/ Old Northern Avenue				
Seaport East Crosswalk	D	D	A	A
Seaport West Crosswalk	D	D	A	A
Old Northern North Crosswalk	D	D	A	C
East Service South Crosswalk	D	D	B	B
Seaport Boulevard/B Street				
Seaport East Crosswalk	D	D	A	A
Seaport West Crosswalk	D	D	A	A
B South Crosswalk	D	D	A	A
Seaport Boulevard/Northern Avenue/ D Street (southbound)/Fish Pier Road				
Seaport West Crosswalk	D	D	A	A
Fish Pier North Crosswalk	D	D	A	A
D (SB) South Crosswalk	D	D	A	A
Northern Avenue/D Street (northbound)				
Northern East Crosswalk	D	D	A	A
D (NB) South Crosswalk	D	D	A	A
Congress Street/Dorchester Avenue				
Congress East Crosswalk	D	D	A	A
Congress West Crosswalk	D	D	A	D
Dorchester South Crosswalk	D	D	D	E
Congress Street/A Street/Thomson Place				
Congress East Crosswalk	D	D	A	A
Congress West Crosswalk	D	D	A	A
Thomson North Crosswalk	D	D	C	C
A South Crosswalk	D	D	A	A
Congress Street/West Service Road/ Boston Wharf Road				
Congress East Crosswalk	D	D	A	A
Congress West Crosswalk	D	D	A	A
Boston Wharf North Crosswalk	D	D	B	A
West Service South Crosswalk	D	D	A	A

Table 3-14 Mid-term No-Build Conditions Pedestrian Levels of Service (Continued)

Intersection	Delay LOS		Space LOS	
	a.m.	p.m.	a.m.	p.m.
Signalized Intersections				
Congress Street/Off-ramp C/Off-ramp I/ East Service Road				
Congress East Crosswalk	D	D	A	A
Congress West Crosswalk	D	D	A	A
East Service North Crosswalk	D	D	A	A
Ramps C&I South Crosswalk	C	C	A	A
Congress Street/On-ramp D/Off-ramp F/B Street				
Congress East Crosswalk	D	D	A	A
Congress West Crosswalk	D	D	A	A
B North Crosswalk	D	D	A	A
Ramps D&F South Crosswalk	D	D	C	A
Congress Street/D Street				
Congress East Crosswalk	D	D	A	A
Congress West Crosswalk	D	D	A	A
D North Crosswalk	C	C	A	A
D South Crosswalk	D	D	F	F
D Street/Silver Line Way				
Silver Line East Crosswalk	D	D	A	A
Silver Line West Crosswalk	D	D	A	A
Summer Street/Dorchester Avenue				
Summer East Crosswalk	D	D	A	A
Summer West Crosswalk	D	D	A	A
Dorchester North Crosswalk	D	D	B	B
Summer Street/Melcher Street				
Summer East Crosswalk	C	C	A	A
Summer West Crosswalk	C	C	B	A
Melcher South Crosswalk	B	B	A	A
Summer Street/World Trade Center Avenue/ Convention Center Drive				
Summer East Crosswalk	C	C	A	A
Summer West Crosswalk	C	C	A	A
World Trade Center North Crosswalk	C	C	A	A
Convention Center South Crosswalk	C	C	A	A
Summer Street/D Street				
Summer East Crosswalk	D	D	A	A
Summer West Crosswalk	D	D	A	A
D North Crosswalk	C	C	A	A
D South Crosswalk	C	C	A	A

Table 3-14 Mid-term No-Build Conditions Pedestrian Levels of Service (Continued)

Intersection	Delay LOS		Space LOS	
	a.m.	p.m.	a.m.	p.m.
Signalized Intersections				
Summer Street/Dry Dock Avenue/Pappas Way				
Summer East Crosswalk	C	C	A	A
Summer West Crosswalk	C	C	A	A
Dry Dock North Crosswalk	C	C	A	A
Pappas South Crosswalk	C	C	A	A
A Street/Melcher Street				
Parking Lot East Crosswalk	D	D	A	A
Melcher West Crosswalk	D	D	A	A
A North Crosswalk	D	D	A	A
A South Crosswalk	D	D	A	A
Seaport Boulevard/Thomson Street				
Seaport East Crosswalk	C	C	A	A
Seaport West Crosswalk	C	C	A	A
Thomson South Crosswalk	C	C	A	A

Light grey cell shading indicates a worsening in LOS from Existing Conditions.

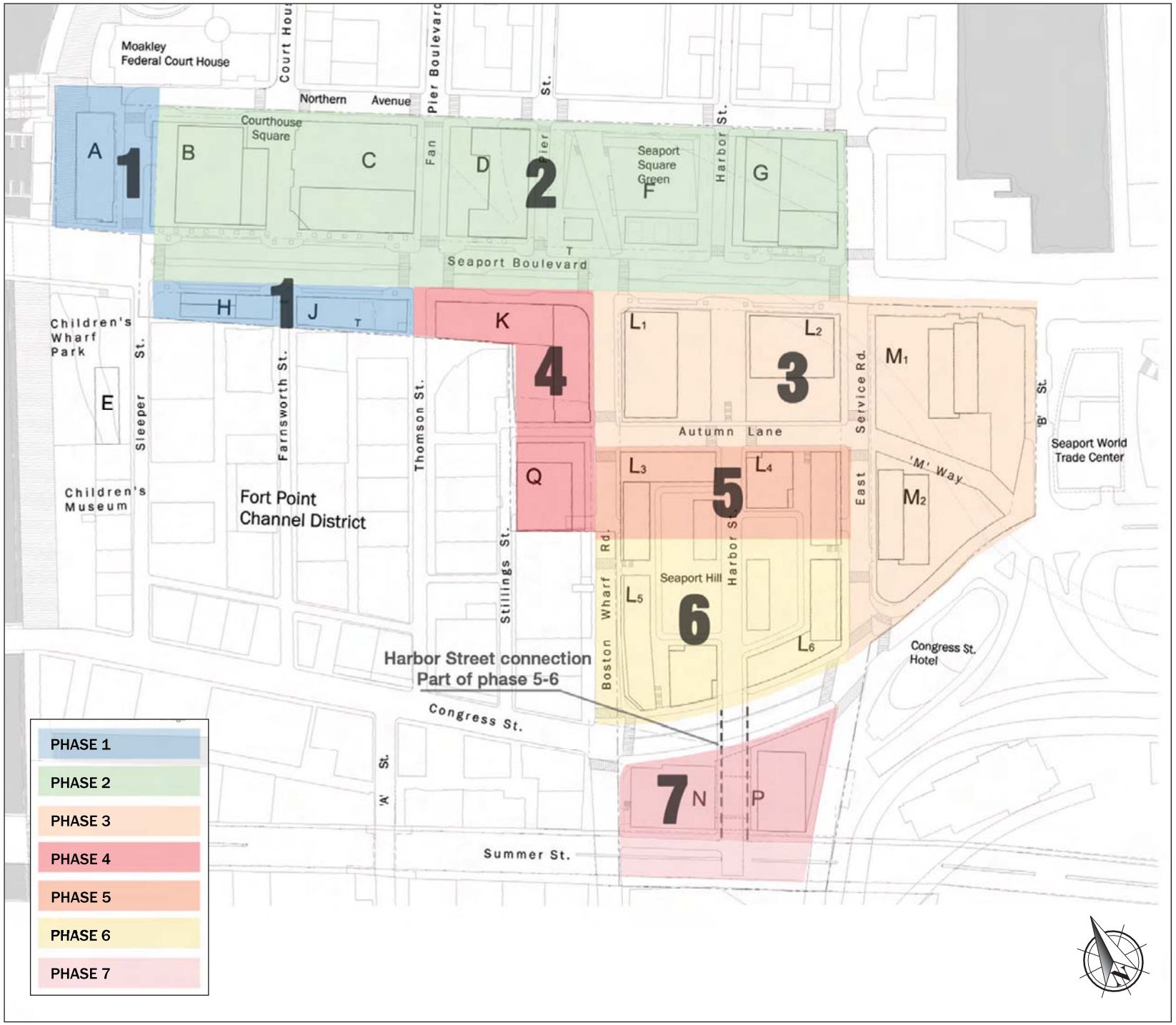
In the Mid-term No-Build Conditions, all crosswalks operate at LOS D or better in both the a.m. and the p.m. peak hours. Only two new crosswalks are worsened to LOS E or F, as follows:

- The east crosswalk of Seaport Boulevard at Atlantic Avenue and
- The south crosswalk of Dorchester Avenue at Congress Street.

Each of these intersections is located in downtown Boston, where high pedestrian volumes are generated between South Station and major office buildings.

3.3.2 Seaport Square Build Conditions

The Seaport Square Build Scenario reflects traffic impacts associated with full development of the proposed 6.5-million-square-foot Seaport Square Project within the Mid-term time frame. At this point, however, it is envisioned that Seaport Square will proceed in seven phases, as shown in Figure 3-29. Table 3-15 breaks down the development program by phase.



SEAPORT SQUARE
IN SOUTH BOSTON

Figure 3-29
Proposed Site Plan

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Table 3-15 Seaport Square Land Use by Phase

Phase	Blocks	Residential Units	Hotel Keys	Retail/ Entertainment	Office/ Research	Educational/ Cultural
1	A, H, J	115	—	45,600	—	26,300
2	B, C, D, F, G	835	220	535,900	442,300	10,000
3	L1, L2, M1, M2	580	—	469,700	753,900	—
4	K, Q	90	110	141,800	103,800	—
5	L3, L4	380	—	64,000	—	—
6	L5, L6	500	—	43,000	—	—
7	N, P	—	220	—	—	563,700
	Totals	**2,500**	**550**	**1,300,000**	**1,300,000**	**600,000**

The Project program is presented in detail in Section 1.3. Table 3-15, above, recaps the land use assumptions used in the transportation analysis. That table represents the complete buildout for all Seaport Square Blocks; the study team anticipates that further studies will be conducted in the course of permitting each individual construction phase or group of phases.

3.3.2.1 Seaport Square Build Conditions Site Access and Circulation

Vehicular Access

Seaport Square is well situated to take advantage of new South Boston access created by the Central Artery/Tunnel project. It is centrally located in terms of direct ramp access to and from both directions of I-93 and I-90, thus lessening the need for Project-generated traffic to travel on local streets.

The Project will create a number of new streets, continuing the grid layout of the Fort Point Channel District. The Project site plan is shown in Figure 3-29, above. New streets include extensions north of Farnsworth Street (as a pedestrian way), Thomson Street/Fan Pier Boulevard, and Pier Street. The site will also construct a new street, Harbor Street, connecting elevated Summer Street with Seaport Boulevard. Harbor Street will form a new T intersection with another new street, Autumn Lane, which will provide access to Boston Wharf Road to the west and East Service Road to the east. Harbor Street will be continued as a pedestrian connection from Autumn Lane to Seaport Boulevard (Harbor Way).

As shown in Figure 3-2, above, parking access and loading for the Project Blocks will be located as follows:

- *Phase 1: Blocks A, H, and J*. The residential garage beneath Block A will be accessed from Northern Avenue west of Sleeper Street. In the short term, Blocks H and J will utilize the 3,430 public spaces in surface parking lots in the area. Once these Blocks are developed, residents and patrons of Blocks A, H, and J will also have the ability to park in the newly constructed underground garages.

- *Phase 2: Blocks B–G.* The garage located under Blocks B through G will have three driveways, located on the east side of Sleeper Street (at Block B), the southern side of Northern Avenue (at Block D), and the western side of East Service Road (at Block G). Three service areas will be provided for Blocks B through G, near each of the parking driveways.

- *Phase 3: Blocks L1, L2, M1, and M2.* The garage under Blocks M1 and M2 will have a driveway on the east side of East Service Road. The service area for Blocks M1 and M2 will be accessed from B Street. For the garage under the L Blocks, see Phase 6 below.

- *Phase 4: Blocks K and Q*. The garage under Blocks K and Q will be accessed from Boston Wharf Road via a new intersection with Stillings Way. Stillings Way will be a new surface street connecting Boston Wharf Road with Stillings Street, primarily to serve parking and loading activity. Loading docks will be located on Stillings Street.

- *Phase 5*: *Blocks L3 and L4.* For the garage under the L Blocks, see Phase 6 below.

- *Phase 6: Blocks L5 and L6*. The garage under Blocks L1 through L6 will have driveways on the east side of Boston Wharf Road and the west side of East Service Road. Access to the service areas for Blocks L1 through L6 will be provided on the north side of Congress Street.

- *Phase 7: Blocks N and P.* The garage and service areas will be accessed from West Service Road, south of Congress Street.

Pedestrian Access

As discussed above, pedestrian amenities and accessibility have been built into all streets in Seaport Square: the boulevards, local streets, connectors, and pedestrian ways. Four pedestrian ways are planned, including:

- Old Sleeper Street between the Barking Crab and Block A;

- Farnsworth Street between Block B and Block C (Courthouse Square);

- Harbor Street between Block L1 and Block L2 (Harbor Way); and

- Autumn Lane between Block M1 and Block M2.

These connections will enhance pedestrian travel between Seaport Square and other important destinations such as the Courthouse, the Children's Museum, the ICA, South Station, and the waterfront. They will also serve as "traffic-calming" measures that discourage through-trips.

Major corridors such as Seaport Boulevard, Congress Street, and Summer Street will be designed in cooperation with BTD and the BRA to provide gracious sidewalks and medians. Sidewalks will be designed to enhance the retail environment and will be wide enough to accommodate outdoor seating and sidewalk entertainment.

Bicycle Access

Seaport Square is well served by the bicycle routes through South Boston. Summer Street, Congress Street, and Seaport Boulevard are all designated as east–west bicycle connections. A Street, D Street, and L Street are all designated as prime north–south connections. The new Harbor Street/Autumn Lane connections to be provided by Seaport Square will enable cyclists to negotiate the grade change between Summer Street and Congress Street more easily.

The intent is to lay out all new roadways in these corridors to accommodate bicycles, with wide outside lanes or bicycle lanes as appropriate. To the west of Seaport Square, the proposed South Bay Harbor Trail will provide recreational access along Fort Point Channel, progressing across the Broadway Bridge through Crosstown and the Boston University Medical Center to the South End and Roxbury.

Seaport Square will continue the connection to the South Bay Harbor Trail on Boston Wharf Road out to Seaport Boulevard and along Pier Street connecting to Fan Pier.

3.3.2.2 Seaport Square Build Conditions Trip Generation

Trip generation is a complex, multi-step process that produces an estimate of vehicle trips, transit trips, walk trips, and bicycle trips associated with a proposed project and a specific land use program. A project's location and proximity to different modes determine how people will travel to and from that project site.

As discussed previously with the BRA and BTD, Institute of Transportation Engineers (ITE) trip generation rates were used to generate trips both for projects included within the Mid-term No-Build Conditions summarized above and for Seaport Square itself. The ITE vehicle trip generation rates presented below produce the number of "unadjusted" vehicle trips associated with Seaport Square. The "unadjusted" vehicle trips, however, are not the final vehicle trips generated by either the Mid-term No-Build projects or by Seaport Square. Several interim steps further refine the estimate to reflect the particular characteristics of the

development program and building site. These interim steps account for pass-by trips, internal trips, mode of travel (as described in subsequent sections), vehicle occupancy rate, and displaced trips.

For analysis purposes, the 600,000 square feet in the cultural/educational use category were broken down into individual land uses corresponding to ITE codes, as follows:

- A 1,800-seat performing arts center on Block P;
- A school with 1,800 students on Block N;
- 5,000 square feet of library/meeting/gallery space on Block D; and
- 5,000 square feet of library/meeting/gallery space on Block G.

Vehicle trip generation estimates for Seaport Square Build Conditions use rates derived from ITE's *Trip Generation* (8th edition, 2008) average trip rates. The estimates use ITE land use codes (LUCs) 220–Hotel, 230–Residential Condominium/Apartment, 310–Hotel, 710–General Office, 820–Shopping Center, as described in the Mid-term No-Build section, as well as the following LUCs:

LUC 520 — Elementary School. Elementary schools typically serve students from kindergarten through the sixth grade. Calculations of the number of trips use ITE's average rate per number of students.

LUC 560 — Church. A church is a building in which public worship services take place. Ancillary uses include meeting spaces or small classrooms. Calculations of the number of trips use ITE's average rate per 1,000 square feet.

LUC 590 — Library. A library is defined as either a public or private facility that consists of shelved books; reading rooms or areas; and, sometimes, meeting rooms. The Library code was used to describe trip generation for the two small community spaces planned for Blocks N and P. One is envisioned as a library branch, and the other as a meeting space or gallery of some type, thus generally fitting the library description.

Land Use — Performing Arts Center. In addition to the ITE Land Use Codes listed above, data from the *Boston Opera House Draft Project Impact Report* (1999) were used as the basis for estimating the mode split and vehicle occupancy rate for the Project's 1,800-seat performing arts center. The p.m. peak-hour trip generation assumes 87% seat occupancy, with 100% of patrons entering and 7% exiting.

3.3.2.3 Seaport Square Build Conditions Pass-by and Internal Trips

A portion of trips to the Project will be pass-by trips and internal trips. Pass-by trips are trips that are already in the transportation network and not specifically destined to the proposed uses. ITE defines pass-by trips as trips "made as intermediate stops on the way from an origin to a primary destination without a route diversion." This accounts for trips generated by people already in the area, as in common shopping districts or dense urban areas. Internal trips are trips that occur between uses within the mixed-use redevelopment, such as a hotel guest who walks to a retail shop within the complex.

ITE provides data for both pass-by and internal trips. These rates are applied to the "unadjusted" vehicle trips. For all time periods, a pass-by rate of 25% was applied to the retail uses, based on ITE data and the nature of the area around the Seaport Square site.

For internal trips, ITE has developed a methodology based on the proposed land uses of a mixed-use development to estimate trips within the site. This methodology was used to determine the number of internal trips for the Project's proposed mixed-use development.

After determining the pass-by and internal trips, the "unadjusted" vehicle trips were converted to person trips by applying the vehicle occupancy rates (VOR) as derived from the 2000 U.S. Census Journey to Work Data and the Nationwide Personal Transportation Survey.

Appendix B-7 presents details of the methodology for estimating pass-by trips, internal trips, and person trips.

3.3.2.4 Seaport Square Build Conditions Mode Split

Vehicle, transit, and walking mode splits were based on the South Boston Waterfront Area rates developed specifically for this Project as summarized in Section 3.1.2.4 and Table 3-11, above. Because of the Project's mixed-use, transit-oriented nature and close proximity to Downtown and MBTA Silver Line and local bus services, many residents, workers, and visitors will choose to walk, bike, or use public transportation rather than use their automobiles. Transit/walk/bike trips account for approximately 60% to 75% of Project-generated peak-hour trips. The mode splits, which have been deemed appropriate by both BTD and the BRA, have been applied to the trip generation for all Mid-term No-Build projects, as well as the Seaport Square Project trips.

3.3.2.5 Seaport Square Build Conditions Vehicle Trips

The trip generation process described above yields the "adjusted" vehicle trips associated with the Project, as shown in Table 3-16 and Appendix B-7. These numbers are based on proposed Seaport Square land uses only.

Table 3-16 Project Vehicle Trips

Time Period	Condos/ Apts.	Hotel	Perform. Arts	School	Office	Retail	Church	Library	Total
Daily									
Entering	1,396	605	454	348	1,959	7,134	28	84	12,009
Exiting	1,396	605	454	348	1,959	7,134	28	84	12,009
a.m. Peak Hour									
Entering	62	53	3	134	605	226	2	2	1,087
Exiting	264	38	0	106	68	148	1	1	626
p.m. Peak Hour									
Entering	172	47	41	38	77	619	2	10	1,005
Exiting	77	48	22	41	526	615	2	11	1,343
Saturday Mid-day Peak Hour									
Entering	157	55	0	0	19	915	15	11	1,172
Exiting	87	43	0	0	19	891	6	10	1,050

Note: Due to rounding, figures may not add to total shown.

The volumes presented in Table 3-16 are the new vehicle trips generated by Seaport Square. Before these new trips are distributed to the study intersections, however, the vehicle trips associated with the existing 3,647 commuter parking spaces that are currently operating on the site must be subtracted from the roadway network. These displaced vehicle trips are described in the following section. After the existing vehicle trips are removed from the roadway network and the new vehicle trips are added, the result is the net new trips generated by Seaport Square. These net new trips are then added to the Mid-term No-Build volumes to create the Seaport Square Build volumes.

3.3.2.6 Seaport Square Build Conditions Displaced Trips

Similar to the Mid-term No-Build Conditions, the study team took into account the existing vehicle trips to be displaced by Seaport Square that are currently included in the 2009 Existing Conditions traffic networks. Most of the existing Project Site includes public parking that will be replaced by Seaport Square itself (see Table 3-17); these public parking spaces generate a substantial volume of weekday peak-hour vehicle trips.

Table 3-17 Off-street Parking Displaced under Seaport Square Build Conditions

Address	Affected Facility	Public Capacity
25 Northern Avenue	LAZ Parking	922
29–49 Stillings Street	LAZ Parking	299
390 Congress Street	LAZ Parking	1,417
145 Seaport Boulevard	LAZ Parking	579
391 Congress Street	LAZ Parking	375
66 Sleeper Street	LAZ Parking	55
	Parking Lot Subtotal	**3,647**

As shown in Table 3-17, above, Seaport Square will displace approximately 3,647 existing public parking spaces. Trip generation estimates for the existing surface parking spaces were based on a combination of data collected by the study team at existing similar public parking facilities and from driveway count data.

It should be noted that the study team took into account existing typical peak-hour utilization of each of these parking lots when developing trip generation rates. These parking lots currently generate approximately 1,161 vehicle trips during the morning peak hour (1,045 trips in and 116 trips out) and 1,161 vehicle trips during the evening peak hour (116 trips in and 1,045 trips out). The study team took credit for the vehicle activity generated by these existing public parking spaces to identify the net new trip generation associated with Seaport Square. No credit was taken for other existing displaced land uses.

3.3.2.7 Seaport Square Build Conditions Net New Vehicle Trip Generation

Table 3-18 compares the a.m. and p.m. peak-hour vehicle trip generation of Seaport Square with that of the existing surface parking uses to identify the new vehicle trip generation.

Table 3-18 Net New a.m. and p.m. Peak-hour Vehicle Trip Generation

Time Period	Displaced Trips (3,647 existing surface parking spaces)	Project-generated Trips	Net New Vehicle Trips
a.m. Peak Hour			
Entering	1,045	1,087	42
Exiting	116	626	510
p.m. Peak Hour			
Entering	116	1,006	890
Exiting	1,045	1,342	297

As shown in Table 3-18, above, approximately 68% of the vehicle trips during the morning peak hour, and nearly 50% of the vehicle trips during the evening peak hour associated with the parking lots within the Seaport Square Project area, are already traveling on the adjacent roadway network. As proposed, Seaport Square will result in a net increase of only 552 vehicle trips (42 trips in and 510 trips out) during the a.m. peak hour, and 1,187 vehicle trips (890 trips in and 297 trips out) during the p.m. peak hour.

3.3.2.8 Seaport Square Build Conditions Vehicle Trip Distribution

The process of estimating trip distribution identifies the various travel paths for vehicles arriving at either the on-site parking garages or nearby parking facilities and the corresponding departure travel path. The distribution combines trip origin information (where did the vehicle trip start?) and trip destination information (where will the vehicle park?). To reflect the fundamental future change in how drivers will travel into and around the waterfront, the trip distribution for Seaport Square site trips is built on:

1) Years 2007–09 traffic counts; and

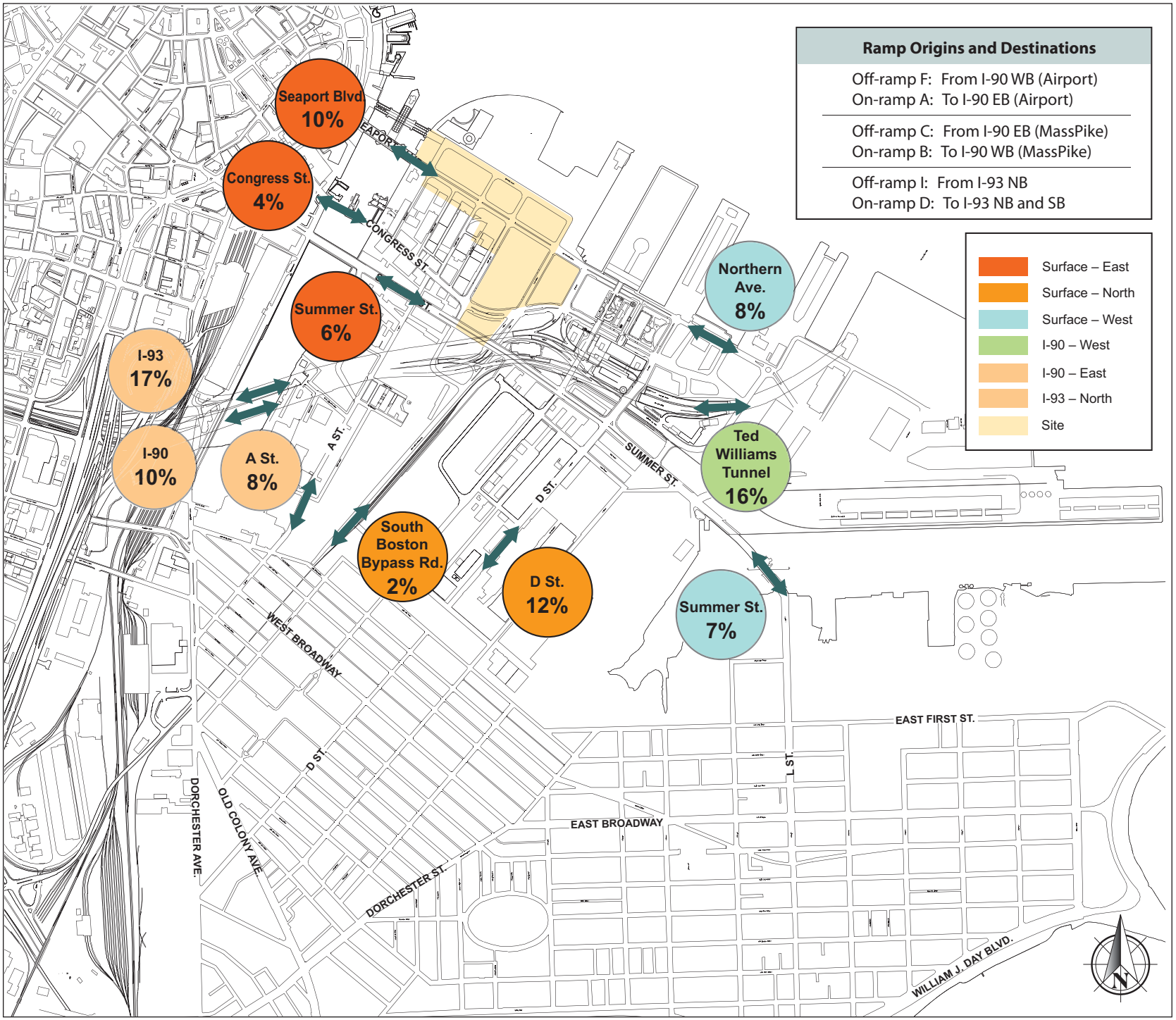
2) Travel patterns forecast in the regional Tranplan model set, reflecting 2010 land use estimates for the full South Boston waterfront and roadway layouts after completion of the CA/T project.

Note that only the **percent distribution** of trips into and out of the study area (and not traffic volumes) was used as the basis for assignment) from the CA/T Tranplan model. Figure 3-30 shows the daily regional distribution used for future development projects of the Seaport District, as obtained from the Year 2000 Census Journey to Work data, BTD's origin–destination data for Area 13, and the CA/T models.

3.3.2.9 Seaport Square Build Conditions Traffic Operations

Seaport Square Build Conditions traffic volumes are shown in Figure 3-31 through Figure 3-34 for the a.m. and p.m. peak hours.

To put perspective on the contribution of the net new Seaport Square Project trips to the study intersection volumes, Figure 3-35 and Figure 3-36 graphically show how the Existing, Mid-term No-Build, and Seaport Square components contribute to Seaport Square Build Conditions volumes for the a.m. and p.m. peak hours. The blue portions of the graphs represent the existing intersection volumes. The yellow portions represent the new intersection volumes attributable to Mid-term projects, not including the Seaport Square Project. The red portions represent the net new intersection volumes attributable to the Seaport Square Project. The relatively small net increase from Seaport Square is the result of the elimination of current parking trips and the addition of new Seaport Square Project trips.



SEAPORT SQUARE
IN SOUTH BOSTON

Figure 3-30

Regional Distribution (from PNF)

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SEAPORT SQUARE
IN SOUTH BOSTON

Figure 3-31
Seaport Square Build Conditions Turning Movement Volumes, a.m. Peak Hour, North of Summer Street

Not to scale.

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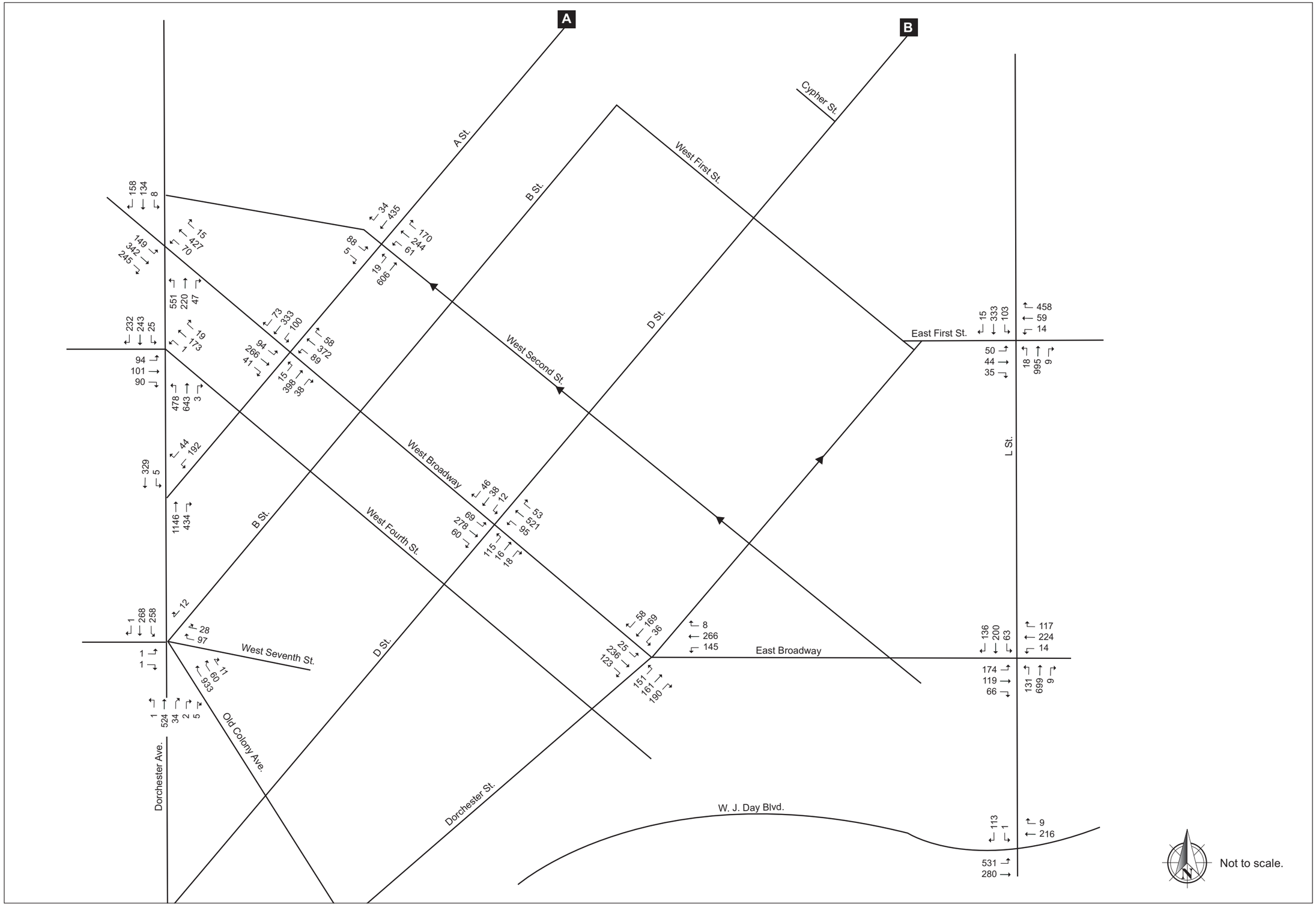

Figure 3-32
Seaport Square Build Conditions Turning Movement Volumes, a.m. Peak Hour, South of Summer Street

SEAPORT SQUARE
IN SOUTH BOSTON

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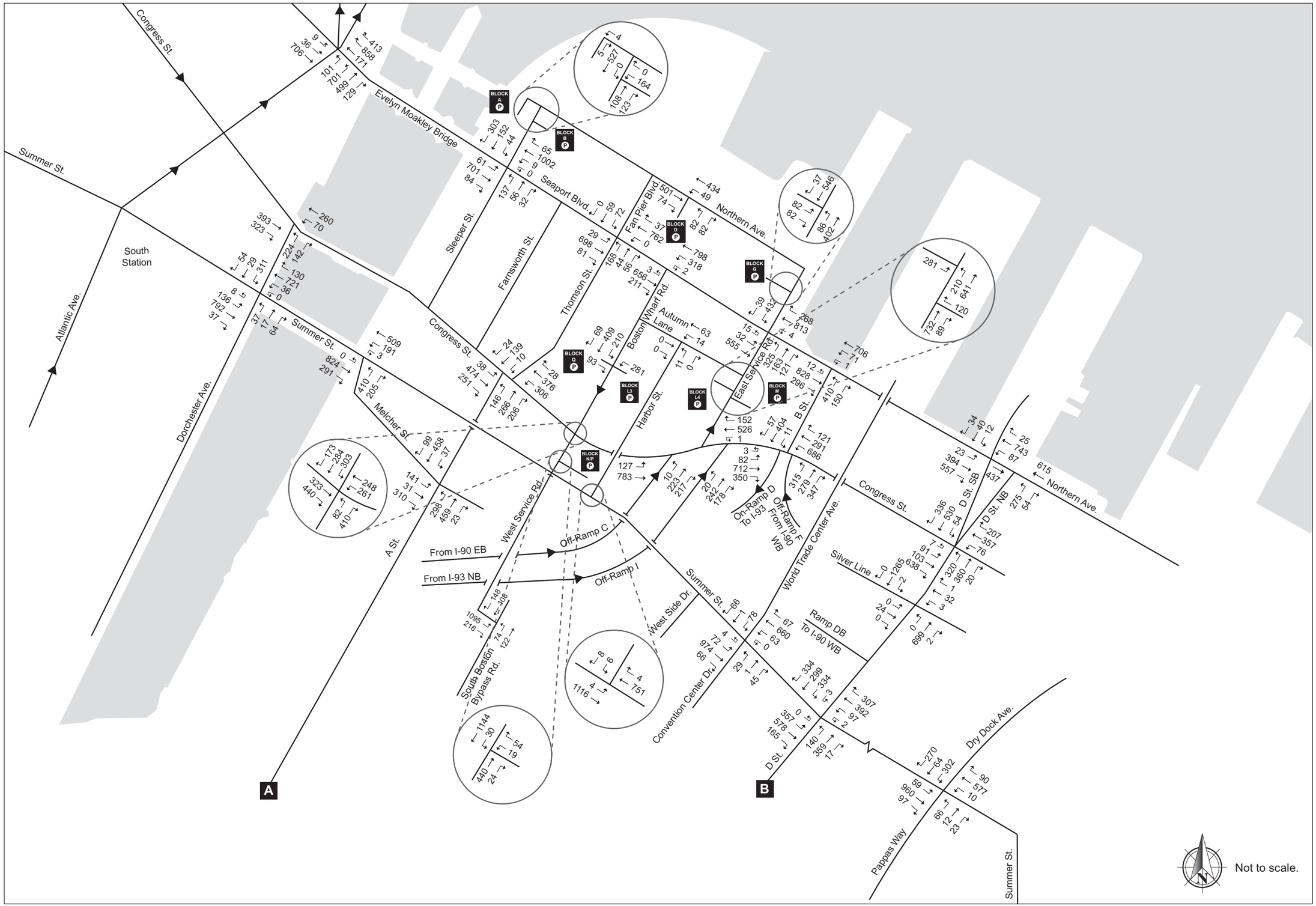

Figure 3-33
Seaport Square Build Conditions Turning Movement Volumes, p.m. Peak Hour, North of Summer Street

SEAPORT SQUARE
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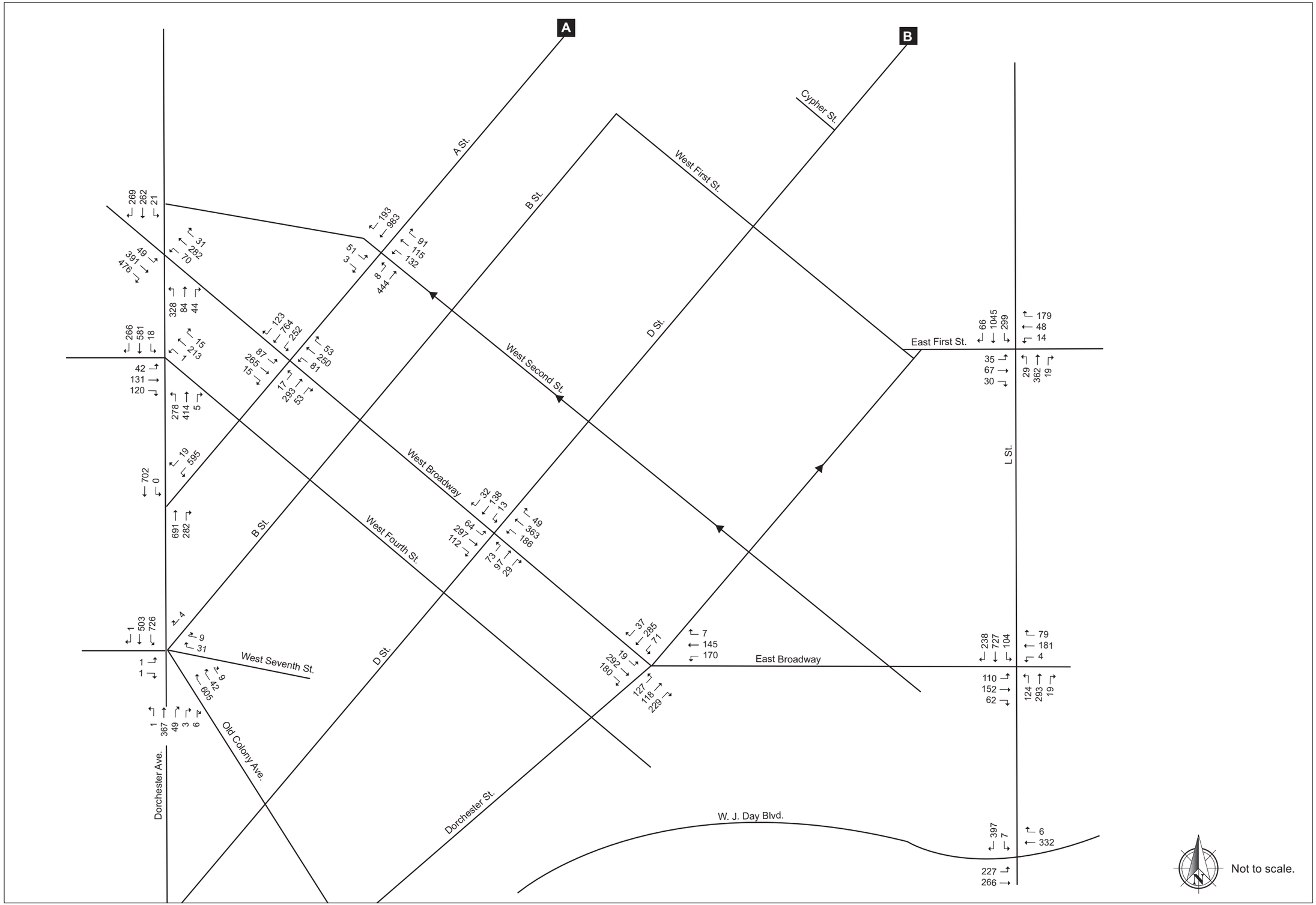

SEAPORT SQUARE
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Figure 3-34

Seaport Square Build Conditions Turning Movement Volumes, p.m. Peak Hour, South of Summer Street

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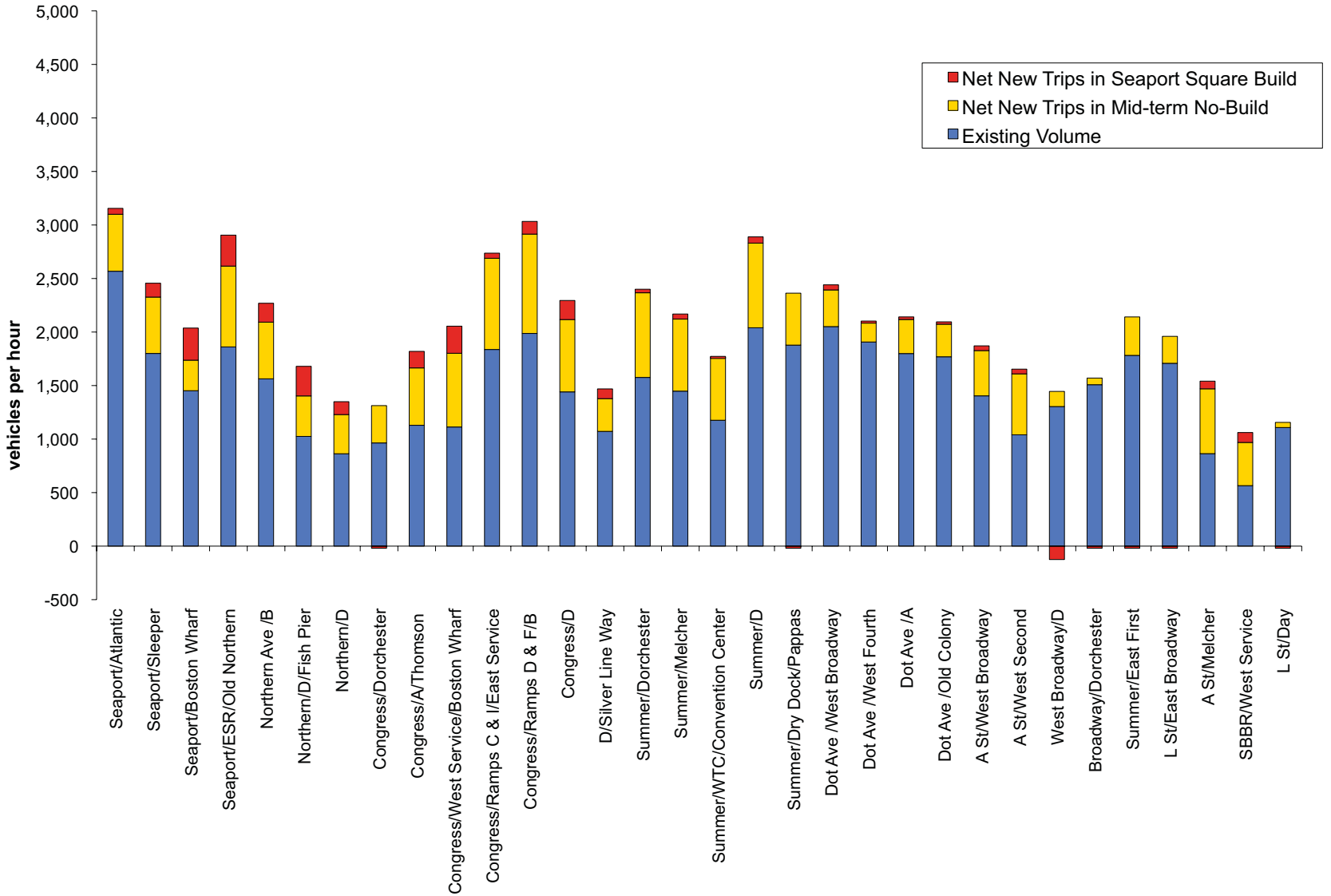

SEAPORT SQUARE
IN SOUTH BOSTON

Figure 3-35

Intersection Volume Comparison Graph: Existing, Mid-term, and Seaport Square Build Conditions, a.m. Peak Hour

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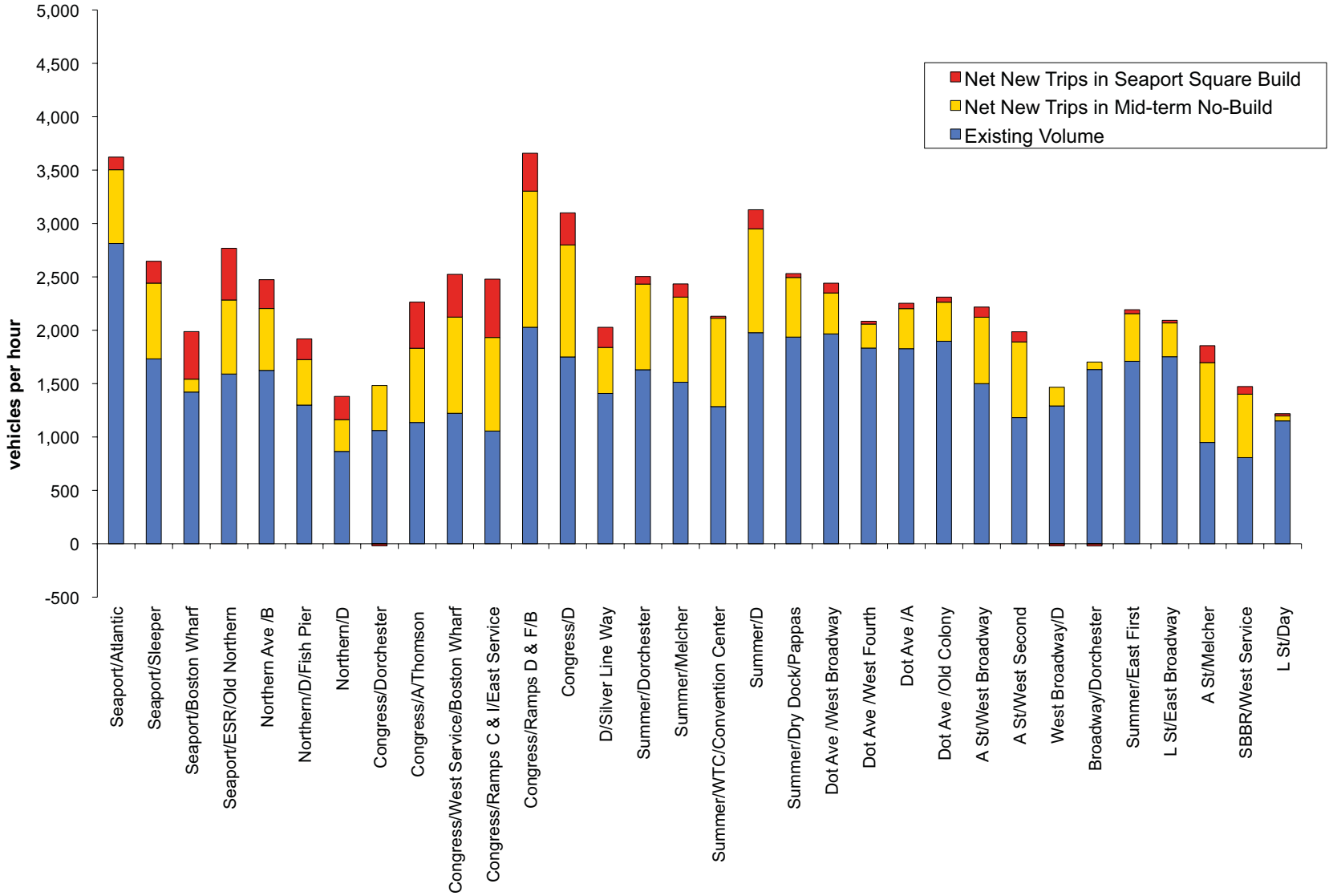

SEAPORT SQUARE
IN SOUTH BOSTON

Figure 3-36

Intersection Volume Comparison Graph: Existing, Mid-term, and Seaport Square Build Conditions, p.m. Peak Hour

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The intersections with the highest volume increases due to the Seaport Square Project are located on routes that serve the Project's parking access/egress driveways. In the a.m. peak hour, four intersections would experience a 10% or greater increase in intersection volumes, as compared to Mid-term Conditions. In the p.m. peak hour, 11 intersections would experience a 10% or greater increase in intersection volumes.

The relative contribution of Seaport Square Project trips to intersection operations is discussed in detail in Section 3.3.3 (Transportation Mitigation Measures).

The associated Seaport Square Build traffic operations are summarized in Table 3-19 for the a.m. and p.m. peak hours. Complete Synchro reports are provided in Appendix B-3, and complete LOS tables showing LOS by individual intersection approach are provided in Appendix B-4.

Table 3-19 Seaport Square Build Conditions Level of Service Summary

Intersection	a.m. Peak	p.m. Peak
Signalized Intersections		
Seaport Boulevard/Atlantic Avenue	E	F
Seaport Boulevard/Sleeper Street	C	C
Seaport Boulevard/Boston Wharf Road	A	B
Seaport Boulevard/East Service Road	F	F
Seaport Boulevard/B Street	E	E
Seaport Boulevard/Northern Avenue/D Street (southbound)/ Fish Pier Street	E	F
Northern Avenue/D Street (northbound)	F	F
Congress Street/Dorchester Avenue	C	B
Congress Street/A Street/Thomson Place	E	F
Congress Street/West Service Road/Boston Wharf Road	D	F
Congress Street/Off-ramp C/Off-ramp I/East Service Road	D	C
Congress Street/On-ramp D/Off-ramp F/B Street	F	F
Congress Street/D Street	C	F
D Street/Silver Line Way	A	A
Summer Street/Dorchester Avenue	F	F
Summer Street/Melcher Street	D	F
Summer Street/World Trade Center Avenue/ Convention Center Drive	B	B
Summer Street/D Street	E	E
Summer Street/Dry Dock Avenue/Pappas Way	E	D
Dorchester Avenue/West Broadway	D	D
Dorchester Avenue/West Fourth Street	B	B
Dorchester Avenue/A Street	A	C
Dorchester Avenue/Old Colony Avenue	C	B
A Street/West Broadway	C	F
A Street/West Second Street	B	B
West Broadway/D Street	C	D
West Broadway/East Broadway/Dorchester Street	E	F
Summer Street/East First Street	D	D

Table 3-19 Seaport Square Build Conditions Level of Service Summary (Continued)

Intersection	a.m. Peak	p.m. Peak
Signalized Intersections		
L Street/East Broadway	E	F
A Street/Melcher Street	F	F
Seaport Boulevard/Thomson Street	B	B
Unsignalized Intersections		
South Boston Bypass Road (Haul Road)/Wormwood Street	—	—
Wormwood EB left	C	F
Wormwood EB left/right	B	D
Haul Road NB left	A	A
Haul Road NB thru	A	A
Haul Road SB thru	A	A
Haul Road SB right	A	A
L Street/William J. Day Boulevard	—	—
William J. Day EB left/thru | thru	A	A
William J. Day WB thru/right	A	A
L SB left	F	C
L SB right	B	C
Sleeper Street/Block B Driveway	—	—
Block B WB left/right	C	C
Sleeper NB thru/right	A	A
Sleeper SB left/thru	A	A
Northern Avenue/Block D Driveway	—	—
Northern EB thru/right	A	A
Northern WB left/thru	A	A
Block D Driveway NB left/right	C	E
East Service Road/Block G Driveway	—	—
Block G EB left/right	E	F
East Service NB left/thru	A	A
East Service SB thru/right	A	A
Boston Wharf Road/Block Q Driveway/Block L3 Driveway	—	—
Block Q EB thru/right	B	B
Block L3 WB left/thru	F	F
Boston Wharf SB left/thru	A	A
Boston Wharf SB thru/right	A	A
East Service Road/Block L4 Driveway	—	—
Block L4 EB left	F	F
East Service NB left/thru	A	A
East Service NB thru	A	A
East Service Road/Block M2 Driveway	—	—
Block M2 WB right	C	B
East Service NB thru	A	A
East Service NB thru/right	A	A
Summer Street/Harbor Street	—	—
Summer EB left/thru	A	A
Summer EB thru	A	A
Summer WB thru	A	A
Summer WB thru/right	A	A
Harbor SB left/right	C	C

Table 3-19 Seaport Square Build Conditions Level of Service Summary (Continued)

Intersection	a.m. Peak	p.m. Peak
Unsignalized Intersections		
West Service Road/Block N & P Driveway	—	—
Block N & P WB left/right	C	F
West Service NB thru	A	A
West Service NB thru/right	A	A
West Service SB left/thru	A	A

Light gray cell shading indicates a worsening in LOS from Mid-term No-Build Conditions that brings operations to LOS E or F. Black cell shading indicates an improvement from the previous condition.

As shown above, eight of the signalized study area intersections in the a.m. peak hour and 10 in the p.m. peak hour will worsen to LOS E or LOS F with Seaport Square in place. The following points should be noted when reviewing the Seaport Square Build Conditions LOS results:

1. Seaport Square will displace commuter surface parking spaces that generate a substantial number of vehicle trips during the peak hours; thus, the new vehicle trips associated with Seaport Square will substantially change travel patterns and the overall effectiveness of existing signal timings, offsets, and phasing.

2. For purposes of this analysis, signal operations for the Seaport Square Build Conditions analysis were assumed to be the same as under Mid-term No-Build Conditions so that specific improvements to traffic signal operations could be more clearly targeted. Mitigation is discussed in a later section of this chapter.

In the ***a.m. peak hour,*** the following ***signalized*** intersections will worsen to overall LOS E or LOS F:

- Seaport Boulevard/East Service Road;
- Seaport Boulevard/Northern Avenue/D Street (southbound)/ Fish Pier Street;
- Northern Avenue/D Street (northbound);
- Congress Street/A Street/Thomson Place;
- Summer Street/Dorchester Avenue;
- Summer Street/D Street;
- L Street/East Broadway; and
- A Street/Melcher Street.

For *unsignalized* locations, three of the Project driveway approaches will operate at LOS E or LOS F, including:

- East Service Road/Block G Driveway—Block G eastbound left/right;
- Boston Wharf Road/Block Q Driveway/Block L3 Driveway—Block L3 westbound left/ through; and
- East Service Road/Block L4 Driveway—Block L4 eastbound left.

It should be noted that operation at LOS E or LOS F is typical for a stop-controlled side street (or driveway) that intersects a major or minor arterial roadway.

In the *p.m. peak hour,* the following *signalized* intersections would worsen to overall LOS E or LOS F:

- Seaport Boulevard/East Service Road;
- Seaport Boulevard/B Street;
- Seaport Boulevard/Northern Avenue/D Street (southbound)/Fish Pier Street;
- Northern Avenue/D Street (northbound);
- Congress Street/A Street/Thomson Street;
- Congress Street/West Service Road/Boston Wharf Road;
- Congress Street/On-ramp D/Off-ramp F/B Street;
- Congress Street/D Street;
- Summer Street/Dorchester Avenue; and
- Summer Street/Melcher Street.

For *unsignalized* locations, five of the Project driveway approaches will operate at LOS E or LOS F, including:

- Northern Avenue/Block D Driveway—Block D Driveway northbound left/right;
- East Service Road/Block G Driveway—Block G eastbound left/right;
- Boston Wharf Road/Block Q Driveway/Block L3 Driveway—Block L3 westbound left/ through;
- East Service Road/Block L4 Driveway—Block L4 eastbound left; and

- West Service Road/Blocks N & P Driveway—Blocks N & P westbound left/right.

It should be noted that operation at LOS E or LOS F is typical for a stop-controlled side street (or driveway) that intersects a major or minor arterial roadway.

Again, peak-hour LOS improves under Seaport Square Build Conditions at several locations.

3.3.2.10 Seaport Square Build Conditions Parking Demand

Seaport Square will include up to 6,500 on-site parking spaces in new underground multi-level garages. Although there are currently 3,647 public and 91 private commuter spaces provided in the parking lots on the site, the new garages will be managed so as to serve development on the various Blocks. Users will include residents, shoppers, hotel guests, restaurant patrons, and office tenants. A portion of the proposed 6,500 spaces will be retained as public parking to accommodate visitors to the site; however, pricing and management strategies will be employed to discourage daily commuters from using the new facilities.

Of the total of 6,500 spaces, approximately 2,500 will be designated for the residential units and will not count toward the Air Pollution Control Commission's (APCC) South Boston Parking Freeze quota. Seaport Square currently has 3,647 APCC-permitted commercial parking spaces. Seaport Square proposes to maintain these public for-fee spaces and request approximately 353 additional spaces from the South Boston Parking Freeze bank.

BTD Parking Ratios

BTD's parking ratios suggest guidelines for the South Boston waterfront area of 1.0 to 1.5 spaces per dwelling unit for residential use and 0.4 spaces per hotel room. For commercial uses, the guidelines seek to "…gradually decrease the parking ratio to 0.7 spaces per 1,000 square feet." This guideline takes into account that the area parking supply will be reduced over time as surface parking lots are redeveloped for new buildings. These are to be regarded as maximums rather than the typical minimum parking requirement. Looking at the proposed development program, BTD guidelines allow for a minimum of 2,500 residential spaces (under the 1.0 space/unit ratio) to a maximum of 3,750 spaces (under 1.5 spaces/unit), 2,240 non-residential spaces, and 220 hotel spaces. Maximum spaces under BTD ratios would thus be approximately 6,210 spaces.

The proposed parking by land use is as follows:

- Residential—2,500 spaces for 2,500 units, for a ratio of 1.0 spaces per dwelling unit, compared to a BTD suggested range of 1.0 to 1.5 spaces per unit;

- Hotel—220 spaces for 550 rooms, for a ratio of 0.4 spaces per room, consistent with the BTD guideline of 0.4 spaces per room;

- Civic Uses (schools, library, gallery space, performing arts center)—255 spaces for 600,000 square feet, or 0.43 spaces per 1,000 square feet;

- Office/Research—925 spaces for 1,300,000 square feet, for a ratio of 0.71 spaces per 1,000 square feet, consistent with the BTD guideline of 0.7 spaces per 1,000 square feet; and

- Retail and Other Non-residential—2,600 spaces for 1,300,000 square feet, or two per 1,000 square feet, compared to a BTD guideline of 0.7 spaces per 1,000 square feet.

Six new underground parking garages comprising spaces will be constructed as part of the full 6.5-million-square-foot buildout of Seaport Square, as follows:

- In Phase 1, a parking garage will be constructed under Block A to provide 28 spaces for the residential uses.

- A parking garage containing approximately 2,400 spaces in four underground levels will be located under Blocks B through G. This parking garage will also provide a new underground connection to the MBTA Silver Line Courthouse Station.

- The garage located under Blocks L1 through L6 will contain approximately 2,700 spaces in three underground levels.

- The garage located under Blocks M1 and M2, will contain approximately 575 spaces in three underground levels.

- Another garage, located under Block K, will contain approximately 450 spaces in three levels.

- The last garage, located under Blocks N and P, will provide approximately 350 spaces in four levels.

Table 3-20 shows the number of parking spaces by land use, the recommended BTD parking ratio, and the estimated Project parking ratio.

Table 3-20 Parking Space Allotment by Land Use

Use	Proposed Spaces	BTD Guideline Parking Ratio	Project Ratio
Residential Condominiums	925	1.0 to 1.50 spaces/unit	1.00 spaces/unit
Residential Apartments	1,575	1.0 to 1.50 spaces/unit	1.00 spaces/unit
Hotel	220	0.40 spaces/room	0.40 spaces/room
Office	925	0.70 spaces/1,000 sf	0.71 spaces/1,000 sf
Cultural/Recreational	255	0.70 spaces/1,000 sf	0.43 spaces/1,000 sf
Retail/Entertainment	2,600	0.70 spaces/1,000 sf	2.00 spaces/1,000 sf
Total Spaces/Overall Ratio	**6,500**		**1.00 spaces/1,000 sf**

The Proponent will submit a formal application with the Boston Air Pollution Control Commission for South Boston Parking Freeze permits as necessary. In terms of the parking freeze, the Proponent will retain the 3,647 licensed commercial spaces currently found on-site, and will receive an exemption for approximately 2,500 residential spaces (one space per residential unit). The 353 additional spaces that the Proponent expects to create will be requested from the South Boston Parking Freeze "bank." The South Boston bank currently has 2,500 parking spaces, which are potentially available to all developers in the South Boston waterfront.

Comments were raised on the PNF with respect to the retail and office parking supply. At two spaces per 1,000 square feet, the proposed retail supply does exceed the recommended BTD ratio. However, when the demand is calculated based on daily person trips to the site with a recommended 39% auto use, the average car occupancy of 1.8 and the shopper turnover rate of 2.67 are taken into account, the retail peak demand comes to 2,672 spaces, in line with the proposed 2,600-space supply. When the office demand is based on the same method (with auto use of 31%, 1.2 average car occupancy, and turnover of 1.1), a demand of 1,781 spaces results—about twice as high as the proposed supply of 900, a severely constrained supply that will encourage use of alternative modes. The overall ratio is approximately 1.0 spaces per 1,000 square feet.

Final parking operations and management for Seaport Square will be codified in the Transportation Access Plan Agreement (TAPA) filed with BTD. Designated spaces within the garages will be illustrated on garage plans submitted both to APCC for the freeze applications and to BTD for the TAPA.

3.3.2.11 Seaport Square Build Conditions Public Transportation

Based on the transit mode shares presented above, the study team determined the new transit trips generated by Seaport Square. New transit trips generated by Seaport Square are shown in Table 3-21.

Table 3-21 Seaport Square Build Conditions Transit Trip Generation

Units/ksf		Resid. (Apt.) 1,575 units	Resid. (Condo) 925 units	Hotel 550 rooms	Perf. Arts Center 1,800 seats	School 1,800 students	Office 1,300 ksf	Retail 1,300 ksf	Church 24 ksf	Library 10 ksf	Total
Daily	In *	1,401	735	648	1,526	878	3,716	11,146	94	213	20,357
	Out*	1,458	735	648	1,526	878	3,467	11,244	94	213	20,293
	Total	**2,859**	**1,501**	**1,296**	**3,052**	**1,756**	**7,183**	**22,390**	**188**	**426**	**40,650**
Morning Peak	In	67	29	51	11	329	1,170	664	8	5	2,334
	Out	270	142	28	0	262	73	315	4	2	1,096
	Total	**337**	**171**	**79**	**11**	**591**	**1,243**	**979**	**12**	**7**	**3,430**

Table 3-21 Seaport Square Build Conditions Transit Trip Generation (Continued)

Units/ksf		Resid. (Apt.) 1,575 units	Resid. (Condo) 925 units	Hotel 550 rooms	Perf. Arts Center 1,800 seats	School 1,800 students	Office 1,300 ksf	Retail 1,300 ksf	Church 24 ksf	Library 10 ksf	Total
Afternoon Peak	In	179	91	34	140	95	113	1,085	6	25	1,768
	Out	82	38	45	74	104	1,036	1,078	6	29	2,491
	Total	**261**	**129**	**79**	**214**	**199**	**1,149**	**2,163**	**12**	**54**	**4,259**
Saturday Peak	In	184	60	59	0	0	35	1,436	52	27	1,853
	Out	114	22	46	0	0	25	1,398	21	24	1,650
	Total	**298**	**82**	**105**	**0**	**0**	**60**	**2,834**	**73**	**51**	**3,503**

* Trips "in" represent alightings from the train and trips "out" represent boardings of the trains.

The Project will add 3,430 transit trips (1,096 boardings and 2,334 alightings) during the a.m. peak hour, 4,259 transit trips (2,491 boardings and 1,768 alightings) during the p.m. peak hour, and 3,503 transit trips (1,650 boardings and 1,853 alightings) during the Saturday mid-day peak hour. The mix of land uses helps balance peak and off-peak directionality of the transit flows, reducing the impacts on transit capacity.

These new transit trips will be distributed on the various inbound and outbound transit services near the Project. The most convenient stations are South Station, serving the Red Line and commuter rail, and Courthouse Station, serving the Silver Line. The future capacity of the transit services in the vicinity of the Project is shown in Table 3-22.

Table 3-22 Seaport Square Build Conditions Public Transportation

Subway Line	Origin–Destination	Car Capacity[1]	Cars Per Train[2]	Train Capacity[2]	Trains Per Hour*	Hourly 1-way Capacity
Red Line	Alewife–Braintree/Ashmont	167	6	1,002	13	13,026
Orange Line	Forest Hills–Oak Grove	131	6	786	8	6,286
Green Line	Lechmere–Boston College, Cleveland Circle, Riverside, Health	90	2/3	180/270	18	4,320
Silver Line	Logan Airport/BMIP to South Station	97	1	97	41	3,977**
Silver Line	South Station to Logan Airport/BMIP	97	1	97	41	3,977**
Blue Line	Wonderland–Bowdoin	95	6	570	15	8,550

[1] Per MBTA service policy for peak-hour service. "Crush loaded" capacity is 1,602 for a 6-car Red Line train, 1,344 for a 6-car Orange Line train, 538 for a 2-car Green Line train; 120 for a Silver Line articulated vehicle, and 954 for a 6-car Blue Line train. Table does not reflect Run as Directed trains added in peak hours.
[2] Three 3-car trains are in service on the Riverside Branch.
[3] Per MBTA: 3-car, low-floor Green Line trains on D Branch (post completion of Arlington and Copley ADA improvements); 6-car Blue Line trains.
* Source: MBTA Service Planning and Web site, 5/09.
** Crush loaded capacity is 4,920.

Impacts of Seaport Square on Silver Line Capacity

Because of concerns expressed about the ability of the Silver Line, in particular, to handle transit trips generated by Seaport Square as well as the Mid-term No-Build development discussed above, a careful analysis of demand and capacity was conducted using the steps described below.

- ***Step 1:*** Assumptions were hard-coded into the model, including:
  - The number of weekday boardings on the Silver Line (2007 MBTA Blue Book);
  - The number of weekday boardings on bus routes #4 and #7 (2007 MBTA Blue Book);
  - The maximum hourly directional capacity of the Silver Line at the different phases of construction (Waterside Place Notice of Project Change, 2007 and conversations with the MBTA office of service planning May 2009); and
  - The number of Project-generated daily, a.m. and p.m. total, and a.m. and p.m. inbound/outbound trips (see Table 3-21, above).
- ***Step 2***: Allocate Mid-term No-Build and Seaport Square transit trips to services, as follows:
  - 88% of Seaport Square transit users to the Silver Line;
  - 2% of transit users to local bus service provided by routes #4 and #7;
  - 10% walk trips to transit available from South Station. Different allocation percentages were used for several projects situated closer to South Station to reflect a higher proportion of transit users selecting to walk to this transportation node.
- ***Step 3:*** Calculate the number of patrons currently using the Silver Line and local bus service during the a.m. and p.m. peaks by dividing the total weekday boardings on each service by the percentage of transit ridership that occurs during the a.m. and p.m. peaks according to the trip generation. This provides baseline numbers for both the Silver Line and local bus service in the area to which Seaport Square Build and Mid-term No-Build trips are added in the next phase. For purposes of this exercise, no additional MBTA local bus service over what is available in the Seaport area today was modeled. With regard to the Silver Line, no additional capacity was modeled beyond what the MBTA office of service planning expects to be able to provide with its current roster of vehicles in all cases except the South Boston Waterfront Long-Term Conditions.

- ***Step 4***: Allocate transit trips for Mid-term No-Build projects and Seaport Square to the three transit options (Silver Line, local bus, or walk to South Station) by multiplying the projected a.m. and p.m. transit trips for each Mid-term No-Build project and Seaport Square by the allocation percentages selected in the baseline numbers section. Projects situated closer to South Station generate lower use of the Silver Line, as noted above.

- ***Step 5:*** Add Mid-term No-Build and Seaport Square Build trips to existing ridership by direction.

- ***Step 6:*** Compare ridership to capacity for the Silver Line and local bus service under Mid-term No-Build and Seaport Square Build Conditions.

- ***Step 7***: Check the number of pedestrians walking to South Station against typical pedestrian peak-hour volumes to ensure that the number is reasonable.

Table 3-23 shows the volume-to-capacity ratios for Existing, Mid-term No-Build and Seaport Square Build ridership for the peak-hour/peak-direction Silver Line trips. Table 3-24 shows the volume-to-capacity ratio for local bus service for the Existing, Mid-term No-Build, and Seaport Square Build cases.

Based on this series of calculations, the Silver Line would be able to absorb predicted increases in ridership generated by the Mid-term No-Build projects, albeit under crush loading.

Under the Seaport Square Build conditions, the crush loading capacities would fill to 89% and 99% during the a.m. and p.m. peak hours, respectively. Note that these relatively high capacity use estimates incorporate the assumption that the MBTA will continue to operate 41 trains per hour by the time the Seaport Square Project is completed. The long-standing plan of the MBTA has been to have full deployment of the Silver Line service at 89 peak-hour/peak direction trains per hour, slated for some time in the future when planned overall development in the South Boston waterfront nears completion. As shown in Section 3.3.4.6, which focuses on Long-Term South Boston Waterfront conditions, the total highest peak-hour/peak-direction ridership of about 6,200 could be accommodated in a more easily achievable 64 peak-hour/peak-direction trips under service policy loads, and 52 peak-hour/peak-direction trips under crush loading.

Table 3-23 Projected Silver Line Peak-hour/Peak-direction Ridership and V/C Ratio, Seaport Square Build Conditions

	From South Station to Project Area				From Project Area to South Station			
a.m. Peak Silver Line Service	Existing 2009	Added Mid-term No-Build	Added Seaport Square Build	Total Seaport Square Build	Existing 2009	Added Mid-term No-Build	Added Seaport Square Build	Total Seaport Square Build
Seated Capacity	3,201	3,997	3,977	3,977	3,201	3,997	3,977	3,977
Crush Capacity	3,960	4,920	4,920	4,920	3,960	4,920	4,920	4,920
# of Riders (peak hour)	506	1,786	2,072	4,364	506	534	965	2,005
% Capacity (service policy)	16%	N/A	N/A	110%	16%	N/A	N/A	50%
% Capacity (crush loading)	13%	N/A	N/A	89%	13%	N/A	N/A	41%
	From South Station to Project Area				From Project Area to South Station			
p.m. Peak Silver Line Service	Existing 2009	Added Mid-term No-Build	Added Seaport Square Build	Total Seaport Square Build	Existing 2009	Added Mid-term No-Build	Added Seaport Square Build	Total Seaport Square Build
Seated Capacity	3,201	3,997	3,977	3,977	3,201	3,997	3,977	3,977
Crush Capacity	3,960	4,920	4,920	4,920	3,960	4,920	4,920	4,920
# of Riders (peak hour)	629	1,104	1,555	3,288	629	2,051	2,192	4,872
% Capacity (service policy)	20%	N/A	N/A	83%	20%	N/A	N/A	123%
% Capacity (crush loading)	16%	N/A	N/A	67%	16%	N/A	N/A	99%

Table 3-24 Volume-to-Capacity Ratio, Local Bus Service, Seaport Square Build Conditions

	Existing a.m.	Existing p.m.	Mid-term No-Build a.m.	Mid-term No-Build p.m.	Seaport Sq. Build a.m.	Seaport Sq. Build p.m.
Capacity	780	780	780	780	780	780
# of Riders (peak hour)	250	311	506	623	575	708
% Capacity	32%	40%	65%	80%	74%	91%

3.3.2.12 Seaport Square Build Conditions Pedestrian Operations

On a typical weekday, the Project will generate approximately 31,610 "walk, bike or other" trips and approximately 40,648 transit trips that may require a walk trip to or from the site. As shown in Table 3-25, there will be 1,711 walk-only trips in and out of the site during the a.m. peak hour, 2,583 walk-only trips in and out during the p.m. peak hour, and 2,982 walk-only trips in and out during the Saturday mid-day peak hour. Again, the mix of land uses fosters more pedestrian trips among the various Blocks.

Table 3-25 Seaport Square Build Pedestrian and "Other" Trip Generation

Time Period	Apart-ments	Condos	Hotel	Perf. Arts	School	Office	Retail	Church	Library	Total
Daily										
Entering	1,593	836	1,207	1,017	585	1,466	8,890	69	142	15,805
Exiting	1,593	836	1,207	1,017	585	1,466	8,890	69	142	15,805
a.m. Peak Hour										
Entering	75	32	110	0	233	255	0	4	4	713
Exiting	301	158	89	0	203	139	103	3	2	998
p.m. Peak Hour										
Entering	199	101	109	79	74	104	657	5	20	1,348
Exiting	92	43	104	49	69	203	653	3	19	1,235
Saturday Mid-day Peak Hour										
Entering	206	67	109	0	0	14	1,141	38	18	1,593
Exiting	127	24	86	0	0	10	1,110	16	16	1,389

Note: these figures include bicycle trips, discussed below.

Pedestrian trips associated with Seaport Square were distributed separately for pedestrians traveling to and from transit stations and for local pedestrian trips. Trips were distributed to the existing pedestrian network in the study area using the distribution shown in Table 3-26.

Table 3-26 Seaport Square Build Conditions Pedestrian Trip Distribution

Transit Riders' Direction	Percentage
To/from South Station	10%
To/from Silver Line (Courthouse or World Trade Center Station)	88%
To/from bus stops (local or express)	2%
Local Pedestrian Trip Direction	**Percentage**
To/from Downtown North (City Hall)	10%
To/from Downtown South (Downtown Crossing, Chinatown)	18%
To/from Dorchester Avenue	2%

Table 3-26 Seaport Square Build Conditions Pedestrian Trip Distribution (Continued)

Local Pedestrian Trip Direction	Percentage
To/from A Street	10%
To/from Fort Point Neighborhood (between Congress St. & Seaport Blvd)	12%
To/from Fan Pier	7%
To/from Seaport Hotel/Waterside Place	7%
To/from BMIP	3%
To/from Summer Street (City Point)	3%
To/from BCEC	2%
Internal Seaport Square trips	25%

The new Project pedestrian trips were added to the Mid-term No-Build pedestrian volumes; the resulting Seaport Square Build Conditions pedestrian volumes are shown in Figure 3-37 and Figure 3-38 for the a.m. and p.m. peak hours. Pedestrian levels of service are shown in Table 3-27.

Table 3-27 Seaport Square Build Conditions Pedestrian Levels of Service

Intersection	Delay LOS		Space LOS	
	a.m.	p.m.	a.m.	p.m.
Signalized Intersections				
Seaport Boulevard/Atlantic Avenue				
Seaport East Crosswalk	D	D	F	F
Seaport West Crosswalk	B	B	A	A
Atlantic North Crosswalk	D	D	C	C
Atlantic South Crosswalk	B	B	A	A
Seaport Boulevard/Sleeper Street				
Seaport East Crosswalk	D	D	A	A
Seaport West Crosswalk	D	D	A	A
Sleeper North Crosswalk	D	D	C	E
Sleeper South Crosswalk	D	D	B	B
Seaport Boulevard/Boston Wharf Road				
Seaport East Crosswalk	C	C	B	C
Seaport West Crosswalk	C	C	C	C
Boston Wharf South Crosswalk	C	C	C	D

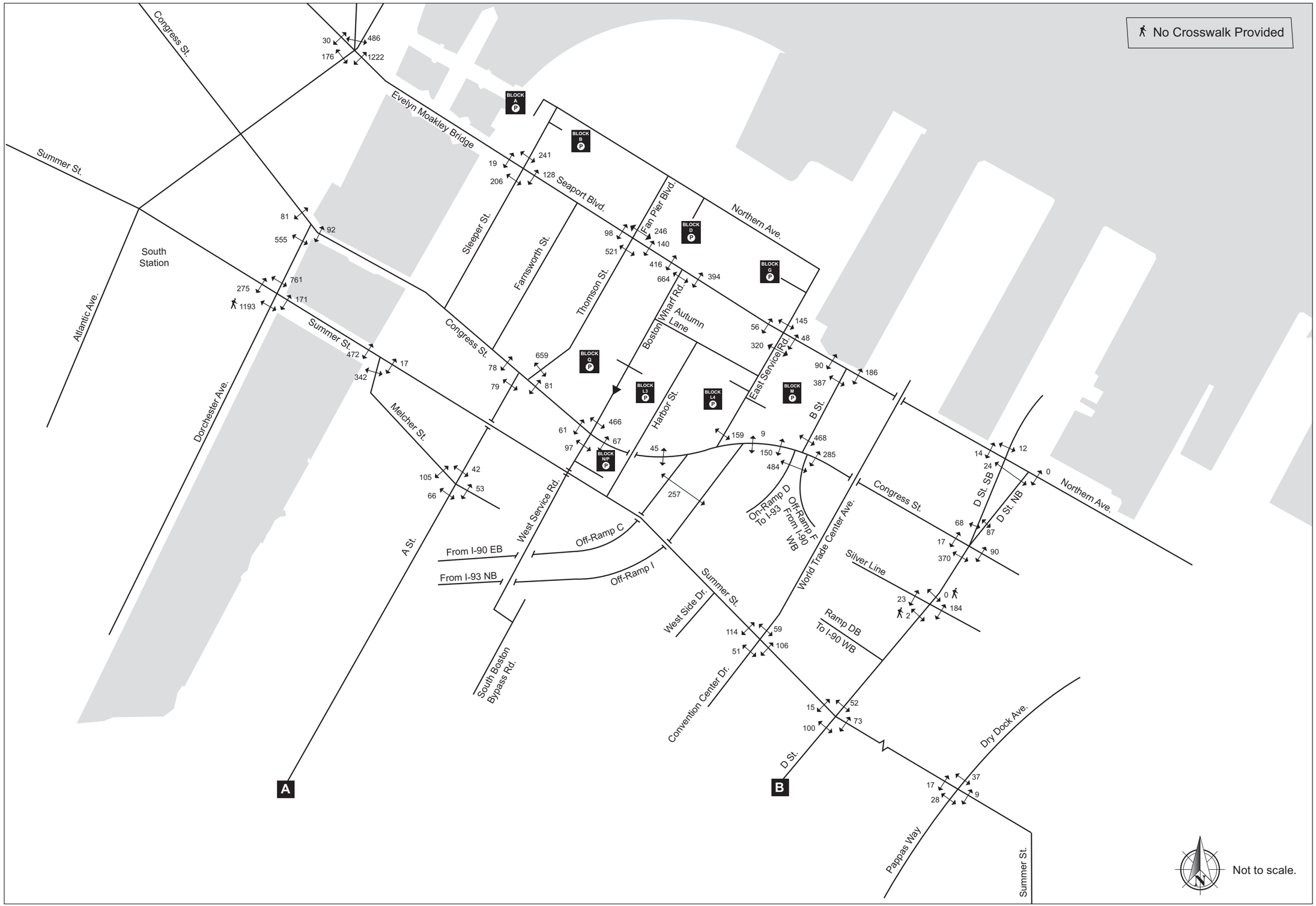

Figure 3-37

Seaport Square Build Conditions Pedestrian Volumes, a.m. Peak Hour, North of Summer Street

SEAPORT SQUARE
IN SOUTH BOSTON

GALE INTERNATIONAL

Morgan Stanley

WS DEVELOPMENT

prepared by:
Howard/Stein-Hudson Associates, Inc.

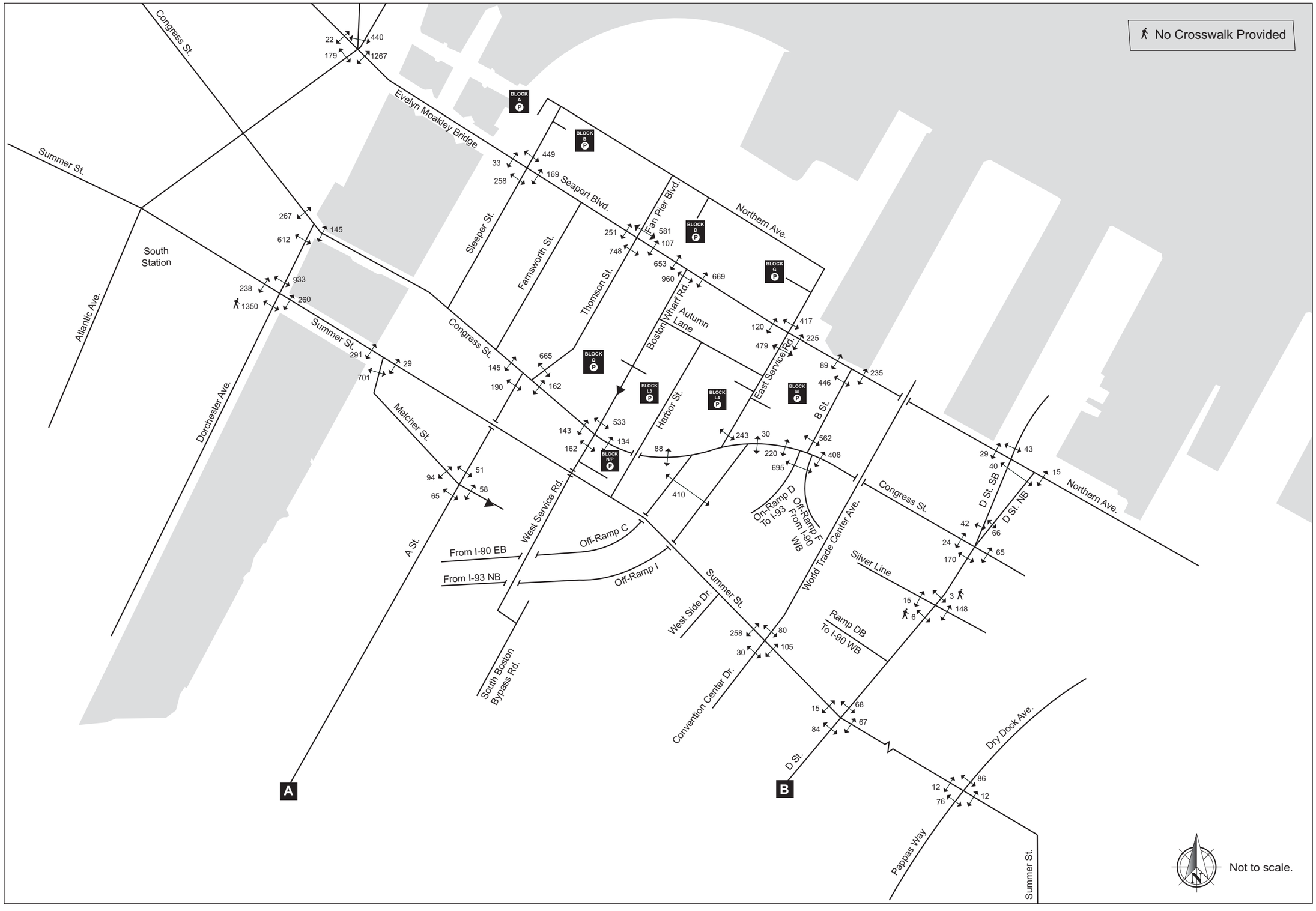

Figure 3-38

Seaport Square Build Conditions Pedestrian Volumes, p.m. Peak Hour, North of Summer Street

prepared by:
Howard/Stein-Hudson Associates, Inc.

Table 3-27 Seaport Square Build Conditions Pedestrian Levels of Service (Continued)

Intersection	Delay LOS		Space LOS	
	a.m.	p.m.	a.m.	p.m.
Signalized Intersections				
Seaport Boulevard/East Service Road/ Old Northern Avenue				
Seaport East Crosswalk	D	D	A	D
Seaport West Crosswalk	D	D	A	A
Old Northern North Crosswalk	D	D	A	D
East Service South Crosswalk	D	D	B	C
Seaport Boulevard/B Street				
Seaport East Crosswalk	D	D	A	A
Seaport West Crosswalk	D	D	A	A
B South Crosswalk	D	D	A	B
Seaport Boulevard/Northern Avenue/ D Street (southbound)/Fish Pier Road				
Seaport West Crosswalk	D	D	A	A
Fish Pier North Crosswalk	D	D	A	A
D (SB) South Crosswalk	D	D	A	A
Northern Avenue/D Street (northbound)				
Northern East Crosswalk	D	D	A	A
D (NB) South Crosswalk	D	D	A	A
Congress Street/Dorchester Avenue				
Congress East Crosswalk	D	D	A	A
Congress West Crosswalk	D	D	A	E
Dorchester South Crosswalk	D	D	D	E
Congress Street/A Street/Thomson Place				
Congress East Crosswalk	D	D	A	A
Congress West Crosswalk	D	D	A	B
Thomson North Crosswalk	D	D	D	D
A South Crosswalk	D	D	A	B
Congress Street/West Service Road/ Boston Wharf Road				
Congress East Crosswalk	D	D	A	A
Congress West Crosswalk	D	D	A	A
Boston Wharf North Crosswalk	D	D	C	C
West Service South Crosswalk	D	D	A	B
Congress Street/Off-ramp C/Off-ramp I/ East Service Road				
Congress East Crosswalk	D	D	A	B
Congress West Crosswalk	D	D	A	B
East Service North Crosswalk	D	D	A	A
Ramps C&I South Crosswalk	C	C	A	A

Table 3-27 Seaport Square Build Conditions Pedestrian Levels of Service (Continued)

Intersection	Delay LOS		Space LOS	
	a.m.	p.m.	a.m.	p.m.
Signalized Intersections				
Congress Street/On-ramp D/Off-ramp F/B Street				
Congress East Crosswalk	D	D	A	C
Congress West Crosswalk	D	D	A	B
B North Crosswalk	D	D	B	B
Ramps D&F South Crosswalk	D	D	E	E
Congress Street/D Street				
Congress East Crosswalk	D	D	A	A
Congress West Crosswalk	D	D	A	E
D North Crosswalk	C	C	A	A
D South Crosswalk	D	D	F	F
D Street/Silver Line Way				
Silver Line East Crosswalk	D	D	A	A
Silver Line West Crosswalk	D	D	A	A
Summer Street/Dorchester Avenue				
Summer East Crosswalk	D	D	A	A
Summer West Crosswalk	D	D	A	A
Dorchester North Crosswalk	D	D	C	C
Summer Street/Melcher Street				
Summer East Crosswalk	C	C	A	A
Summer West Crosswalk	C	C	B	A
Melcher South Crosswalk	B	B	A	A
Summer Street/World Trade Center Avenue/ Convention Center Drive				
Summer East Crosswalk	C	C	A	A
Summer West Crosswalk	C	C	A	A
World Trade Center North Crosswalk	C	C	A	A
Convention Center South Crosswalk	C	C	A	A
Summer Street/D Street				
Summer East Crosswalk	D	D	A	A
Summer West Crosswalk	D	D	A	A
D North Crosswalk	C	C	A	A
D South Crosswalk	C	C	A	A
Summer Street/Dry Dock Avenue/Pappas Way				
Summer East Crosswalk	C	C	A	A
Summer West Crosswalk	C	C	A	A
Dry Dock North Crosswalk	C	C	A	A
Pappas South Crosswalk	C	C	A	A

Table 3-27 Seaport Square Build Conditions Pedestrian Levels of Service (Continued)

Intersection	Delay LOS		Space LOS	
	a.m.	p.m.	a.m.	p.m.
Signalized Intersections				
A Street/Melcher Street				
Parking Lot East Crosswalk	D	D	A	A
Melcher West Crosswalk	D	D	A	A
A North Crosswalk	D	D	A	A
A South Crosswalk	D	D	A	A
Seaport Boulevard/Thomson Street/Fan Pier Boulevard				
Seaport East Crosswalk	C	C	A	A
Seaport West Crosswalk	C	C	A	A
Fan Pier North Crosswalk	C	C	A	C
Thomson South Crosswalk	C	C	A	D

Light grey cell shading indicates a worsening in LOS from Existing Conditions.

Only a few additional crosswalks operate at LOS E or worse as a result of Seaport Square, as follows:

- North crosswalk of Sleeper Street in the p.m. peak hour operates at LOS E.
- West crosswalk of Congress Street at Dorchester Avenue operates at LOS E in the p.m. peak hour.
- South crosswalk of On-ramp D and Off-ramp F at B Street operates at LOS E in both the a.m. and the p.m. peak hours.
- West crosswalk of Congress Street at D Street operates at LOS E in the p.m. peak hour.

3.3.2.13 Seaport Square Build Conditions Bicycle Accommodations

Bicycle trips were estimated at 1.5% of total person trips, based on an estimate from the Massachusetts Bike Coalition. The numbers of bike trips, extracted from the pedestrian and other figures above, are summarized in Table 3-28.

Table 3-28 Seaport Square Project-generated Bicycle Trips

Bicycle Trips	Total	In	Out
Daily	1,676	838	838
a.m. Peak Hour	114	69	45
p.m. Peak Hour	158	72	87
Saturday Mid-day	155	82	73

BTD has established guidelines that buildings with more than nine residential units must provide secure bicycle parking at the rates of one bicycle space per three residential units. Accordingly, Seaport Square will provide secure on-site residential bicycle storage for at least 833 bicycles, plus an additional 400 spaces for the other land uses (one bicycle space for every 10 automobile parking spaces). Additionally, a bicycle rack will be provided near each public entrance for use by non-residential tenants.

3.3.2.14 Seaport Square Build Conditions Loading and Service Accommodations

As shown in the Site Plan in Figure 3-29, above, the Project totals nine service areas with 35 loading docks. All service and loading will take place off-street. The service driveway location of each development Block is listed below.

- Block A -- via Sleeper Street;
- Blocks B and C -- via Sleeper Street;
- Block D -- via Old Northern Avenue;
- Block G -- via East Service Road;
- Block H – no loading dock; the new Chapel will generate minimal loading activity;
- Block J – via Farnsworth Street;
- Blocks K and Q -- via Stillings Street;
- Block L -- via Congress Street;
- Block M -- via B Street; and
- Blocks N and P -- via West Service Road.

The study team estimated the number of truck trips associated with Seaport Square. The primary source of truck trip generation rates was taken from research data summarized from national studies and Boston specific studies.[2] A description of the anticipated loading/ service activity by land use is presented below.

Residential Use. Residential units primarily generate truck trips that are delivering small packages, flowers, dry cleaning and food, both prepared and grocery. Truck trip estimates were based on national rates per residential unit.

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[2] *Truck Trip Generation Data—Synthesis 298*. National Cooperative Highway Research Program (NCHRP) and Transportation Research Board. 2001.

Hotel Use. Hotel deliveries include primarily linens and food. Truck trip estimates were based on National Cooperative Highway Research Program (NCHRP) data for Boston.

Retail Use. Different types of retailers—major vs. "storefront" types—have different truck trip generation rates. The mix of retailers for the Project is not yet finalized. Over time, as retail tenants for the Blocks are designated, the loading dock design will be finalized. For the purposes of this analysis, it has been assumed that 75% of the overall retail space will be occupied by major retailers and 25% will be storefront retailers. A major retail store will generate fewer trips per square feet, because most merchandise will arrive from a central location, as opposed to a variety of smaller retailers that will have different sources for their merchandise. Truck trip estimates were based on NCHRP data for Boston.

Office Use. Deliveries for office use are related primarily to office supplies and couriers, depending on the nature of the office tenants. Truck trip estimates were based on NCHRP data for Boston.

Performing Arts Center. On a typical weekday day, when no major performance is scheduled, the loading activity is assumed to be similar to a movie theater, being mostly concession product based. Theater truck trip estimates were based on NCHRP data for Boston. During the set-up and break-down of a major performance, however, truck activity will increase.

Cultural/Library. Daily delivery activity for these uses is expected to be minimal. Truck trip estimates were based on the library use of NCHRP data for Boston.

School. Truck trip estimates were based on NCHRP data for Boston.

A summary of anticipated loading/service activity by Block is presented in Table 3-29.

Table 3-29 Summary of Anticipated Loading/Service Activity by Block

Block	Primary Uses	Number of Truck Bays	Number of Daily Trucks
A	Residential, Retail [1]	1	2
B/C	Office, Retail, Residential, Cultural	6	21
D	Residential, Retail, Cultural	2	15
G	Hotel, Residential, Retail	2	28
H	Chapel	0	1
J	Residential, Retail	0	5
K/Q	Residential, Hotel, Office, Retail	4	15
L	Residential, Office, Retail	12	33
M	Residential, Retail	4	27
N/P	Hotel, Performing Arts, School	4	8
	Totals	**35**	**154**

1) Note that the Block A truck bay will also accommodate trash from the adjacent Barking Crab restaurant.

Overall, the Project will generate approximately 154 truck deliveries per day. It is anticipated that 90% of these deliveries will occur between 7:00 a.m. and 5:00 p.m. However, whenever possible, loading and service activities will be requested to occur during off-peak hours. Based on observations of truck deliveries at other Boston mixed-use developments, the average duration of a delivery is about 15 minutes. Based on this duration of 15 minutes per truck, each dock could accommodate up to four trucks per hour. Given the number of available truck bays and the projected number of truck deliveries, sufficient loading capacity is provided in the Seaport Square Project.

Note that trash truck trips are not included in the number of daily trucks. In Downtown Boston for this type of development, trash truck trips generally occur between 5:00 a.m. and 7:00 a.m. and do not coincide with the regular delivery activity at the loading docks.

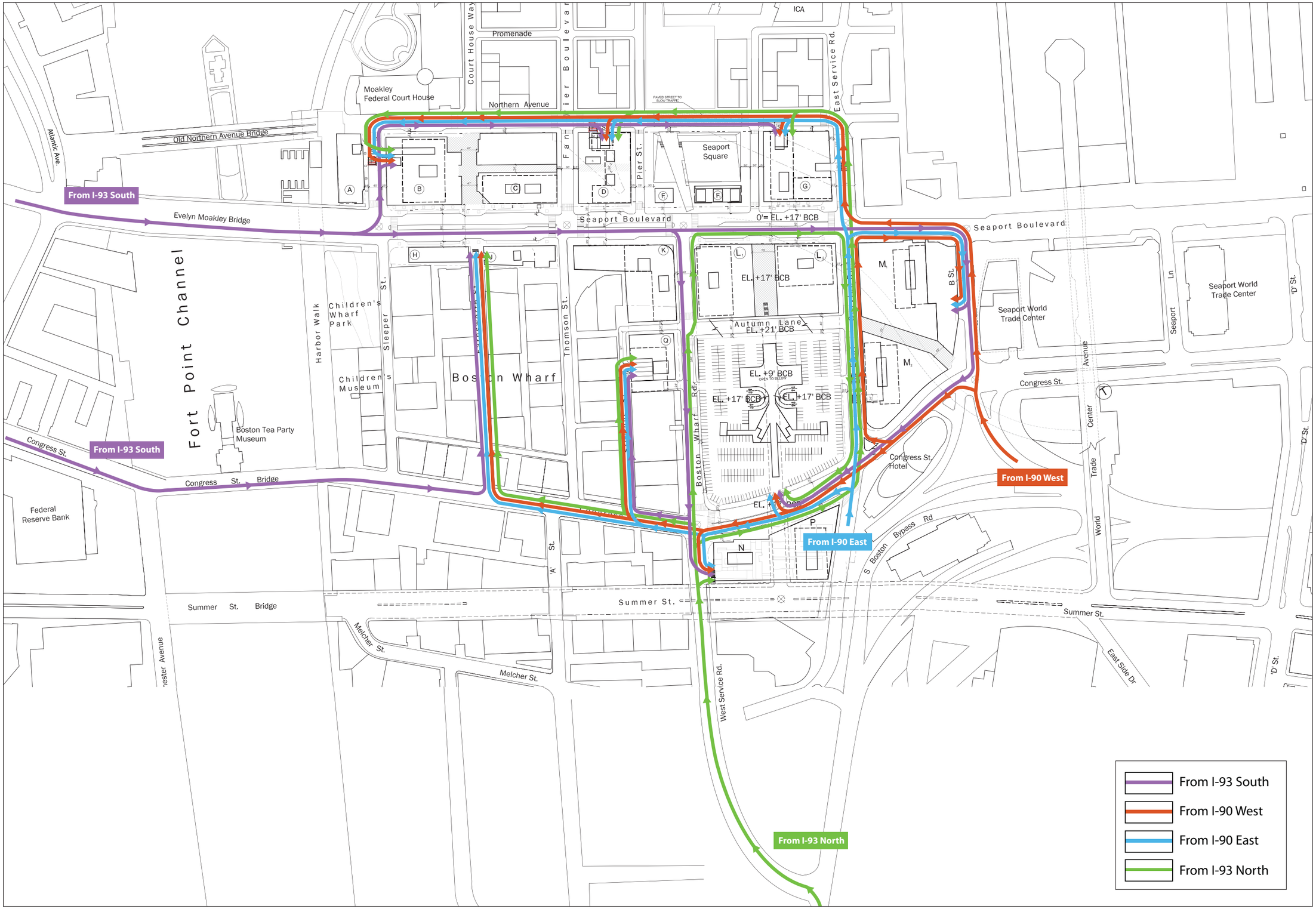
Truck routes to each loading area from the regional highway system are shown in Figure 3-39. Truck routes from each loading area to the regional highway system are shown in Figure 3-40. The loading docks for the various Blocks are proposed to be accessed at street level. The planned locations were shown previously in Figure 3-2.

During the planning process, the study team reviewed the truck movements and necessary articulation for a heavy vehicle to access each loading area. For each loading area, the movements of a WB-67 design vehicle, which is a large semi tractor-trailer, were tested using AutoTURN, a program used with AutoCAD to simulate vehicle turning movements. The simulations show that a WB-67 cannot complete the necessary movements at some of the loading docks due to the width of the existing streets. For those areas, a smaller vehicle was used; the Owner will manage and control the sizes of vehicles making deliveries and make those limitations clear to delivery vendors. For the loading area in B Block, the largest vehicle that can enter the load dock is a WB-50 semi tractor-trailer due to the width of Sleeper Street. Similarly, at the M and N Block loading areas, the largest vehicle that can enter the loading area is a WB-50 because of the existing street width. At the shared loading area for H Block and J Block, located at the northern end of Farnsworth Street, the largest delivery vehicle that can maneuver is an SU-36, a single-unit truck with the same wheelbase as a heavy trash truck. The truck size is limited by the width of Farnsworth Street. At the loading area for Q Block, accessed from Stillings Street, the largest delivery vehicle that can access the dock is again an SU-36, a single-unit truck. Diagrams showing the truck turning maneuvers are included in Appendix B-8. As individual buildings are designed, the truck turning diagrams for the proposed loading docks will be revisited. Loading/service areas will include permanent "no idling" signs. An on-site manager will oversee all service and loading operations.

SEAPORT SQUARE
IN SOUTH BOSTON

Figure 3-39.

Truck Routes from Regional Highways



GALE INTERNATIONAL

Morgan Stanley

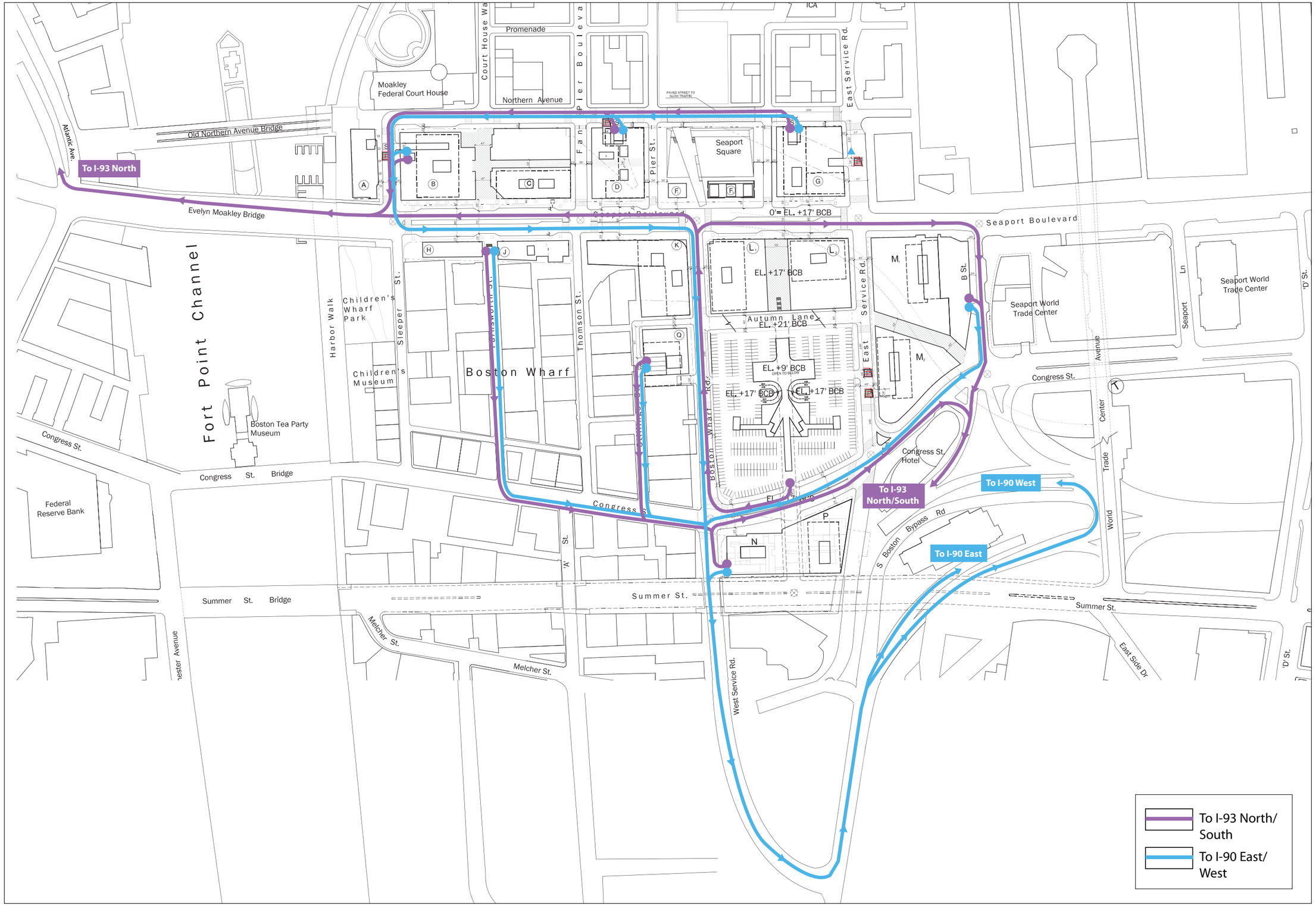
WS DEVELOPMENT

prepared by:
Howard/Stein-Hudson Associates, Inc.

SEAPORT SQUARE
IN SOUTH BOSTON

Figure 3-40

Truck Routes to Regional Highways



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3.3.3 Transportation Mitigation Measures

The Proponent has developed a physical design and management program for Seaport Square that emphasizes transit, walking, and bicycle connections in order to reduce auto dependency. The Proponent is committed to continuing to work with the City to foster sustainable development that balances the needs of the various transportation modes and to implement infrastructure and management improvements that will mitigate the impact of development on the surrounding transportation system.

3.3.3.1 Transit Mitigation

Seaport Square is envisioned as a transit-oriented development that will provide significant improvements to the public realm, including a new Silver Line entrance to the existing Courthouse Station. This new headhouse kiosk will be located in Seaport Square Green along Seaport Boulevard and will be easily accessible with a direct connection to Logan International Airport and to the South Station commuter rail and Red Line services. The new station kiosk will also provide a convenient location for both leisurely waterfront pleasure seekers and daily office and business workers.

3.3.3.2 Pedestrian Mitigation

As the various Blocks within the site area are developed, Seaport Square will enhance the pedestrian environment adjacent to its buildings along the major east–west corridors of Old Northern Avenue, Seaport Boulevard, and Congress Street, as well as along the north–south streets of Sleeper Street, Fan Pier Boulevard, Pier Street, Boston Wharf Road, new Harbor Street/Autumn Lane, East Service Road, and B Street, as described above. The few crosswalks with projected space deficiencies can be improved through widening, if necessary.

New Pedestrian Connection: As the Fort Point Channel Watersheet Activation Plan envisions, and in addition to the numerous pedestrian connections previously described, a new waterfront way will be created along the City-owned Old Sleeper Street to link existing sections of the Harborwalk from the Children's Museum to the Federal Courthouse. Restaurants and outdoor seating will enliven the area during day and evening hours.

3.3.3.3 Bicycle Mitigation

The Proponent is committed to improving bicycle accessibility and use in the Project area. Bicycle enhancements include the Harborwalk connection between the Children's Museum and the Federal Courthouse, as described above; provision of secure, sheltered bicycle racks and sidewalk-level public bicycle racks; continuation of the existing low-cost bicycle rental program; and investigation into the feasibility of launching a shared-bike program similar to SmartBike at an appropriate location within the Project area. Bicycle amenities are described in more detail in Section 3.3.3.4, Transportation Demand Management (TDM).

3.3.3.4 New Harbor Street to Link Summer Street and Congress Street

The *South Boston Transportation Study* conducted in 2000 for BTD recommended a "New Ramp Street to connect Summer Street and New Northern Avenue [Seaport Boulevard] in the vicinity of East Service Road" (page 49). Seaport Square proposes to build this new "Harbor Street" connection as part of Phases 5–7. The intention is to provide a direct connection from Summer Street to the Seaport Square Green on Seaport Boulevard for pedestrians and cyclists. For vehicles, Harbor Street will end short of Seaport Boulevard at a new parallel street, "Autumn Lane," that will allow vehicles to turn to East Service Road or Boston Wharf Road. This will allow Harbor Street to provide local access to the L Blocks while discouraging through-traffic.

3.3.3.5 Intersection Improvements by Corridor

While some intersections operate poorly under Existing and Mid-term No-Build Conditions, Seaport Square itself contributes relatively less traffic to these intersections than other area developments. The overall impact from the Seaport Square Project can largely be mitigated by altering signal phasing plans or changing designated travel lane use. With these mitigation improvements, only six of the 33 study intersections will experience a relevant change in level of service between Mid-Term No-Build conditions and Seaport Square Build with Mitigation conditions. The Proponent will work with BTD to develop an appropriate mitigation program that will be codified in the Transportation Access Plan Agreement.

This section focuses on improvements that are proposed at study area intersections. The intersection levels of service for Seaport Square Build Conditions, as presented in Table 3-19 above, suggest that several intersections in the study area will operate at poor levels of service if no mitigating action is taken.

While delays at many study area intersections would be reduced with the Mid-term timing improvements now under design, further reductions in delay can be achieved by altering the signal phasing plan or changing the designated lane use. Where effective, additional mitigating actions have been incorporated into intersection analysis. This condition is referred to as Seaport Square Build Conditions with Mitigation, and includes all the improvements reflected in the Mid-term No-Build case plus additional improvements.

The level of service results from the suggested Seaport Square mitigation are summarized in Table 3-30 and Table 3-31. The operation and any mitigation of study intersections by corridors (Seaport Boulevard, Congress Street, and Summer Street) are discussed in detail below. Mitigation improvements are targeted at locations where the overall level of service becomes LOS E or F due to the Project, or where the Project contributes 10% or more to the intersection volume.

Seaport Boulevard will be the centerpiece of the Seaport Square Project in that it is the major front door from Downtown Boston and will provide the spine for much of the predominant mixed land use. As such, Seaport Boulevard will need to accommodate many of the development trips in its underground garages and will need to provide for porte-cocheres for hotel and residential uses. During the morning peak periods, eastbound Seaport Boulevard traffic turning left into Sleeper Street, Fan Pier Boulevard, Pier Street, and Old Northern Avenue will predominate, causing potential peak period congestion at these intersections.

Table 3-30 Level of Service Comparison, a.m. Peak Hour

Intersection	Existing	Mid-term No-Build	Seaport Sq. Build	Seaport Sq. Build with Mitigation
Signalized Intersections				
Seaport Boulevard/Atlantic Avenue	D	E	E	E
Seaport Boulevard/Sleeper Street	C	F	C	C
Seaport Boulevard/Boston Wharf Road	B	A	A	A
Seaport Boulevard/East Service Road	C	D	F	C
Seaport Boulevard/B Street	F	E	E	C
Seaport Boulevard/Northern Avenue/ D Street (southbound)/Fish Pier Street	B	C	E	C
Northern Avenue/D Street (northbound)	C	E	F	D
Congress Street/Dorchester Avenue	C	C	C	C
Congress Street/A Street/Thomson Street	C	D	E	D
Congress Street/West Service Road/ Boston Wharf Road	C	D	D	C
Congress Street/Off-ramp C/Off-ramp I/ East Service Road	E	D	D	D
Congress Street/On-ramp D/Off-ramp F/B Street	E	F	F	F
Congress Street/D Street	D	C	C	C
D Street/Silver Line Way	A	A	A	A
Summer Street/Dorchester Avenue	C	E	F	F
Summer Street/Melcher Street	B	D	D	D
Summer Street/World Trade Center Avenue/Convention Center Drive	A	B	B	B
Summer Street/D Street	D	D	E	E
Summer Street/Dry Dock Ave/Pappas Way	C	E	E	E
Dorchester Avenue/West Broadway	D	D	D	D
Dorchester Avenue/West Fourth Street	B	B	B	B
Dorchester Avenue/A Street	B	A	A	A
Dorchester Avenue/Old Colony Avenue	B	C	C	C
A Street/West Broadway	C	C	C	C
A Street/West Second Street	B	B	B	B
West Broadway/D Street	C	D	C	C

Table 3-30 Level of Service Comparison, a.m. Peak Hour (Continued)

Intersection	Existing	Mid-term No-Build	Seaport Sq. Build	Seaport Sq. Build with Mitigation
Signalized Intersections				
West Broadway/East Broadway/ Dorchester Street	F	E	E	E
Summer Street/East First Street	E	E	D	D
L Street/East Broadway	E	D	E	E
A Street/Melcher Street	—	E	F	F
Seaport Boulevard/Thomson Street	—	A	B	B
Unsignalized Intersections				
A Street/Melcher Street	—	—	—	—
Melcher EB left/thru/right	D	—	—	—
Melcher WB left/thru/right	D	—	—	—
A NB left	A	—	—	—
A NB thru/right	A	—	—	—
A SB left/thru/right	A	—	—	—
South Boston Bypass Road (Haul Road)/ West Service Road	—	—	—	—
West Service EB left	B	—	—	—
West Service EB right	B	—	—	—
Haul Road NB left	A	—	—	—
Haul Road NB thru	A	—	—	—
Haul Road SB thru	A	—	—	—
Haul Road SB right	A	—	—	—
South Boston Bypass Road (Haul Road)/ Wormwood Street	—	—	—	—
Wormwood EB left	—	C	C	C
Wormwood EB left/right	—	B	B	B
Haul Road NB left	—	A	A	A
Haul Road NB thru	—	A	A	A
Haul Road SB thru	—	A	A	A
Haul Road SB right	—	A	A	A
L Street/William J. Day Boulevard	—	—	—	—
William J. Day EB left/thru | thru	A	A	A	A
William J. Day WB thru/right	A	A	A	A
L SB left	F	F	F	F
L SB right	B	B	B	B
Sleeper Street/Block B Driveway	—	—	—	—
Block B WB left/right	—	—	C	C
Sleeper NB thru/right	—	—	A	A
Sleeper SB left/thru	—	—	A	A
Northern Avenue/Block D Driveway	—	—	—	—
Northern EB thru/right	—	—	A	A
Northern WB left/thru	—	—	A	A
Block D Driveway NB left/right	—	—	C	C
East Service Road/Block G Driveway	—	—	—	—
Block G EB left/right	—	—	E	E
East Service NB left/thru	—	—	A	A
East Service SB thru/right	—	—	A	A

Table 3-30 Level of Service Comparison, a.m. Peak Hour (Continued)

Intersection	Existing	Mid-term No-Build	Seaport Sq. Build	Seaport Sq. Build with Mitigation
Unsignalized Intersections				
Boston Wharf Road/Block Q Driveway/ Block L3 Driveway	—	—	—	—
Block Q EB thru/right	—	—	B	B
Block L3 WB left/thru	—	—	F	F
Boston Wharf SB left/thru	—	—	A	A
Boston Wharf SB thru/right	—	—	A	A
East Service Road/Block L4 Driveway	—	—	—	—
Block L4 EB left	—	—	F	F
East Service NB left/thru	—	—	A	A
East Service NB thru	—	—	A	A
East Service Road/Block M2 Driveway	—	—	—	—
Block M2 WB right	—	—	C	C
East Service NB thru	—	—	A	A
East Service NB thru/right	—	—	A	A
Summer Street/Harbor Street	—	—	—	—
Summer EB left/thru	—	—	A	A
Summer EB thru	—	—	A	A
Summer WB thru	—	—	A	A
Summer WB thru/right	—	—	A	A
Harbor SB left/right	—	—	C	C
West Service Road/Block N & P Driveway	—	—	—	—
Block N & P WB left/right	—	—	C	C
West Service NB thru	—	—	A	A
West Service NB thru/right	—	—	A	A
West Service SB left/thru	—	—	A	A

Light grey cell shading indicates a change in LOS from the previous condition that brings operations to LOS E or LOS F.
Black cell shading indicates an improvement in LOS from the previous condition.

Table 3-31 Level of Service Comparison, p.m. Peak Hour

Intersection	Existing	Mid-term No-Build	Seaport Sq. Build	Seaport Sq. Build with Mitigation
Signalized Intersections				
Seaport Boulevard/Atlantic Avenue	E	F	F	F
Seaport Boulevard/Sleeper Street	B	C	C	C
Seaport Boulevard/Boston Wharf Road	C	A	B	A
Seaport Boulevard/East Service Road	C	D	F	C
Seaport Boulevard/B Street	C	D	E	D
Seaport Boulevard/Northern Avenue/D Street (southbound)/Fish Pier Street	C	C	F	C
Northern Avenue/D Street (northbound)	B	D	F	D
Congress Street/Dorchester Avenue	C	C	B	B
Congress Street/A Street/Thomson Street	B	E	F	E

Table 3-31 Level of Service Comparison, p.m. Peak Hour (Continued)

Intersection	Existing	Mid-term No-Build	Seaport Sq. Build	Seaport Sq. Build with Mitigation
Signalized Intersections				
Congress Street/West Service Road/ Boston Wharf Road	D	C	F	D
Congress Street/Off-ramp C/Off-ramp I/ East Service Road	D	C	C	C
Congress Street/On-ramp D/Off-ramp F/B Street	C	E	F	F
Congress Street/D Street	D	E	F	E
D Street/Silver Line Way	A	A	A	A
Summer Street/Dorchester Avenue	C	E	F	F
Summer Street/Melcher Street	C	E	F	F
Summer Street/World Trade Center Avenue/Convention Center Drive	B	B	B	B
Summer Street/D Street	C	E	E	E
Summer Street/Dry Dock Avenue/Pappas Way	E	D	D	D
Dorchester Avenue/West Broadway	D	D	D	D
Dorchester Avenue/West Fourth Street	B	C	B	B
Dorchester Avenue/A Street	B	B	C	C
Dorchester Avenue/Old Colony Avenue	B	B	B	B
A Street/West Broadway	C	F	F	F
A Street/West Second Street	B	B	B	B
West Broadway/D Street	C	D	D	D
West Broadway/East Broadway/ Dorchester Street	F	F	F	F
Summer Street/East First Street	C	C	D	D
L Street/East Broadway	F	F	F	F
A Street/Melcher Street	—	F	F	F
Seaport Boulevard/Thomson Street	—	B	B	C
Unsignalized Intersections				
A Street/Melcher Street	—	—	—	—
Melcher EB left/thru/right	E	—	—	—
Melcher WB left/thru/right	C	—	—	—
A NB left	A	—	—	—
A NB thru/right	A	—	—	—
A SB left/thru/right	A	—	—	—
South Boston Bypass Road (Haul Road)/ West Service Road	—	—	—	—
West Service EB left	B	—	—	—
West Service EB right	B	—	—	—
Haul Road NB left	A	—	—	—
Haul Road NB thru	A	—	—	—
Haul Road SB thru	A	—	—	—
Haul Road SB right	A	—	—	—

Table 3-31 Level of Service Comparison, p.m. Peak Hour (Continued)

Intersection	Existing	Mid-term No-Build	Seaport Sq. Build	Seaport Sq. Build with Mitigation
Unsignalized Intersections				
South Boston Bypass Road (Haul Road)/ Wormwood Street	—	—	—	—
Wormwood EB left	—	F	F	F
Wormwood EB left/right	—	C	D	D
Haul Road NB left	—	A	A	A
Haul Road NB thru	—	A	A	A
Haul Road SB thru	—	A	A	A
Haul Road SB right	—	A	A	A
L Street/William J. Day Boulevard	—	—	—	—
William J. Day EB left/thru | thru	A	A	A	A
William J. Day WB thru/right	A	A	A	A
L SB left	C	C	C	C
L SB right	C	C	C	C
Sleeper Street/Block B Driveway	—	—	—	—
Block B WB left/right	—	—	C	C
Sleeper NB thru/right	—	—	A	A
Sleeper SB left/thru	—	—	A	A
Northern Avenue/Block D Driveway	—	—	—	—
Northern EB thru/right	—	—	A	A
Northern WB left/thru	—	—	A	A
Block D Driveway NB left/right	—	—	E	E
East Service Road/Block G Driveway	—	—	—	—
Block G EB left/right	—	—	F	F
East Service NB left/thru	—	—	A	A
East Service SB thru/right	—	—	A	A
Boston Wharf Road/Block Q Driveway/ Block L3 Driveway	—	—	—	—
Block Q EB thru/right	—	—	B	B
Block L3 WB left/thru	—	—	F	F
Boston Wharf SB left/thru	—	—	A	A
Boston Wharf SB thru/right	—	—	A	A
East Service Road/Block L4 Driveway	—	—	—	—
Block L4 EB left	—	—	F	F
East Service NB left/thru	—	—	A	A
East Service NB thru	—	—	A	A
East Service Road/Block M2 Driveway	—	—	—	—
Block M2 WB right	—	—	B	B
East Service NB thru	—	—	A	A
East Service NB thru/right	—	—	A	A

Table 3-31 Level of Service Comparison, p.m. Peak Hour (Continued)

Intersection	Existing	Mid-term No-Build	Seaport Sq. Build	Seaport Sq. Build with Mitigation
Unsignalized Intersections				
Summer Street/Harbor Street	—	—	—	—
Summer EB left/thru	—	—	A	A
Summer EB thru	—	—	A	A
Summer WB thru	—	—	A	A
Summer WB thru/right	—	—	A	A
Harbor SB left/right	—	—	C	C
West Service Road/Block N & P Driveway	—	—	—	—
Block N & P WB left/right	—	—	F	F
West Service NB thru	—	—	A	A
West Service NB thru/right	—	—	A	A
West Service SB left/thru	—	—	A	A

Light grey cell shading indicates a worsening in LOS from the previous condition that brings operations to LOS E or LOS F.
Black cell shading indicates an improvement in LOS from the previous condition.

- ***Seaport Boulevard/Atlantic Avenue.*** While this downtown intersection will operate at LOS E or LOS F during peak hours, even with timing improvements, less than 4% of the intersection volume under Seaport Square Build Conditions is attributable to the Seaport Square Project. No additional mitigation is proposed.

- ***Seaport Boulevard/Sleeper Street.*** Operations at this location will be more critical in that it is a gateway intersection to the Seaport area. Sleeper Street also provides access to the Moakley Federal Courthouse and to portions of the Fan Pier development in addition to the initial Seaport Square development Blocks A through G. In ongoing design, the relationships between the service ramps and the Sleeper Street intersection will be assessed to ensure that Sleeper Street operates well. While between 6% and 9% of the intersection volumes are attributable to the Project, the location will continue to operate at LOS C or better under the Seaport Square Build Conditions. No mitigation is proposed.

- ***Seaport Boulevard/Thomson Street/Fan Pier Boulevard.*** This intersection is likely to be underutilized during peak period operations and could accommodate some additional flows from Sleeper Street to provide access to Northern Avenue and the Fan Pier development. Final design details at this intersection could establish ways to handle some overflow volumes for some special uses within the context of the street design. Since this intersection will continue to operate at LOS B or LOS C, no mitigation is proposed.

- ***Seaport Boulevard/Boston Wharf Road.*** Boston Wharf Road is one of the major access roadways to the below-grade garage system servicing the L Block. During the design development process, additional efforts should be made by the

Proponent to draw more development traffic through this intersection with wayfinding and parking signs, thus reducing turning movements at other critical intersections. This will be possible as more information becomes available about individual garage access points, time availability of parking spaces, etc. This intersection will continue to operate at LOS A or LOS B. No mitigation is proposed.

- ***Seaport Boulevard/East Service Road/Old Northern Avenue.*** This location is one of the most critical intersections within the development area. This is a major, four-leg intersection with high turning movements. In the a.m. peak hour under Seaport Square Build Conditions, the Project contributes about 11% to the intersection volumes. In the p.m. peak hour, this rate is about 21%. A major hotel is to be located at the corner of Seaport Boulevard and Old Northern Avenue, with its porte-cocheres located near the intersection. Access to parking garages will also be located nearby. This intersection thus needs to accommodate all of these functions in a logical manner in order to provide maximum service with minimal congestion. The Proponent will work closely with City agencies to ensure adequate operations. Even with the Mid-term BTD signal timing improvements, this intersection would operate at LOS F and LOS E during the a.m. and p.m. peak hour, respectively.

  A marked improvement in operations at this location can be achieved with the following measures:

  - Eliminate the Seaport Boulevard eastbound lead phase; left-turning volumes will continue to be low, and this phase is no longer required.

  - Right turns on red (RTOR) are currently prohibited in the northbound and south-bound directions of the intersection. Maintain these restrictions and implement no turns on red at Seaport Boulevard westbound.

  - Incorporate a protected and overlap phase for Seaport Boulevard westbound via the creation of a new 75-foot, designated right-turn lane. This would allow the existing two lanes to be dedicated to through-traffic only. This intersection would improve to LOS C and LOS D during the a.m. peak hour and p.m. peak hour, respectively, upon implementation of these measures.

- ***Seaport Boulevard/B Street.*** This intersection serves major traffic volumes to the regional traffic system ramps and other developments. As a T intersection, it has a large proportion of turning movements that cause artificially high levels of service. During the a.m. and p.m. peak hours, the intersection will operate at LOS F. Seaport Square contributes between 8% and 12% of the overall intersection volumes. Further signal timing changes would not improve overall operations. The eastbound Seaport Boulevard approach currently has one through travel lane and one exclusive right-turn lane. However, east of the intersection, Seaport Boulevard

has two receiving lanes. Intersection operations would be improved if the exclusive right-turn lane was designated as a through/right-turn lane. This change would result in LOS D or better.

- *Seaport Boulevard/Northern Avenue/D Street (southbound)/Fish Pier Street and Northern Avenue/D Street (northbound).* Under Seaport Square Build Conditions, about 15% of the volume at these two intersections would be attributable to the Seaport Square Project; without any timing improvements or mitigation, these intersections will degrade into LOS E or LOS F. As stated above, signal timing changes alone would not improve overall operations. The westbound Northern Avenue currently has one through lane. Adding a westbound through lane on the Northern Avenue approach would improve the two intersections to LOS C or LOS D. However, adequate curb-to-curb width exists to provide two through travel lanes on this section of Northern Avenue. West of D Street, there are two travel lanes for Northern Avenue westbound traffic. The Proponent will work with the City and Massport to further investigate designating two travel lanes on Northern Avenue east of D Street.

Congress Street. Congress Street is an important arterial street from the heart of downtown Boston through the upper portion of the Seaport District, and provides access to the ramp system connections to I-90 and I-93 via the Seaport Access Roadway, which provides accessibility to this area. In addition, Congress Street also provides access to other land parcels in this area, some of which will be under active development in the future.

- *Congress Street/Dorchester Avenue.* The intersection of Congress Street with Dorchester Avenue is located on the downtown side of Fort Point Channel. Under Seaport Square Build Conditions, this intersection would operate at LOS C and LOS B in the a.m. and p.m. peak hours, respectively. No mitigation is proposed.

- *Congress Street/A Street/Thomson Street.* The intersection of Congress Street with A Street and Thomson Street is an important intersection in that A Street is one of the few streets connecting the northern Seaport area to the southern 100 Acres development area. In the a.m. peak hour, about 9% of intersection volumes is attributable to the Seaport Square Project, and in the p.m. peak hour about 23%. As such, a large proportion of traffic from other projects uses this intersection, with a smaller proportion of Seaport Square Project traffic. Under Mid-term No-Build Conditions, the intersection will operate at LOS E or LOS F. Eliminating the exclusive pedestrian phase and implementing a concurrent pedestrian phasing would improve a.m. peak conditions to LOS D and p.m. conditions to LOS E.

- *Congress Street/West Service Road/Boston Wharf Road.* This location is a major intersection for the Seaport Square development and for the City street system, because West Service Road leads to Ramp A, the I-90 eastbound on-ramp toward Logan International Airport. This intersection would operate at LOS D or F without

any improvements. The Seaport Square Project contributes between 14% and 19% of the intersection volumes. The eastbound Congress Street approach currently has two active through travel lanes. One proposal from the Congress Street Crossroads Initiative study is to restrict peak-hour curbside use on the eastbound approach allowing for two through travel lanes and one exclusive right lane. Combined with providing a westbound lead for Congress Street traffic, these mitigation strategies will allow the intersection to operate at LOS C in the a.m. peak hour and LOS D in the p.m. peak hour.

- *Congress Street/Off-ramp C/Off-ramp I/East Service Road.* This location is the second major intersection along Congress Street that provides regional highway access to the Seaport District. Off-Ramp C provides egress from I-90 EB and Off-Ramp I provides egress from I-93 NB. During the a.m. and p.m. peak hours, the intersection operates at LOS D and LOS C, respectively. No further mitigation is proposed.

- *Congress Street/On-ramp D/Off-ramp F/B Street.* This location is the third major intersection along Congress Street that provides regional access to the Seaport District. Off-ramp F provides egress from I-90 from Logan International Airport and points north, and On-ramp D provides access to I-93 northbound and I-93 southbound. The intersection will operate at LOS F during both peak hours. While the Seaport Square Project contributes between 5% and 11% of intersection volume, about one-third of the Seaport Square Build Conditions volumes is attributable to other area projects. Since signal timing changes and other possible mitigation actions would not improve the level of service, the study team recommends that this location be monitored.

- The three Congress Street locations, described above (Boston Wharf Road, East Service Road, and B Street), are the lifeline of the accessibility of the Seaport District. The regional access provided by these three intersections means that the Seaport District is well served by the ramp system and does not need to depend on more local city arterial streets to provide the needed access.

- *Congress Street/D Street.* This intersection is essentially the end of the Congress Street corridor for the purposes of the Seaport District circulation. Under the Seaport Square Build Conditions, this intersection will operate at LOS C in the morning, but LOS F in the evening, with the Project contributing between 8% and 11% to the intersection volumes. Further mitigation would be to re-stripe the D Street northbound approach to allow an exclusive left-turn lane, one shared left-turn/through lane, and one through/right-turn lane. Lane use signage for this approach currently illustrates this lane usage; however, it is believed that the pavement markings were temporarily modified to accommodate closure of one receiving lane on the north leg of the intersection due to construction of the

adjacent Renaissance Boston Waterfront Hotel. With the lane use change, the intersection will operate at LOS C during the a.m. peak hour, but continue at LOS F during the p.m. peak hour.

Summer Street. Summer Street is the major urban arterial street at the southern boundary of the Seaport Square Project. It travels from downtown Boston through to residential South Boston and beyond to the east. In general, the proportion of Seaport Square traffic using Summer Street is very small because the Seaport Square traffic would use the regional ramp access intersections along Congress Street. The proportion of other development traffic volumes on Summer Street is significantly higher.

- *Summer Street/Dorchester Avenue.* The intersection of Summer Street with Dorchester Avenue is a major intersection adjacent to Downtown. Under all future-year conditions, this location is forecast to operate at LOS F during each peak hour. Only about 3% of the intersection volume under Seaport Square Build Conditions is attributable to the Seaport Square Project. No mitigation is proposed.

- *Summer Street/Melcher Street.* Melcher Street, which connects to A Street at a lower level, is a major route to the 100 Acres area. The Seaport Square Project contributes 3% to 6% of volume to this intersection under Seaport Square Build Conditions. Much of the additional future traffic volume is due to other development traffic volumes rather than Seaport Square traffic volumes. No mitigation is proposed.

- *Summer Street/World Trade Center Avenue/Convention Center Drive.* The minor street approaches at this intersection serve two limited uses: the Seaport World Trade Center and the Convention Center. As such, they are special event-type roadways that have limited traffic volume during normal morning and evening peak periods. This location will operate at LOS C or better during all peak hours. No mitigation is proposed.

- *Summer Street/D Street.* This intersection is the major southeasterly intersection of the Seaport Square study area. The Seaport Square Project contributes 2% to 6% of volume to this intersection under Seaport Square Build Conditions. Overall level of service is LOS E during both peak hours, under all future conditions. No mitigation is proposed.

Other Major Intersections. The following measures are proposed for other major study area intersections.

- *West Service Road (Wormwood Street)/South Boston Bypass Road.* While not located along the Congress Street corridor, much of the traffic through this intersection uses the Congress Street/West Service Road intersection. Seaport Square contributes 5% to 10% of traffic to the intersection volumes. This intersection is

currently signalized but operates on flash with the eastbound approach (Wormwood Street) operating under stop control. For purposes of this analysis, it was assumed that the intersection would continue to operate on flash until traffic signal control was warranted. During the a.m. peak hour, the eastbound Wormwood approach will operate at LOS C under Mid-term No-Build Conditions and Seaport Square Build Conditions. During the p.m. peak hour, the eastbound Wormwood approach will operate at LOS F under Mid-term No-Build Conditions and Seaport Square Build Conditions. The study team recommends that this intersection continue to be monitored to evaluate whether changing the operation of the signal from flash to fully signalized traffic control is warranted as development projects come on line.

- *A Street/Melcher Street.* Seaport Square contributes 5% to 10% of traffic to the intersection volumes. During the a.m. peak hour, the intersection will deteriorate from LOS E under Mid-term No-Build Conditions to LOS F under Seaport Square Build Conditions. During the p.m. peak hour, the intersection will operate at LOS F. Signal timing changes and other possible mitigation actions would not improve the level of service. As the 100 Acres development projects are built and the City constructs the Wormwood Street/Fort Point Avenue couplet, with direct access to West Service Road, traffic circulation patterns will change. It is possible that the new circulation patterns will result in lower turning volumes at A Street/Melcher, resulting in improved level of service. No mitigation is proposed.

- *D Street/Silver Line Way.* While the overall intersection will operate at LOS A in all periods, the Silver Line approaches deteriorate to LOS D under Seaport Square Build Conditions. Because of the high number of passengers per vehicle on the Silver Line, compared to general traffic on D Street, delays on Silver Line Way disproportionately affect a larger population of travelers. While roadway travel progression is important on the D Street corridor, the MBTA and City should consider a signal priority system for buses.

Outlying Intersections. In the future, as traffic from Seaport Square disperses onto the regional highway network, the outlying study area intersections (generally those south of Summer Street and east of D Street) will carry a lower proportion of Seaport Square traffic and will, therefore, be less affected. Of all the outlying intersections, none have more than 5% of their volumes attributable to Seaport Square. No mitigation is proposed for the outlying intersections.

3.3.3.6 Transportation Demand Management ("TDM")

Gale International is already a corporate member of the Seaport Transportation Management Association ("Seaport TMA"), a non-profit association of private businesses, employers, developers, and property managers in the South Boston waterfront dedicated to easing commutes and reducing local traffic congestion. A Transportation Coordinator will be designated for Seaport Square. As described on the Seaport TMA Web site:

"Founded in 1994 through the cooperation of three major area employers—Fidelity Investments, P&G/The Gillette Company, and the Seaport World Trade Center—Seaport TMA is a neighborhood group that ensures reliable access to the South Boston waterfront for employees and visitors alike. Seaport TMA offers commuter programs and transportation alternatives that reduce the number of people who drive alone to the South Boston waterfront. Through collaboration with the MBTA, the City of Boston, the Massachusetts Port Authority, the State Executive Office of Transportation, and many others, we encourage and support the development of new transportation alternatives.

As area employers and property owners seek solutions to reducing traffic congestion and promoting full use of the transportation network, membership in the Seaport TMA has grown. The 28 corporate members represent more than 19,500 commuters and a million annual visitors in the South Boston waterfront. Seaport TMA membership is open to all organizations in the South Boston waterfront and includes a diverse mix of private sector businesses, non-profits and developers."

The Proponent will strongly encourage all commercial building managers and tenants within the district to join and participate actively with the Seaport TMA.

The Proponent is committed to implementing a TDM program that supports the City's efforts to reduce dependency on the automobile by encouraging travelers to use alternatives to driving alone, especially during peak periods. TDM will be facilitated by the mixed-use nature of the Project as well as its location adjacent to the Downtown, the Financial District, and to other offices, transit, and shopping in South Boston. The Proponent will commit to implementing this TDM program for Phase 1 of the Project as well as for the full build-out of the Project.

The Transportation Access Plan Agreement (TAPA) will confirm the commitments to TDM that will be outlined in the Article 80 review of the Project. These TDM measures will include:

- ***Continued TMA Participation:*** Currently a member of the Seaport Transportation Management Association (TMA), the Proponent will continue to support the TMA. Management will work with the other members of the TMA to disseminate ride share/ car pool information. The TMA members also provide "guaranteed ride home" service, publish a newsletter, and coordinate a "Transportation Day."

- ***Car-Sharing Service:*** The Proponent will provide spaces in one or more of its garages for car-sharing services. The Proponent is exploring providing 100 or more spaces in at least one garage, a hub for a car-sharing vehicle service.

- *Car Pool/Van Pool Parking:* The Proponent will provide preferential parking spaces in its non-residential garages for employee/tenant car pools and van pools.

- *Transit Passes:* The Proponent will participate in a transit pass program for tenants' employees and residents through the TMA. The Proponent will encourage commercial tenants to subsidize transit passes for their employees.

- *Commuter Tax Benefit Program:* The Proponent will encourage tenants to treat employee payments for transit passes as a pre-tax deduction from paychecks.

- *Orientation Packets:* The Proponent will provide orientation packets to new residents containing information on available transportation choices, including transit routes and schedules. On-site management will work with new residents and commercial tenants as they move in to help facilitate transportation for new arrivals.

- *Transportation Coordinator:* The Proponent will designate a Transportation Coordinator to oversee loading and service activities, and provide alternative transportation materials to residents. Individual loading dock managers will be stationed at commercial building loading docks to oversee deliveries on-site.

- *Bicycle Amenities:* The Proponent will provide bicycle racks in secure, sheltered areas for residents and tenants' employees. Additional bicycle parking will be provided on the sidewalks within Seaport Square proximate to main building entrances. The Proponent currently operates a low-cost bicycle rental program from the site. This program will continue upon completion of Seaport Square.

- *Shared Bike Program:* The Proponent will investigate launching a shared-bike program similar to SmartBike at an appropriate location within the Project area. This will involve providing a docking station for retrieving and returning bicycles, making prospective tenants and residents aware of the program in selling or leasing space, assisting tenants and residents in registering for the program, and cooperating with the Seaport TMA and its members in promoting shared bike use to residents, tenants, and tourists.

- *Web Site:* The Proponent will design and implement a Project Web site that will include public transportation information for residents and visitors.

- *Parking Management and Pricing:* The Proponent will charge market-rate public parking rates in the garages as a disincentive to single-occupancy vehicle use and will manage the use of parking spaces to achieve the greatest benefit from shared parking among user groups.

3.3.4 South Boston Waterfront Long-term Conditions

At the BRA's request, the study team analyzed a Long-term Condition that incorporates not only Seaport Square development, but also all other development planned or suggested for the 1,000 Acres area. While it is impossible to assign a specific year to this scenario, this report refers to the alternative as the "South Boston Waterfront Long-term Conditions." As noted in BTD's 2000 *South Boston Transportation Study*, the degree of development analyzed in this Long-term case…

> "…can be expected to take up to 40 years, depending on economic conditions. Although this extends beyond the typical 20-year planning horizon, this projection was considered helpful in planning the South Boston waterfront's future and in evaluating currently proposed master development plans."

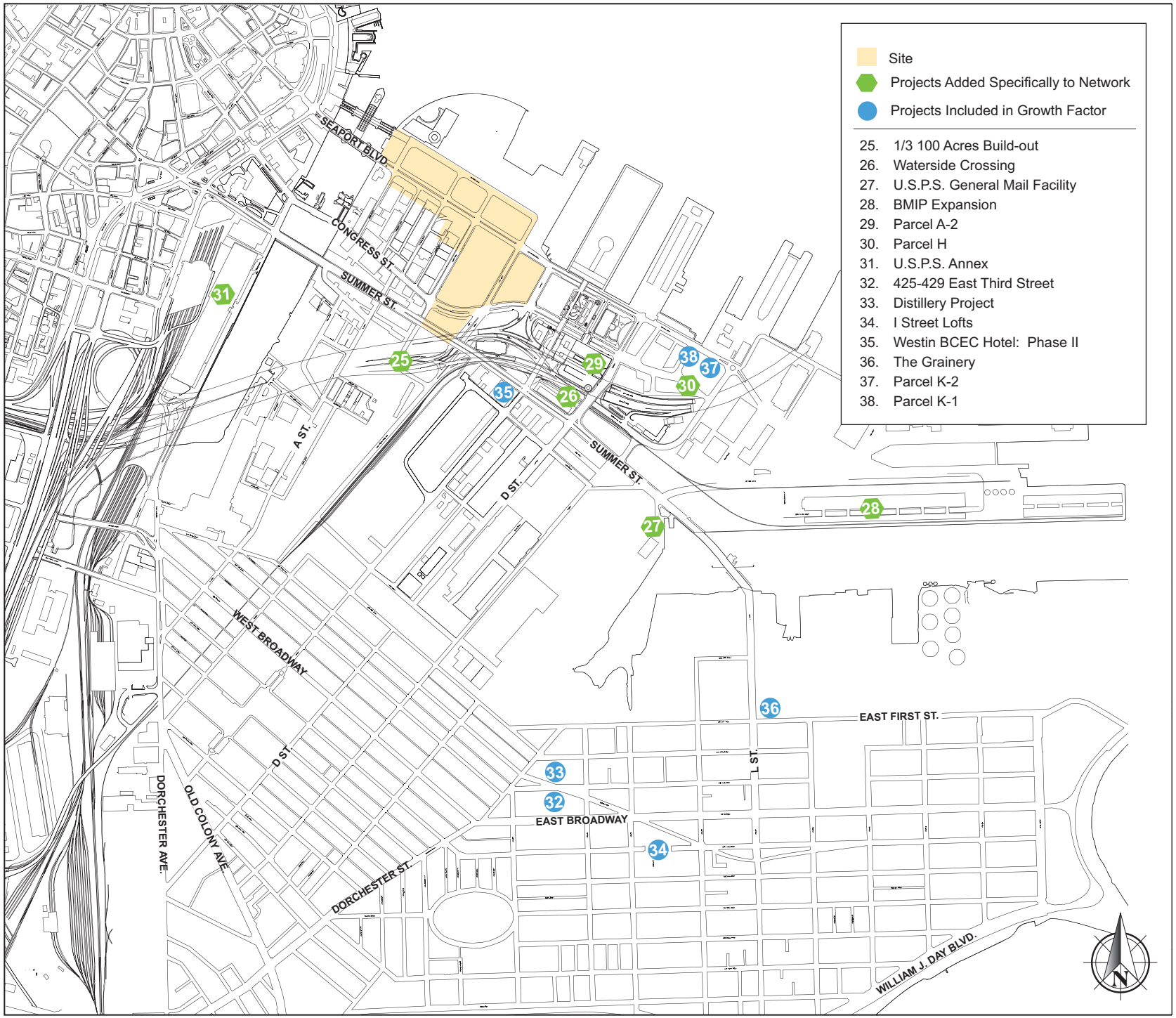
Analysis was conducted for the roadways and transit system, the two areas with the most concerns expressed about long-term capacity.

3.3.4.1 South Boston Waterfront Long-term Conditions: Additional Development Projects and Background Growth

The same methodology of accounting for Project trips that was used for Mid-term No-Build Conditions was applied to the South Boston Waterfront Long-term Conditions scenario. Additional projects planned over a longer-term time frame were either added individually to the Long-term Conditions traffic networks, or incorporated into background growth. These additional projects are illustrated in Figure 3-41 and summarized in Table 3-32. Together, these projects account for an additional 7.6 million square feet of space. The mix of land uses added in this scenario, exclusive of Seaport Square, is approximately 17% hotel, 34% residential, 44% office, 5% retail, and under 1% other uses.

Projects included specifically in the South Boston Waterfront Long-term Conditions scenario (beyond Seaport Square itself) include:

- *100 Acres* – The 100 Acres area includes various parcels along A Street. The area has an approved Planned Development Agreement allowing a mixed-use project of approximately 6,000,000 square feet. For planning purposes, trips generated by the space not yet developed have been analyzed in two groups: 100 Acres Buildout (2/3 of total) and 100 Acres Buildout (1/3 of total). Added to the Mid-term No-Build scenario is the remaining one-third of the total approved square feet, including approximately 800,000 square feet of office space, 136,000 square feet of retail, 17,000 square feet of cultural/recreational space, 272,000 square feet of hotel space, and 800,000 square feet of residential space.



SEAPORT SQUARE
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Figure 3-41

Key Area Projects: South Boston Waterfront Long-term Conditions

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- ***Waterside Crossing*** – The Waterside Crossing mixed-use project includes a 300-room hotel, 250,000 square feet of retail space, and 490 parking spaces. Access to this project would be from Summer Street and D Street.

- ***USPS New General Mail Facility*** – The United States Postal Service proposes to replace the current General Mail Facility at South Station with a new facility next to the Boston Harbor Reserved Channel. This facility would consolidate postal functions currently spread throughout the waterfront area, such as interstate and regional mail shipments, parcel post, business mail, and employee parking.

Table 3-32 South Boston Waterfront Long-term Conditions Land Use: Key Area Projects

Project[1]	Hotel (sf)	Retail (sf)	Office (sf)	Residential (sf)	Other[2] (sf)	TOTAL[3] (sf)
Projects Added Specifically to Network						
25. 100 Acres Buildout (1/3 of total)	272,000	135,089	807,956	807,956	17,000	2,040,001
26. Waterside Crossing	242,000	250,000				492,000
27. USPS New General Mail Facility			211,492		479,605	691,097
28. BMIP Expansion					556,000	556,000
29. Parcel A-2		20,000	425,000			445,000
30. Parcel H		10,000	400,000			410,000
31. USPS Annex			1,500,000	1,500,000		3,000,000
Subtotal Added	**514,000**	**415,089**	**3,344,448**	**2,307,956**	**1,052,605**	**7,634,098**
Projects Included in Area Growth Factor						
32. 425–429 East Third Street				20,000		20,000
33. Distillery Project				99,000		99,000
34. I Street Lofts				36,000		36,000
35. Westin BCEC Hotel, Ph. II	320,000					320,000
36. The Grainery				97,000		97,000
37. Parcel K-2					40,000	40,000
38. Parcel K-1	450,000	10,000				460,000
Subtotal Added	**770,000**	**10,000**		**252,000**	**40,000**	**1,072,000**
Less Land Use Replaced or Converted[2]	(0)	(13,536)	(11,082)	(0)	(1,075,569)	(1,100,187)
Net New Added	**1,284,000**	**411,533**	**3,333,366**	**2,559,956**	**17,036**	**7,605,911**
Total Added from Mid-term No-Build	2,763,489	1,237,778	5,164,122	5,045,566	563,552	14,774,507
Total Added in Long-term So. Boston No-Build	**4,047,489**	**1,649,331**	**8,497,488**	**7,605,078**	**580,599**	**22,380,418**
Total Added From Seaport Sq.	500,000	1,300,000	1,300,000	2,800,000	600,000	6,500,000
Total Added in So. Boston Waterfront Build Condition	**4,547,489**	**2,949,331**	**9,797,488**	**10,405,078**	**1,180,588**	**28,880,418**
Land Use % of Total	**16%**	**10%**	**34%**	**36%**	**4%**	**100%**

1. Numbering does not reflect sequence in which projects will be implemented.
2. Total square footage does not take into consideration existing public parking spaces located within the 1,000 Acres that will be displaced with the proposed developments.
3. "Other" includes recreational, cultural, manufacturing, and industrial uses.

- *BMIP Expansion – (International Cargo Center of New England)* – Located on Harbor Street between Dry Dock Avenue and Northern Avenue, the International Cargo Center of New England project would redevelop four parcels within the Boston Marine Industrial Park into a modern, intermodal cargo handling facility. The facility would consist of a warehouse of 180,000 square feet, an administrative facility of 101,400 square feet, 23,000 square feet of office space, and 300,000 square feet of additional space. Space for parking and shipping container storage would also be part of this project. The 1999 Boston Marine Industrial Park Master Plan describes land use changes and new facilities, totaling a net increase of approximately 556,000 square feet of warehouse/industrial space.

- *Parcel A-2* – Massport Parcel A-2 is projected to include 425,000 square feet of office space and 20,000 square feet of retail.

- *Parcel H* – Massport Parcel H is projected to include 400,000 square feet of office space and 10,000 square feet of retail.

- *USPS Annex* – After the move of the United States Postal Service General Mail Facility, its building at South Station is slated for redevelopment into a large-scale, mixed-use project. BRA envisions 3,000,000 square feet of office and residential use on the site. The project involves expanding the track capacity of South Station by six tracks and reopening Dorchester Avenue, a major thoroughfare closed by the Postal Service when it established its major distribution center at the station.

Table 3-32 and Figure 3-41, above, also include the remaining seven area projects that account for 6% of Long-term area-wide traffic impacts. As shown in the table, these projects account for approximately 1,000,000 square feet of additional floor space. The mix of land uses for Mid-term No-Build Conditions is 52% residential/hotel, 38% office, 7% retail, and 3% other.

3.3.4.2 South Boston Waterfront Long-term Conditions: Land Use Scenario

As shown in the table, the combined list of Long-term projects, including Seaport Square, adds approximately 29 million square feet of land use to the South Boston 1,000 Acres area beyond what has been constructed and occupied since 2000. The overall mix of new land use expected to be developed in the 1,000 Acres area in the Long-term, including Seaport Square itself, is 16% hotel, 36% residential, 34% office, 10% retail, and 4% other. The higher proportion of residential/hotel uses yields traffic generation estimates generally reduced from prior forecasts that were more heavily oriented to commercial uses.

3.3.4.3 Long-term Infrastructure Improvement Assumptions

One additional major improvement was assumed in the South Boston Waterfront Long-term Conditions traffic network:

- ***Dorchester Avenue reopening.*** As proposed in the BTD *South Boston Transportation Study,* there is a plan to reopen Dorchester Avenue from West Broadway north to Summer Street. Currently, traffic along this section of Dorchester Avenue is restricted to USPS vehicles only. The Long-term analysis assumes that Dorchester Avenue is open to general traffic. At the intersection of Summer Street/Dorchester Avenue, it is assumed that the lane use configuration will remain unchanged; however, it is likely that improvements will be made to this location as part of the USPS Annex project.

3.3.4.4 South Boston Waterfront Long-term Vehicle Trip Generation and Distribution

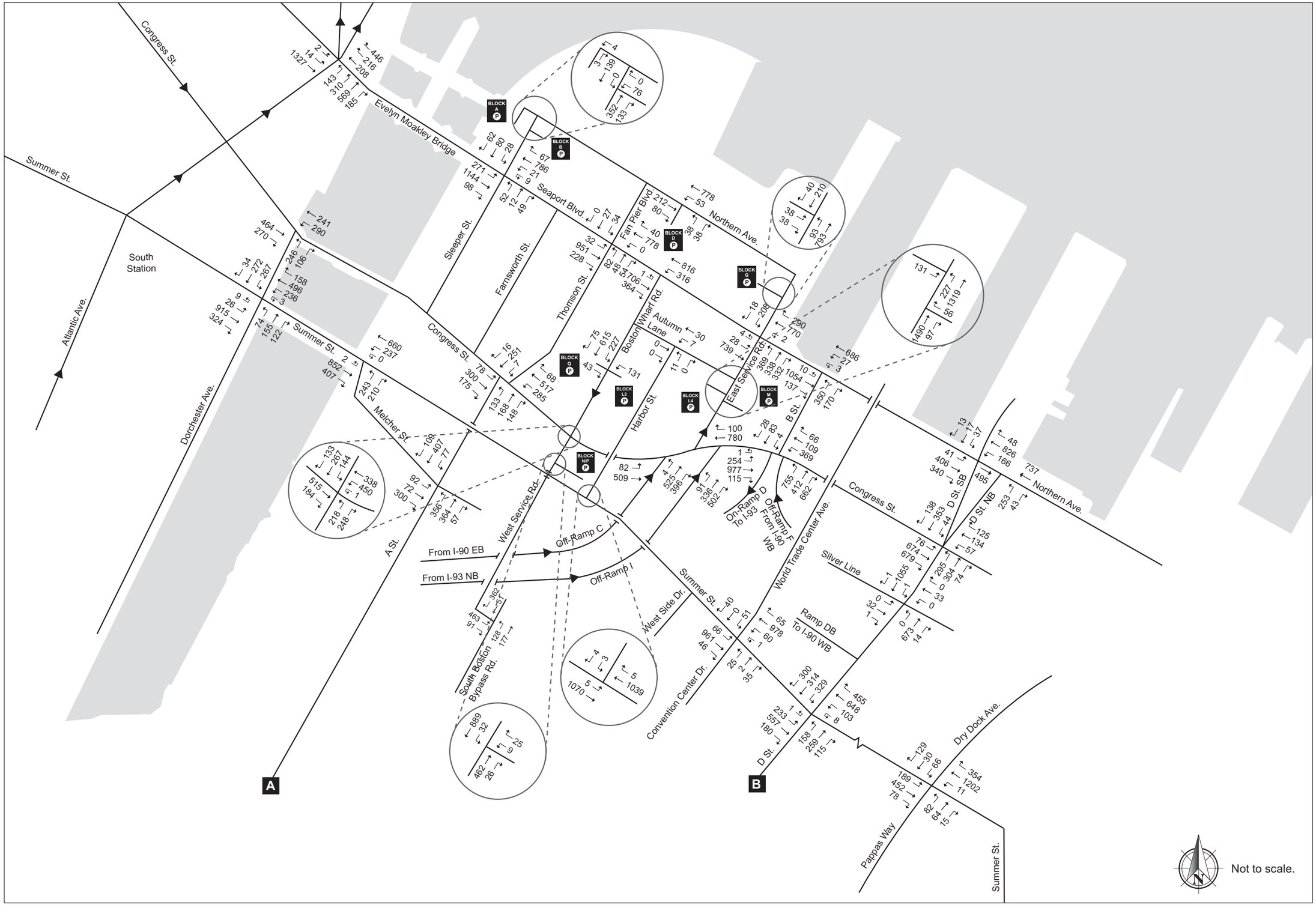
Trip generation and distribution were carried out for projects in the South Boston Waterfront Long-term Conditions case in the same manner they were carried out for the Mid-term No-Build and Seaport Square Build cases. All projects projected to be added in or near the 1,000 Acres (as shown in Figure 3-3), including Seaport Square itself, are included in the South Boston Long-term Conditions case.

3.3.4.5 South Boston Waterfront Long-term Conditions Traffic Operations

The Seaport Square transportation study scope, and some comments, called for an analysis of all planned or envisioned projects within the 1,000 Acres. Since it is unlikely that the entire list will be implemented by the Mid-term impact year, these projects were added to the Seaport Square Build network, rather than serving as a No-Build analysis. South Boston Waterfront Long-term Conditions traffic volumes are shown in Figure 3-42 through Figure 3-45 for the a.m. and p.m. peak hours.

It is noteworthy that, while Seaport Square land use accounts for 23% of the added overall Long-term projected land use, it accounts for only 7% of a.m. peak-hour vehicle trips (see Figure 3-46) and only 12% of p.m. peak-hour vehicle trips (see Figure 3-47). One reason is that the Seaport Square development will replace commuter parking spaces on the parking lots that operate on the site today. A second reason is that over 50% of Seaport Square land use is devoted to residential, hotel, and cultural/entertainment uses that generate less traffic than office and retail uses, as shown in Figure 3-48.

The associated South Boston Waterfront Long-term traffic operations are summarized in Table 3-33 for the a.m. and p.m. peak hours. Complete Synchro reports are provided in Appendix B-3.



SEAPORT SQUARE
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Figure 3-42

South Boston Waterfront Long-term Conditions Turning Movement Volumes, a.m. Peak Hour, North of Summer Street

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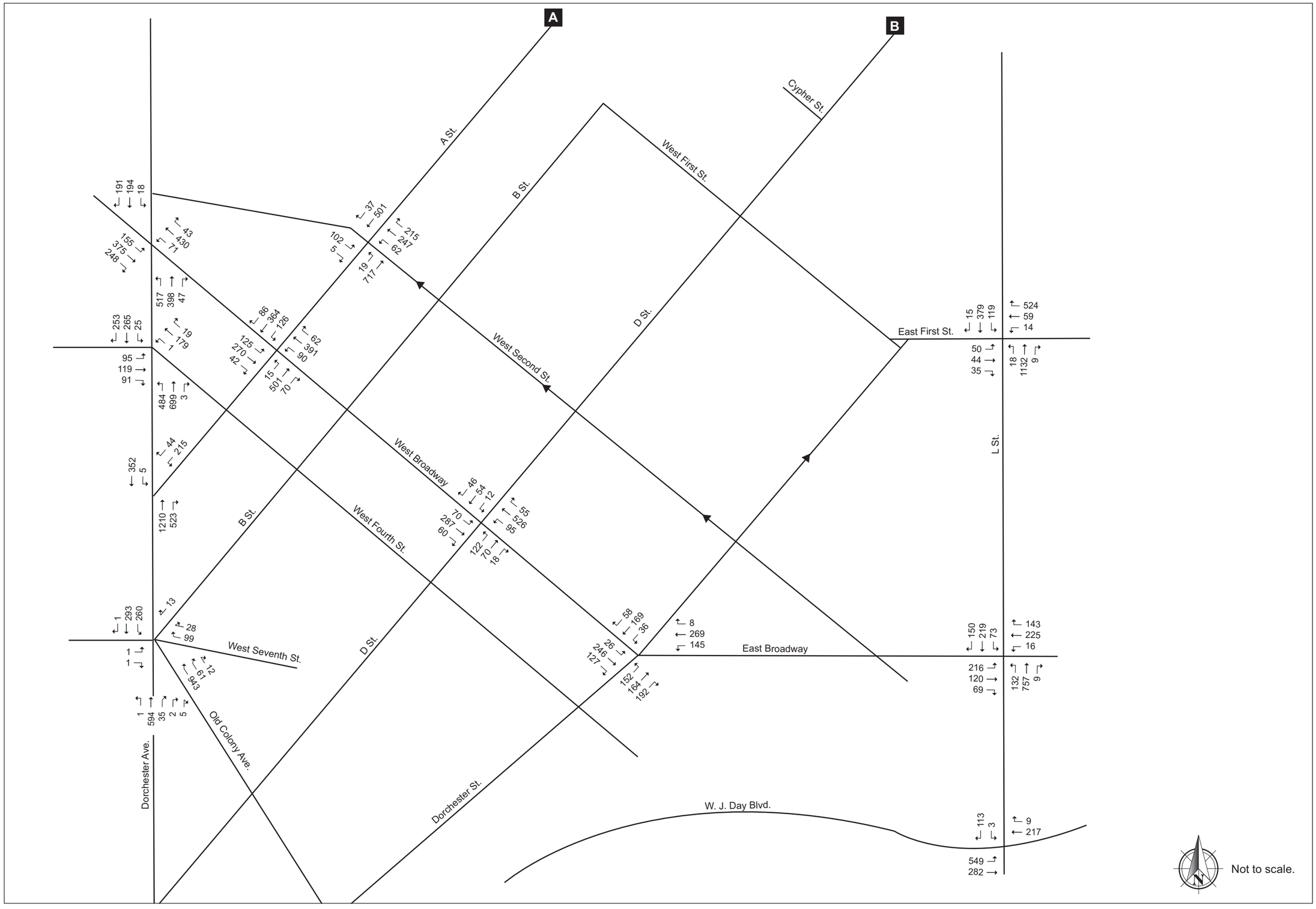

SEAPORT SQUARE
IN SOUTH BOSTON

Figure 3-43
South Boston Waterfront Long-term Conditions Turning Movement Volumes, a.m. Peak Hour, South of Summer Street

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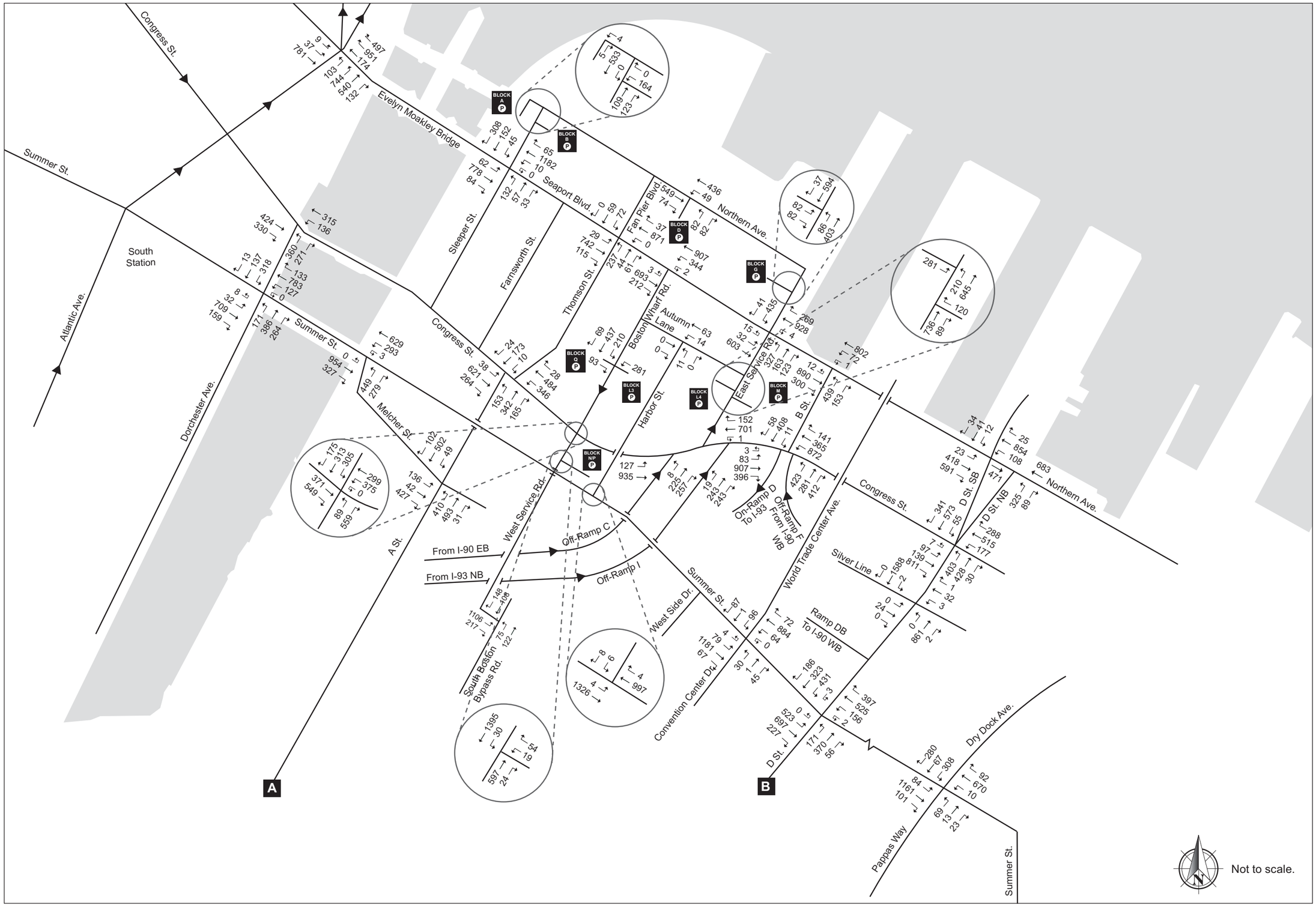

Figure 3-44
South Boston Waterfront Long-term Conditions Turning Movement Volumes, p.m. Peak Hour, North of Summer Street

SEAPORT SQUARE
IN SOUTH BOSTON

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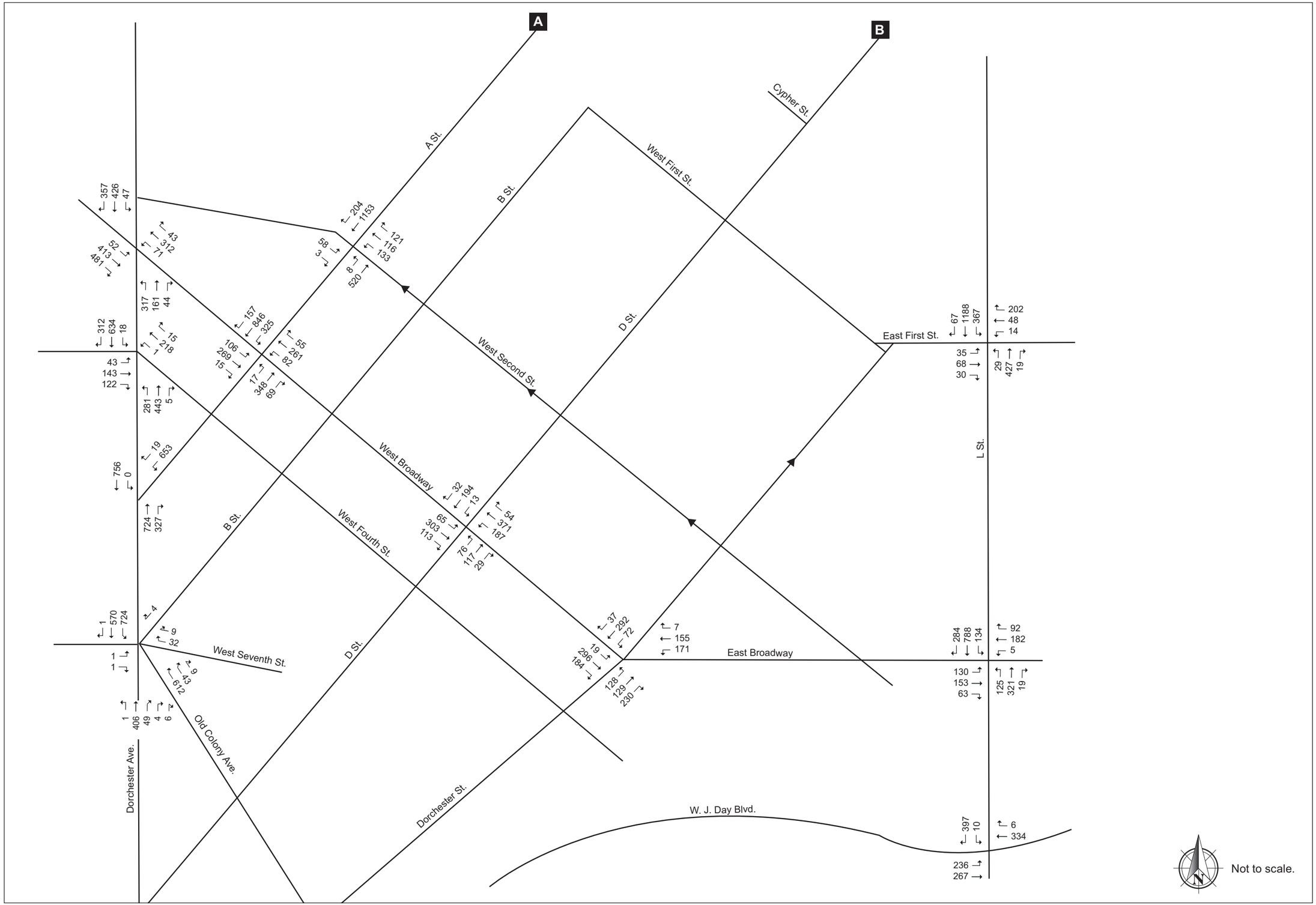

Figure 3-45
South Boston Waterfront Long-term Conditions Turning Movement Volumes, p.m. Peak Hour, South of Summer Street

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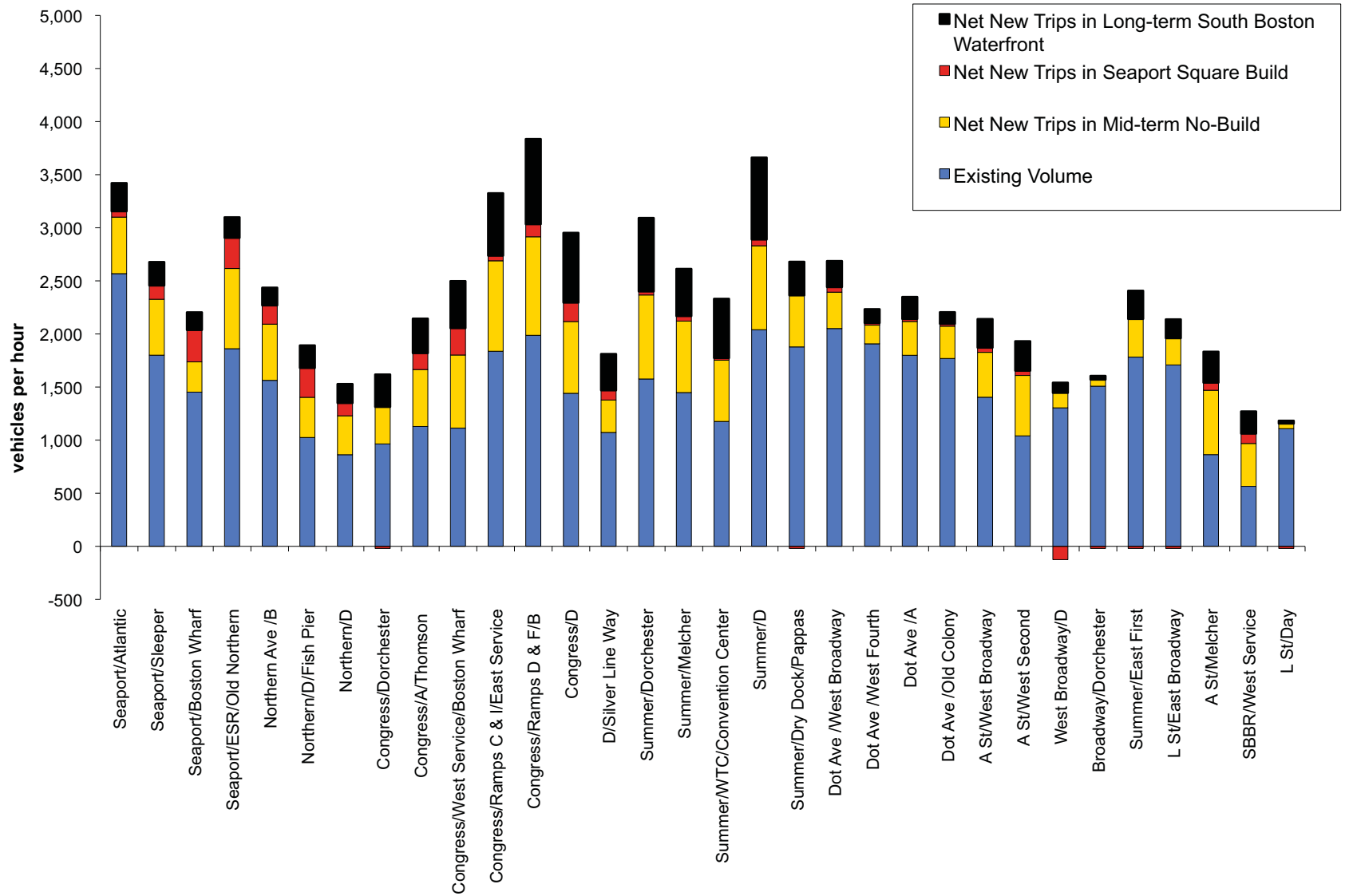

SEAPORT SQUARE
IN SOUTH BOSTON

Figure 3-46

Intersection Volume Comparison Graph: Existing, Mid-term, Seaport Square Build, and South Boston Waterfront Long-term Build Conditions, a.m. Peak Hour

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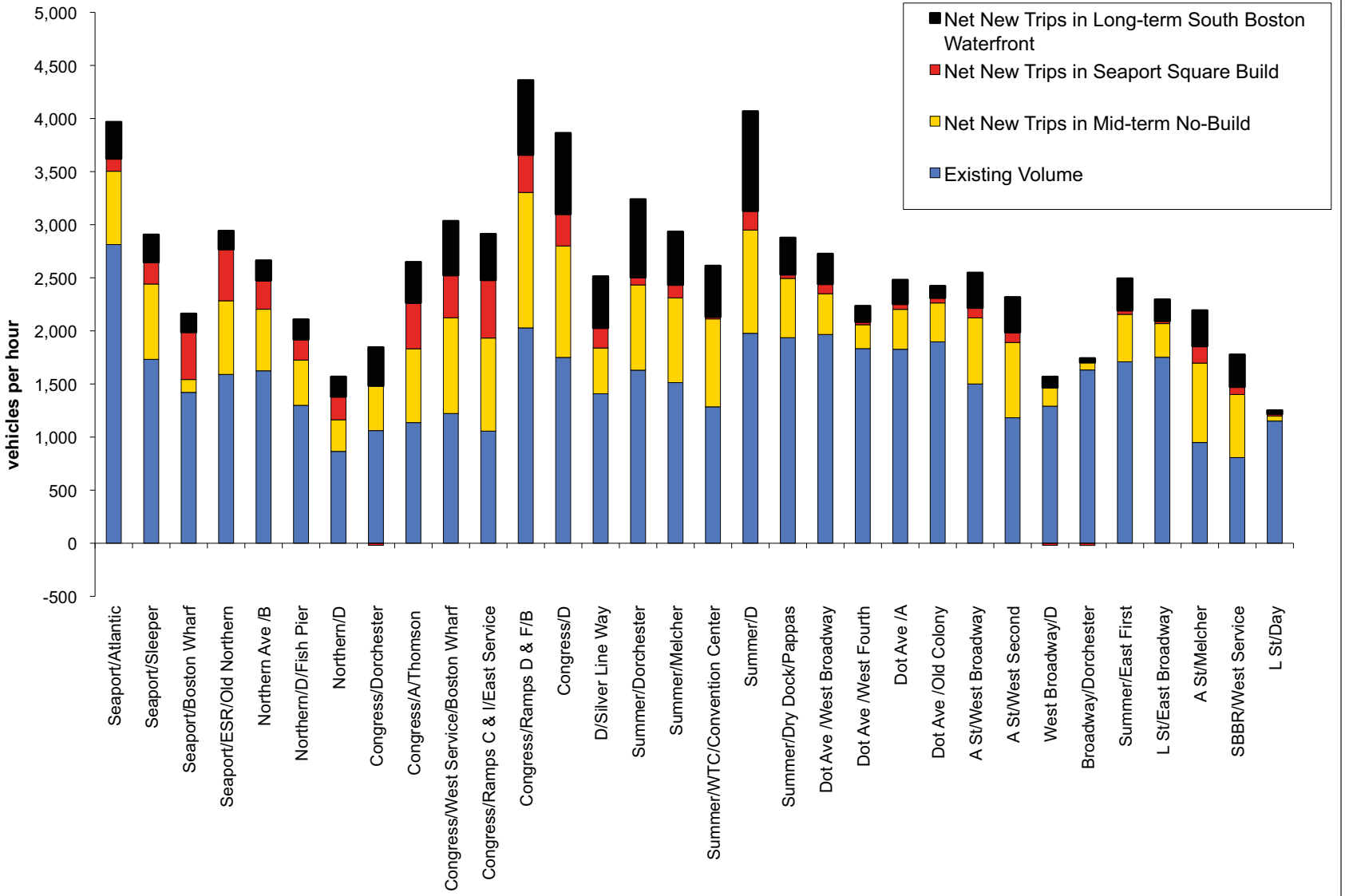

SEAPORT SQUARE
IN SOUTH BOSTON

Figure 3-47

Intersection Volume Comparison Graph: Existing, Mid-term, Seaport Square Build, and South Boston Waterfront Long-term Build Conditions, p.m. Peak Hour

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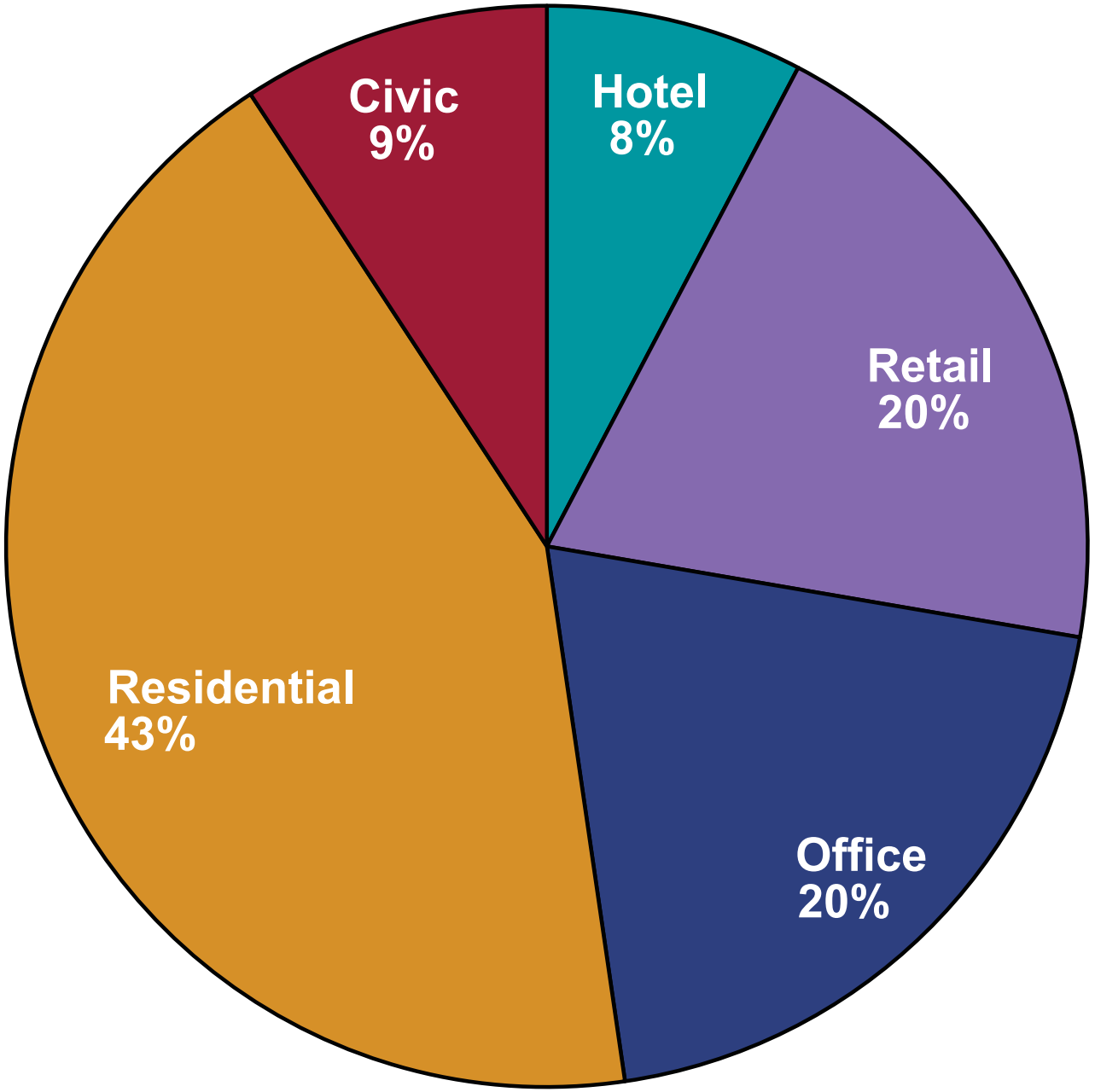
prepared by:
Howard/Stein-Hudson Associates, Inc.



SEAPORT SQUARE
IN SOUTH BOSTON

Figure 3-48
Distribution of Seaport Square Land Use

GALE INTERNATIONAL

Morgan Stanley

WS DEVELOPMENT

prepared by:
Howard/Stein-Hudson Associates, Inc.

Table 3-33 South Boston Waterfront Long-term Conditions: Level of Service Summary

Intersection	a.m. Peak	p.m. Peak
Signalized Intersections		
Seaport Boulevard/Atlantic Avenue	F	F
Seaport Boulevard/Sleeper Street	E	C
Seaport Boulevard/Boston Wharf Road	B	B
Seaport Boulevard/East Service Road	C	C
Seaport Boulevard/B Street	C	D
Seaport Boulevard/D Street (southbound)/Fish Pier Street	C	C
Seaport Boulevard/D Street (northbound)	D	F
Congress Street/Dorchester Avenue	F	F
Congress Street/A Street/Thomson Street	E	F
Congress Street/West Service Road/Boston Wharf Road	D	E
Congress Street/Off-ramp C/Off-ramp I/East Service Road	F	C
Congress Street/On-ramp D/Off-ramp F/B Street	F	F
Congress Street/D Street	D	F
D Street/Silver Line Way	A	C
Summer Street/Dorchester Avenue	F	F
Summer Street/Melcher Street	F	F
Summer Street/World Trade Center Avenue/ Convention Center Drive	C	C
Summer Street/D Street	F	F
Summer Street/Dry Dock Avenue/Pappas Way	F	E
Dorchester Avenue/West Broadway	F	F
Dorchester Avenue/West Fourth Street	C	B
Dorchester Avenue/A Street	A	C
Dorchester Avenue/Old Colony Avenue	C	B
A Street/West Broadway	E	F
A Street/West Second Street	B	B
West Broadway/D Street	D	D
West Broadway/East Broadway/Dorchester Street	E	F
Summer Street/East First Street	E	E
L Street/East Broadway	F	F
A Street/Melcher Street	F	F
Seaport Boulevard/Thomson Street	B	C
Unsignalized Intersections		
South Boston Bypass Road (Haul Road)/Wormwood Street	—	—
Wormwood EB left	E	F
Wormwood EB left/right	C	F
Haul Road NB left	A	A
Haul Road NB thru	A	A
Haul Road SB thru	A	A
Haul Road SB right	A	A
L Street/William J. Day Boulevard	—	—
William J. Day EB left/thru | thru	A	A
William J. Day WB thru/right	A	A
L SB left	F	D
L SB right	B	C

Table 3-33 South Boston Waterfront Long-term Conditions: Level of Service Summary (Continued)

Intersection	a.m. Peak	p.m. Peak
Unsignalized Intersections		
Sleeper Street/Block B Driveway	—	—
Block B WB left/right	C	D
Sleeper NB thru/right	A	A
Sleeper SB left/thru	A	A
Northern Avenue/Block D Driveway	—	—
Northern EB thru/right	A	A
Northern WB left/thru	A	A
Block D Driveway NB left/right	C	F
East Service Road/Block G Driveway	—	—
Block G EB left/right	E	F
East Service NB left/thru	A	A
East Service SB thru/right	A	A
Boston Wharf Road/Block Q Driveway/Block L3 Driveway	—	—
Block Q EB thru/right	B	B
Block L3 WB left/thru	F	F
Boston Wharf SB left/thru	A	A
Boston Wharf SB thru/right	A	A
East Service Road/Block L4 Driveway	—	—
Block L4 EB left	F	F
East Service NB left/thru	A	A
East Service NB thru	A	A
East Service Road/Block M2 Driveway	—	—
Block M2 WB right	C	B
East Service NB thru	A	A
East Service NB thru/right	A	A
Summer Street/Harbor Street	—	—
Summer EB left/thru	A	A
Summer EB thru	A	A
Summer WB thru	A	A
Summer WB thru/right	A	A
Harbor SB left/right	D	E
West Service Road/Block N & P Driveway	—	—
Block N & P WB left/right	D	F
West Service NB thru	A	A
West Service NB thru/right	A	A
West Service SB left/thru	A	A

Light grey cell shading indicates a change in LOS from Seaport Square Build with Mitigation Conditions that brings operations to LOS E or LOS F.
Black cell shading indicates that LO has improved from the previous condition.

Under Long-term Conditions, the following intersections or approaches worsen to LOS E or LOS F in the a.m. peak hour:

- Seaport Boulevard/Atlantic Avenue;
- Seaport Boulevard/Sleeper Street;

- Congress Street/Dorchester Avenue;
- Congress Street/A Street/Thomson Street;
- Congress Street/Off-ramp C/Off-ramp I/East Service Road;
- Summer Street/Melcher Street;
- Summer Street/D Street;
- Summer Street/Dry Dock Avenue/Pappas Way;
- Dorchester Avenue/West Broadway;
- A Street/West Broadway;
- L Street/East Broadway; and
- Wormwood Street eastbound approach at South Boston Bypass Road.

In the p.m. peak hour, LOS at the following intersections or approaches worsens to LOS E or LOS F:

- Northern Avenue/D Street (northbound);
- Congress Street/Dorchester Avenue;
- Congress Street/A Street/Thomson Street;
- Congress Street/West Service Road/Boston Wharf Road;
- Congress Street/D Street;
- Summer Street/D Street;
- Summer Street/Dry Dock Avenue/Pappas Way;
- Dorchester Avenue/West Broadway;
- Summer Street/East First Street;
- Wormwood approach at SBBR;
- Block D driveway at Northern Avenue; and
- Harbor Street approach at Summer Street.

Essentially, the South Boston Waterfront Long-term Conditions scenario reverses some of the gains achieved through the earlier improvements made by BTD and project proponents within the 1,000 Acres, although LOS is still acceptable at many of the study area intersections. However, because the Long-term scenario looks so far into the future, the study team suggests that operations at these locations be monitored as projects in the 1,000 Acres advance, to identify and address problems as they may occur over the years.

3.3.4.6 South Boston Waterfront Long-term Conditions Public Transportation

A second issue of concern in terms of Long-term planning is the transit capacity serving the area. Based on the transit mode shares and methodology presented above, the study team added the transit trips estimated for the remaining Long-term projects to the Seaport Square Build Conditions trips. The Long-term projects exclusive of Seaport Square are projected to add to the Seaport Square Build volumes 3,431 transit trips (1,096 boardings and 2,335 alightings) during the a.m. peak hour; 4,260 transit trips (2,492 boardings and 1,768 alightings) during the p.m. peak hour; and 3,504 transit trips (1,650 boardings and 1,854 alightings) during the Saturday mid-day peak hour. The mix of land uses helps balance peak and off-peak directionality of the transit flows, reducing the impacts on train capacity.

These new transit trips will be distributed on the various inbound and outbound transit services near the Seaport. The most convenient stations are South Station serving the Red Line and commuter rail, and Courthouse Station serving the Silver Line. The future Long-term capacity of transit service in the South Boston waterfront area is shown in Table 3-34.

Table 3-34 South Boston Waterfront Long-term Conditions Public Transportation

Subway Line	Origin–Destination	Car Capacity[1]	Cars Per Train[2]	Train Capacity[2]	Trains Per Hour	Hourly 1-way Capacity
Red Line	Alewife–Braintree/Ashmont	167	6	1,002	13	13,026
Orange Line	Forest Hills–Oak Grove	131	6	786	8	6,286
Green Line	Lechmere–Boston College, Cleveland Circle, Riverside, Health	90	2/3	180/270	18	4,320
Silver Line	Logan Airport/BMIP to South Station	97	1	97	88	8,600
Silver Line	South Station to Logan Airport/BMIP	97	1	97	88	8,600
Blue Line	Wonderland–Bowdoin	95	6	570	15	8,550

[1]Per MBTA service policy for peak-hour service. "Crush loaded" capacity is 1,602 for a 6-car Red Line train, 1,344 for a 6-car Orange Line train, 538 for a 2-car Green Line train; 120 for a Silver Line articulated vehicle, and 954 for a 6-car Blue Line train. Table does not reflect Run as Directed trains added in peak hours.
[2]Three 3-car trains are in service on the Riverside Branch.
[3]Per MBTA: three-car, low-floor Green Line trains on D Branch (post completion of Arlington and Copley ADA improvements); six-car Blue Line trains.

Impacts of the Long-term Projects on Silver Line Capacity

Based on the same series of calculations as were employed in the Mid-term No-Build and Seaport Square Build cases, the Long-term findings are that transit service is adequate to absorb the increases in ridership from all the Long-term projects and Seaport Square under the projected full deployment of Silver Line service (89 peak-hour/peak-direction trips). In fact, the total highest Seaport Square Build peak-hour/peak-direction ridership of about 6,200 (p.m. peak hour) could be accommodated in a more easily achievable 64 peak-hour/peak-direction trips under service policy loads, and 52 peak-hour/peak-direction trips under crush loading. Boarding counts performed at the Courthouse Silver Line Station in April 2008 also support the finding of adequate future transit capacity. Table 3-35 shows Existing, Mid-term No-Build, Seaport Square Build, and Long-term ridership for the peak-hour/peak-direction Silver Line trips.

Table 3-35 Projected Silver Line Peak-hour/Peak-direction Ridership and V/C Ratio, Long-term Conditions

	From South Station to Project Area					From Project Area to South Station				
a.m. Peak Silver Line Service	Existing 2009	Added Mid-term No-Build	Added Seaport Square Build	Added Other Long-Term Projects	Total South Boston Waterfront Long-term Conditions	Existing 2009	Added Mid-term No-Build	Added Seaport Square Build	Added Other Long-Term Projects	Total South Boston Waterfront Long-term Conditions
Seated Capacity	3,201	3,997	3,977	8,600	8,600	3,201	3,997	3,977	8,600	8,600
Crush Capacity	3,960	4,920	4,920	10,680	10,680	3,960	4,920	4,920	10,680	10,680
# of Riders (peak hour)	506	1,786	2,072	1,301	5,665	506	534	965	265	2,270
% Capacity (service policy)	16%	N/A	N/A	N/A	66%	16%	N/A	N/A	N/A	26%
% Capacity (crush loading)	13%	N/A	N/A	N/A	53%	13%	N/A	N/A	N/A	21%
	From South Station to Project Area					From Project Area to South Station				
p.m. Peak Silver Line Service	Existing 2009	Added Mid-term No-Build	Added Seaport Square Build	Added Other Long-Term Projects	Total South Boston Waterfront Long-term Conditions	Existing 2009	Added Mid-term No-Build	Added Seaport Square Build	Added Other Long-Term Projects	Total South Boston Waterfront Long-term Conditions
Seated Capacity	3,201	3,997	3,977	8,600	8,600	3,201	3,997	3,977	8,600	8,600
Crush Capacity	3,960	4,920	4,920	10,680	10,680	3,960	4,920	4,920	10,680	10,680
# of Riders (peak hour)	629	1,104	1,555	509	3,797	629	2,051	2,192	1,333	6,205

Table 3-35 Projected Silver Line Peak-hour/Peak-direction Ridership and V/C Ratio, Long-term Conditions (Continued)

	From South Station to Project Area					From Project Area to South Station				
% Capacity (service policy)	20%	N/A	N/A	N/A	44%	20%	N/A	N/A	N/A	72%
% Capacity (crush loading)	16%	N/A	N/A	N/A	36%	16%	N/A	N/A	N/A	58%

As shown above, the total Long-term peak-hour/peak-direction ridership of about 6,200 could be accommodated in a more easily achievable 64 peak-hour/peak-direction trips under service policy loads or 52 peak-hour/peak-direction trips under crush loading.

Table 3-36 shows volume-to-capacity ratios for local bus service for the Existing, Mid-term No-Build, Seaport Square Build, and Long-term cases.

Table 3-36 Volume-to-Capacity Ratio, Local Bus Service, Long-term Conditions

	Existing a.m.	Existing p.m.	Added Mid-term No-Build a.m.	Added Mid-term No-Build p.m.	Added Seaport Sq. Build a.m.	Added Seaport Sq. Build p.m.	Total S. Boston Waterfront Long-term a.m.	Total S. Boston Waterfront Long-term p.m.
Capacity	780	780	780	780	780	780	780	780
# of Riders (peak hour)	250	311	256	312	69	85	672	824
% Capacity	35%	43%	71%	87%	80%	99%	94%	115%

3.4 Construction Period Impacts

Seaport Square construction impacts are discussed in detail in Section 4.12. Most construction activities will be accommodated within current site boundaries. Details of the overall construction schedule, work hours, number of construction workers, worker transportation and parking, number of construction vehicles, and routes will be addressed in detail in a Construction Management Plan to be filed with BTD in accordance with the City's transportation maintenance plan requirements.

The proposed construction staging plan will be designed to isolate the construction while providing safe access for pedestrians and vehicles during normal day-to-day activity and emergencies. The staging areas will be secured by chain-link fencing to protect pedestrians from entering these areas.

Although specific construction and staging details have not been finalized, the Proponent will work with the construction contractor and the City of Boston to ensure that staging areas will be located to minimize impact to pedestrian and vehicular flow. Secure fencing and barricades will be used to isolate construction areas from pedestrian traffic. In addition, public safety for pedestrians on abutting sidewalks will also include covered pedestrian walkways when appropriate and, as required, the suspension of the use of certain sidewalks during the most hazardous periods of overhead work activity during the construction of the superstructure. As required by BTD and the Boston Police Department, police details will be provided to facilitate traffic flow. Seaport Square construction will include debris nets on various levels of the building elevations to protect the public and the abutters. All construction procedures will be designed to meet all OSHA safety standards for specific site construction activities.

The number of workers required during the construction period will vary, depending on the stage of construction. The estimated average daily work force will be approximately 25 to 40 during the preparatory phases, increasing to 400 workers during typical periods, and up to approximately 600 workers during the peak period of construction. The Proponent will make reasonable good-faith efforts to assure that at least 50% of the total employee work hours will be allocated for Boston residents, at least 25% of total employee work hours will be allocated for minorities, and at least 10% of the total employee work hours will be allocated for women.

Because the construction workers will arrive and depart prior to peak traffic periods, the construction trips are not expected to impact local traffic conditions. To reduce vehicle trips to and from the construction site, no construction worker parking will be permitted on the site. The contractor will establish a designated drop-off area for workers, tools, and equipment. The established time frame for the drop-off area will be 6:00 a.m. to 7:00 a.m. The drop-off area will include posted "No Idling" signs.

All workers will be strongly encouraged to use public transportation. The contractor will be strongly encouraged to offer a subsidy for MBTA passes for all full-time employees. The location of Seaport Square within close proximity of the MBTA Silver Line Courthouse Station and South Station will encourage transit use.

The Construction Management Plan to be executed with the City prior to commencement of construction will document all committed measures.

2.0 GENERAL INFORMATION

2.1 Project Identification and Project Team

Project Name: Seaport Square

Location: The Project will include approximately 23 acres in South Boston, generally bound by Northern Avenue and Seaport Boulevard (between Old Sleeper Street and East Service Road) and by Stillings Street, Boston Wharf Road, East Service Road, and B Street (between Seaport Boulevard and Summer Street).

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Geotechnical Consultant:	Haley & Aldrich 465 Medford Street, Suite 2200 Boston, MA 02129 (617) 886-7400 Marya Gorczyca
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Landscape Architect:	Reed Hilderbrand Associates, Inc. 741 Mt. Auburn Street Watertown, MA 02472 (617) 923-2422 Gary Hilderbrand

2.2 Regulatory Controls and Permits

2.2.1 History of BRA and MEPA Review

2.2.1.1 City of Boston Article 80 Review

The proposed Project is subject to review by the BRA pursuant to Article 80, Section 80B, Large Project Review, of the Boston Zoning Code. A Project Notification Form/ Environmental Notification Form (PNF/ENF) was filed with the BRA and MEPA on June 2, 2008. This document also included a request to both agencies to waive further review for Phase 1 (Blocks A, H and J). On November 13, 2008, the BRA Board approved a waiver of further review for Block A.

2.2.1.2 Massachusetts Environmental Policy Act Review

As mentioned above, a PNF/ENF was filed with the BRA and MEPA on June 2, 2008. The PNF/ENF also included a request to waive further review for Phase 1 (Blocks A, H and J). On August 8, 2008, MEPA issued a certificate on the ENF requiring a Draft Environmental Impact Report (EIR) and a Draft Record of Decision for the Phase 1 Waiver request. On September 17, 2008, MEPA issued a Final Record of Decision granting a Phase 1 Waiver allowing commencement of Phase 1 of the Project prior to completion of the EIR. Due to changes in the placement of uses and changes to Blocks H and J, a Notice of Project Change (NPC) was filed with MEPA on March 31, 2009. On May 8, 2009, MEPA issued a certificate on the NPC reaffirming the scope contained in the August 8, 2008 certificate. A Final Amended Record of Decision was issued on June 5, 2009 confirming approval of commencement of Phase 1 prior to completion of the EIR. The certificate on the ENF, the NPC, and the Final Amended Record of Decision are included in Appendix A.

2.2.2 Anticipated Permits, Reviews and Approvals

Given the scale of the Project, it will be subject to BRA and MEPA impact reviews, reviews relating to impacts on nearby historic properties, and permitting related to transportation and other infrastructure impacts. Anticipated reviews, permits and approvals are provided in Table 2-1. Immediately below is a summary of anticipated permits; Section 2.5 below provides greater detail on state permits and preliminary Project compliance.

Most of the Project Site consists of landlocked tidelands exempt from the waterways licensing requirements of Chapter 91. Certain areas of the Project Site are within Chapter 91 licensing jurisdiction and subject to the South Boston Municipal Harbor Plan: all of

Block A; the western end of Block B; the western end of Block H; the northeastern corner of Block G; and the northeastern portion of Block M. These areas total approximately 1.64 acres. The Proponent will seek Chapter 91 licenses for those sub-Blocks after Article 80 and MEPA review for the relevant Blocks is complete. Because the entire Project Site is located on landlocked tidelands, the Project will comply with the recently-enacted legislation governing those areas by addressing the impact of the Project on public access to the waterfront and on groundwater levels, and will seek a public benefit determination from the Secretary of the Executive Office of Energy and Environmental Affairs (see Chapter 4 for Public Benefit Analysis).

Blocks H, J, K, and Q of the Project Site are within the Seaport Boulevard/Boston Wharf Road Protection Area adjacent to the Fort Point Channel Landmark District. As such, in addition to State Register Review by the Massachusetts Historical Commission, the Project will be subject to review by the Boston Landmarks Commission under the Standards and Criteria for the Protection Area.

The Project will require approvals from the Federal Aviation Administration for buildings that exceed 200 feet in height. The Proponent has designed the Project to be consistent with allowable building heights as shown on advisory maps issued by Massport and will coordinate with Massport and the FAA as appropriate.

The Project Site has South Boston Parking Freeze permits from the City's Air Pollution Control Commission for 3,647 commercial parking spaces. The Proponent expects to seek new permits for approximately 353 additional commercial spaces from the Parking Freeze bank. The Project will also require permits relating to wastewater and construction dewatering, and approvals from City and state transportation agencies and departments for the roadway improvements and parking facilities that are part of the Project. A list of potential permits is below.

Table 2-1 Anticipated Environmental Reviews, Permits and Approvals

Agency Name	Review Process, Permit , or Approval
FEDERAL	
Environmental Protection Agency	National Pollution Discharge Elimination System
Federal Aviation Administration	FAA Height Restriction Notice; Section 19 Determination
STATE	
Executive Office of Energy and Environmental Affairs (MEPA Unit)	Secretary's Certificates (including Phase 1 Waiver/Final Record of Decision)
Department of Environmental Protection, Division of Wetlands and Waterways	Chapter 91 License; Landlocked Tidelands Public Benefit Determination
Department of Environmental Protection, Division of Water Pollution Control	Sewer Connection and Extension Permit

Table 2-1 Anticipated Environmental Reviews, Permits and Approvals (Continued)

Agency Name	Review Process, Review Process, Permit , or Approval
Department of Environmental Protection, Division of Air Quality Control	Air Plan Approval, if required
Department of Environmental Protection	Notification of Demolition and Construction
Massachusetts Water Resources Authority	Sewer Use Discharge Permit
Massachusetts Historical Commission	State Register Review
Massachusetts Highway Department	Change of Access Designation, Access Permit
Executive Office of Transportation	Compliance with Chapter 40, Section 54A
Massachusetts Bay Transportation Authority	Approvals related to Silver Line facility connections
LOCAL	
Boston Redevelopment Authority	80B Large Project Review; 80C Planned Development Area Review
Boston Zoning Commission	80C Planned Development Area Approval
Boston Civic Design Commission	Review and Approval
Boston Air Pollution Control Commission	Parking Freeze Permits, Confirmation of Exemptions
Boston Water and Sewer Commission	Sewer Use Discharge Permit; Site Plan Approval; Construction Dewatering Permit; Sewer Extension/ Connection Permit; Stormwater Connection; Cross Connection/Backflow Prevention Permit; Hydrant Meter Permit; Construction Permit for Facilities; Termination Verification Permit (Chapel)
City of Boston Inspectional Services Department	Building and Occupancy Permits; Termination Verification Permit (Chapel)
Boston Public Improvement Commission	Acceptance of New Public Way or Private Way Open to Public Travel; Street and Sidewalk Occupation Permits; Tieback/Earth Retention System License Agreement; Curb Cut; Subsurface/Surface Discontinuances; Specific Repair Plan Approval; Street Opening; Licenses for Awning or Projections
Boston Zoning Board of Appeal	Conditional Use Permits, variances, and Interim Planning Permits (for Phase 1 Blocks)
Boston Conservation Commission	Notice of Intent
Boston Department of Public Works	Street Occupancy Permit; Curb Cut Permit

Table 2-1 Anticipated Environmental Reviews, Permits and Approvals (Continued)

Agency Name	Review Process, Review Process, Permit , or Approval
Boston Transportation Department	Transportation Access Plan Agreement; Construction Management Plan
Boston Landmarks Commission	Article 85 Demolition Delay Review; Seaport Boulevard/Boston Wharf Road Protection Area review
Boston Parks and Recreation Commission	Approval of Demolition and Construction within 100 feet of park or parkway
Boston Public Safety Commission, Committee on Licenses	Permit to erect and maintain parking garage; Flammable storage license
Boston Fire Department	Storage tank permit; Burner and permit for fuel oil; Cross connection backflow preventer; Approval for sprinkler systems; Permit for maintenance of fire protection/equipment; Permit for safe access to the site; Permit for welding and cutting equipment

2.2.2.1 State Permitting and Agency Actions

The following is a summary of the state permits and agency actions required or potentially required by the Project, and a preliminary description of the Project's compliance with the standards applicable to each such permit or action.

Executive Office of Energy and Environmental Affairs; Massachusetts Environmental Policy Act Review

The Massachusetts Environmental Policy Act ("MEPA") (M.G.L. ch. 30, Secs. 61 through 62H; 301 CMR 11.00) requires the Secretary of Energy and Environmental Affairs to conduct environmental impact reviews of certain projects involving state agency action. MEPA jurisdiction applies to: (i) projects undertaken by a state agency, (ii) those aspects of a project that are within the subject matter of any required state permit, (iil) projects involving state financial assistance, and (iv) those aspects of a project within the area of any real property acquired from a state agency. Where MEPA jurisdiction applies and certain environmental thresholds are exceeded, MEPA filings are required. The MEPA statute requires that state agencies "use all practicable means and measures to minimize damage to the environment," by studying alternatives to the proposed project, and developing enforceable mitigation commitments, which will become permit conditions for the project. MEPA review occurs before permitting agencies act, to ensure that they consider the environmental consequences of their actions and can exercise their Section 61 responsibilities when issuing permits.

The current MEPA review of the Project began with the filing of the ENF on June 2, 2008. Following review of the ENF, the Secretary issued a Certificate for an EIR on August 8, 2008. The Proponent submitted a Notice of Project Change on March 31, 2009, and the Secretary issued a second Certificate on May 8, 2009 reaffirming the scope contained in the August 8, 2008 Certificate. This Draft EIR responds to that Certificate.

Department of Environmental Protection, Division of Wetlands and Waterways, Chapter 91 License

Under the Waterways Regulations, 310 CMR 9.00 et seq., development within Chapter 91 areas must meet certain dimensional and use constraints relating to maximum lot coverage, waterfront setback, maximum height, and facilities of public accommodation. Chapter 91 constraints, however, may be modified by substitute provisions in an approved Municipal Harbor Plan. In reviewing a project that is in compliance with an approved Municipal Harbor Plan, MassDEP, in its Chapter 91 review, is required to follow the requirements of the approved Municipal Harbor Plan.

The City of Boston submitted a Municipal Harbor Plan (the "MHP") for the South Boston Waterfront District to EOEA for approval in July 2000, and the Secretary approved the plan in a Decision dated December 6, 2000 (the "MHP Decision"). The MHP Decision was subject to adoption by the City of Boston of zoning provisions consistent with the plan. The City adopted Article 42E of the Boston Zoning Code to fulfill the requirement to have zoning consistency with the MHP.

As noted in Section 4.8 of this Draft PIR/EIR, all of Block A, the western end of Block B, the western end of Block H, the northwestern corner of Block G, and the northwestern portion of Block M are subject to the requirements of Chapter 91, as modified by the MHP. The Project will comply with the requirements of the MHP without the need for amendments. See Section 4.8 for more detail regarding the Project's compliance with Chapter 91 and the MHP.

Department of Environmental Protection, Division of Water Pollution Control, Sewer Connection and Extension Permit

Under sewer regulations issued by MassDEP in January, 2007, if a project increases flow through an existing sewer connection by more than 50,000 gallons per day, or generates at least 50,000 gallons per day of sanitary sewage through a new sewer connection, a sewer connection permit from the Division of Water Pollution Control will be required. Such permits are generally granted as long as design and engineering requirements are met and the receiving sewer line has adequate capacity. The sewer regulations require that where a project increases flow through an existing sewer connection in an amount of between more than 15,000 gallons per day and 50,000 gallons per day, or generates between 15,000 and 50,000 gallons per day through a new sewer connection, certification is required stating that the sewer connection complies with applicable standards.

The Project will apply for the necessary sewer connection permits on a Block-by-Block basis and will comply with the engineering standards required for such permits. State connection permits will be secured concurrently with required local sewer infrastructure permits from the Boston Water and Sewer Commission.

Department of Environmental Protection, Division of Air Quality Control, Air Plan Approval

If a project results in the installation of a heating plant, emergency generator or other fossil-fuel-burning equipment exceeding source-specific thresholds, approval is required from the Division of Air Quality Control of MassDEP. MassDEP has implemented a streamlined permitting process for smaller units conforming to predetermined specifications. This program, named the Environmental Results Program (ERP), was designed to alleviate the burden of the permitting process on both the applicants and the regulatory agency.

Individual boilers with heating capacities between 10 million and 40 million Btu per hour heat input are subject to the requirements of the ERP for boilers. Such boilers must be fired with natural gas and/or ultra-low sulfur diesel and meet the emission rates outlined in 310 CMR 7.26(33). Stacks must be designed as to not cause or contribute to a condition of air pollution. The required notification must be made to MassDEP prior to installation and appropriate records must be kept thereafter.

Emergency generators greater than 37 kilowatts are subject to the requirements of the ERP for emergency engines (310 CMR 7.26(42)). Engines must meet appropriate emissions standards applicable to their size and fuel, have a stack constructed as to not cause or contribute to a condition of air pollution, must not cause adverse noise impacts, and must only be operated due to a power outage and for no more than 300 hours per year. The required notification must be made to MassDEP within 60 days after installation and appropriate records must be kept thereafter.

The ERP registration does not provide relief from any other applicable state and federal air quality regulations. Units of larger size than the ERP limits must obtain an air plan approval from MassDEP. If MassDEP approval is required, the Project will comply with the relevant design and engineering requirements.

Massachusetts Water Resources Authority ("MWRA"), Sewer Use Discharge Permit, Temporary Construction Site Dewatering Permit

Regulations set forth at 360 CMR 10.051 require a Sewer Use Discharge Permit or Group Permit for any discharge of Industrial Waste, as defined in 360 CMR 10.004, directly or indirectly, into the MWRA Sewer System. 360 CMR 10.004 defines Industrial Waste as "any solid, liquid or gaseous Wastes or Wastewater, resulting from an industrial or manufacturing process or from a commercial, governmental or institutional activity, or from the development, recovery, or processing of natural resources." Certain uses within the

proposed development may require a Sewer Use Discharge Permit. As these specific uses are yet to be determined however, permits will be secured on a discharge-by-discharge basis as the need arises.

Massachusetts Historical Commission

Chapter 9, §§26-27D of the General Laws establish a process for the review by the Massachusetts Historical Commission ("MHC") of development projects for their effect on historic properties ("State Register Review"). Regulations governing State Register Review, 950 CMR § 71.00 et seq., set forth a procedure requiring notification to MHC of any project either to be undertaken by a state body or prior to such state body's funding or licensing of a private project, and requiring the MHC to determine whether such a project will have an "adverse effect" on properties listed on the State Register of Historic Places.

In response to the filing of the ENF and the NPC, MHC issued a finding of adverse effect due to the proposed demolition of the Chapel of Our Lady of Good Voyage, which is listed in MHC's Inventory of Historic and Archaeological Assets of the Commonwealth. The Proponent will consult with MHC as required by MHC's regulations.

Massachusetts Highway Department, Change of Access Designation, Vehicular Access Permit

Under regulations published by the Massachusetts Highway Department ("MHD") in November 2007, a highway access permit is required for any new or reconfigured curb-cut onto the State Highway Layout ("SHLO"), or for substantial increases in traffic onto the SHLO. The new regulations define the SHLO as "Commonwealth property under the custody and control of [MHD] being used and laid out for highway purposes; this does not include excess parcels that may have been acquired by [MHD] but which are not being used for highway purposes." The regulations also do not apply "to roadways within the Metropolitan Highway System, since those roadways are under the jurisdiction of the Massachusetts Turnpike Authority . . . ."

Vehicular Access Permits are required for:

1. New residential or commercial driveways or streets intersecting the SHLO.

2. Physical modifications to existing residential or commercial driveways or streets at their intersection with the SHLO.

3. Change in use of an existing residential or commercial driveway onto the SHLO that results in a substantial increase in or impact on traffic over the current use.

4. Construction of new, or change of use of existing, residential or commercial driveways from properties that abut the SHLO to serve a building or facility, or expansion of a building or facility, that generates a substantial increase in impact on traffic.

According to a determination letter from MHD dated July 22, 2008, MHD owns Congress Street, and the Massachusetts Turnpike Authority ("MTA") operates the street. There exists a "no access" sideline along Congress Street, between Boston Wharf Road and B Street, where curb cuts are proposed. Accordingly, the Project will request a change in designation of the "no access" area, as well as a Vehicular Access Permit for the proposed Congress Street curb cuts. As part of this request, the Project will submit a site plan, a curb cut plan, and a traffic study to MHD. The Proponent will work with MHD to meet the safety and traffic flow requirements necessary to receive such access permits.

Executive Office of Transportation and Construction; Section 54A Consent

Under Massachusetts General Laws Chapter 40 and 780 CMR 111.3, Section 54A, any construction of permanent improvements on land formerly used as a railroad right-of-way, or land appurtenant to such right-of-way, requires consent of the Executive Office of Transportation ("EOT"). Certain areas of the Project Site include former railroad interests; accordingly, EOT approval will likely be required.

Massachusetts Bay Transportation Authority, Approvals Related to the Silver Line Facilities

The Project will seek MBTA approvals for all connections to the MBTA's Silver Line facilities, such as the construction of the new Silver Line headhouse in Seaport Square Green, as well as for construction over the Silver Line tunnel.

2.3 Public Participation

The Project has undergone considerable public review by a wide-ranging group of city and state agencies and governing officials throughout the Project history. These include the Boston Redevelopment Authority (BRA), the Boston Civic Design Commission (BCDC), Boston Water and Sewer Commission, the Boston Landmarks Commission (BLC), MassDEP, Massachusetts Department of Energy, Public Improvement Commission, the Massachusetts Secretary of Energy and Environmental Affairs, the Massachusetts Secretary of Housing and Economic Development, the MassDevelopment office, Massachusetts Port Authority, and The Boston Harbor Association. The Project has also been presented for review on multiple occasions to Governor Patrick, Mayor Menino, South Boston elected officials, and the Impact Advisory Group established by the BRA.

In addition to review by city and state agencies and officials, the Proponent has made significant efforts to work with the South Boston community and its neighbors. Prior to submission of the PNF/ENF in June 2008, six different public meetings were held in the

community between April and July 2008 to provide an overview of the Project and a platform for discussion of specific topics such as transportation, parks and public realm. After the PNF/ENF submission, a seventh meeting was held in July 2008 to summarize the preceding meetings. A dedicated website was also created, www.seaportsquare.com, specifically to invite public feedback and to distribute copies of presentations about the Project. The Proponent has also become actively involved in numerous South Boston non-profit and/or charitable organizations, including the South Boston Neighborhood House and A Better City.

The Proponent acted on input received from its ongoing collaboration with the BRA, other agencies and abutters by making program and massing changes to the master plan outlined in Section 1.5.

2.4 Zoning

The Project Site is within the Fort Point Waterfront Subdistrict of the Harborpark District (the "Fort Point Waterfront") governed by Article 42E of the Boston Zoning Code (the "Code"), except for Block Q, which is within the M-4 Restricted Manufacturing Subdistrict. The entire Project Site is also within the South Boston Inner Harbor Subdistrict of the South Boston Interim Planning Overlay District governed by Article 27P of the Code (the "IPOD") and the Restricted Parking District. Blocks H, J, K, and Q are within the Groundwater Conservation Overlay District. The regulations of the Code other than Article 27P constitute the Underlying Zoning for the Project Site. Where the provisions of Underlying Zoning conflict with the provisions governing the IPOD, the IPOD regulations govern.

In the Fort Point Waterfront, most of the uses contemplated to be included in the Project are allowed, including: Open Space/Recreational Uses; Community Uses and Cultural Facilities; Residential Uses; Hotel Uses; Office Uses; Research Center Uses; Local Retail and Service Uses; General Retail Uses; Restaurant Uses; Place of Worship; Exhibition/ Conference use; and Art/Artists' Mixed Use. Parking is a conditional use in the Fort Point Waterfront.

The Project may require zoning relief to allow (1) Parking Uses (for commercial parking on Blocks B, C, D, F, G, K, Q, L, and M); (2) certain education uses on Blocks N and P; and (3) for any other uses not listed as Allowed in Section 42E-21. The Project will provide day care facilities and Facilities of Public Accommodation in the amount set forth in the Code, or receive zoning relief to allow flexibility with respect to the provision of such facilities.

The dimensional requirements vary for individual development Blocks within the Project Site. The maximum FAR in the IPOD is 5.0 for Blocks A, H, J, Q, and part of Block K, and 4.0 for Blocks B, C, D, F, G, L, M, N, and the remainder of Block K. The Project-wide FAR will be approximately 6.49; individual zoning lots (including adjacent lots in common ownership) will have FARs ranging from 0.11 to 9.50. The maximum building height for the Project Site under the IPOD is 75 feet for Blocks A, H, J, Q, and part of Block K, and

150 feet for Blocks B, C, D, F, G, L, M, N, and the remainder of Block K. The maximum heights for the Project Site pursuant to Underlying Zoning range from 125 feet to 250 feet. The Project will therefore require relief from both the maximum FAR and maximum building height requirements of the Code.

In the IPOD, projects involving new construction at grade must devote at least 50% of the lot area to open space, unless the BRA determines during Large Project Review that a smaller open space area, or the provision of open space in a different location, would result in a design more compatible with the surrounding area. In the Fort Point Waterfront, projects south of the old configuration of Northern Avenue must provide open space of at least 30% of lot area. All of the Project Site is located south of the old layout of Northern Avenue and is thus subject to the 30% open space requirement, with the exception of a triangular portion of Blocks F and G, to which the 50% requirement would apply. Including the new streets that the Proponent will construct on its property, the Project will have approximately 35% open space; using the zoning definition yields approximately 25% of open space.

Block Q, which is subject to the dimensional requirements of the M-4 district, may require relief from the minimum parapet setback, minimum lot size and lot width, minimum yard, and parking and loading requirements.

Blocks H, J, K, and Q are within the Groundwater Conservation Overlay District, and will need to achieve consistency with the requirements of Article 32 by ensuring that those portions of the Project will have no negative impact on groundwater on those sites or adjacent sites.

Off-street parking and loading requirements will be determined by the BRA during Large Project Review.

The Proponent intends to seek any zoning relief required for the development of Blocks A, H, and J from the Board of Appeal and seek the adoption of a Planned Development Area (PDA) to achieve zoning compliance for the rest of the Project Site.

2.5 Legal Information

2.5.1 Legal Judgments Adverse to the Proposed Project

The Proponent is not aware of any legal judgments in effect or legal actions pending that are adverse to the Project.

2.5.2 History of Tax Arrears on Property Owned in Boston by the Proponent

The Proponent is not in tax arrears on any property owned within the City of Boston.

2.5.3 Site Control/Public Easements

In September, 2006, the Proponent acquired title to the Project Site, with the exceptions described below, from Fox Boston Seaport Land LLC.

A portion of Blocks C and D is currently owned by the Archdiocese of Boston, and occupied by the Chapel of Our Lady of Good Voyage. The Proponent has submitted a letter of intent to the Archdiocese and expects to acquire the site currently occupied by the Chapel.

Within the Project Area, a parcel with an area of 2,469 square feet located between the current end of Farnsworth Street and Seaport Boulevard is owned by the MBTA. Similarly, a parcel with an area of 3,614 square feet located between Blocks J and K, at the northern end of Thomson Place, is owned by the MBTA.

Pursuant to a 1998 agreement among the McCourt Broderick Limited Partnership (MBLP) (a previous site owner), the City of Boston, and the BRA, the BRA is required to transfer to the Proponent (1) a triangular parcel at the intersection of Northern Avenue and the proposed East Service Road extension containing approximately 31,835 square feet in order to square off Blocks F and G; and (2) a permanent subsurface easement to a triangular parcel adjacent to Blocks C and D and to an adjacent strip of land within the Old Northern Avenue right of way.

In return, the Proponent must transfer to the City or the BRA the land between Blocks C and D, which will be used for the extension of Thomson Place (Fan Pier Boulevard), and possibly additional property.

Pursuant to a 1997 Omnibus Settlement Agreement among MBLP, the Massachusetts Department of Highways (MHD), the Massachusetts Bay Transportation Authority (MBTA), and Energy International, Inc. (the "OSA"), MHD is required to transfer to the Proponent fee or easement interests in parcels of land previously taken from MBLP outside final roadway and transit rights of way, including an air rights parcel on Blocks P and N. The OSA establishes a procedure to determine the final configurations of Blocks P and N. The Proponent intends to work with MHD to finalize any transfers required by the OSA.

1.0 PROJECT DESCRIPTION

1.1 Project Site

After decades of neglect and underdevelopment, South Boston's Seaport District is now recognized as the next great neighborhood in the City of Boston. As described below, numerous development projects are planned, underway or recently completed, with Seaport Square positioned at the geographic center of this rapidly changing area.

The Project Site consists of approximately 23 acres of land, defined by an L-shaped series of blocks as indicated in Figure 1-1. Currently occupied primarily by surface parking lots, the Project Site is generally bound by Northern Avenue and Seaport Boulevard (between Old Sleeper Street and East Service Road) and by Stillings Street, Boston Wharf Road, East Service Road, and B Street (between Seaport Boulevard and Summer Street). The only existing building on the site is the Chapel of Our Lady of Good Voyage. Throughout this document, the term "Project Site" shall refer to the area owned, or to be owned, by the Proponent. The Proponent has master planned a larger 33 acre area including adjoining public ways, much of which will be improved in concert with the Project. This area is referred to herein as the Project Area, and is shown on Figures 1-1 and 1-2.

To the north, south, east, and west of the Project Site, planning, permitting, and construction has moved forward in the past ten years to redevelop previously underutilized areas of South Boston, which has resulted in the significant transformation of many acres of other surface parking lots and major improvements to roadway infrastructure, particularly in the Seaport District. Recently completed projects by others including Seaport World Trade Center, the Boston Convention and Exhibition Center (BCEC), the Moakley Federal Courthouse, and the Institute of Contemporary Art (ICA) have added new uses and new attractions to the area, signaling renewed vitality for the Seaport District. The Fan Pier mixed-use development, filling the gap between the Federal Courthouse and the ICA, has also begun construction, and a number of additional development projects are in the planning stages.

1.2 Project Description

Seaport Square will transform 23 acres of land currently used as surface parking lots into a vibrant, 24/7 neighborhood, just steps from the waterfront and Boston's Financial District (see Figures 1-3 and 1-4). Utilizing thoughtful principles of urban planning, this master planned Project will weave together a unique fabric of residences, offices, shops, restaurants, cultural institutions, educational facilities, hotels, and open spaces spanning 20 city blocks. Retail will be a major component of the Project, planned for the ground floor, and on the second and third floors in some cases, of most of the proposed buildings. The shops will be a blend of local and regional stores and boutiques mixed with larger national

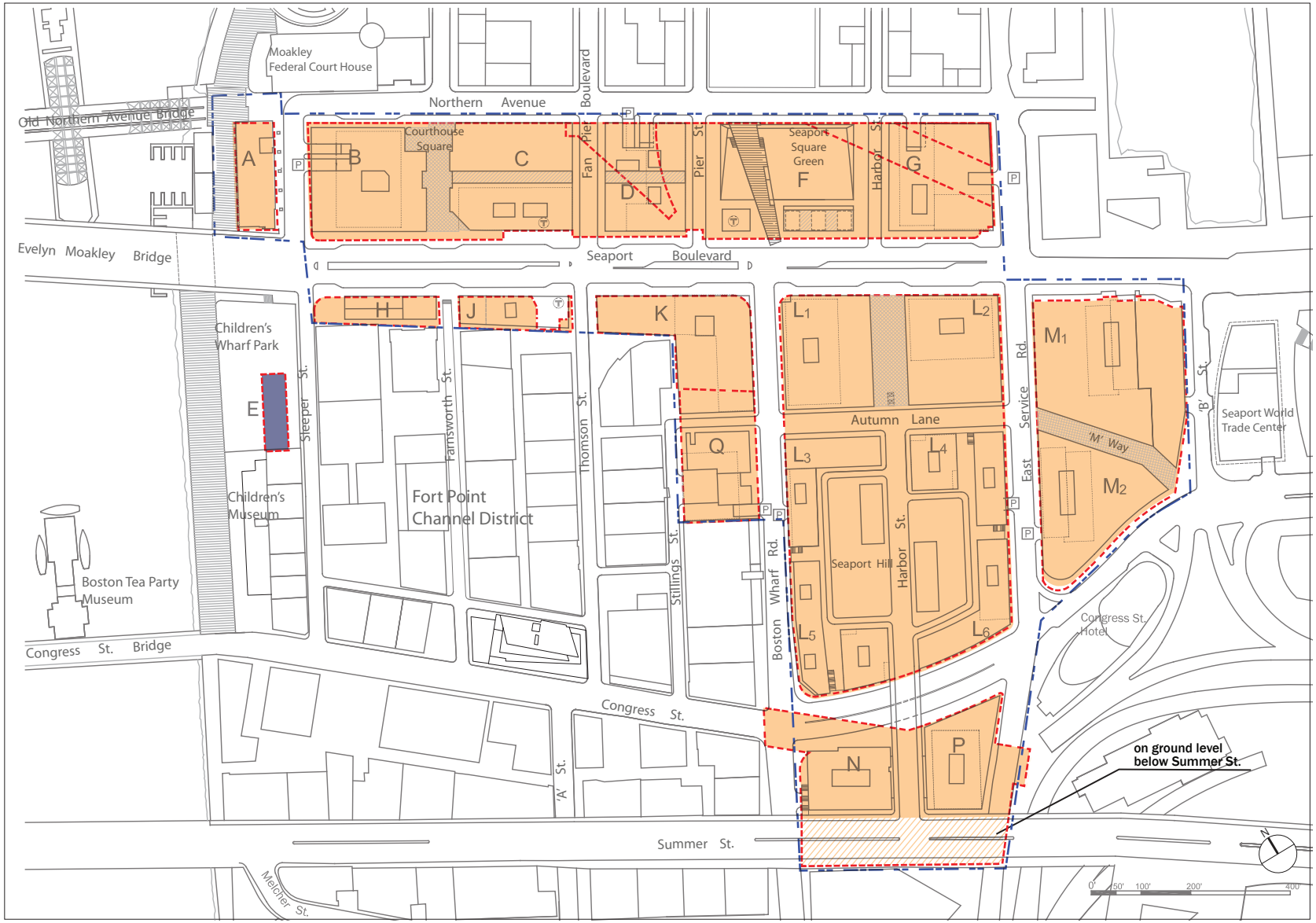

Figure 1-1

Project Site

prepared by:

KPF

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SEAPORT SQUARE
IN SOUTH BOSTON

Figure 1-2

Existing Conditions

GALE INTERNATIONAL

Morgan Stanley

WS DEVELOPMENT

prepared by:
Epsilon Associates, Inc.

Proposed by others

Seaport Square Development Project

SEAPORT SQUARE
IN SOUTH BOSTON

Figure 1-3

Proposed Project
View West

GALE
INTERNATIONAL

Morgan Stanley

WS DEVELOPMENT

prepared by:
KPF

Proposed by others

Seaport Square Development Project

SEAPORT SQUARE
IN SOUTH BOSTON

Figure 1-4

Proposed Project
View North

GALE INTERNATIONAL

Morgan Stanley

WS DEVELOPMENT

prepared by:
KPF

retailers. Large retail tenants such as a grocery store are also being considered. The entire development will be distinguished by its commitment to sustainable design by targeting LEED-ND Silver certification or higher for the entire Project Site.

Seaport Square will take advantage of the major public infrastructure improvements constructed over recent years, including the MBTA Silver Line and improved access to major arteries and I-90 and I-93. This new growth has been envisioned by the BRA's Seaport Public Realm Plan and the South Boston Municipal Harbor Plan.

The Proponent has consulted and collaborated extensively with the BRA and the community throughout the planning process for the Seaport Square Project. Seaport Square will offer significant public realm benefits, including creating and activating a generous amount of publicly accessibly open space, (green space, new pedestrian ways, and sidewalks), totaling approximately 25% (or approximately six acres) of the Project Site. Highlights include two significant new public open spaces, Seaport Square Green and Seaport Hill, and a new network of local streets and sidewalks including a direct connection to the neighborhood and the waterfront area from Summer Street (see Figure 1-5). These connections will be further enhanced by the substantial amount of ground floor retail space which will help activate the sidewalks and provide a 24/7 experience.

Seaport Square will not only fill an existing urban void, but will link together separate clusters of diverse activity and urban fabric. The Project establishes a series of connections between the Financial District, the waterfront area, the existing, historic Fort Point Channel District and the Fan Pier project. These connections stitch together isolated entities such as the Institute of Contemporary Art, the Seaport World Trade Center, the Boston Convention and Exhibition Center, and the planned future development of Waterside Place.

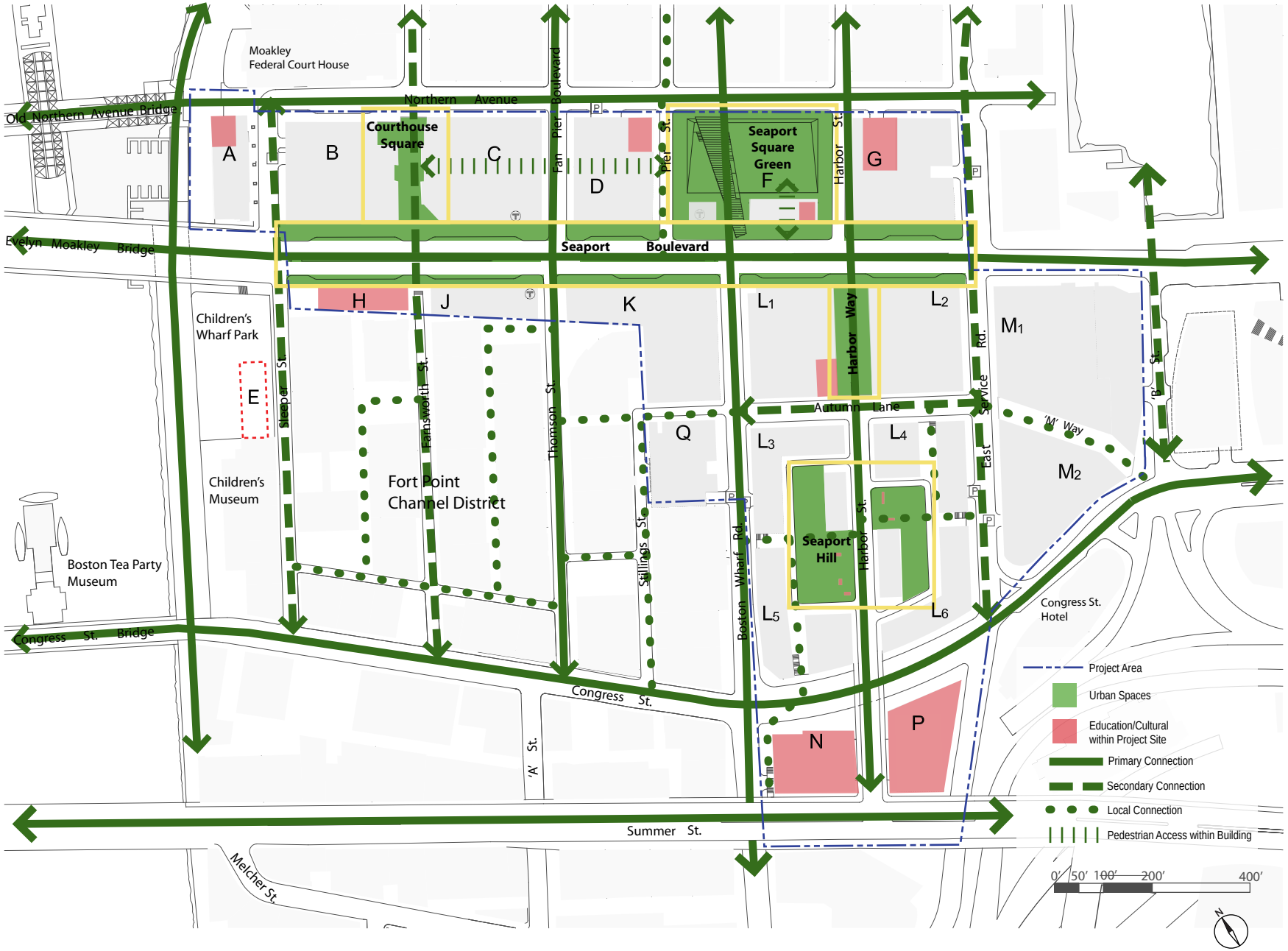
Seaport Square links these existing facilities into a coherent city fabric, and creates a series of streets and open spaces of different hierarchies, roles and characters.

1.2.1 Public Spaces

Five new public spaces establish connections and serve as the framework for the proposed build out and massing of the neighborhood. They are: Seaport Boulevard, Seaport Square Green, Seaport Hill, Harbor Way, and Courthouse Square (see Figure 1-6).

1.2.1.1 Seaport Boulevard

Seaport Boulevard is the main axis connecting Downtown Boston to the Seaport District. Improved with new tree plantings, a landscaped median, and distinctive accessible sidewalk paving, Seaport Boulevard will bring a new street experience to the City, as shown in Figure 1-7. Tree-lined sidewalks will create a pleasant, canopied stroll for pedestrians from the Financial District to Seaport Square and the Seaport World Trade Center, along which small local shops and boutiques will be interspersed with national retailers.



SEAPORT SQUARE
IN SOUTH BOSTON

Figure 1-5

Urban Open Spaces

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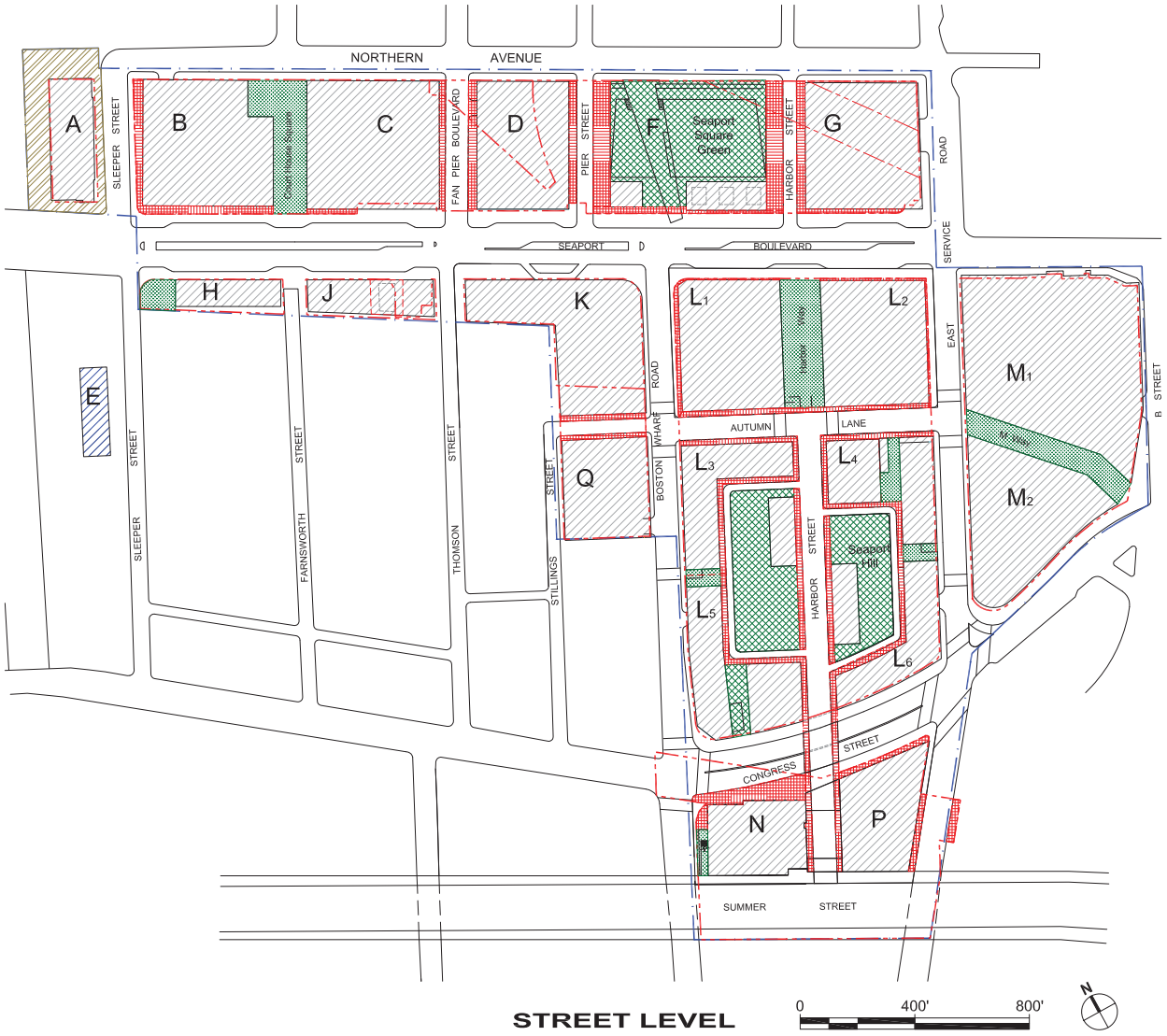

1,008,370 SF
PROJECT SITE

1,436,300 SF
PROJECT AREA

660,895 SF
BUILD OUT
(TOTAL SITE COVERAGE)

88,076 SF
SIDEWALKS
(7,768 LF)

58,739 SF
PEDESTRIAN ONLY WAYS

102,550 SF
GREEN SPACE

7,280 SF
Parcel E
(not included in percentage calculation)

22,333 SF
Block A Open Space
(not included in percentage calculation)

PROJECT SITE	23 ACRES / 1,008,370 SF
BUILD OUT	660,895 SF
UNBUILT	347,475 SF

$$\frac{\text{UNBUILT (347,475 SF)}}{\text{PROJECT SITE (1,008,370 SF)}} = 34\%$$

$$\frac{\text{OPEN SPACE - SIDEWALK, PEDESTRIAN, GREEN SPACE (249,365 SF)}}{\text{PROJECT SITE (1,008,370 SF)}} = 25\%$$

Note: All areas are approximations.

SEAPORT SQUARE
IN SOUTH BOSTON

Figure 1-6

Project Site
Open Space

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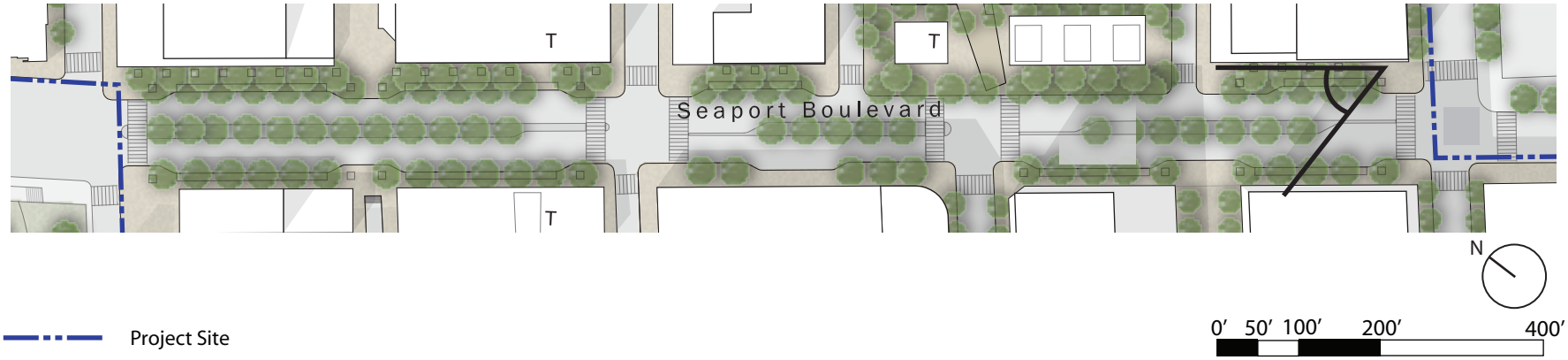

SEAPORT SQUARE
IN SOUTH BOSTON

Figure 1-7

Seaport Boulevard Plan & View

GALE INTERNATIONAL

Morgan Stanley

WS DEVELOPMENT

prepared by:
KPF

The Project will introduce new restaurants, banks, local services, and cafes for area employees and neighborhood residents to enjoy along Seaport Boulevard.

Seaport Boulevard is considered a retail promenade, enhancing the pedestrian experience, but also including bicycle, vehicular, and truck circulation. It will have a planted median, along with traffic lanes in both directions.

A gracious sidewalk with a double row of trees is planned for the north side of Seaport Boulevard to accommodate outdoor seating and sidewalk entertainment. A wide sidewalk with a single row of trees is planned for the south side.

The buildings that line Seaport Boulevard are designed to mediate two distinct urban fabrics: on the northern side of the Boulevard, a series of higher buildings match the height of the Fan Pier buildings and provide a clear urban edge to the waterfront area, while buildings along the southern side of the Boulevard extend the scale, massing and height of the adjacent industrial brick warehouse fabric, creating a distinct edge to the Fort Point Channel Landmark District. The transition in scale and massing of these two different streetwall conditions along Seaport Boulevard will be further articulated by the building architecture.

1.2.1.2 Seaport Square Green

As depicted on Figures 1-8, 1-9 and 1-10, Seaport Square Green is a multi-functional urban open space, similar in size to Boston's Copley Square. It stands at the intersection of the area's major urban axes and acts as a focal point for Seaport Square and adjacent developments. Defined by Seaport Boulevard on one side and Northern Avenue on the other, it connects to the Fan Pier Park, creating a continuous public space that reaches the waterfront and connects to the Harborwalk.

This open space is designed to host a range of year-round activities, such as spring art shows, summer theater, fall farmer's markets, and winter displays of ice sculptures and holiday lights. Envisioned as a grand civic lawn large enough to support active recreation and concerts, the Green gently slopes toward the waterfront. Steps cascade down the eastern and western sides of the Green, and a paved pedestrian pathway crosses the Green under a bower of shade trees, connecting to Fan Pier Park via a crosswalk at Boston Wharf Road.

A reflecting pool and water feature is proposed at the edge of the lawn along Northern Avenue. A retail pavilion and a new Silver Line MBTA entrance activate the southern side of the Square, resulting in a constant flow of pedestrian traffic and adding a buffer between the green space and Seaport Boulevard. Office, hotel, entertainment, retail, residential, and cultural uses in adjacent buildings, surround Seaport Square Green, activating its edges to provide life to the open space.

SEAPORT SQUARE
IN SOUTH BOSTON

Figure 1-8

View of Seaport Square Green from Northern Avenue

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Morgan Stanley

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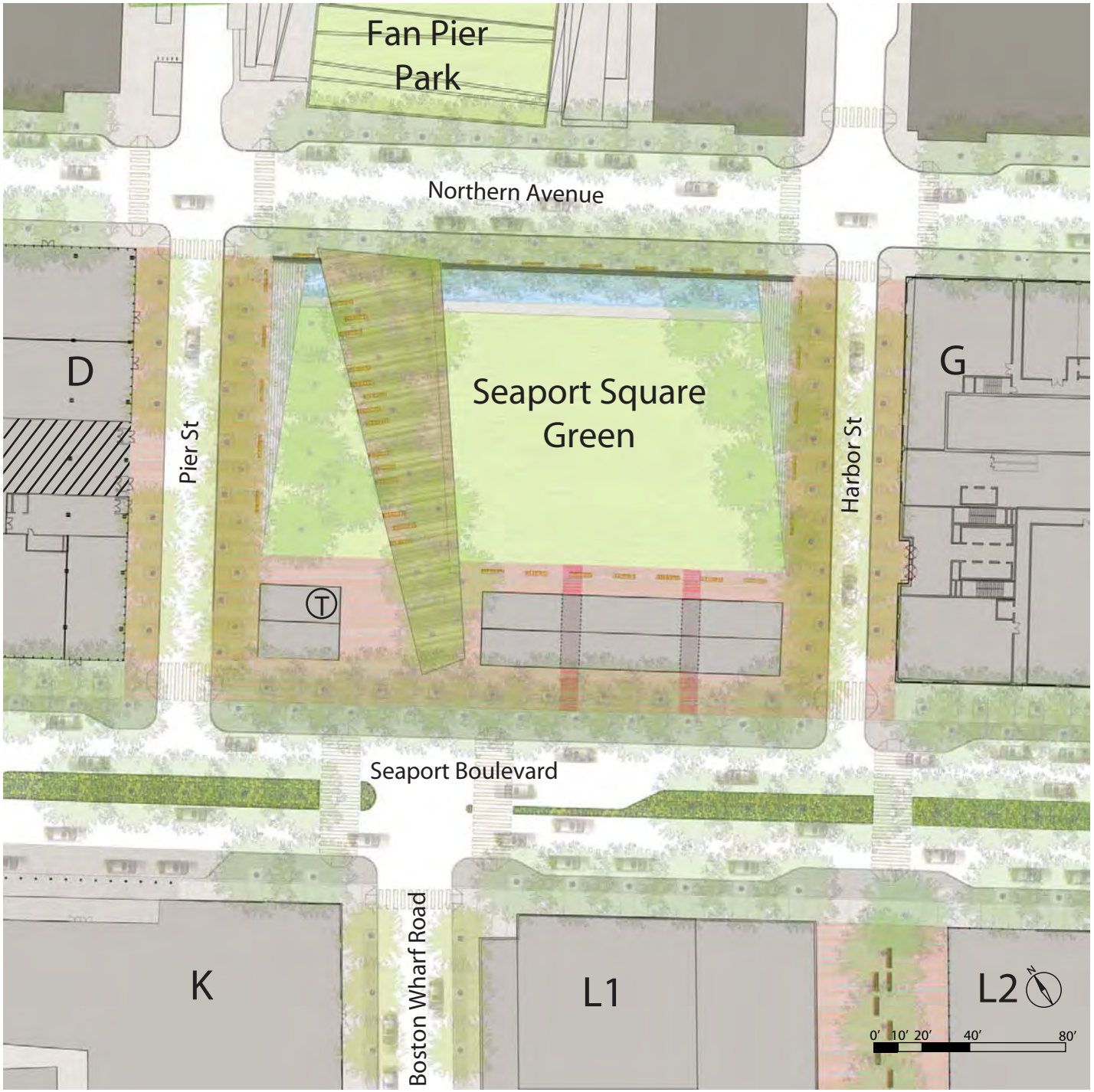


SEAPORT SQUARE
IN SOUTH BOSTON

Figure 1-9
Seaport Square Green

GALE INTERNATIONAL

Morgan Stanley

WS DEVELOPMENT

prepared by:

REED HILDERBRAND

Section Looking East (North Side)

Section Looking East

Section Looking East (South Side)

Seaport Square Green Sketch

GALE INTERNATIONAL

Morgan Stanley

WS DEVELOPMENT

prepared by: **Reed Hilderbrand/KPF**

SEAPORT SQUARE
IN SOUTH BOSTON

Figure 1-10

Seaport Square Green Sections & Perspective

By adding a new MBTA headhouse / station entrance in the Seaport Square Green, the Proponent is providing a landmark destination and convenient location along the waterfront that does not currently exist for easy public transit access. When the Silver Line Phase II infrastructure was built and opened in 2004, it was the hope of the public and the MBTA that the future development would embrace the new bus rapid transit (BRT) public transportation. Easy access to the Silver Line, Red Line at South Station, and also Logan International Airport from the neighborhoods of Dudley Square, and Downtown Boston to the South Boston waterfront was always the future vision. This prominent Silver Line headhouse at the corner of the Green is a natural nexus for activity and people. By anchoring the MBTA new station entry here there will be not only safe and lively activity in the open space, but also easy public access to the Green.

Seaport Square Green offers a space for relaxation and recreation, fosters cohesive community activities, and will attract workers, visitors and residents to the South Boston waterfront.

1.2.1.3 Seaport Hill and Harbor Way

Seaport Hill forms the center of a diverse new residential neighborhood. As in many of Boston's most beloved neighborhoods, housing will be the predominant use. Atop Seaport Hill a new open space of approximately 0.75 acres is surrounded by residential buildings, some with active ground floor retail shops (see Figure 1-11). The open space features green lawns bordered by trees, park benches, flower beds, public art, a dog recreation space and a children's playground. At the edges of the open space, landscaped areas provide a buffer for the adjacent ground floor residential units.

Seaport Hill is one of a linked series of spaces connecting the elevated Summer Street down to Seaport Boulevard and the waterfront area via the new Harbor Street or Harbor Way (see Figure 1-12). Harbor Street links Summer Street to the neighborhood with pedestrian connections to both Boston Wharf Road and East Service Road.

Harbor Way, located at the base of Seaport Hill, is an approximately 15,500 sf open space, providing a pedestrian connection from Seaport Boulevard, and a visual connection to Seaport Square Green.

1.2.1.4 Courthouse Square

Courthouse Square is an outdoor public space along Northern Avenue and across from the Moakley Federal Courthouse (see Figures 1-13 and 1-14). It also includes a public pedestrian passage connecting Seaport Boulevard and Northern Avenue between Blocks B and C, culminating with the Square at its northern end.

SEAPORT SQUARE
IN SOUTH BOSTON

Figure 1-11

Seaport Hill looking Northeast

GALE INTERNATIONAL

Morgan Stanley

WS DEVELOPMENT

prepared by:

KPF

SEAPORT SQUARE
IN SOUTH BOSTON

Figure 1-12

Harbor Way looking North

GALE INTERNATIONAL

Morgan Stanley

WS DEVELOPMENT

prepared by:

KPF

SEAPORT SQUARE
IN SOUTH BOSTON

Figure 1-13

Courthouse Square Sketch

GALE INTERNATIONAL

Morgan Stanley

WS DEVELOPMENT

prepared by:

KPF

SEAPORT SQUARE
IN SOUTH BOSTON

Figure 1-14

View along Northern Avenue looking West

GALE INTERNATIONAL

Morgan Stanley

WS DEVELOPMENT

prepared by:

KPF

Courthouse Square will serve as a place of repose. Given its location adjacent to the Courthouse entrance, this space could also be used for public gatherings, and will serve both visitors and users of the Courthouse, the adjacent office buildings and the local neighborhood residents. The Square will be lined with a mix of retail spaces, including restaurants and cafes. Its continuation through the block, connecting Northern Avenue and Seaport Boulevard, will allow greater visual and physical connectivity between the Fort Point Channel District and the waterfront.

1.2.1.5 Cultural Corridor

Throughout Boston, cultural institutions contribute to the rich tapestry of urban life and serve as important centers of the neighborhood in which they reside. For residents and visitors alike, the Museum of Fine Arts, Symphony Hall, Boston Center for the Arts, and the Theater District are familiar destinations, integral to civic life and vital to the economic vitality of the City.

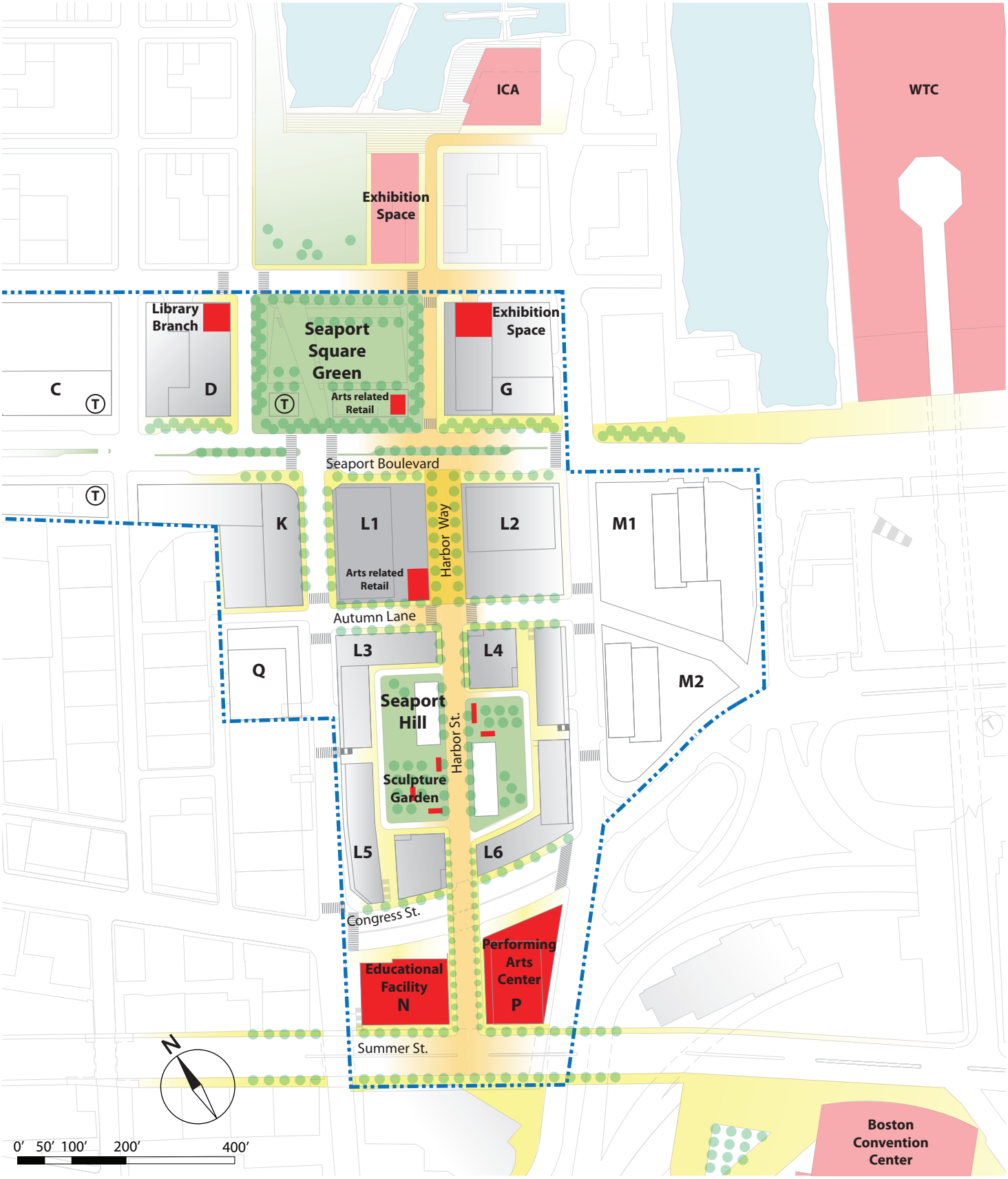
With this in mind, the physical link created from Summer Street to Seaport Boulevard by Harbor Street and Harbor Way is conceived as a "Cultural Corridor" connecting the ICA to the BCEC (see Figure 1-15). The intent of the Cultural Corridor is to establish the area as a new cultural destination for the City, activating the South Boston waterfront and contributing to its economic success.

Anchoring the waterfront end of this corridor is the ICA's visionary new building, a globally recognized icon of contemporary culture, and a catalyst for the arts in Boston. Garnering worldwide acclaim, the physically isolated ICA will soon be linked to Seaport Square and Fan Pier developments.

At the opposite end of this corridor, where Harbor Street meets the elevated Summer Street, a new landmark performing arts and education complex will occupy Blocks P and N. Designed to further stimulate the cultural life of the City, the performing arts center will build on the arts identity of the neighboring Fort Point Channel District and leverage its proximity to the ICA and the waterfront, the BCEC, and the numerous adjacent hotels.

The Project further designates sites along Harbor Street for a series of cultural venues. These include the outdoor sculpture gardens on the open space at Seaport Hill, exhibit space on Block G, arts related retail on Block L1, public art and performance venues on Seaport Square Green, and a branch library or similar public use at Block D. Together these will create a strong cultural component for the area and will activate and provide year-round use to the Project.

This Cultural Corridor is a key organizing principle for Seaport Square, and by creating and promoting its identity as a cultural destination, the economic vitality of the new neighborhood's mix of residential, office, and retail uses is further enhanced. Seaport



GALE INTERNATIONAL

Morgan Stanley

WS DEVELOPMENT

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SEAPORT SQUARE IN SOUTH BOSTON

Figure 1-15

Cultural Corridor

Square's physical connection to the South Boston waterfront and to the City at large is reinforced by developing this Cultural Corridor to contribute to the evolution of civic, cultural, and economic life in Boston.

1.3 Development Program

The Seaport Square Project includes 23 buildings of varying sizes on 20 Blocks with a total of approximately 6.5 million square feet (sf) of development. The Project will include approximately 2.8 million sf of residential, 1.3 million sf of office, 1.3 million sf of retail and entertainment, 600,000 sf of cultural and educational and 500,000 sf of hotel uses. Approximately 6,500 parking spaces will be provided in underground parking garages beneath the Project Site. Every building, with the exception of the relocated Chapel, some of the residential Block L buildings and the educational facilities, will include retail uses at ground level to provide an inviting and animated pedestrian experience. A breakdown of uses by Block is provided in Table 1-1 below.

Table 1-1 Seaport Square Program

Block	Total (gsf)	Retail / Entertainment (gsf)	Residential (gsf)	Office / Research (gsf)	Hotel (gsf)	Educational/ Cultural (gsf)
Block A	**86,800**	23,600	61,200	0	0	2,000
Block B	**562,200**	119,900	0	442,300	0	0
Block C	**591,000**	210,000	381,000	0	0	0
Block D	**464,000**	69,000	390,000			5,000
Park Pavilion	**9,000***	9,000	0	0	0	0
Block G	**498,000**	128,000	165,000	0	200,000	5,000
Block H	**24,300**	0	0	0	0	24,300
Block J	**86,000**	22,000	64,000	0	0	0
Block K	**281,300**	91,000	90,300	0	100,000	0
Block L1	**493,700**	78,000	0	415,700	0	0
Block L2	**415,200**	77,000	0	338,200	0	0
Block L3	**202,000**	32,000	170,000	0	0	0
Block L4	**292,000**	32,000	260,000	0	0	0
Block L5	**360,000**	25,000	335,000	0	0	0
Block L6	**249,000**	18,000	231,000	0	0	0
Block M1	**526,700**	226,700	300,000	0	0	0
Block M2	**440,500**	88,000	352,500	0	0	0
Block N	**363,700**	0	0	0	0	363,700
Block P	**400,000**	0	0	0	200,000	200,000
Block Q	**154,600**	50,800	0	103,800	0	0
Total	**6,500,000**	**1,300,000**	**2,800,000**	**1,300,000**	**500,000**	**600,000**

* Includes new MBTA Silver Line entrance.

1.3.1 Distribution of Land Uses

The Seaport Square Project has been planned with a coordinated mix of synergistic uses which together will create a high quality of life for Seaport Square residents, workers and visitors. This section presents a series of diagrams illustrating the horizontal and vertical distribution of these uses throughout the site. As shown in the illustrations, the Project takes advantage of a change in ground plane to enhance the configuration of the basement, ground and street levels. The plans of typical floors illustrate the uses. For planning and descriptive purposes, each Block has been labeled with a letter from left to right and north to south, ranging from A to Q. Figures 1-16 to 1-18 include massing diagrams and uses as well as views of the Project. Figures 1-19 to 1-22 provide elevations showing proposed building uses. The heights indicated are zoning heights.

1.3.1.1 Ground Floor

The Ground Floor Plan as well as the Street Level Plan (see Section 1.3.1.2 below) show continuity of uses between the elevated Harbor Street and Summer Street, and also show the pedestrian environment Project-wide.

Throughout Seaport Square, retail uses, which will enliven the pedestrian experience with active entrances and seating areas outside, are proposed at ground level. Ground level uses are shown in Figure 1-23. This figure also indicates where parking and loading entrances are located (indicated with a "P"), and where building lobbies connect the buildings to the street. At Block A, a portion of the ground floor is to be used as cultural space with public access in conjunction with its welcoming "gateway" location to the Seaport Square neighborhood. Blocks B, C, D and G all have retail spaces as indicated in pink. In addition, buildings on Blocks C and D have a direct interior pedestrian through-block connection at this level to allow pedestrians easy and direct passage between Courthouse Square and Seaport Square Green, creating direct connections to open space and the waterfront.

Block F's kiosks (located at the southeast edge of Seaport Square Green), shown in red on Figure 1-23, house public and cultural spaces with the new MBTA Silver Line headhouse as a prominent and easily accessible destination at the corner. Block G along Harbor Street includes public cultural space shown in red in proximity to Seaport Square Green.

Block H, also a public space, is proposed as the new home for the Chapel of Our Lady of Good Voyage. Blocks L1, L2, and Q include ground level retail spaces with entrances to offices at the upper levels. Blocks J, M1 and M2 also have retail at the ground level, and residential above. At Blocks C and J, the MBTA station entrances will be embedded in each lobby serving as direct and easy access for Silver Line riders. Block K is a mix of hotel at its western half and retail on the eastern half.

Residential
Office
Retail
Hotel
Cultural

SEAPORT SQUARE
IN SOUTH BOSTON

Figure 1-16

Overall View from Northwest

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Residential
Office
Retail
Hotel
Cultural

SEAPORT SQUARE
IN SOUTH BOSTON

Figure 1-17

Overall View from Southeast

GALE INTERNATIONAL

Morgan Stanley

WS DEVELOPMENT

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SEAPORT SQUARE
IN SOUTH BOSTON

Figure 1-18

Overall View from North

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SEAPORT SQUARE
IN SOUTH BOSTON

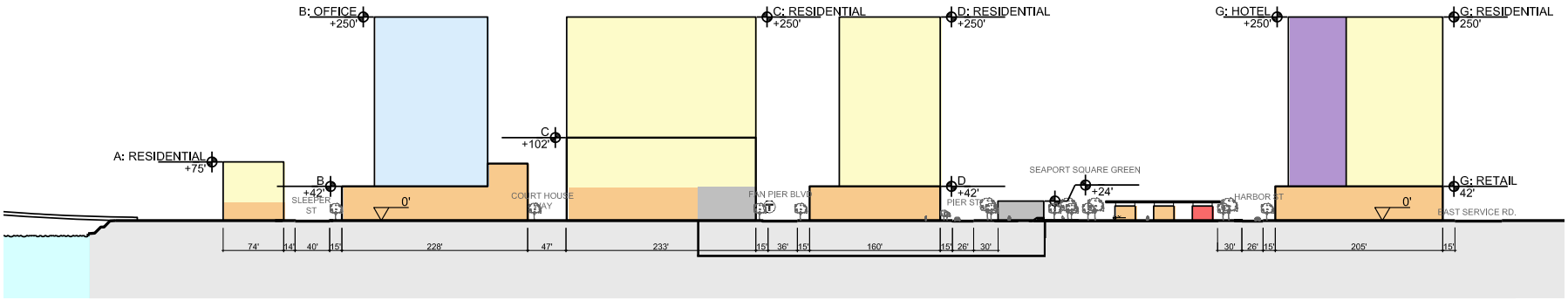
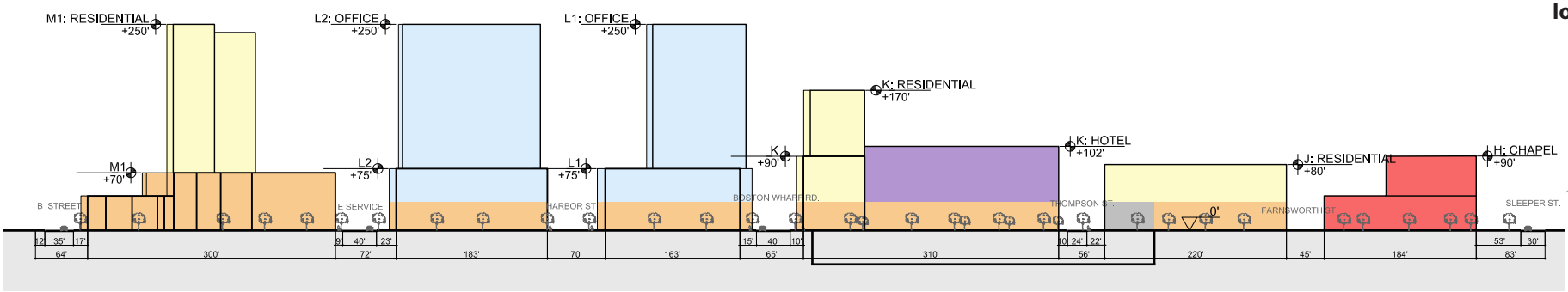


Figure 1-19

Section Seaport Blvd. looking north



Seaport Blvd. looking south

- Residential
- Cultural
- Hotel
- Office
- Retail
- Transportation

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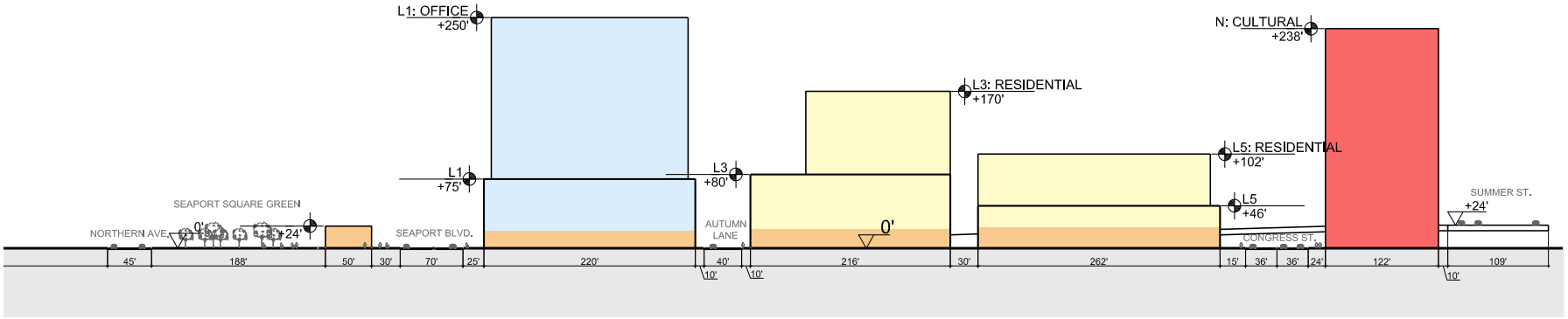
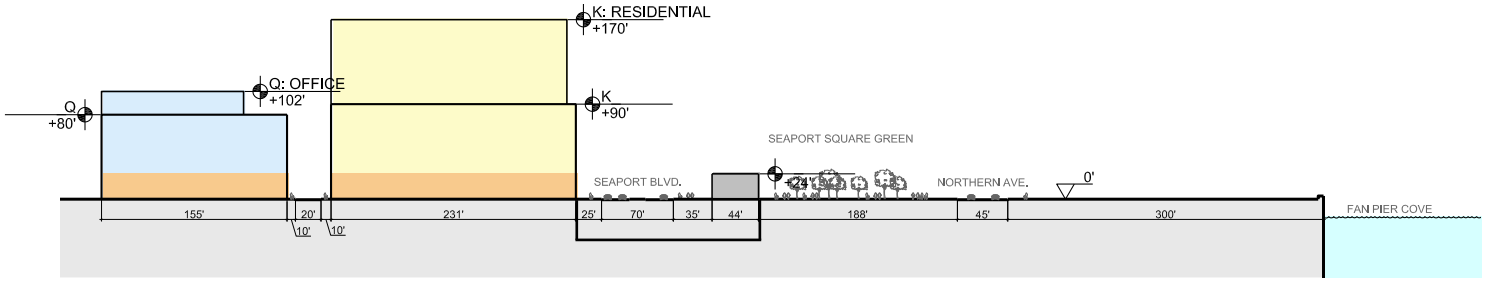


Figure 1-20

Boston Wharf Rd.
Elevation looking east



Boston Wharf Rd.
Elevation looking west

- Residential
- Cultural
- Hotel
- Office
- Retail
- Transportation

SEAPORT SQUARE
IN SOUTH BOSTON

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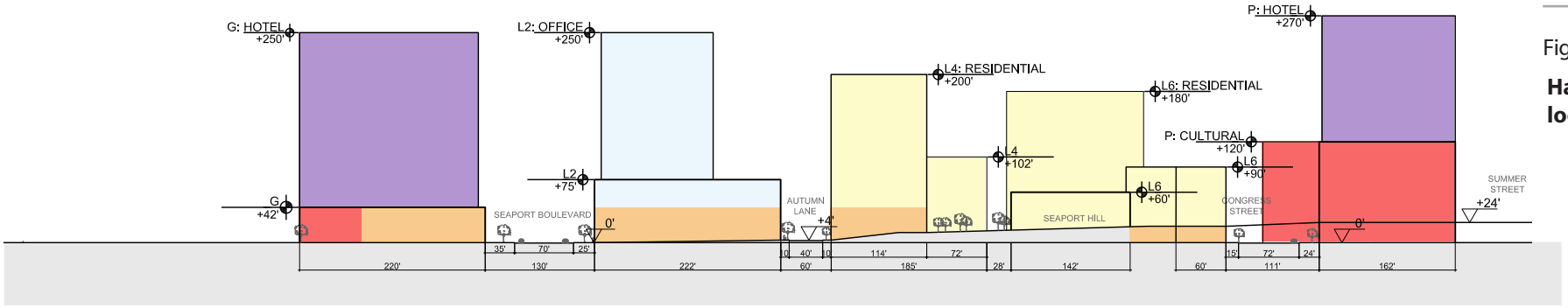
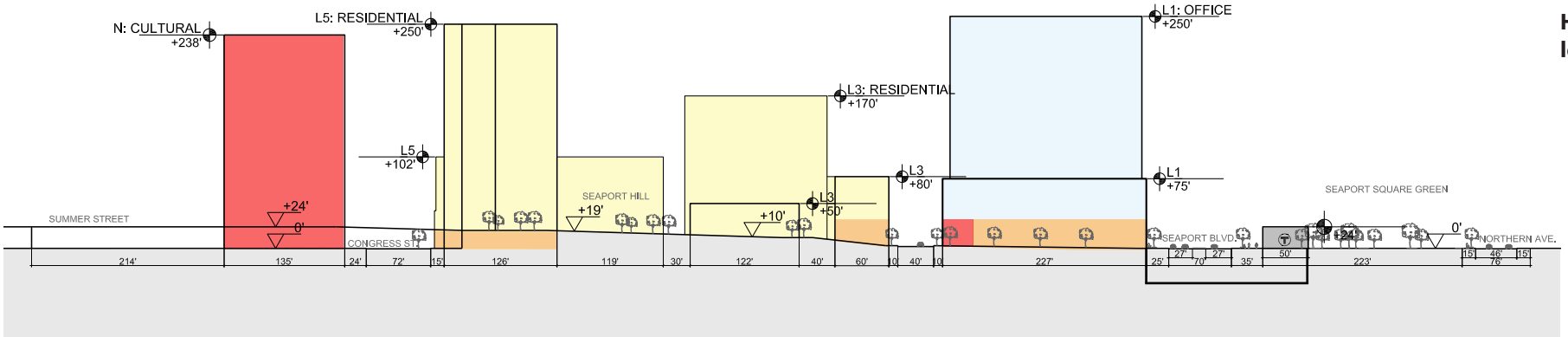


Figure 1-21

Harbor St. Elevation looking east



Harbor St. Elevation looking west

- Residential
- Cultural
- Hotel
- Office
- Retail
- Transportation

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SEAPORT SQUARE
IN SOUTH BOSTON

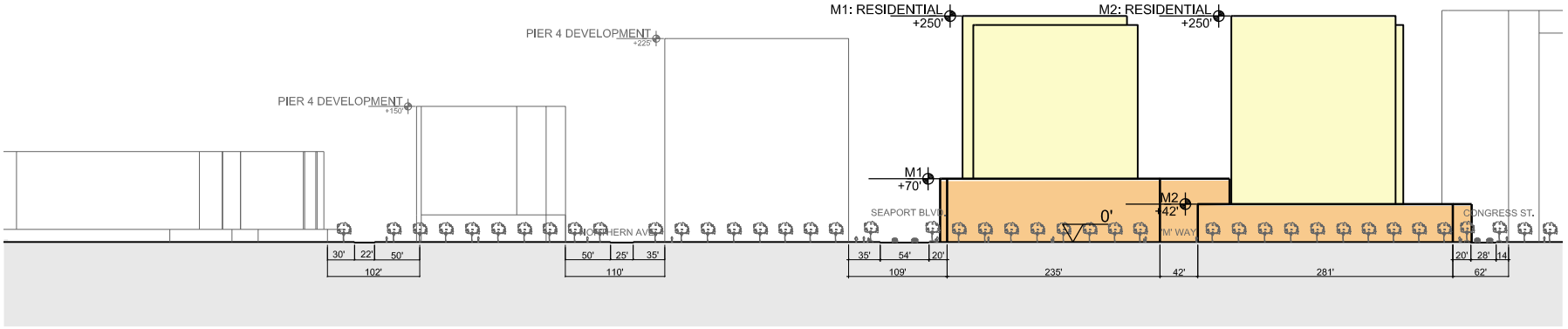
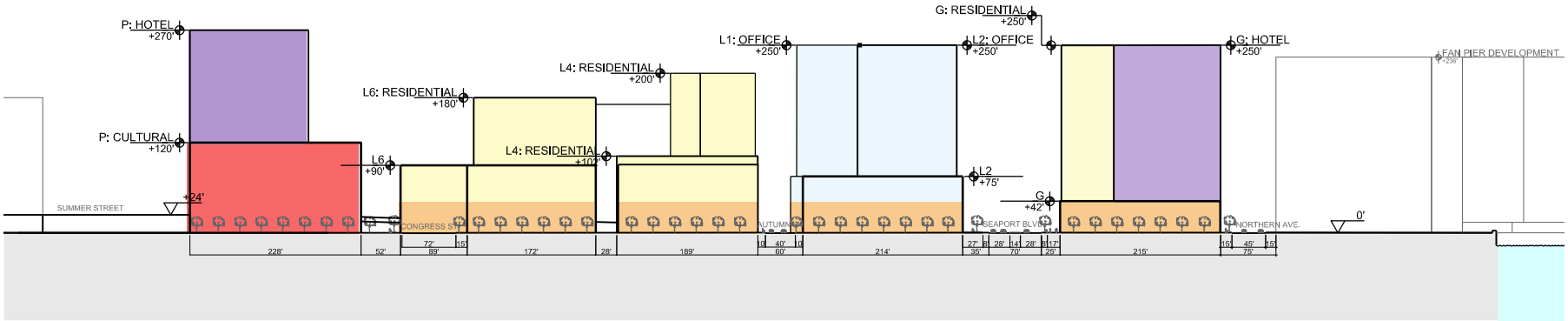


Figure 1-22

East Service St.
Elevation looking east



East Service St.
Elevation looking west

- Residential
- Cultural
- Hotel
- Office
- Retail
- Transportation

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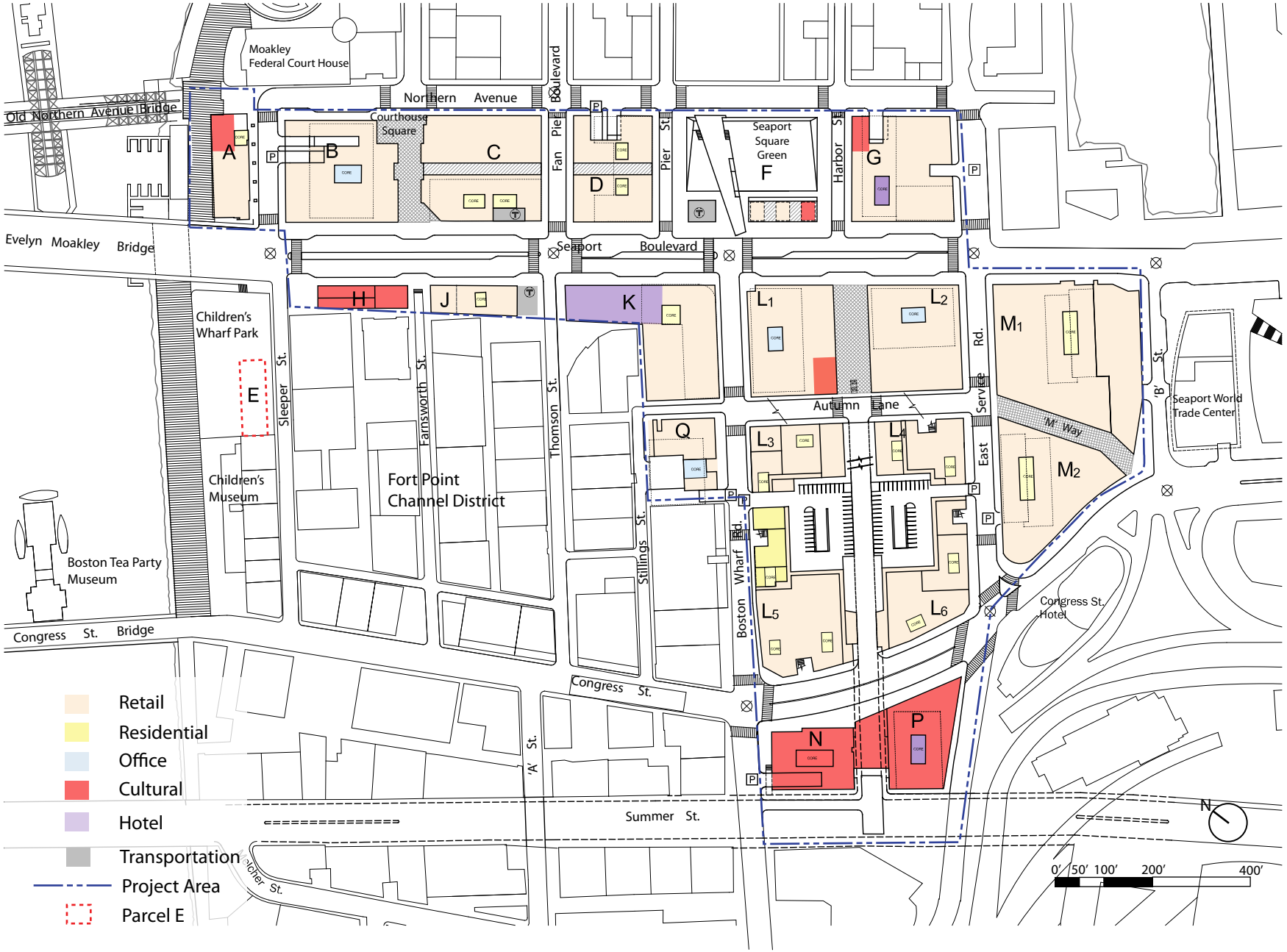

SEAPORT SQUARE
IN SOUTH BOSTON

Figure 1-23

Ground Level

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Block M1 is planned for a large retail tenant such as a gourmet grocery store. A new pedestrian way dividing Blocks M1 and M2 will allow direct access from Autumn Lane and East Service Road to Congress Street and B Street. This newly created path of travel will reconnect the pedestrian traveler from the Fort Point Channel to Seaport World Trade Center, and the future development at Waterside Place and the Congress Street Hotel.

Surrounding Seaport Hill, Blocks L3 through L6 will contain retail and entry to the below-grade parking garage with vehicular access to Boston Wharf Road and East Service Road. Above this garage is Seaport Hill which, with its raised grade, will allow the surrounding residential building configurations to front Seaport Square Green with pedestrian entrances (see Figure 1-24).

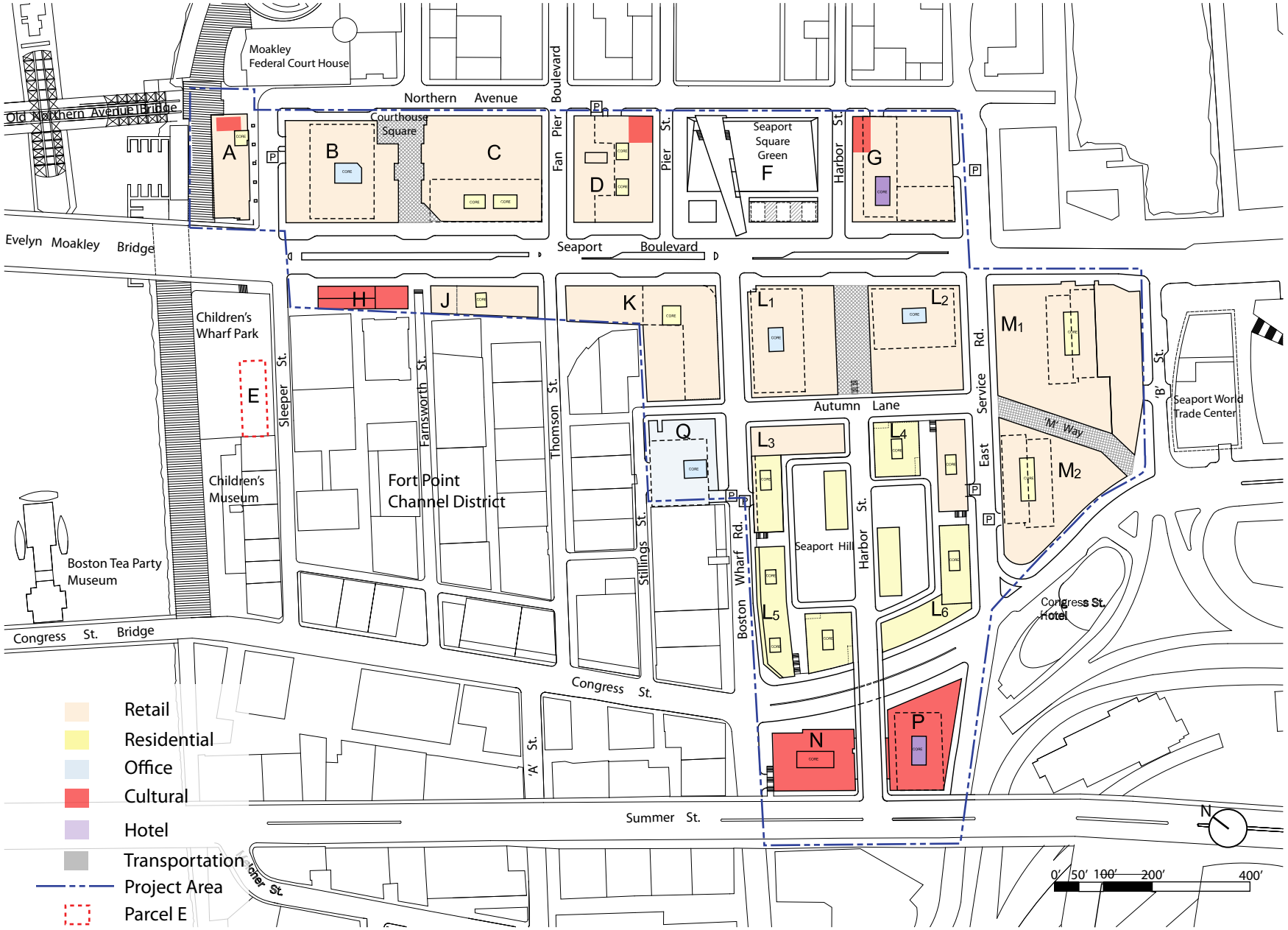
Loading for the L Blocks is concealed under the new Harbor Street where it crosses Congress Street. The retail located at the bottom floor of the L Block buildings will also be convenient for residents via public open stairs connecting up to Seaport Hill. Blocks N and P, both with public and cultural uses, will be accessible from the ground level at Congress Street with loading and service occurring from under Summer Street.

1.3.1.2 Elevated Street Levels

Blocks L3 – L6 as well as N and P have different ground and street level uses given the elevated Harbor Street and Summer Street. The Street Levels Plan shows the floor plans and open space at the elevated street levels along Summer Street and Harbor Street and Seaport Hill. This plan demonstrates the continuity of the street level experience, between these raised elevations and the previous Ground Floor Plan as shown in Figure 1-23 above.

Street level uses and the location of the buildings' main entries are shown in Figure 1-25. While many of the Seaport Square Blocks also have second floor retail spaces (see Figure 1-24), the residential Blocks L3 through L6, have residential uses at the second level, fronting on the raised Harbor Street and Seaport Hill. Where Harbor Street meets Summer Street, cultural uses occupy the elevated street level, with an education facility proposed at Block N and a performing arts center, with hotel uses above, at Block P.

Pedestrian connections between these street levels are an important component of the proposed Project. At the west side of Block N, along Boston Wharf Road, an open public stair makes a pedestrian connection from the elevated Summer Street down to the intersection of Boston Wharf Road and Congress Street (see Figure 1-26). A publicly accessible elevator will be included within the building on Block N or Block P for handicap accessibility between Summer Street and Congress Street. Similarly, a public open stair connects Harbor Street and Seaport Hill down to Congress Street at Block L (see Figure 1-27). Figure 1-28 shows the street levels in the area and the elevation of Harbor Street to Summer Street.



SEAPORT SQUARE
IN SOUTH BOSTON

Figure 1-24

Second Floor

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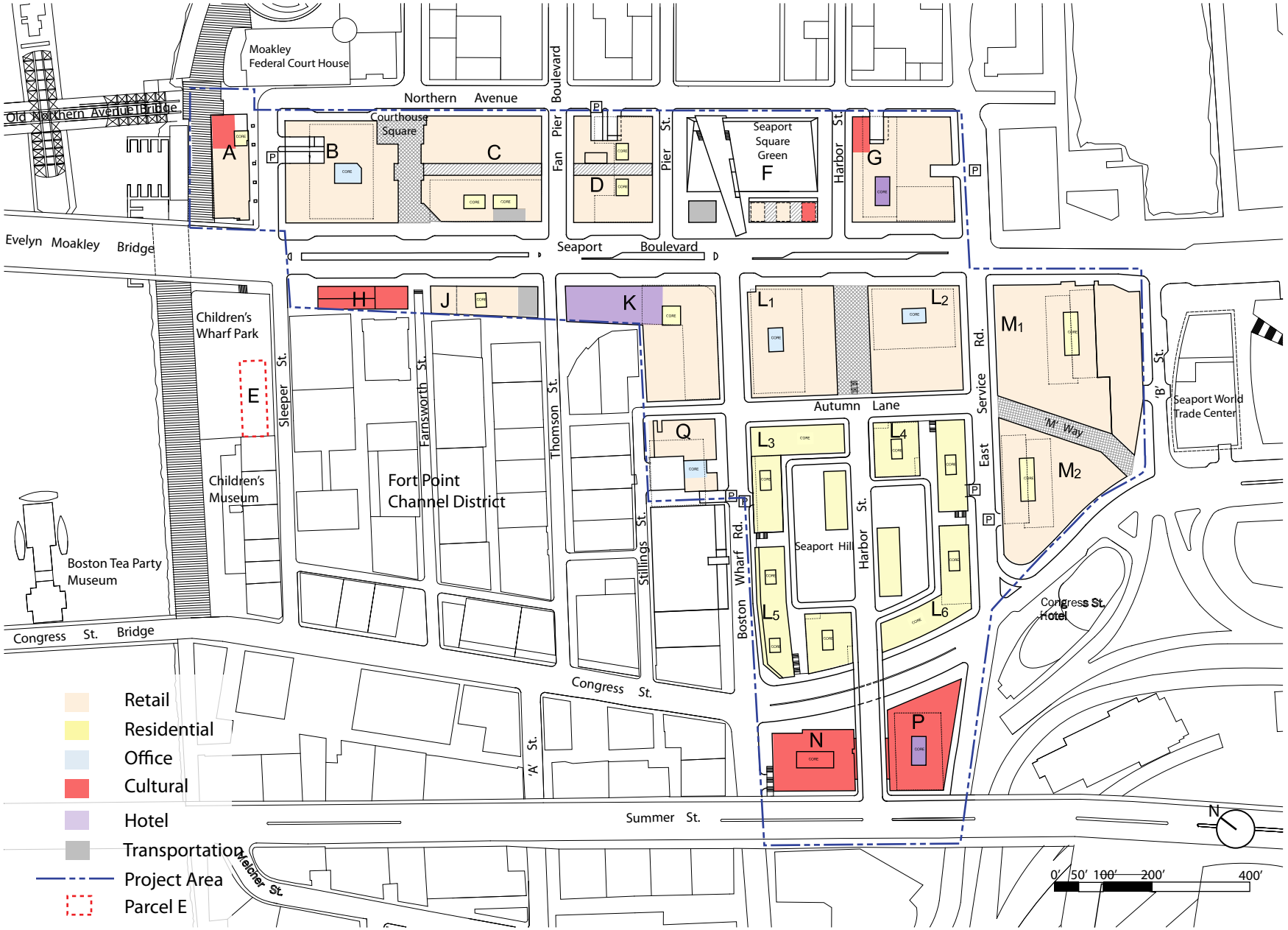

SEAPORT SQUARE
IN SOUTH BOSTON

Figure 1-25

Street Levels

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SEAPORT SQUARE
IN SOUTH BOSTON

Figure 1-26

Public Stair Connecting Summer Street and Boston Wharf at Congress Street

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SEAPORT SQUARE
IN SOUTH BOSTON

Figure 1-27

Public Stair Connecting Congress Street to Seaport Hill

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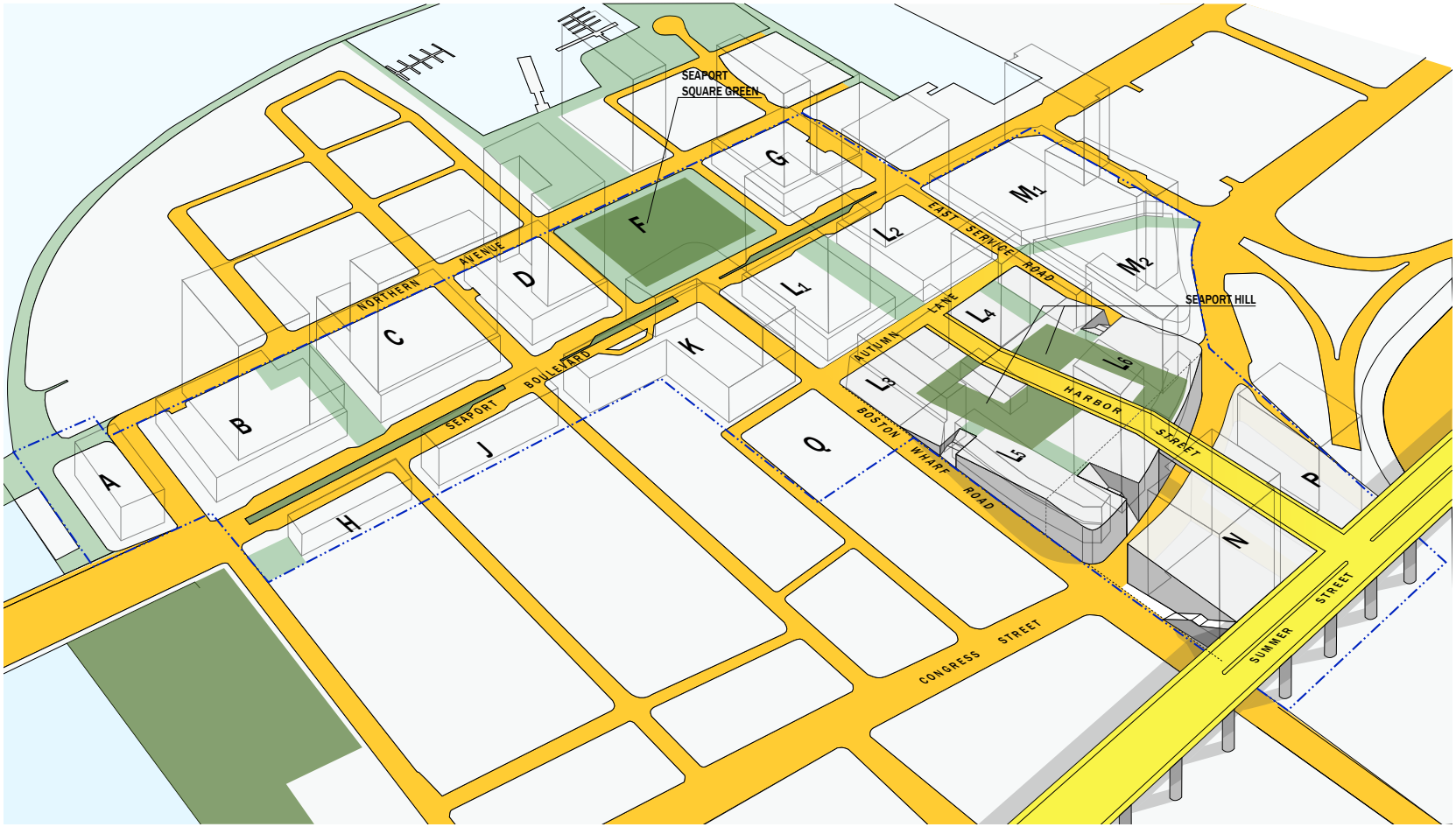
SEAPORT SQUARE
IN SOUTH BOSTON

Figure 1-28

Street Levels



Height differences exaggerated for diagram purposes.

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1.3.1.3 Typical Upper Floor Plan

The typical upper floor plan, as shown on Figure 1-29, identifies the mix of residential, office, cultural and hospitality uses above the retail podiums. Beginning north of Seaport Boulevard are the office and research buildings at Block B, then the residential apartments at Blocks C and D. Block G has the hotel combined with luxury residential condominiums. The intention is to create a variety of complementary uses along Seaport Boulevard. On the south side of Seaport Boulevard, Blocks J and K are residential, and Block K includes a hotel. Blocks L3 through L6 make up the Seaport Hill residential area and include low, medium and high rise residential buildings. Blocks M1 and M2 are residential towers above retail podiums. Additional office and research spaces are located at Blocks L1, L2 and Q. The education and cultural complex planned for Block N complements the hospitality use on Block P.

1.3.1.4 Roof Plan

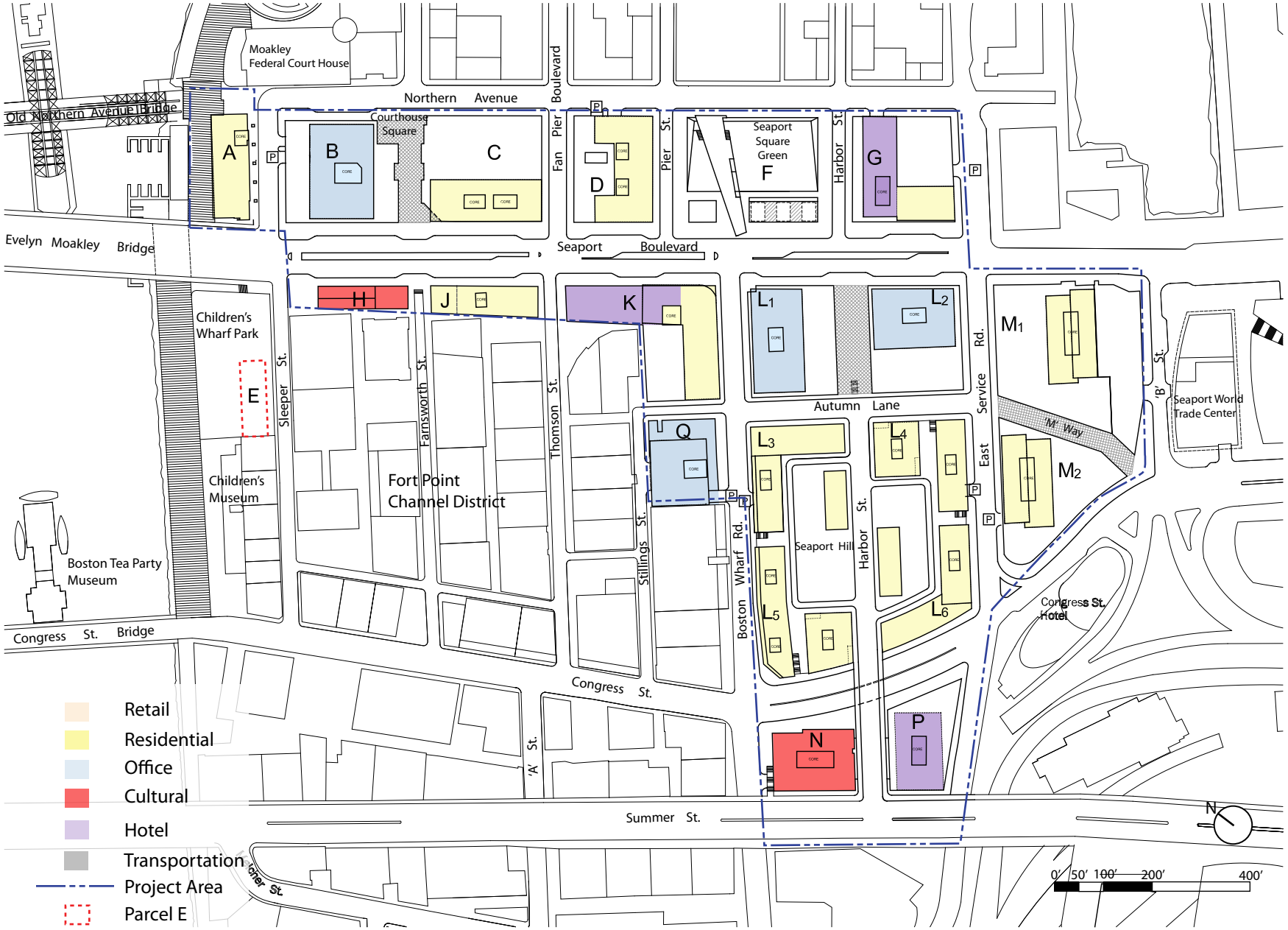
As shown on Figure 1-30, green/planted roofs and reflective white roofs are planned for all buildings. Wherever there is not mechanical equipment on the rooftops, and space allows, the intent is to commit to planting where possible, or high-albedo roof coatings in order to reduce building energy use. This sustainable strategy will lead to a reduction in the "heat island effect" commonly found in large urban areas. Other aspects of the Project's sustainable strategy related to rooftops can be found in Sections 4.6 and 4.13.

1.3.1.5 Parking Plan

There are five underground parking garages along with a small residential garage at Block A. The total number of underground parking spaces is approximately 6,500. There are also approximately 320 legal metered or two-hour on-street parking spaces. The layout of parking garage ramps, parking spaces, parking lobbies, and underground loading is shown in Figure 1-31.

1.3.1.6 Public Realm Plan

This Project includes green spaces, sidewalks, and pedestrian ways, and ground level building areas that are activated and used by the public, as shown on the Public Realm Plan, Figure 1-32. In this plan, the stronger the color within the ground level area, the more intense the activity designated for that space.



SEAPORT SQUARE
IN SOUTH BOSTON

Figure 1-29

Typical Floor

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Project Area

SEAPORT SQUARE
IN SOUTH BOSTON

Figure 1-30

Roof Plan

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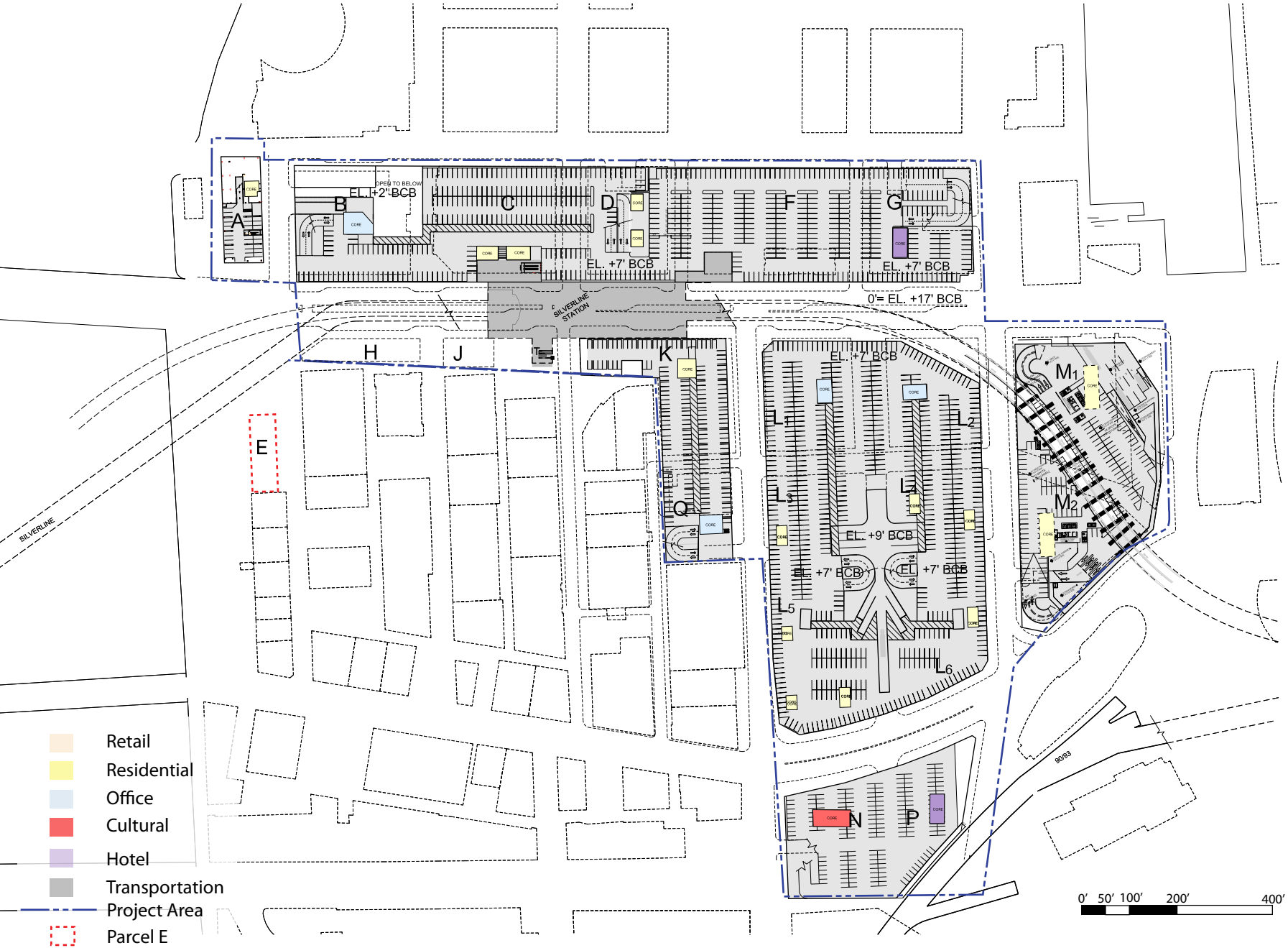

SEAPORT SQUARE
IN SOUTH BOSTON

Figure 1-31

B1 Level Parking Plan

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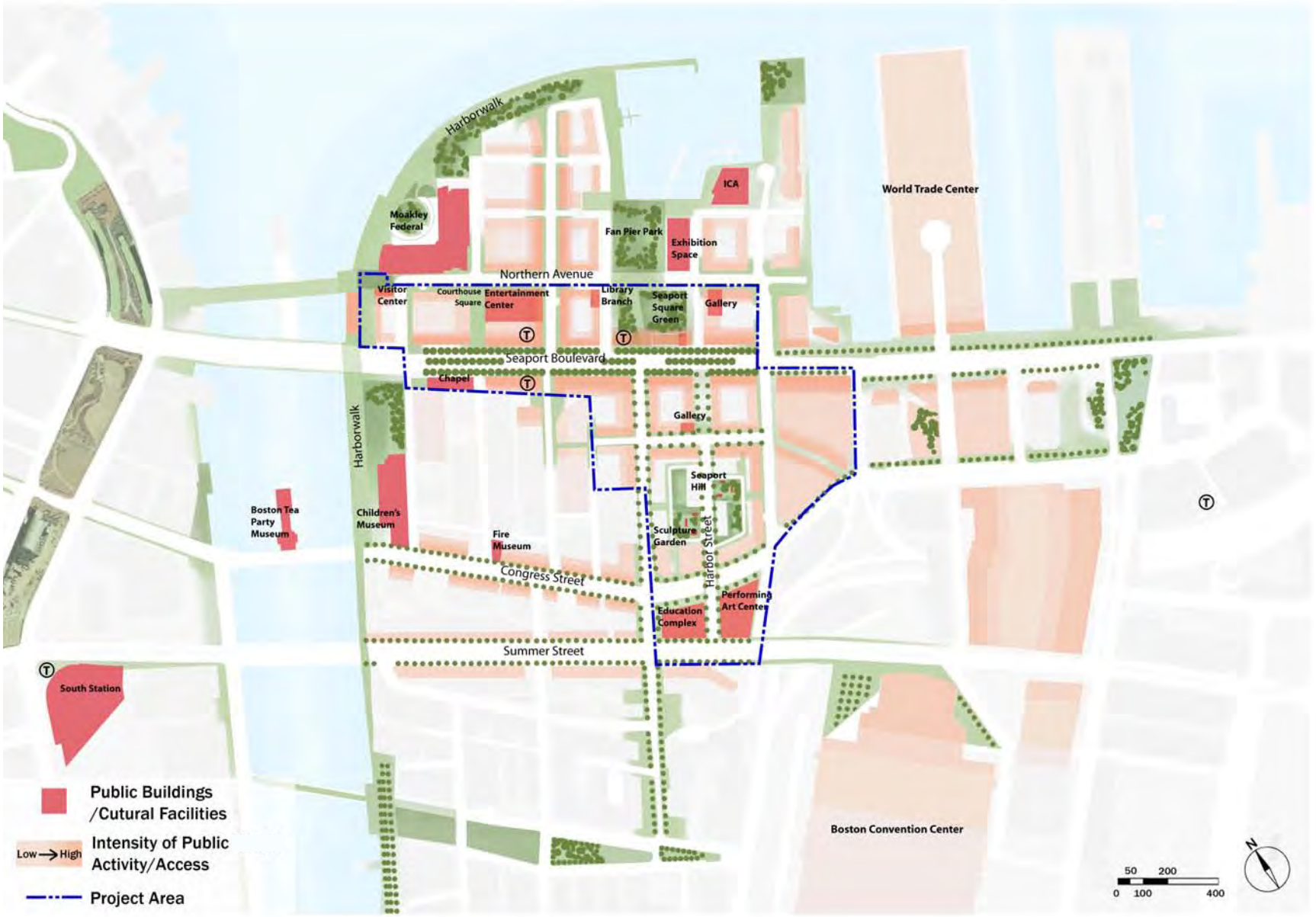

SEAPORT SQUARE
IN SOUTH BOSTON

Figure 1-32

Public Realm: Cultural Facilities, Public Buildings, and Street Activity

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These public spaces connect the surrounding communities and public amenities, increase use of the waterfront, and create new urban places: Seaport Boulevard, Harbor Way, Seaport Square Green, Seaport Hill and Courthouse Square. The public realm plan also shows how the Project's open spaces create a continuous system that ties the new neighborhood to its surroundings: extending the Fort Point Channel District fabric, connecting to the new grid of the Fan Pier development and allowing its streets to feed into Seaport Boulevard, extending and connecting Seaport Square Green to Fan Pier Park, connecting to the 100 Acre Plan area via Boston Wharf Road, and strengthening the connection from the Project Site to the Harborwalk by providing more physical and visual links to it. Section 1.2 provides detailed information on the planning and design of Seaport Square.

1.3.1.7 Street Sections

The Seaport Square Project will achieve an appropriate balance of neighborhood cohesion and design diversity that is imperative to the development of a project of this size. This approach, encouraged by the BRA, creates streetscapes which change along their length and across their width, to provide a rich pedestrian environment and visual aesthetic as viewed from public ways and by occupants in nearby buildings. Sections are included in Figures 1-33 to 1-37. Elevations are included in Figures 1-19 to 1-22 as described above.

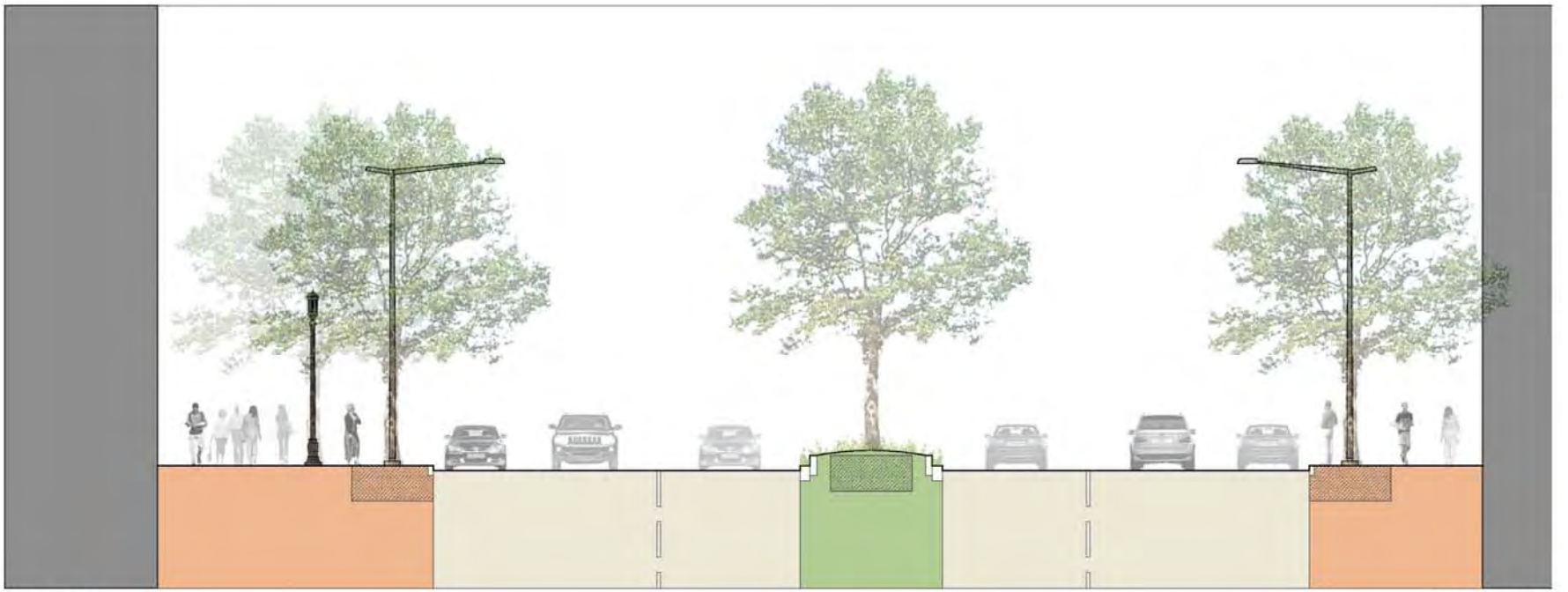
1.4 Public Benefits

- **New Jobs**: The Project will create approximately 10,000 construction jobs and approximately 20,000 permanent jobs. The permanent jobs will be created through the retail space, office and research uses, the new branch library, the new educational facilities, and services related to the residential and hotel uses.

- **Increased Housing**: The Project includes the development of approximately 2,500 homes, including both for sale and rental units, priced to attract a broad spectrum of income levels.

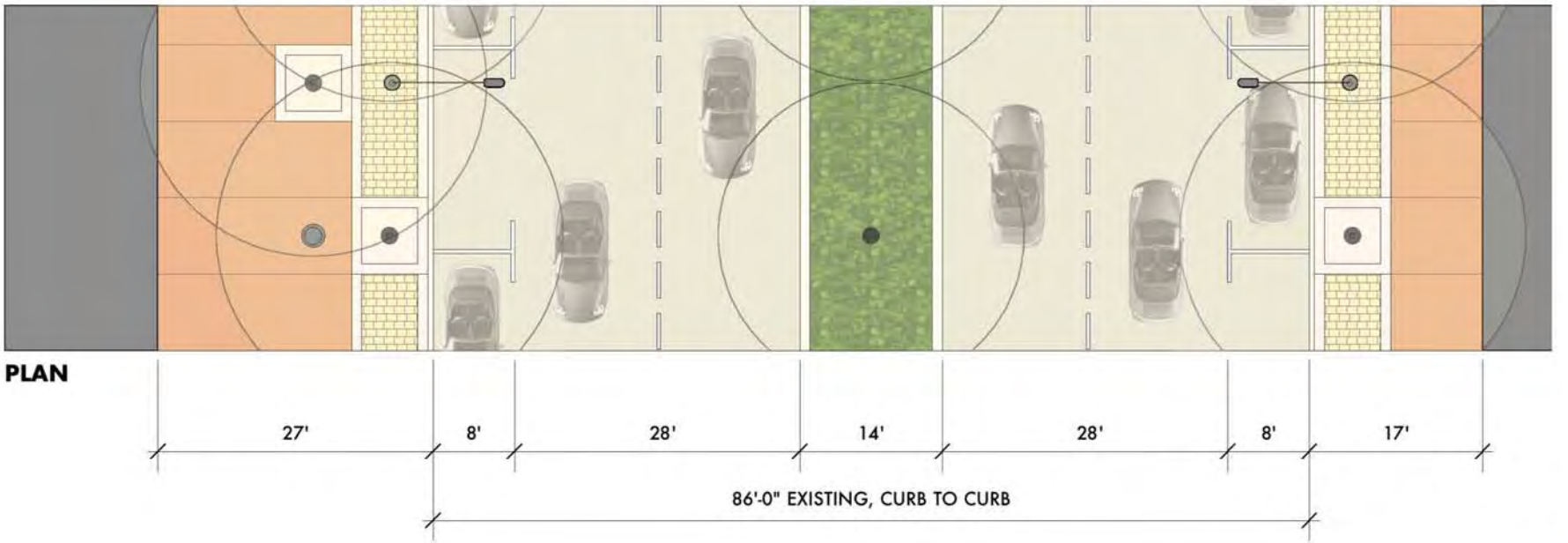
- **Affordable Housing**: The Mayor's Executive Order dated May 16, 2006 established as City policy that any residential project seeking zoning relief must set aside at least 15% of the number of market rate units as affordable to moderate income and middle income households, or contribute to a housing creation fund a per unit subsidy for 15% of the number of market rate units. Affordable housing will make up approximately 15% (325) of the number of market rate units.

- **Workforce Housing**: In addition to the 325 units of affordable housing, an additional approximately 15% of the number of market rate units are proposed as workforce housing units. Workforce housing is intended for people whose income is too high to qualify for formally restricted affordable housing units, but who are



SECTION

SEAPORT



PLAN

SEAPORT SQUARE
IN SOUTH BOSTON

Figure 1-33

Street Section:
Seaport Boulevard

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Morgan Stanley

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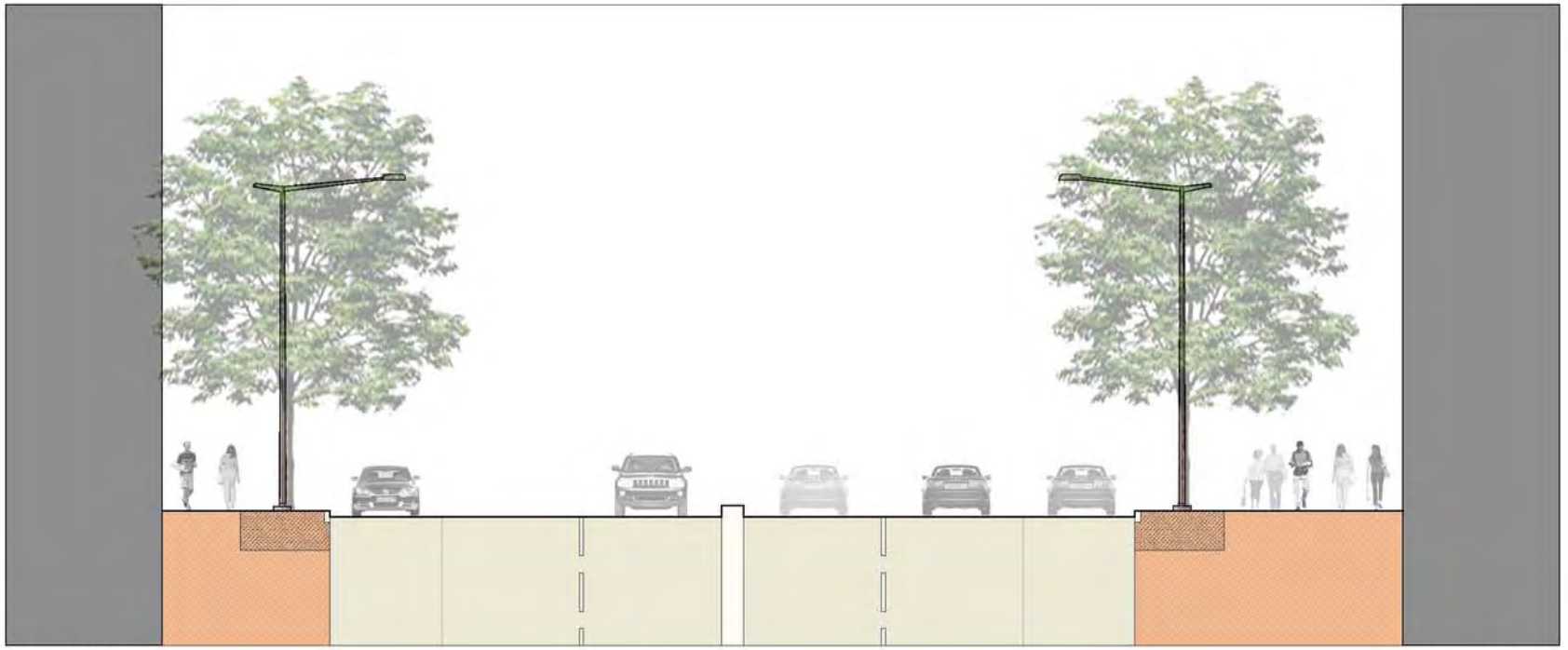

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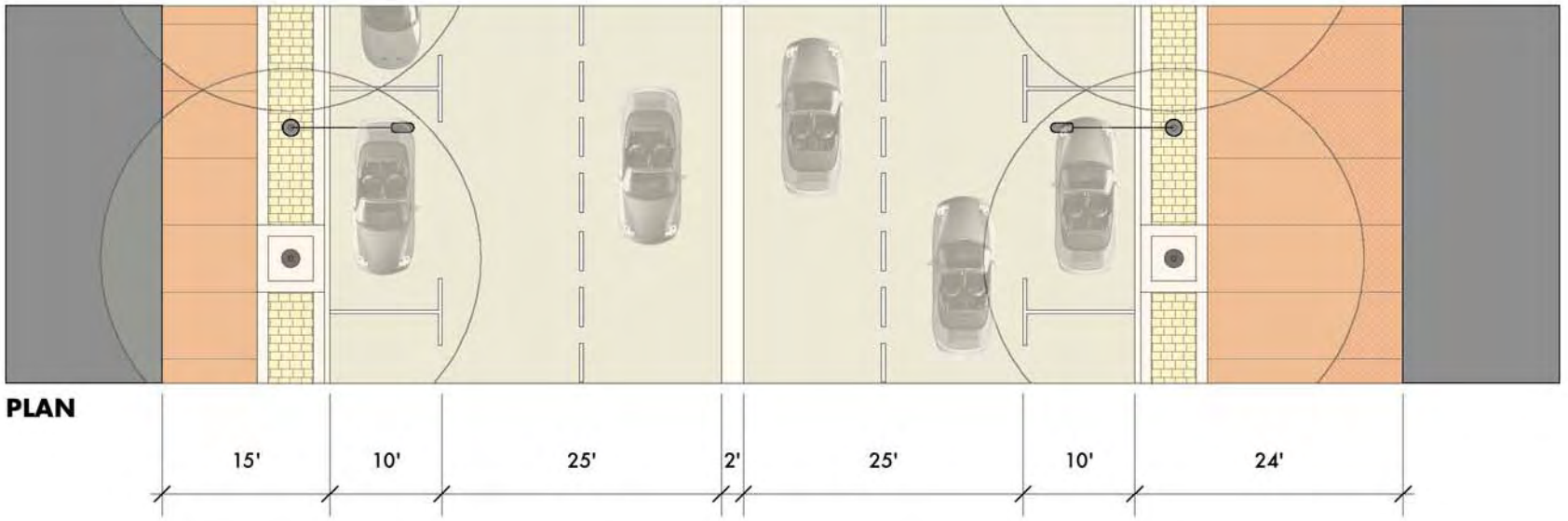

PLAN

SEAPORT SQUARE
IN SOUTH BOSTON

Figure 1-34

Street Section:
Congress Street

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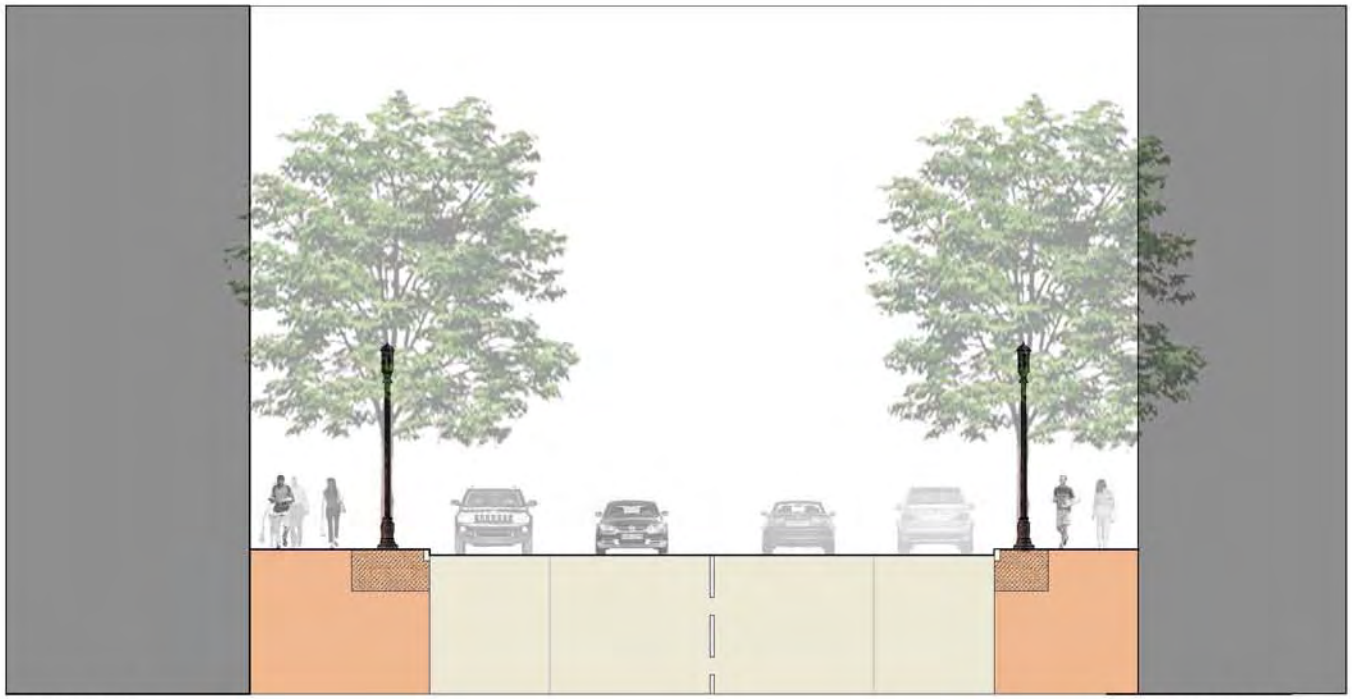

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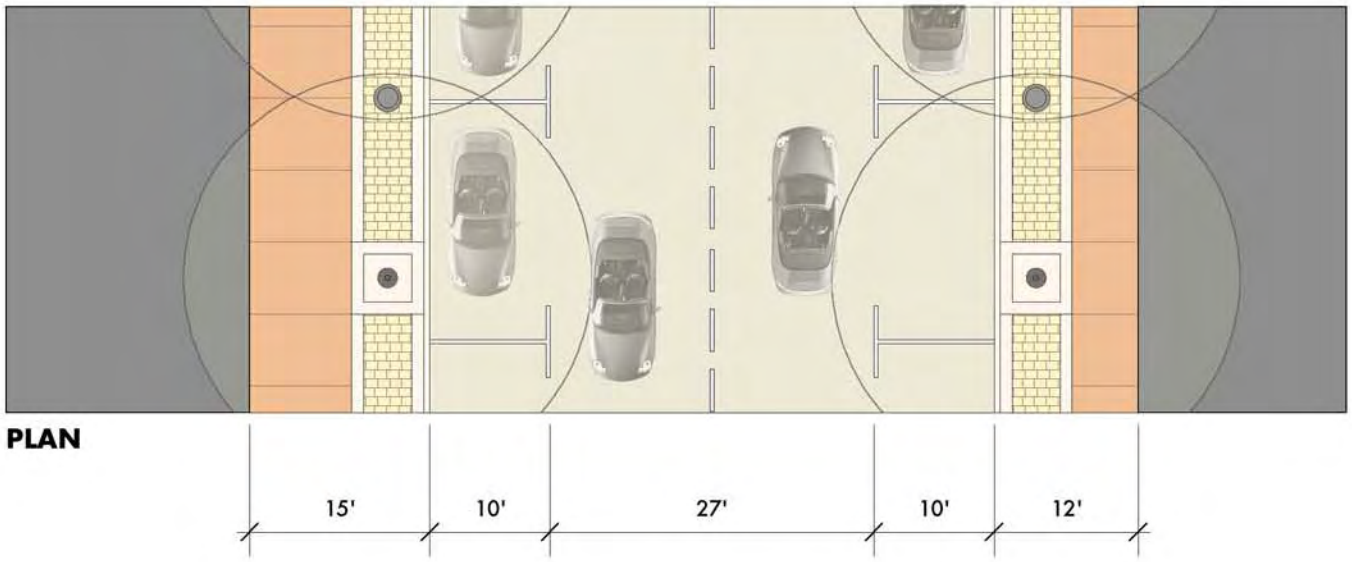

PLAN

SEAPORT SQUARE
IN SOUTH BOSTON

Figure 1-35

Street Section:
Northern Avenue

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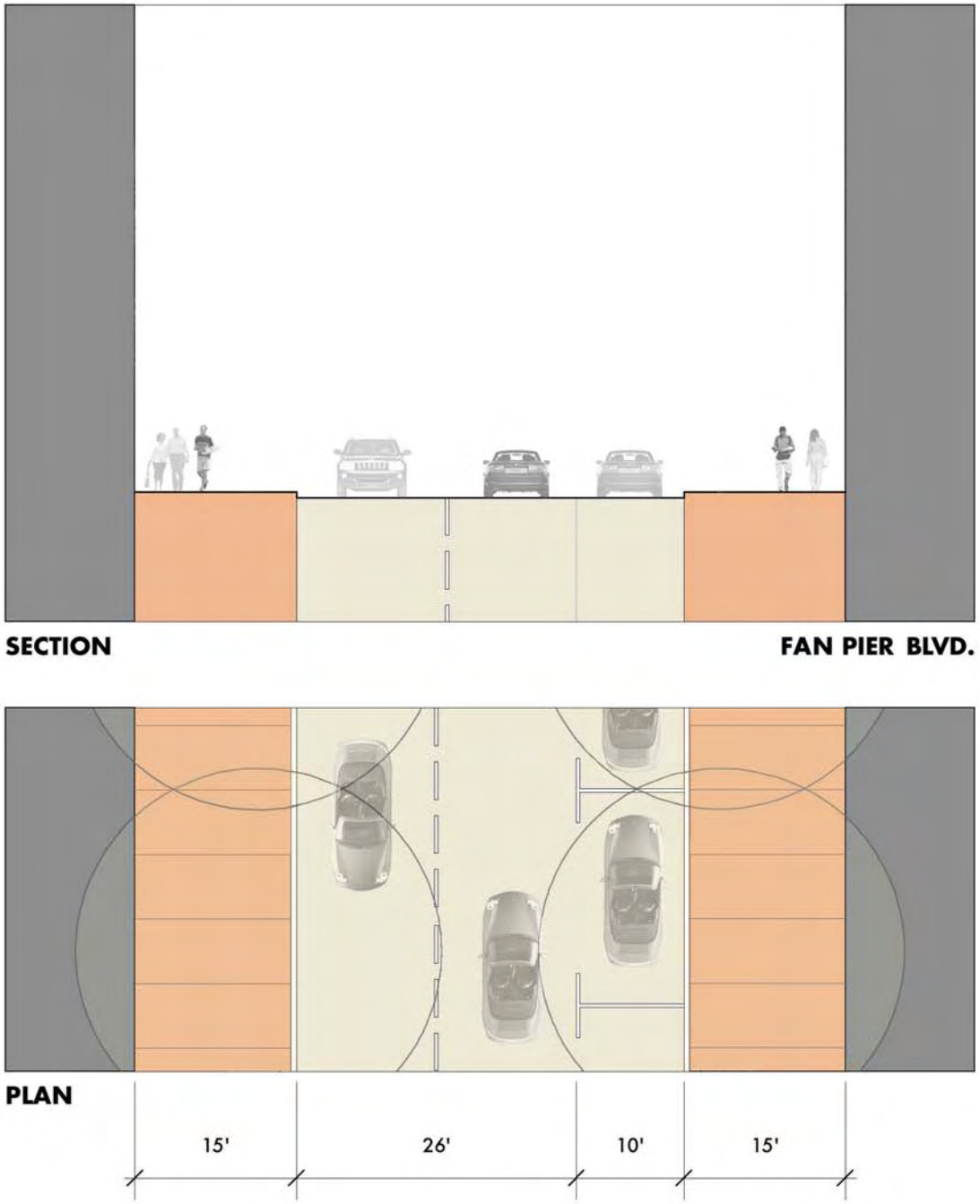

SEAPORT SQUARE
IN SOUTH BOSTON

Figure 1-36

Street Section:
Fan Pier Boulevard

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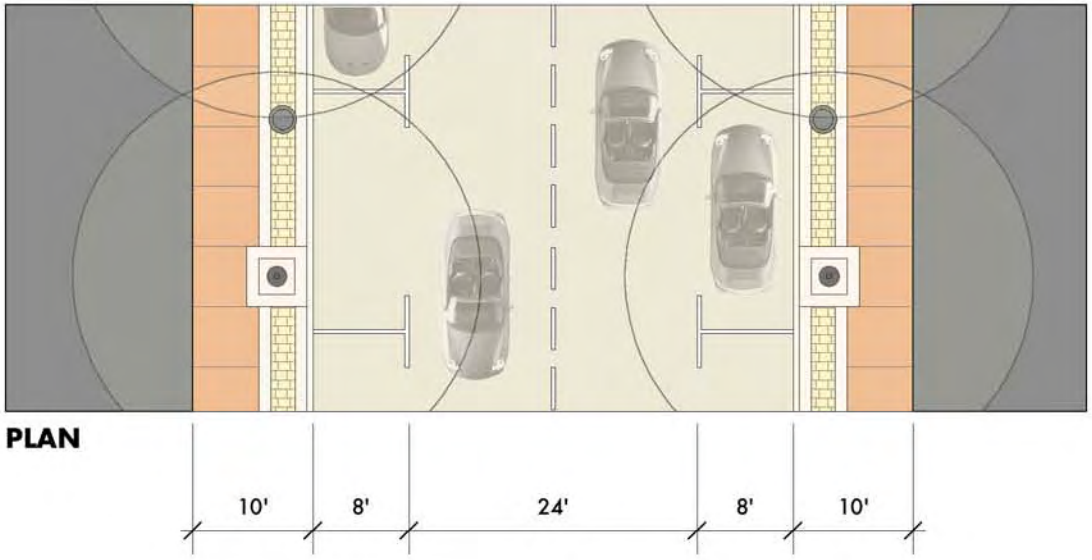
SECTION **AUTUMN LANE**



PLAN

SEAPORT SQUARE
IN SOUTH BOSTON

Figure 1-37

Street Section:
Autumn Lane

GALE INTERNATIONAL

Morgan Stanley

WS DEVELOPMENT

prepared by:

REED HILDERBRAND

often priced out of the housing market, such as firefighters, police officers, teachers, and the like. The inclusion of the workforce housing component reflects the Proponent's belief that the strength of the City comes from the economic diversity of its inhabitants. Seaport Square will provide various housing opportunities for people of all income levels.

- Open Space: To reinforce the mission of Seaport Square as a place for connecting with the South Boston waterfront, shopping, working, living, learning, and recreating, and inspired by the BRA's civic vision, the Project will include a substantial amount of open space that will help create a continuous public realm. Approximately 34% of the Project Site will be devoted to open space including green space, sidewalks, pedestrian ways and streets. Excluding the streets, approximately 25% of the Project Site will be open space. The two largest open spaces are Seaport Square Green and Seaport Hill, at approximately 1.25 and 0.75 acres respectively; Courthouse Square will also provide an outdoor seating area.

  The Proponent will also create open spaces in areas outside of the Project Site but within the Project Area as defined in Section 1.1 and detailed in the Offsite Improvements bullet below. Additionally, as described in Section 1.2, the Proponent will construct new sidewalks and pedestrian ways, and improve Seaport Boulevard, an existing public way, with trees, extensive landscaping, public art and outdoor seating to create an aesthetically pleasing connection through the Project to the Financial District and to other areas of the South Boston waterfront.

- Sustainable Design/Green Building: The Project will target LEED-ND standards at the Silver Level or higher for the entire Project Site. In addition, the LEED 2009 rating system for "New Construction" and "Core + Shell" projects will be pursued as applicable for the different use types at Seaport Square. The Proponent believes Seaport Square will be one of the largest sustainably-designed neighborhoods in the United States.

- Smart Growth/Transit-Oriented Development: The redevelopment of this site into an attractive mixed-use development will help create a thriving urban community in the South Boston area. With 2,500 residential units located in the middle of a commercial employment core, the site is ideal for promoting walking between home and work. As a mixed-use development in close proximity to the MBTA's Red and Silver Lines, the Project embodies the major tenets of transit-oriented development (TOD), and includes the construction of a new MBTA headhouse in Seaport Square Green. In addition to being located within a quarter-mile of public transit, Seaport Square has planned for and designed a compact, walkable development incorporating approximately 100 retail stores, housing, hotels, offices, educational facilities, a library, a performing arts center and other recreational opportunities for pedestrians. The Proponent also anticipates continuing with the

bike share program which it has successfully operated at the site for the past three years. A large car share program available to neighborhood residents and visitors will also operate from the Project's underground parking garage.

- **New Tax Revenue**: The Proponent estimates that the Project will generate approximately $32,000,000 in annual local property taxes, $31,000,000 in annual state sales taxes, $2,600,000 in state hotel occupancy tax, $2,600,000 in local occupancy tax, and $1,200,000 toward the convention center financing fee.

- **Linkage**: The Project is estimated to generate approximately $35,000,000 in housing and jobs linkage funds to the City of Boston.

1.4.1 Extraordinary Public Improvements

- **New Streets and Sidewalks**: Approximately $25 million will be spent for new public streets and sidewalks. Improvements to existing public streets will be made and new streets will be constructed including Harbor Street and Autumn Lane, Pier Street and a pedestrian extension of Farnsworth.

- **New Pedestrian Connection**: As the Fort Point Channel Watersheet Activation Plan envisions, and in addition to the numerous pedestrian connections as previously described, a new waterfront pedestrian way will be created along the City-owned Old Sleeper Street to link existing sections of the Harborwalk from the Children's Museum to the Federal Courthouse. Restaurants and outdoor seating will enliven the area during day and evening hours.

- **Northern Avenue**: The Project proposes to provide up to $5 million to be used to upgrade and improve the area along Old Northern Avenue, including sidewalks, lighting, traffic and landscaping in the area between the Northern Avenue Bridge and East Service Road. This proposed upgrade along Northern Avenue represents a shift of previously proposed funding from the Northern Avenue Bridge, which is currently being funded with federal money.

- **Bridging Grade to Summer Street**: An estimated $10 million will be spent to construct Harbor Street, which will link the elevated Summer Street (which was originally raised to accommodate the trains that historically served Fan Pier) to the ground level. The new street will establish a loop connecting downtown Boston and the Seaport District. Harbor Street will slope gently towards the water, crossing through the new residential neighborhood and splitting vehicular traffic east and west onto newly constructed Autumn Lane. Harbor Street will then continue as a wide pedestrian path to reach Seaport Boulevard and Seaport Square Green.

- **Open Space and Landscape Improvements**: The Project includes approximately $25 million in open space and landscaping improvements, including two new major open spaces, Seaport Square Green and Seaport Hill. In addition, pedestrian movement constitutes an important part of the Seaport Square Project. Courthouse Square will provide pedestrians a welcoming place to relax. Harbor Way will provide a wide pedestrian passage at the edge of Harbor Street between Autumn Lane and Seaport Boulevard. Courthouse Square through Seaport Square Green and the connections between Seaport Boulevard and Northern Avenue will provide Seaport District pedestrians a high degree of flexibility and ease of travel by foot.

- **New MBTA Silver Line Station Entrance**: The Project will add a new MBTA headhouse / station entrance in the Seaport Square Green. This headhouse/ station will provide a landmark destination and convenient location along the waterfront that does not currently exist for easy public transit access to the Silver Line.

1.4.2 Cultural, Educational and Community Contributions

- **Cultural Corridor**: Created by a physical link from Summer Street to Seaport Boulevard via Harbor Street, the Cultural Corridor will be a new cultural destination in the City, connecting the Institute of Contemporary Art on the waterfront and the Boston Convention and Exhibition Center on Summer Street. Between these two buildings, new attractions will include a performing arts and education complex on Blocks P and N, sculpture gardens on Seaport Hill, exhibit and gallery spaces at Blocks L1 and G, public art and performance venues on Seaport Square Green, and a branch library at Block D. The Cultural Corridor will build on the arts identity of the neighboring Fort Point Channel District, and create a strong cultural component that will activate and provide year-round use of Seaport Square.

- **Performing Arts Center**: An approximately 1,800 seat facility designed for the performing arts could be located on Summer Street. This facility could be used by such arts institutions as the Boston Ballet or the Berklee College of Music, and will provide a new venue for performances to be enjoyed by both tourists and locals. The performing arts center will draw visitors to the area, filling hotels, restaurants and shops. The space will also serve as arts and assembly space for the educational facilities (see below), as well as provide facilities for residents and civic groups in the local community. The feasibility of this use will depend on local demand and funding.

- **Exhibition Space**: Exhibition space is proposed adjacent to the largest open space associated with the Project, Seaport Square Green (Block G). The Proponent envisions a space where neighborhood artists can show their work, a place for arts classes and community gathering, perhaps in coordination with the ICA. This arts space will increase community interest and connection to the area.

- **Educational Facilities**: To attract families to the Project Site, a privately funded Pre-K -1 public pilot educational facility for 200 children will be located within the Project. A second educational facility, a new K-12 educational facility will provide substantial annual scholarships for City residents. After school hours, this space may be used for adult education programs or other continuing education needs of City residents.

- **Public Library**: Seaport Square will include a new neighborhood branch of the Boston Public Library on Block D to serve area residents and complement the South Boston Branch Library.

- **Chapel**: A new facility will be constructed to relocate the existing Chapel of Our Lady of Good Voyage to a site at the foot of the Moakley Bridge that is more conveniently located within the community. The new site will provide better access and visibility for the Chapel, allowing it to expand to better serve the needs of the growing neighborhood.

- **Visitor's Center**: A new Visitor Center will be located in the Block A building. The Center will provide the City an opportunity to market and promote the entire Seaport District as a new and vibrant area for living, working and shopping.

- **Off-Site Open Space Improvements:** The Proponent will work with the South Boston community to identify an off-site athletic field that can be utilized for athletic events related to the educational facility. As part of this arrangement, the Proponent will fund capital upgrades to the field(s) and fund a portion of the ongoing maintenance. Additional off-site improvements are planned for Northern Avenue, Farnsworth Street, Old Sleeper Street and Parcel E, located near the Children's Museum. The Proponent will also upgrade sidewalks adjacent to the Project Site, as well as improve the median of Seaport Boulevard.

1.5 Project Evolution Since the Filing of the PNF/ENF

Since the filing of the Project Notification Form/Environmental Notification Form (PNF/ENF), the Proponent and its master plan architects, Kohn Pedersen Fox (KPF), have continued to discuss the Project with the BRA, state and local agencies, stakeholders and the local South Boston community. With these discussions in mind, and in conjunction with the BRA urban design staff, the Proponent has continued to refine the Project. The overall program remains at approximately 6.5 million square feet of build out with the same overall mix of uses and floor areas described in the PNF/ENF. Block A, for which a waiver of further review has been granted, remains essentially unchanged. However, based on numerous discussions and feedback, certain uses have been swapped among other Blocks across the 23 acres. Additionally, some of the Blocks that once housed one large building

now are proposed to have multiple, smaller buildings. Therefore, the number of buildings proposed has increased from 19 to 23. The Proponent believes these changes significantly enhance the quality of the overall Project. Specific changes include:

- **Block K** has been redesigned as requested by the BRA in order to preserve the character of the Fort Point Channel District. The design incorporates a reduction in the overall building height and massing. Block K is situated across Seaport Square Green at the intersection of Seaport Boulevard and Boston Wharf Road, defining the corner of the historic Fort Point Channel District. The massing of Block K was designed to fit into the fabric of the Fort Point Channel District, with a lower height on the western side to match the surrounding building heights. Additionally, the massing of Block K along Seaport Boulevard is slightly higher to create a better proportion for the wider street section of Seaport Boulevard. The massing is highest along Boston Wharf Road in order to strengthen its presence across from Seaport Square Green.

- **Blocks B, C, and D** have been redesigned to better interface with the Fan Pier development. The new design includes changes to the massing, orientation, and overall program. Block C has been reprogrammed from an office building to a retail/entertainment and residential building. In response to feedback from city and state agencies, massing of the residential tower has been shifted away from the Northern Avenue side to the Seaport Boulevard side of the Project to avoid a "canyon effect" along Northern Avenue. Block D has been re-designed from an office building to a retail and residential building to take advantage of its adjacency to Seaport Square Green. The Proponent is internally reviewing the uses for these Blocks, including the possibility of switching uses between Blocks B and D.

- **Entertainment Complex:** In response to the BRA and Fan Pier development, the entertainment complex has been moved to Block C (from Blocks L1 and L2) to help activate and enliven both Northern Avenue and Fan Pier Boulevard. Since Fan Pier Boulevard (part of the Fan Pier development) was conceived in earlier plans to be a commercial street and a major connector to bring people in and out of the area, an effort was made to design Blocks B, C, and D to enhance Fan Pier Boulevard's role and create a distinction between it and the streets parallel to it. The Project's previous emphasis on the pedestrian connection between Blocks B and C was diminished in order to strengthen Fan Pier Boulevard, which runs between Blocks C and D. Significant changes were made to enhance the importance of Fan Pier Boulevard, including the relocation of the entertainment complex onto Block C, the changing of the massing and program of Blocks C and D, the widening of the sidewalk near Blocks C and D, the insertion of the MBTA station headhouse into Block C and the creation of an interior through-block passage in Blocks C and D.

These changes also responded to traffic considerations as Fan Pier Boulevard is the main street that crosses Seaport Boulevard connecting the Fan Pier area and the waterfront to the Fort Point Channel District.

- **Blocks H and J** have swapped uses as requested by the BRA. Block H will be the new home for the Chapel of Our Lady of Good Voyage, and Block J will be a retail/residential building. Changes to the design of Block H have been made in response to the BRA, with the understanding that this part of Seaport Boulevard acts as a gateway to the whole Seaport District for those coming in from downtown. Placing the Chapel in this strategic location adds another public façade along this side of the Fort Point Channel, between public buildings currently present along the eastern side of the Fort Point Channel, the Moakley Federal Courthouse and the Children's Museum. This change enhances the public nature of this space and enriches the architectural expression of diverse building types along one urban space. The creation of a public square in front of the Chapel follows urban planning precedents of having an open space in front of public buildings (a commonly used design concept for both churches and chapels), both to create an open space for the public and an urban pause, a recess from the continuous fabric. The public square also functions for traffic purposes, allowing more pedestrian space around this crossing of Seaport Boulevard, and creates an open view, articulating the 'gateway' condition of the Boulevard.

- **Blocks L1 and L2** have been redesigned from residential and retail/entertainment uses to office/retail use to maximize the visibility of those uses along Seaport Boulevard, and due to their proximity to the Central Artery/Tunnel connections. This shift in uses will change the character of the podium spaces, making it more friendly and appropriate for the residential neighborhood around it. In addition, the number of buildings proposed for the L Blocks has increased to provide a more neighborhood-like scale.

- **Courthouse Square** has been reshaped between Blocks B and C, creating a useable public space across from the Moakley Federal Courthouse and along Northern Avenue. The previous plan did not include a clearly articulated public space. The creation of a public square in front of the Chapel follows a well established precedent for public buildings, providing an outdoor gathering space. In addition, the Square provides added pedestrian space at the adjacent crossing of Seaport Boulevard and enhances both the view to Fort Point Channel from Seaport Square and the 'gateway' view to Seaport Square from the Evelyn Moakley Bridge.

- **Civic/cultural programs within Blocks G, D, and L** have been incorporated around Seaport Square Green. Programs include a local branch library, an art gallery, and an exhibition space as an extension of the existing Institute of Contemporary Art. These spaces will enhance the diversity of uses and contribute to a sense of Seaport Square Green as a vibrant neighborhood center.

- The funding of infrastructure improvements for Northern Avenue replace previous funding commitments for Old Northern Avenue Bridge improvements. In response to a City of Boston request, the Proponent was asked to focus the improvements on Northern Avenue itself, including landscaping and other improvements rather than the Old Northern Avenue Bridge.

1.6 Development Context

Master planning by Massport and the City of Boston in the 1990s established a framework for development in the South Boston waterfront, while still preserving the needs of the working port. Plans that were created by the BRA include the South Boston Waterfront Municipal Harbor Plan, the Seaport Public Realm Plan, and other plans. In 2006, the BRA finalized the Fort Point Channel 100 Acres Master Plan, a continuation of the planning process of the South Boston waterfront for this portion of the Fort Point Channel area.

As these planning frameworks evolved, new development began with the World Trade Center complex, providing exhibition space, commercial office space, retail shops and meeting areas. In 1998, the addition of the Seaport Hotel, West Office Building and East Office Building expanded the mix of uses in the area, and the opening of the John Joseph Moakley Federal Courthouse provided an important architectural anchor for the western end of the South Boston peninsula.

More recent developments of note include the John Hancock (formerly Manulife) office building, completed in 2003 and the Boston Convention and Exhibition Center, completed in 2004, among the largest convention centers in the nation. In 2006, a new Westin Hotel opened adjacent to the BCEC and the Park Lane Seaport Apartments building, one of the largest apartment projects constructed in Boston in 20 years, was also completed. The opening of the Institute of Contemporary Art in December 2006 further diversified the mix of uses in the area by adding an important cultural component.

Looking forward, the Fan Pier project, currently under construction, includes office, retail and residential uses, as well as new open spaces for future residents, workers, and visitors to enjoy. Additional projects approved by the BRA, but yet to commence, include the Congress Street Hotel, 49-63 Melcher Street, and Waterside Place. Other area projects are described below in Section 1.6.1.

Substantial investment has also been made in public infrastructure to improve the transportation network and public amenities in the area. These improvements are fundamental to the long-term build-out of the district, and help define the development densities and types of development suitable in the South Boston waterfront. Improvements to highway infrastructure are the result of careful planning and coordination between the Massachusetts Port Authority (Massport), the Central Artery/Tunnel project and the City of Boston. The resulting series of highway on- and off-ramps provide direct vehicular access

to I-90 and I-93 in all directions. The MBTA Silver Line, a rapid transit line opened in 2005, provides quick and convenient access to the South Boston waterfront area from South Station and Boston's Downtown and Financial districts.

Seaport Square is located in the geographic center of the South Boston waterfront area and has great potential to link these development projects together into the seamless, vibrant, mixed-use neighborhood envisioned by the BRA in their master planning documents. Seaport Square plans to fill what is today a great void, connecting the low-rise, historic buildings in the Fort Point Channel District to the taller, new structures that are planned or have been built over the past decade in the waterfront area. Height and density will increase as one moves east from the Fort Point Channel, and south from Boston Harbor starting at Fan Pier. The height also connects the Project Site to the BCEC, which is at a higher elevation along Summer Street. The proposed program of uses will complement current and planned uses for the area, also adding significant open and public spaces. Figure 1-38 details existing and planned uses within the area.

1.6.1 Other Area Projects and Cumulative Impacts

The South Boston waterfront is a rapidly transforming area with approximately 38 projects in the Project's surrounding area either under construction, approved by the BRA, or in some stage of permitting or planning.

These projects can be broken down into two general categories: those that are anticipated to be completed in the next several years, and those that are anticipated to be completed further into the future.

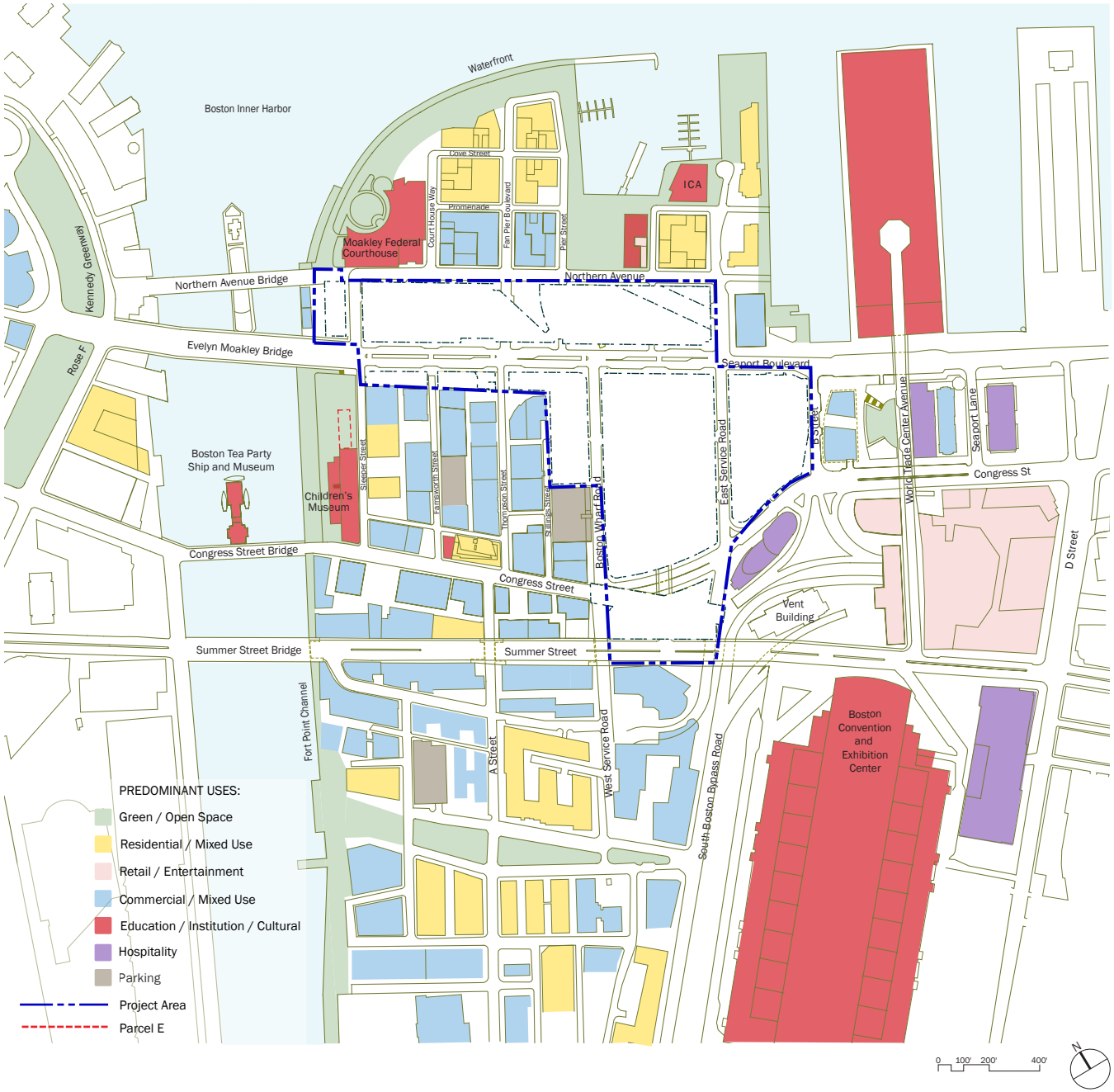
Projects that have been recently completed or are anticipated to be completed in the next several years are described below.

- **Channel Center: Phase 2-4** will include, when complete, 101,400 square feet of retail space, 525,400 square feet of office space, and 400 residential units.

- **Fan Pier** will include 2.9 million square feet of built space. The first phase of this work includes the Institute of Contemporary Art, completed in 2006, and ongoing construction at Parcel F. When completed, Parcel F will include an 18-story office building of 493,000 square feet.

- **Waterside Place** is a mixed-use development that includes 640,000 square feet of retail space comprising small shops, a grocery store, and restaurants. The project also includes 200 residential units, 300 hotel rooms, a 20,000-square-foot visitor center, and 2,350 parking spaces.

- **South Station Air Rights** includes 1.375 million square feet of office space, a 200-room hotel, 170 residential units, and 934 parking spaces.



SEAPORT SQUARE
IN SOUTH BOSTON

Figure 1-38

Existing & Proposed Land Use of Surroundings

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Morgan Stanley

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prepared by:
KPF

- **Boston Cargo Terminal** is a proposed waterfront project that calls for creation of an intermodal freight facility on the North Jetty site, north of FID Kennedy Street.

- **Fort Point District 100 Acres Master Plan** includes various parcels along A Street in South Boston. The area has an approved Planned Development Area Master Plan that allows a mixed-use project of approximately 6,000,000 square feet.

- **154 West Second Street (The Signal Building)** is a mixed-use development with 75 residential units, of which 24 will be artist live/work units. The project also includes a 101–space parking garage. The project is currently under construction.

- **316-322 Summer Street** includes the renovation, joining, and expansion of two buildings for office and retail space. The expansion will add 18,800 sf of new space.

- **346-354 Congress Street (FP3)** rehabilitated two existing buildings and infilled an adjacent surface lot for 92 residential units, including four artist live/work units, as well as ground-floor restaurant space. The project has been completed.

- **Channel Wharf** includes 45 residential units and 68 parking spaces.

- **3 Dorchester Street: Phase 2** includes the addition of 22 three-bedroom residential units.

- **Old Colony Square** is a development of 20 residential units and one ground-floor commercial unit with 21 parking spaces.

- **311 Summer Street** includes the rehabilitation of the exterior façade, the addition of a stepped-back, one-story office penthouse, as well as an interior renovation that allows for a mix of uses. The project has been completed.

- **Emerald Court** includes the development of approximately 245 residential units and approximately 3,600 square feet of retail space with associated parking.

- **Pier 4** is a mixed-use development consisting of three new buildings with 385,000 sf of office space, 200-250 hotel rooms, approximately 200 housing units as well as retail, open space and parking.

- **Residences at 371-401 D Street** includes 585 residential units in four buildings with approximately 724 parking spaces.

- **Congress Street Hotel** is a 24-story hotel with 502 rooms on 18 floors, accessory retail space, and 150 parking spaces plus 18 valet parking spaces.

- **Jimmy's Harborside** includes 65,000 sf of total development in two buildings that will contain office and restaurant space. The project is currently under construction.

- **The Residences at 50 West Broadway** is a mixed-use development with approximately 139 residential units, approximately 3,500 square feet of commercial space, and an approximately 152-space parking structure. The project is currently under construction.

- **Leachmore Point: Eleven West Broadway** includes 64 residential units, ground-floor retail, and a 69-space parking garage beneath the building.

- **36 A Street** is a residential development with 25 units and 20 parking spaces. The project has been completed.

- **368 Congress Street** includes the rehabilitation of existing office space and the introduction of ground floor retail and/or restaurant space.

- **902 East Second Street** includes 44 residential units and 49 parking spaces.

- **49-63 Melcher Street** includes the renovation of existing space, and the construction of new space. The project includes approximately 188,500 sf of office space and approximately 33,000 sf of retail space.

The projects above have been included in analyses completed on the Seaport Square Project, where appropriate, to determine cumulative impacts. For example, all of the projects have been included in the transportation analysis, but only the projects within the extent of the shadow and wind analyses, such as Fan Pier (but not South Station Air Rights) have been included for those studies.

Projects that are estimated to be completed in a later timeframe include: a portion of the 100 Acres build-out, Waterside Crossing, U.S.P.S. General Mail Facility, Boston Marine Industrial Park Expansion, Parcel A-2, Parcel H, U.S.P.S. Annex, 425-429 East Third Street, Distillery Project, I Street Lofts, Westin BCEC Hotel Phase 2, The Grainery, Parcel K-2, and Parcel K-1. These projects are at various stages, but none have yet been approved by the BRA. Information is therefore limited, and project impacts to the area are uncertain. However, Seaport Square has included as much information as practical on these projects in the analyses provided in this document, including transportation and infrastructure. Shadow and wind analyses include BRA approved projects and their background conditions. Seaport Square will not preclude the development of any of the projects, and it is anticipated that as these projects move through the permitting process, they will include Seaport Square in their analyses.

1.6.2 Conclusion

A summary of the cumulative impacts associated with the Project and other projects in the area are provided below.

Shadow

The Project will create new shadows in the area since the existing Project Site generally consists of parking lots. The Project is expected to result in shadows typical of densely-built urban areas. However, existing open spaces will generally be unaffected by new shadow, and much of the new shadow falls onto adjacent streets and the Project Site itself. As the design of buildings moves forward, and the massing is refined, it is anticipated that new shadow impacts will be reduced. In general, the area will include areas of sun and shade for residents and visitors to enjoy.

Transportation

Due to the surface parking lots on the Project Site, the area already has a large number of existing vehicle trips. While some intersections operate poorly under Existing and Mid-term No-Build Conditions, Seaport Square itself contributes relatively less traffic to these intersections than other area developments. With mitigation improvements, composed primarily of signal timing phasing changes and travel lane use changes, only three of the 33 study intersections during the a.m. peak hour, two of the 33 study intersections during the p.m. peak hour, and one of the 33 study intersections during both the a.m. and p.m. peak hours will experience a relevant change in level of service between Mid-Term No-Build conditions and Seaport Square Build with Mitigation conditions.

In addition, it is likely that trips will be redirected from overburdened intersections like Seaport Boulevard/Sleeper Street to those with excess capacity, like Seaport Boulevard/ Boston Wharf Road, so as to eventually achieve balance in the network.

Infrastructure

Due to the site's urban location and recent major infrastructure investments in the area as part of the Central Artery/Tunnel and Silver Line Tunnel, the area is generally well served by public and private utility infrastructure. As with any project this size, there are challenges to meeting the specific needs of the Project, but those challenges are manageable. Continued coordination with the City of Boston, BWSC, private utility companies and other Project stakeholders is required and anticipated.

Wind:

Generally, the wind conditions improved or stayed the same with the proposed Project in place. Of the 156 locations studied for annual wind conditions, 145 or approximately 93% of the locations had wind conditions which improved or remained the same from the Existing configuration to the Build with Mitigation configuration. For all test configurations, wind conditions are generally improved in the summer and fall seasons when wind conditions are more favorable and open space areas are generally more active.

Based on the results of the wind tunnel tests described, it is anticipated that the potential mitigation measures described in Section 4.1.5.3 or other mitigation measures will be implemented in order to eliminate dangerous pedestrian comfort conditions that exist today as well as with the proposed Seaport Square Project.

With mitigation 138 of 156 locations are suitable for walking or better, only 18 of 156 locations have uncomfortable conditions, and no locations have dangerous conditions. The specific design or nature of any mitigation measures implemented is somewhat flexible, provided the aerodynamic effect is similar to or better than the mitigation measures described in Section 4.1.5.3. It has been noted that there are still a few areas where uncomfortable wind conditions remain. For these areas and others that may exceed the appropriate pedestrian wind comfort criterion, it is anticipated that further wind tunnel studies will be performed for each individual Block in order to establish more precise mitigation during the design review process.

1.7 Consistency with Planning

1.7.1 MetroFuture

MetroFuture is the new regional plan produced by the Metropolitan Area Planning Council (MAPC). The plan sets up a vision for the region in regard to land use and development. The plan provides 65 goals in six categories: Sustainable Growth Patterns, Housing Choices, Community Vitality, Prosperity, Getting Around, and Energy, Air, Water and Wildlife.

The Sustainable Growth Patterns category seeks to concentrate new growth in "municipalities already well served by infrastructure," near existing public transportation, and on brownfields sites. The plan also seeks to encourage design that promotes transit use and preserves and enhances historic resources. The Project will meet these goals by developing 23 acres of land that is currently being used mostly for surface parking, is served by existing infrastructure and public transportation. The Project promotes public transit with the inclusion of a new MBTA headhouse, restricted parking through the use of pricing and management strategies to discourage daily commuters from using the facility, and the development of a walkable neighborhood with the essential services for everyday life. The

Project will also enhance the surrounding historic resources by improving the area surrounding the Fort Point Channel Landmark District and by designing the Project with the surrounding historic resources in mind.

The Housing Choices category seeks to increase the share of housing that is more affordable for working families, allow for low-income households to afford a home in a convenient location, and create urban neighborhoods that boast more appealing housing options for young professionals and their families. Of the 2,500 housing units proposed in the Project, 15% will be for workforce housing, while an additional 15% will be affordable units. The Project will include a variety of housing options appealing to all households.

The Community Vitality category seeks safe and well-maintained communities and open spaces and a connected pedestrian network that encourages walking and bicycling. The Project includes a number of open spaces, both for passive and active recreation. As part of the development, the Proponent expects that the open spaces will be maintained as private property, yet remain open to the public for its enjoyment. In addition, the Project will include improvements to open spaces that are not within the Project boundaries. The Project itself is a new neighborhood, providing goods and services that residents need on an everyday basis, allowing people to walk or bike on their errands.

The Prosperity category seeks to maintain Boston' global competitiveness, as well as make Boston an attractive location for different types of businesses. The Project seeks to be a hub of global business, providing offices and residences that allow individuals to live and work in the same neighborhood. The Project also includes cultural and artistic resources, including a new performing arts center, a cultural corridor and exhibition space, all of which will attract area residents and visitors to the area.

The Getting Around category seeks more transportation options, a decrease in vehicle trips and an increase in walking and bicycle trips. The Project will create a new neighborhood where individuals can live, work and play, limiting the number of vehicle trips. The Project Site is on the MBTA Silver Line and proximate to South Station, providing easy access to transit.

The Energy, Air, Water and Wildlife category seeks to place the Boston area as a national leader in reducing greenhouse gas emissions, and seeks to decrease energy demand and solid waste, while increasing recycling and renewable energy. As shown in the greenhouse gas emissions analysis in Section 4.6, the Project incorporates numerous measures to reduce greenhouse gas emissions. The Project's location and proximity to public transit limits the number of vehicles coming and going from the site. The Project will target LEED-ND standards at the Silver level or higher. Buildings in the Project will be energy efficient and will utilize a percentage of recycled content and regionally-sourced construction materials. Recycling and solid waste programs will allow for a relatively high rate of recycling during construction and operational phases. A detailed description of sustainable design measures is included in Section 4.13.

1.7.2 City of Boston's Open Space Plan 2008 – 2012

The City of Boston's Parks and Recreation Department's Open Space Plan 2008-2012 looks at public open space, including non-traditional open spaces such as urban wilds, community gardens, cemeteries, greenways, trails, thoroughfares, and harbor islands, as well as traditional parks, playgrounds, squares and malls. It also examines open lands under private ownership, such as non-profit institutions, so as to understand their role in the citywide open space system. The Project will create approximately six acres of new open space including green spaces and pedestrian plazas, such as Seaport Square Green, Seaport Hill, and Courthouse Square. In accordance with this plan, these spaces will be linked to the Harborwalk and other open spaces in the area, including Fan Pier Park, adding additional links connecting this area of Boston to other parts of the City. The Proponent will also work with the South Boston community to identify an off-site athletic field that can be utilized for athletic events related to the educational facility. As part of this arrangement, the Proponent will fund capital upgrades to the field(s) and fund a portion of the ongoing maintenance. Additional off-site improvements are planned for Northern Avenue, Farnsworth Street, Old Sleeper Street and Parcel E, adjacent to the Children's Museum.

1.7.3 Seaport Public Realm Plan

The BRA issued the South Boston Waterfront Public Realm Plan, also known as the Seaport Public Realm Plan, in 1999 to establish a framework for the future of this area of South Boston, and to position public realm attributes to drive private investment. Substantial public investment in the area over the past two decades, and the location of the area relative to the Financial District and the waterfront, has created a prime location for development. The plan recognizes that the area is well-served by transportation connections to the interstate highway system, the Massachusetts Bay Transportation Authority (MBTA) transit system and to Logan International Airport. In addition, the area consists of an expanse of surface parking lots and other areas that have development potential. The Plan encourages development, while also allowing for a new, vibrant public realm.

For the Project Site, the Plan envisions "an intensely active, mixed-use, high density" area with "retail, restaurant, leisure, entertainment, and institutional uses," that will "cater to a wide range of users and activities." The Project will meet the objectives of the Plan, including:

- creating a vibrant new neighborhood with substantial residential and civic uses that will attract people to the site even after the end of the workday;
- connecting the South Boston waterfront to the interior, encouraging people to experience the water as well as the land, providing a vibrant and expansive retail and restaurant environment, a mix of uses, a variety of building types, scales and

heights, entertainment and leisure areas, as well as institutional uses such as new educational facilities and a new public library to enhance Boston's position as the economic engine of the region;

- expanding the open space network of the City by creating substantial open spaces with pedestrian connections to the Harborwalk, creating view corridors through the site towards the waterfront; and

- ensuring employment opportunities and affordable housing for South Boston neighborhoods and other adjacent neighborhoods to ensure that the residential neighborhoods remain a vibrant community and receive significant benefits.

1.7.4 South Boston Municipal Harbor Plan

The proposed Project is located within the area of the existing South Boston Municipal Harbor Plan (SBMHP), submitted by the BRA and approved by the Secretary of Environmental Affairs in 2000. This SBMHP focuses on the 128 acres of waterfront land in South Boston that are subject to Chapter 91 jurisdiction. Five Blocks within the Project are subject to Chapter 91 licensing jurisdiction and thus covered by the SBMHP, including all of Block A and portions of Blocks B, G, H, and M1, making up approximately 80,000 sf, of the 23-acre Project Site, or 7.8% of the Project Site.

One primary planning goal of the MHP was to "Plan the area as a vital mixed-use neighborhood that expands the City's residential communities and provides a lively mix of open space, civic and cultural, water-transit and commercial uses and job opportunities that are mutually supportive and bring activity to the waterfront."

The Seaport Square Project will fulfill the goals of the South Boston Municipal Harbor Plan by activating the South Boston waterfront and promoting the public's enjoyment of Fort Point Channel and Boston Harbor. The Project is designed to be consistent with the Municipal Harbor Plan.

1.7.5 Fort Point Channel Watersheet Activation Plan

The BRA's 2002 Fort Point Channel Watersheet Activation Plan provides a vision for the future of the Fort Point Channel and the area immediately adjacent. The Plan also highlights strategies to continue improvements to the Fort Point Channel, as well as combine the efforts of interested parties and permitting agencies to reinforce the Plan. In particular, planning goals include:

- the activation of the Fort Point Channel and its edges and the provision of special destination facilities so as to attract the public and generate activity on a year-round basis;

- the establishment of strong connections between Fort Point Channel, the Harborwalk and other waterfront attractions and destinations; and

- the enhancement of public access (pedestrian, transit, bicycle, water) from all Boston neighborhoods and from Downtown to Fort Point Channel.

Seaport Square, located adjacent to the Fort Point Channel, will advance the goals of the Plan by:

- Introducing a pedestrian connection along Old Sleeper Street between existing segments of the Harborwalk between the Children's Museum and the Federal Courthouse;

- Enlivening the area with new restaurants and outdoor seating;

- Enhancing public access to the Channel by providing up to $5 million to upgrade and improve the area along Old Northern Avenue; and

- Establishing special public destinations along the Channel and waterfront, attracting many to the site through the installation of art in open spaces, and the activation of additional public spaces. The edges of the Fort Point Channel will be drawn into the Project.

1.8 Project Alternatives

As required by the Certificate on the ENF, this section discusses previously-considered site planning alternatives, particularly how site planning has been influenced by existing infrastructure, with the aim of demonstrating how the preferred alternative avoids, minimizes, and mitigates environmental impacts. It also describes the as-of-right alternative as well as a No Build Alternative to provide a baseline against which to compare Project impacts. Finally, it discusses alternative Project layouts that redistribute Northern Avenue buildings and heights to address concerns relating to wind and shadow impacts.

1.8.1 Previously-considered Site Planning Alternatives

The Proponent and the BRA held discussions and working sessions throughout the past three years to create a shared vision for the Seaport Square master plan. These meetings strengthened the design and helped the Proponent, architects and designers gain a better understanding of the character, role, and wider urban objectives to be considered during Seaport Square's development. Previous planning studies for the area were consulted to ensure that the Project was consistent with the concepts in these plans and to avoid approaches that were not supported by these planning studies.

The Seaport Square master plan was based on the planning principles of the Seaport District as described in the Seaport Public Realm Plan prepared by the BRA and published in February 1999. The main principles used as guidelines throughout the design process include:

- Integrating the proposed east-west street network with existing city streets;
- Creating an open space and civic use plan that integrates the waterfront into the experience of urban life;
- Preserving and strengthening the Harborwalk and the associated civic programs;
- Creating a mixed–use neighborhood;
- Connecting to the waterfront from north-south streets; and
- Preserving the character of the Fort Point Channel Landmark District.

Beyond these guidelines, a number of conditions were influential during the planning of Seaport Square. A discussion of these conditions and related alternatives is provided below.

Transportation

The planning that took place for the South Boston waterfront envisioned development similar to Seaport Square and has been the basis for the Project. Through the various planning studies, the capacity of the transportation system was evaluated and was determined to have capacity for a project of the proposed size and density. The Proponent used these studies as a guide for Project design.

Following the guidelines in the Seaport Public Realm Plan, the roadway grid system in the adjacent Fort Point Channel Landmark District was influential in the design of the roadway system for Seaport Square. East-west corridors were analyzed to determine how traffic could flow most efficiently and how vehicles, pedestrians and bicyclists would move safely through the Project Site.

For north-south movements, the Seaport Public Realm Plan included a concept for a street linking Summer Street to the waterfront. Earlier plans for Seaport Square did not include a connection of this nature – an urban street aligned with buildings and open spaces- but rather a vehicular only off-ramp from Summer Street down. However, as planning and urban design progressed, it became apparent that the link between Summer Street and the waterfront should be of a more urban nature, i.e. a street for vehicular and pedestrian use, as a part of an urban neighborhood. The Proponent named this street Harbor Street. A previous plan included a Harbor Street connection to Summer Street, but the Harbor Street route was indirect, going around Seaport Hill. This configuration would have separated the

Seaport Hill open space from the surrounding buildings, and decreased the efficiency of the roadway. In the currently proposed plan the roadway has been straightened, allowing open space to be created on both sides of the road, providing a safer alternative to crossing Harbor Street, and enhancing mobility through the Project Site.

The proximity of South Station to the Project Site and the MBTA's Silver Line's route through the Project Site, have also been integral to the planning of Seaport Square. Public transit is necessary both to ensure the environmental sustainability of Seaport Square and for the economic development of the area. Therefore, the Project has been designed to take advantage of the transit facilities by locating the entertainment portions of the Project proximate to South Station and the Silver Line stations and by integrating an improved or new MBTA Silver Line headhouse into Block J and Block C. An additional free standing Silver Line headhouse will be designed as a pavilion, with an architectural presence, at the edge of Seaport Square Green and Seaport Boulevard –one of the most central locations in the whole plan. Situating a new entrance to the Silver Line in such a location reflects the plans promotion and endorsement of public transportation.

Public Access to Waterfront

Seaport Square has been designed to capitalize on the proximity of the Project Site to the waterfront. It creates pedestrian, bicycle and vehicular routes to the waterfront and provides amenities along those thoroughfares. As mentioned above, Harbor Street's route was adjusted to improve access between Summer Street and the waterfront. This connection is especially important for people attending events at the BCEC who may want to enjoy the waterfront during their visit.

Public access to the waterfront has also been facilitated by changes to the building program. Alternative program uses were studied, including a retail district located within the L Blocks. This alternative was rejected as it did not connect to and thus strengthen the planned retail at Fan Pier and along Northern Avenue. Entertainment and retail space has been added along Northern Avenue, with the goal of bringing people to the area and to the adjacent waterfront. Previous plans included more office space along Northern Avenue than is currently proposed; a larger proportion of office space would have made office workers the population most likely to frequent these areas and would not have resulted in the vibrant nighttime and weekend activity that the Proponent hopes to attract.

Impacts to Historic Resources

Blocks H, J, K and Q are within the Seaport Boulevard/Boston Wharf Road Protection Area, along the perimeter of the Fort Point Channel Landmark District were designed with respect to the urban fabric, usage and character of the Landmark District. Building heights were restricted to match those of the Landmark District and likewise with the programs assigned to these buildings. Block K was changed several times, following BRA comments, to appropriate the massing, orientation and setbacks to the character of the Landmark District.

The Chapel was moved to Block H instead of Block J in order to give it more public presence and to create a more suitable gateway condition on entering the Seaport district from the downtown. The moving of the Chapel to Block H also enabled the creation of an additional public space in front of the Chapel –to provide both a larger area for pedestrians crossing Seaport Boulevard and Sleeper Street and to highlight the 'public' façade of the Chapel, a pause from the continuous street wall of the neighborhood.

Open Spaces

The Seaport Square Project consists of three major interconnected open spaces, which act both as connectors and as urban destinations in themselves: Seaport Square Green, an urban open space that both anchors the Project to the site and connects it to the larger-scale public space network; Seaport Hill, a residential neighborhood along the newly created Harbor Street that sits in close proximity to numerous amenities of urban living, including the waterfront, Downtown Boston, and the new Seaport Hill open space; and Seaport Boulevard, the major artery designed to accommodate and invite urban commerce of every scale. In response to the South Boston Municipal Harbor Plan, open spaces were planned to connect to the adjacent Fan Pier Park to more fully connect with nearby open spaces as well as the waterfront.

1.8.2 As-of-Right Alternative

Based on the BRA Scoping Determination and further discussions with the BRA, where appropriate, impact studies compare the proposed Project to either existing conditions or to an as-of-right alternative, whichever has greater impacts. Because the Project Site is currently occupied by surface parking, the existing condition generally provides a less impactful comparison. We have accordingly modeled an as-of-right alternative which assumes the same parcelization of the site as the proposed Project, but with buildings which conform to height and floor area ratio limits of underlying zoning, i.e. limits for PDAs allowed by applicable Harborpark zoning in Article 42E for all Blocks except for Block Q, which is located in a M-4 district, where we have used M-4 zoning height and floor area ratio limits. To account for floor area which would be allowed on Blocks currently designated as open space, the floor area ratios have been calculated site-wide, and have applied unused FAR from open space Blocks to nearby building Blocks. For Blocks subject to the approved South Boston Municipal Harbor Plan (Block A and portions of Blocks B, G, H and M-1), the MHP height limits have been used where they are more restrictive. The Project has assumed a 30% site-wide open space requirement from Harborpark zoning, and has assumed compliance with the MHP's open space aggregation rules.

An as-of-right alternative with a FAR of 4.25 and a maximum height of 200' would allow for approximately half the square footage included in the proposed Project. Due to the decrease in program as well as in height, the resulting project would have decreased traffic and shadow impacts. However, a development with the reduced scale and program would not be financially feasible and therefore would not be built. As detailed below, without this

Project as proposed, the many benefits associated with Seaport Square, including environmental improvements, would not be realized. The Seaport area would remain a vast area of parking lots without activated public open space or planned infrastructure improvements.

Analysis for daylight, wind and shadow for the as-of-right alternative are as follows:

Daylight: In most cases, the daylight obstruction values for the as-of-right alternative will be within the range or lower than daylight obstruction values of the surrounding area or proposed Project. The daylight obstruction values are typical of densely built urban areas.

Wind: With respect to the as-of-right alternative, the primary difference from the proposed Project is the reduction in height of many of the buildings, while the majority if not all of the lower 60 foot to 65 foot podiums have remained unchanged. It is expected that the changes to the building height will have little influence on the pedestrian wind conditions which will be similar to those described for the proposed Project. The fact that some of the taller portions of the larger buildings have been slightly reduced in the as-of-right condition ensures that the down-washing of wind from the upper towers to grade will be similar to the conditions described for the proposed Project. In addition, any other slight modifications to the buildings will be captured during the detailed wind tunnel testing set to occur for each separate block.

Shadow: The shadows resulting from the proposed Project and the as-of-right alternative are very similar. In many cases there are no net new shadows beyond those created as a result of the as-of-right alternative and in other cases the proposed Project creates only minor new shadows beyond those created by the as-of-right alternative.

1.8.3 No Build Alternative

The No Build Alternative would leave the Project Site as it exists currently - 23 acres of low cost commuter parking lots, undeveloped parcels, and the Chapel of Our Lady of Good Voyage, the only existing building on the Project Site. The environmental impacts related to the Project would not occur, including impacts from transportation and wastewater generation and impacts on historic resources. The associated population increase, both resident and nonresident, would also not occur. However, without the development of the Project, the many benefits that Seaport Square proposes, including environmental improvements also would not occur.

Ten intersections in the Project area currently operate at level of service (LOS) E or F. As described in the Chapter 3, Transportation, Project mitigation includes significant improvements to three of those intersections. Under the No Build Alternative, those improvements would not be made and the existing poor level of service would persist. In

addition, the No Build alternative would not include the proposed new connection between Seaport Boulevard and Summer Street, as well as numerous pedestrian connections and new open spaces.

Currently, stormwater falls onto the mostly impervious parking lot, and flows into the stormwater system the parking lot surfaces. Under the No Build Alternative, this condition would remain. The proposed Project, however, will decrease the impervious area of the Project Site from approximately 95% to 76%, through the inclusion of new open spaces and landscaping. These pervious surfaces will reduce stormwater runoff during storm events and decrease the pollutants that are washed into Boston Harbor. In addition, green roofs will reduce the volume of stormwater runoff and minimize Project impacts on the stormwater conveyance system. The proposed pervious surfaces and green roofs will also decrease the heat island effect that is caused by the existing, expansive paved surfaces.

The No Build Alternative would prevent the many environmental benefits associated with the Project from being realized, including a decrease in stormwater runoff from the site into Boston Harbor, improved transportation mobility through the South Boston Waterfront, and the creation of a new open spaces. The Project will also provide other benefits to the City of Boston, as described in Section 1.3, above, including development of a vital new neighborhood, increased tax revenues, new linkage funds, construction and permanent jobs, and new civic spaces, including a new public library branch and a new visitor's center.

1.8.4 Alternative Project Layout —Northern Avenue

The MEPA Certificate on the ENF required that the Proponent evaluate an alternative that redistributes the buildings and heights proposed for the portion of the Project located along Northern Avenue. The Certificate specifically cited concerns about wind and shadow impacts that might have resulted from the development plan presented in the ENF. As directed, the Proponent studied various alternative configurations of buildings and heights along Northern Avenue, and has selected the current Preferred Alternative from among the variations studied which avoids the canyon-like effect by redistributing the massing away from Northern Avenue. This new Preferred Alternative is described in Section 1.2, above.

1.9 Performance Standard Concept

The Seaport Square Project will provide numerous environmental and public benefits. The Project will provide civic and public uses and create a sense of place along the South Boston waterfront. Where asphalt parking lots now exist, the Project will provide 23 well-designed, sustainable buildings, creating a new neighborhood with wide sidewalks adjacent to new retail establishments, landscaped areas, and welcoming open spaces for residents, office workers and visitors alike.

The Seaport Square Project complements the City's built heritage, while fostering environmentally responsible growth. Seaport Square enhances the public realm through its creation of a truly vibrant 24-hour/7-day a week urban waterfront neighborhood with substantial open space and civic uses that infuse the waterfront with urban life. Well designed public spaces invite people to connect with each other in meaningful ways. The open spaces of Seaport Square are carefully planned in order to engage people day and night by providing new places to live, work, relax and recreate.

Open spaces, which will take advantage of the views of Boston Harbor and natural lighting have been planned to maximize their full potential. Building heights and Project towers have been planned to minimize any potential impacts in Chapter 91 jurisdictional land as well as maximize public benefit, views and public access. The Project will be LEED-ND Certifiable at least at the Silver level. Impacts from traffic, wind, shadow, daylight as well as other potential impacts are summarized in ES-4 and underscore Seaport Square's strong commitment to environmental protection while creating a new and exciting neighborhood.

The benefits from the proposed Project far outweigh the potential environmental impacts from the proposed Project. In addition to the public benefits already described in Section 1.4 above, the Proponent has committed to extensive mitigation measures to ameliorate potential environmental impacts of the proposed Project which are described in Section 3.3.3.

1.10 Project Phasing

As described in Section 2.10 of the PNF/ENF submitted in June, 2008, the Proponent originally contemplated beginning construction of Phase 1, followed by construction of the remainder of the Project in one continuous construction sequence, with the entire Project completed by 2014. Changes in the real estate and financial markets since that time have made this plan unfeasible, resulting in the Proponent changing its approach to Project delivery to a phased build-out.

As previously proposed, **Phase 1** will include Blocks A, H and J; the BRA Board has approved a waiver of further review for Block A, while a Phase 1 Waiver was granted by MEPA allowing all three Blocks to commence construction prior to completion of the EIR. Block A is a gateway site that will provide a new waterfront way along the City-owned Old Sleeper Street to provide a pedestrian connection linking existing Harborwalk segments between the Children's Museum and the Federal Courthouse, as well as an inviting program of restaurants, retail and housing. Block H relocates a neighborhood institution, Chapel of Our Lady of Good Voyage, and Block J will create a much-needed edge to Seaport Boulevard on its south side, with a two-story base of stores and restaurants, the first in an shopping promenade planned to serve as an anchor to the entire neighborhood.

Before creating a Project phasing schedule beyond Phase 1, the Proponent collaborated with the BRA to design a new plan for the program and a development schedule of individual Blocks to ensure a cohesive build-out for each phase, and an appropriate schedule for the delivery of public benefits. Figure 1-39 shows the proposed phases. Figures 1-40 to 1-42 are circulation diagrams by phase.

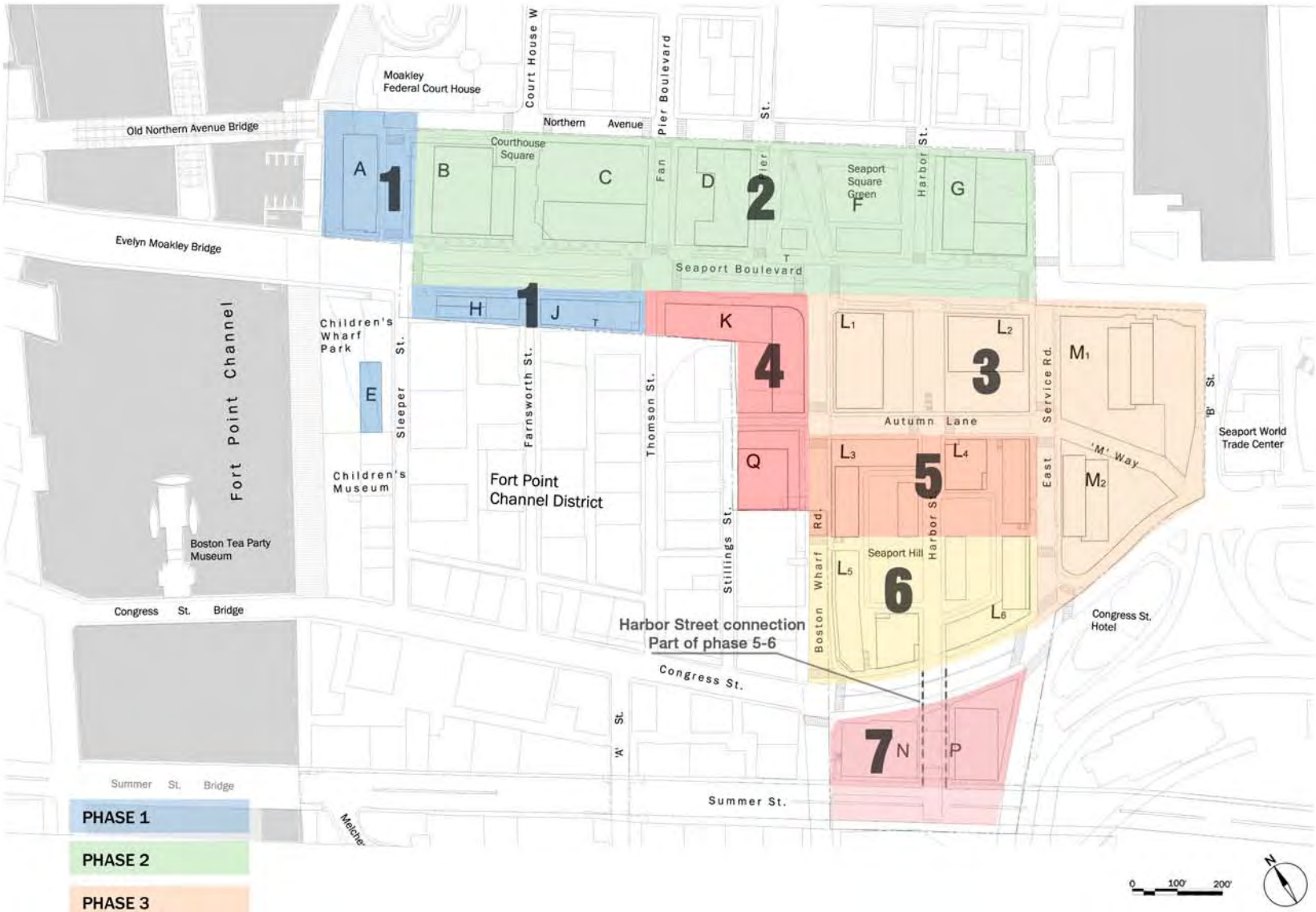
Phase 2 is a significant phase which includes Blocks B, C, D, F and G and revises the original use plan from dominant office (three Blocks) with pedestrian retail, hotel and open space to dominant residential use (two Blocks), office (one Block), retaining the planned pedestrian retail, hotel and open space. This shift in use program supports BRA objectives to create significant housing in the Seaport District, and the sequence of build out creates a mixed-use program consistent with the goal of a vibrant urban neighborhood, complete with Seaport Square Green, the first of two significant open spaces planned for Seaport Square.

The changes in use for Blocks C and D from office/retail to residential/retail are also intended to address BRA urban design staff and community suggestions that the height and massing of the original plan be revised to open up Northern Avenue in order to avoid a canyon-like effect; that entertainment uses should be located at Block C rather than Blocks L1 and L2; and that the visibility of Blocks L1 and L2 be maximized along Seaport Boulevard proximate to the Central Artery/Tunnel connections.

The use program and massing changes in Phase 2 are also designed to better complement the Fan Pier development, adjacent to Seaport Square.

Phases 3 and 4, Blocks L1, L2, M1, M2 and Blocks Q and K will complete the build-out around the Seaport Square Green, (across Seaport Boulevard) and establish a new pedestrian loop of Autumn Lane to Fan Pier Boulevard to Northern Avenue to East Service Road. These streets will enhance the connectivity and flow between the existing Boston Wharf District, the Fan Pier area, and the eastern continuation of Congress Street. In addition to new streets, these phases create pedestrian ways and public spaces including the L Block passage (Harbor Way), M Block passage (M Way) and the extension of Autumn Lane to meet Thomson Place, which extends to Fan Pier Boulevard on the north side of Seaport Boulevard.

Phases 5 and 6 will establish the Seaport Hill area, a significant residential section of Seaport Square including the Seaport Hill Green. It will also include the creation of Harbor Street which connects the elevated Summer Street to Seaport Square, Seaport Boulevard, and the waterfront, an important urban connection for South Boston linking isolated facilities such as the South Boston Convention Center and the Harborwalk.



PHASE 1

PHASE 2

PHASE 3

PHASE 4

PHASE 5

PHASE 6

PHASE 7

SEAPORT SQUARE
IN SOUTH BOSTON

Figure 1-39

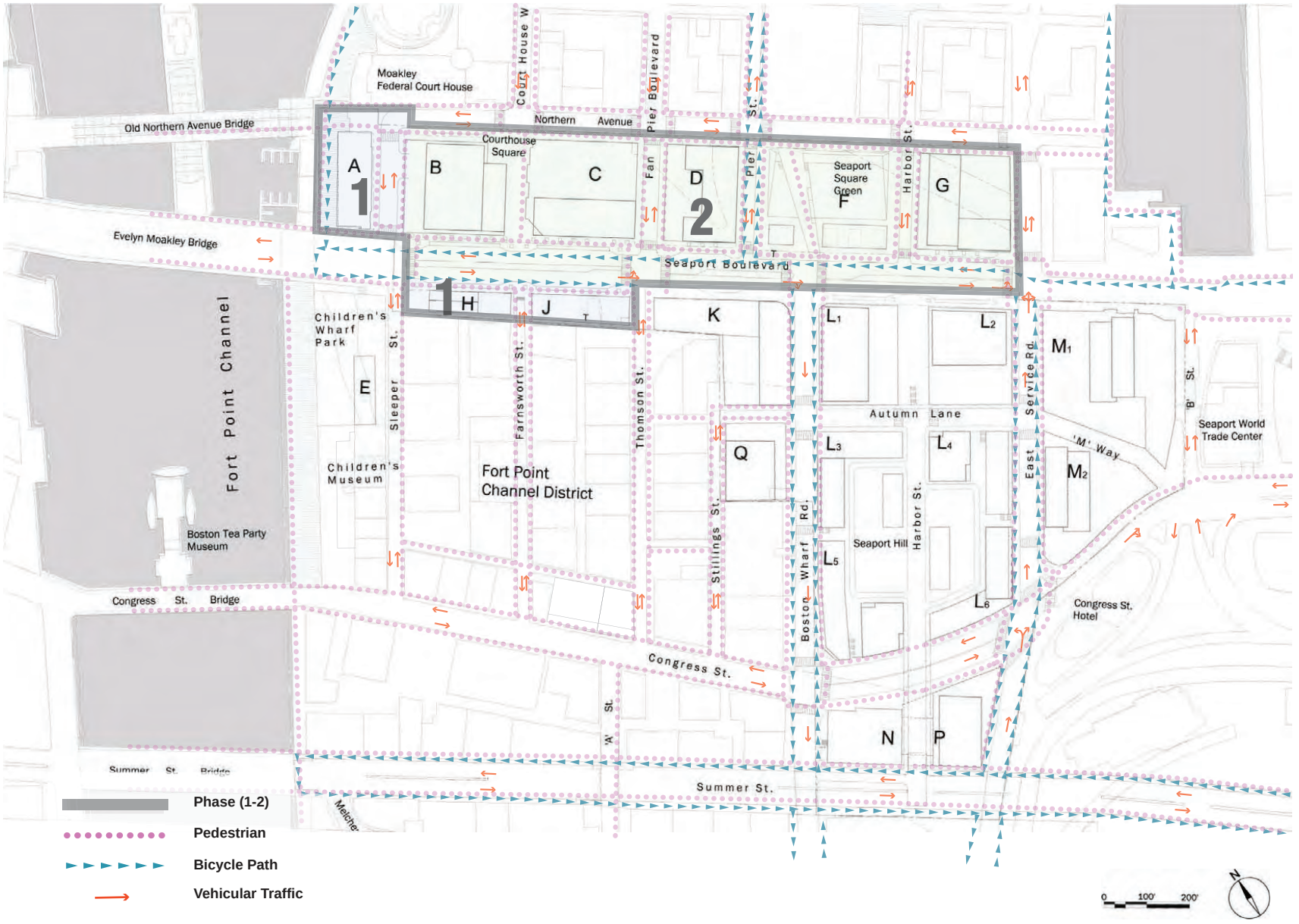
Project Phases

GALE INTERNATIONAL

Morgan Stanley

WS DEVELOPMENT

prepared by:
KPF



SEAPORT SQUARE
IN SOUTH BOSTON

Figure 1-40

Phases 1-2 Circulation

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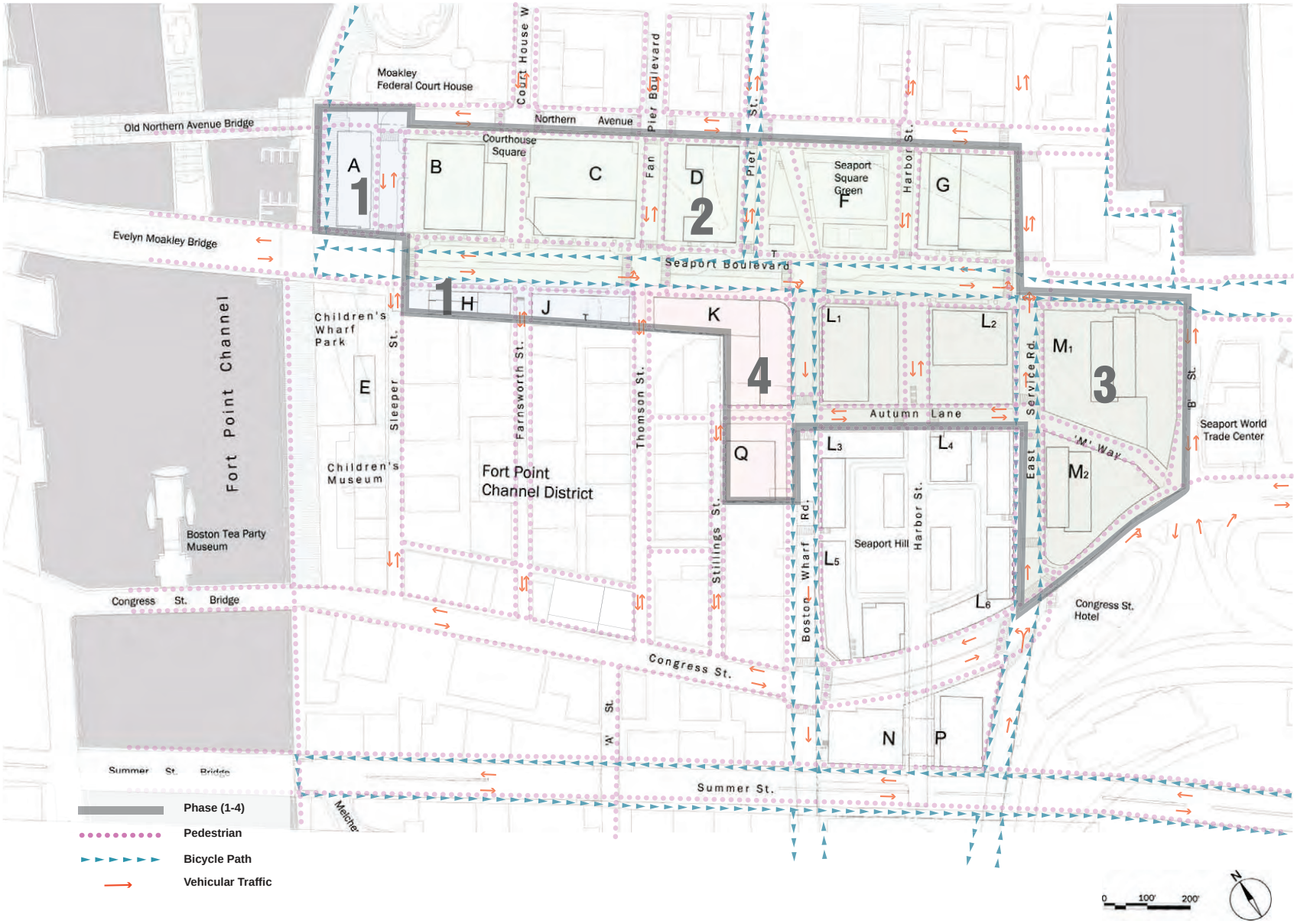

SEAPORT SQUARE
IN SOUTH BOSTON

Figure 1-41

Phases 3-4 Circulation

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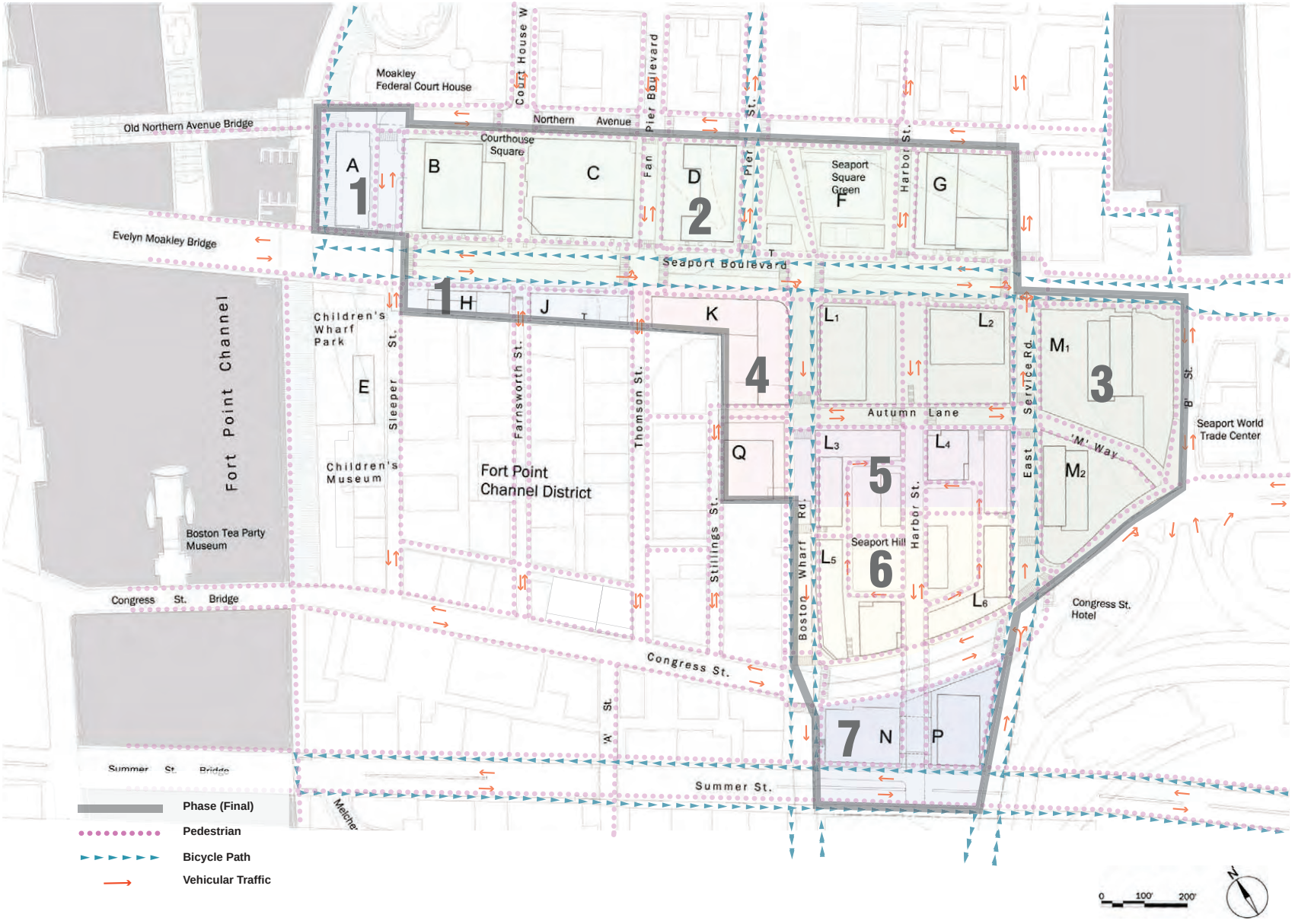

SEAPORT SQUARE
IN SOUTH BOSTON

Figure 1-42

Project Completion Circulation

GALE INTERNATIONAL

Morgan Stanley

WS DEVELOPMENT

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KPF

Phase 7 creates another new urban destination, a performing arts center and education complex, and adds to the connections established in Phases 5 and 6.

1.10.1 Phasing Plan

A tentative Project plan is set forth below, although the Proponent may construct the phases in a different sequence if market conditions so warrant.

- Phase 1: Blocks A, H and J
- Phase 2: Blocks B, C, D, F and G
- Phase 3: Blocks L1, L2, M1 and M2
- Phase 4: Blocks K and Q
- Phase 5: Blocks L3 and L4
- Phase 6: Blocks L5 and L6
- Phase 7: Blocks N and P

1.10.2 Community Benefits

Certain public and community benefits, such as affordable housing, linkage payments and job creation are linked to the construction and or completion of a building within the Project, while others may be linked to construction or completion of all buildings within a specific phase of the Project. If all the construction on a specific Phase is not completed in one continuous building sequence, the Proponent will propose an allocation of community benefits and improvements that reasonably reflects the pro –rata portion attributable to an individual Project component.

Community Benefits of Seaport Square Master Plan:

Phase 1

- Visitor Center located in Block A
- Pedestrian way linking to the Harborwalk through improvements to Old Sleeper Street
- A new Chapel of Our Lady of Good Voyage to replace the current, aging structure
- Improvements to Parcel E at Children's Wharf Park

Phase 2

- 1.25 acre Seaport Square Green, adjacent to Fan Pier Park

- A new MBTA Silver Line headhouse on the south-west side of Seaport Square Green. The addition of the new headhouse will create an active and lively open space environment and easy pedestrian access to the Green and adjacent waterfront park.

- Open space pavilions

- A new branch of the Boston Public Library

- Exhibition space

- Public open space at Courthouse Square across from the Moakley Federal Courthouse providing a pedestrian link from the Courthouse to the MBTA Silver Line

- New Seaport Boulevard as a tree lined urban connection and destination (the area adjacent to each Block will be improved upon completion of that Block)

- A $5 million contribution to upgrade and improve Northern Avenue including landscaping, sidewalks, lighting, and traffic upgrades in the area between the Northern Avenue Bridge and East Service Road

- Farnsworth Pedestrian Way, Thomson Street to Northern Avenue and the Pier Street Extension

Phase 3

- Seaport Boulevard and connections to the Seaport World Trade Center area

- Harbor Way, with open space between Blocks L1 and L2

- The L Block pedestrian link to Autumn Lane

- The M Block pedestrian link to Congress Street and the Core Block

- Autumn Lane, a new vehicle link from Boston Wharf Road to East Service Road

Phase 4

- Completes and frames Fort Point Channel District

- Boston Wharf Road, continuation, connecting southward to the '100 acre' area

- Autumn Lane continuation through to Stilling Street and further to create the connection to Thomson Street

Phase 5-6

- Seaport Hill open space
- Cultural Corridor amenities including Sculpture Garden and public art
- Harbor Street completion as a new pedestrian and vehicular connection between Summer Street and Autumn Lane
- Car sharing facilities available to visitors and residents, accessed from underground parking garages

Phase 7

- Education complex complete with planned privately funded Pre-Kindergarten to Grade 1 public pilot educational facilities and a new K-12 educational facility
- Performing arts center completion with plans for capacity of approximately 1,800 people reinforcing Seaport Square as a cultural destination with the city and providing an exciting new venue for the performances arts
- Cultural Corridor completion: a series of art programs and spaces connecting the elevated Summer Street and Boston Convention and Exhibition Center down to the waterfront will be created
- Off-site athletic field improvements completed for use by Seaport Square educational facilities and the South Boston community

Master Plan Completion

- 30% of the Project Site will be publically accessible open space including new streets, green spaces, sidewalks and pedestrian ways.
- The Project is targeting LEED-ND (Neighborhood Development) Silver certification or higher, and when completed, will be a model of sustainable design and one of the largest LEED-certified developments in the United States.

1.10.3 Schedule

The Proponent has developed both a Phasing Plan and a Construction Schedule designed to take advantage of construction efficiencies. Upon completion of Blocks A, H and J (Phase 1), the remaining Project will be built on a series of large "bathtubs" with below-grade floor plates for parking and access. Each bathtub will serve as the foundation upon which multiple buildings will then be constructed. Considerable construction efficiencies will be realized by constructing these bathtubs sequentially.

In addition, the phasing and construction schedule will allow the Proponent to take maximum advantage of the remaining site for storage, parking and construction lay-down areas. This is designed to minimize the impact on local streets and neighboring property owners. It is anticipated that the parking lots will remain in operation until such time as work commences on a specific phase. Figures 1-40 to 1-42 provide a site circulation plan illustrating how motor vehicles, pedestrians and cyclists will be accommodated on the site during each phase of the Project. Figures 1-16 and 1-39 show an overall view and Project phasing, while Figures 7-2, 7-4 and 7-6 show proposed wastewater, water and stormwater infrastructure, respectively. Sites used for construction staging and storage will be cleaned up after construction and returned to use as surface parking, unless the site is scheduled for construction activities in the short-term. As further detailed in Seaport Square's Development Schedule (see Appendix F), initiation of Phase 1 construction takes place in 2011 with the rest of Project construction through 2019.

EXECUTIVE SUMMARY

This Draft Project Impact Report/Environmental Impact Report (Draft PIR/EIR) has been prepared in response to comment letters responding to the Project Notification Form/ Environmental Notification Form (PNF/ENF) submitted on June 2, 2008; discussions with the Boston Redevelopment Authority (BRA), the Massachusetts Environmental Policy Act Office (MEPA), and other local and state agencies; a BRA Scoping Determination for the Draft PIR is provided in Appendix A; and the Certificate issued on the ENF by the Secretary of the Executive Office of Energy and Environmental Affairs provided in Appendix A.

ES.1 Introduction

Seaport Square, in South Boston's Seaport District (the Project), will be Boston's first 21st century neighborhood. Working closely with the Boston Redevelopment Authority (BRA) and other city officials, Gale International, Morgan Stanley and W/S Development Associates (collectively the Proponent) developed and designed a comprehensive master plan spanning 23 acres currently in use as surface parking lots. Located in the center of the Seaport District, Seaport Square will link numerous development projects already underway or recently completed in this rapidly transforming area, creating a seamless, vibrant location (see Figures ES-1 and ES2).

Seaport Square represents a unique placemaking opportunity of mixed uses including residences, shops, office space, cultural institutions and public spaces that will shape the way people live, work and play in the city for the next century and beyond. As such, Seaport Square aims to provide a fitting accompaniment to the city's built heritage, while fostering environmentally responsible growth.

The Project establishes a high standard for a continuous public realm of new streetscapes, open space, and culture. The Proponent has carefully considered the vision of the BRA's Seaport Public Realm Plan and has designed the Project to recognize the goals of the Plan. Civic and cultural functions such as a library, exhibition space, a performing arts education center, and a relocated chapel, as well as storefront retail throughout the development, will activate the streets and sidewalks and create 24-hour activity.

As a transit-oriented development, Seaport Square will utilize recent public infrastructure improvements including the MBTA Silver Line. The Project will be a world-class example of a sustainable, mixed use urban infill development, as evidenced by its commitment to pursuing a LEED-Silver rating on all major buildings as well as a rating of LEED-ND (Neighborhood Development) Silver or higher for the entire Project Site. Seaport Square is poised to create many positive economic impacts including thousands of new jobs, approximately $35,000,000 of linkage funds, significant annual real estate taxes for the City of Boston and annual sales taxes for the Commonwealth, in addition to state hotel occupancy taxes, local occupancy taxes, and convention center financing fees.

Proposed by others

Seaport Square Development Project

SEAPORT SQUARE
IN SOUTH BOSTON

Figure ES-1

Proposed Project
View West

GALE
INTERNATIONAL

Morgan Stanley

WS DEVELOPMENT

prepared by:
KPF

Proposed by others

Seaport Square Development Project

SEAPORT SQUARE
IN SOUTH BOSTON

Figure ES-2

Proposed Project
View North

GALE INTERNATIONAL

Morgan Stanley

WS DEVELOPMENT

prepared by:
KPF

Seaport Square will attract residents, businesses, shoppers and visitors from across the city and across the globe and is sure to become one of Boston's most desirable neighborhoods.

ES.2 Project Program

The Seaport Square Project includes 23 buildings of varying sizes on 20 Blocks with a total of approximately 6.5 million square feet (sf) of development. The Project will include approximately 2.8 million sf of residential, 1.3 million sf of office, 1.3 million sf of retail and entertainment, 600,000 sf of cultural and educational and 500,000 sf of hotel uses. Approximately 6,500 parking spaces will be provided in underground parking garages beneath the Project Site. With the exception of the Chapel, a portion of the Block L buildings and the educational facilities, every building will include retail uses at ground level to provide an inviting and animated pedestrian experience. A breakdown of uses by Block is provided in Table ES-1 below.

Table ES-1 Seaport Square Program

Block	Total (gsf)	Retail / Entertainment (gsf)	Residential (gsf)	Office / Research (gsf)	Hotel (gsf)	Educational/ Cultural (gsf)
Block A	**86,800**	23,600	61,200	0	0	2,000
Block B	**562,200**	119,900	0	442,300	0	0
Block C	**591,000**	210,000	381,000	0	0	0
Block D	**464,000**	69,000	390,000			5,000
Park Pavilion	**9,000***	9,000	0	0	0	0
Block G	**498,000**	128,000	165,000	0	200,000	5,000
Block H	**24,300**	0	0	0	0	24,300
Block J	**86,000**	22,000	64,000	0	0	0
Block K	**281,300**	91,000	90,300	0	100,000	0
Block L1	**493,700**	78,000	0	415,700	0	0
Block L2	**415,200**	77,000	0	338,200	0	0
Block L3	**202,000**	32,000	170,000	0	0	0
Block L4	**292,000**	32,000	260,000	0	0	0
Block L5	**360,000**	25,000	335,000	0	0	0
Block L6	**249,000**	18,000	231,000	0	0	0
Block M1	**526,700**	226,700	300,000	0	0	0
Block M2	**440,500**	88,000	352,500	0	0	0
Block N	**363,700**	0	0	0	0	363,700
Block P	**400,000**	0	0	0	200,000	200,000
Block Q	**154,600**	50,800	0	103,800	0	0
Total	**6,500,000**	**1,300,000**	**2,800,000**	**1,300,000**	**500,000**	**600,000**

* Includes new MBTA Silver Line entrance.

ES.3 Summary of Public Benefits

- **New Jobs**. The Project will create approximately 10,000 construction jobs and approximately 20,000 permanent jobs. The permanent jobs will be created through the retail space, office and research uses, the new branch library, the new educational facilities and services related to the residential and hotel uses.
- **Increased Housing**. The Project includes the development of approximately 2,500 homes, including both for sale and rental units, priced to attract a broad spectrum of income levels.
- **Affordable Housing**. The Project will create approximately 325 affordable housing units representing 15% of the number of market rate units.
- **Workforce Housing**. The Project will include an additional approximately 325 units designed and priced to be affordable for people whose income is too high to qualify for formally restricted affordable housing units, but who are often still priced out of the housing market.
- **Open Space**. Approximately 34% of the Project Site will be devoted to open space including green space, sidewalks, pedestrian ways and streets. Excluding the streets, approximately 25% of the Project Site will be open space. The two largest open spaces are Seaport Square Green and Seaport Hill, at approximately 1.25 and 0.75 acres respectively; Courthouse Square will also provide an outdoor seating area.

  The Proponent will also create open spaces in areas outside of, but adjacent to, its property. Additionally, the Proponent will construct new sidewalks and pedestrian ways, and improve Seaport Boulevard, an existing public way, with trees, extensive landscaping, public art and outdoor seating.
- **Sustainable Design/Green Building**. The Project will target LEED-ND certification at least at the Silver Level. In addition, the LEED 2009 rating system for "New Construction" and "Core + Shell" projects will be pursued as applicable for the different use types at Seaport Square. The Proponent believes Seaport Square will be one of the largest sustainably-designed neighborhoods in the United States.
- **Smart Growth/Transit-Oriented Development**. The Project is a mixed-use development designed to be compact and walkable between home and work as well as walkable to area shops, cultural institutions and other leisure activities. The Project is close in proximity to the MBTA's Red and Silver Lines and embodies the major tenets of transit-oriented development (TOD), and includes the construction of a new MBTA headhouse next to Seaport Square Green. A bike share program operated by the Proponent for the past three years will continue and a large car share program available to neighborhood residents and visitors will also operate from the Project's underground parking garage.

- **New Tax Revenue**. The Proponent estimates that the Project will generate approximately $32,000,000 in annual local property taxes, $31,000,000 in annual state sales taxes, $2,600,000 in state hotel occupancy tax, $2,600,000 in local occupancy tax, and $1,200,000 toward the convention center financing fee.
- **Linkage Funds**. The Project will generate approximately $35,000,000 in housing and jobs linkage funds to the City of Boston. Notably, this linkage payment will be the largest linkage payment ever made to the City of Boston.

ES.3.1 Extraordinary Public Improvements

- **New Streets and Sidewalks**: Approximately $25 million will be spent for new public streets and sidewalks. Improvements to existing public streets will be made and new streets will be constructed including Harbor Street and Autumn Lane, Pier Street and a pedestrian extension of Farnsworth.
- **New Pedestrian Connection**: As the Fort Point Channel Watersheet Activation Plan envisions, and in addition to the numerous pedestrian connections as previously described, a new waterfront pedestrian way will be created along the City-owned Old Sleeper Street to link existing sections of the Harborwalk from the Children's Museum to the Federal Courthouse. Restaurants and outdoor seating will enliven the area during day and evening hours.
- **Northern Avenue**: The Project proposes to provide up to $5 million to be used to upgrade and improve the area along Old Northern Avenue, including sidewalks, lighting, traffic and landscaping in the area between the Northern Avenue Bridge and East Service Road. This proposed upgrade along Northern Avenue represents a shift of previously proposed funding from the Northern Avenue Bridge, which is currently being funded with federal money.
- **Bridging Grade to Summer Street**: An estimated $10 million will be spent to construct Harbor Street, which will link the elevated Summer Street to the ground level and establish a loop connecting downtown Boston and the Seaport District. Harbor Street will slope gently towards the water, crossing through the new residential neighborhood and splitting vehicular traffic east and west onto newly constructed Autumn Lane, and will then continue as a wide pedestrian path to reach Seaport Boulevard and Seaport Square Green.
- **Open Space and Landscape Improvements**: The Project includes approximately $25 million in open space and landscaping improvements, including two new major open spaces, Seaport Square Green and Seaport Hill. Courthouse Square will provide pedestrians a welcoming place to relax and Harbor Way will provide a wide pedestrian passage at the edge of Harbor Street between Autumn Lane and Seaport Boulevard. Courthouse Square through Seaport Square Green and the connections between Seaport Boulevard and Northern Avenue will provide Seaport District pedestrians a high degree of flexibility and ease of travel by foot.

- **New MBTA Silver Line Station Entrance**: The Project will add a new MBTA headhouse / station entrance at Seaport Square Green. This headhouse/ station will provide a landmark destination and convenient location along the waterfront that does not currently exist for easy public transit access to the Silver Line.

ES.3.2 Cultural, Educational and Community Contributions

- **Cultural Corridor**: Created by a physical link from Summer Street to Seaport Boulevard via Harbor Street, the Cultural Corridor will connect the Institute of Contemporary Art on the waterfront and the Boston Convention and Exhibition Center on Summer Street. Between these two buildings, new attractions will include a performing arts and education complex, sculpture gardens on Seaport Hill, exhibit and gallery spaces, public art and performance venues on Seaport Square Green, and a branch library. The Cultural Corridor will build on the arts identity of the neighboring Fort Point Channel District, and create a strong cultural component that will activate and provide year-round use of Seaport Square.
- **Performing Arts Center**: An approximately 1,800 seat facility designed for the performing arts could be located on Summer Street for use by such institutions as the Boston Ballet or the Berklee College of Music. The performing arts center will be enjoyed by locals and tourists, filling hotels, restaurants and shops. The space will also serve as arts and assembly space for the educational facilities (see below), as well as provide facilities for residents and civic groups in the local community. The feasibility of this use will depend on local demand and funding.
- **Exhibition Space**: Exhibition space is proposed adjacent to the largest open space associated with the Project, Seaport Square Green (Block G). The Proponent envisions a space where neighborhood artists can show their work, a place for arts classes and community gathering, perhaps in coordination with the ICA. This arts space will increase community interest and connection to the area.
- **Educational Facilities**: To attract families to the Project Site, a privately funded Pre-K -1 public pilot educational facility for 200 children will be located within the Project. A second educational facility, a new K-12 educational facility will provide substantial annual scholarships for city residents. After school hours, this space may be used for adult education programs or other continuing education needs of city residents.
- **Public Library**: Seaport Square will include a new neighborhood branch of the Boston Public Library to serve area residents and complement the South Boston Branch Library.

- **Chapel**: A new facility will be constructed to relocate the existing Chapel of Our Lady of Good Voyage to a site at the foot of the Moakley Bridge that is more conveniently located within the community. The new site will provide better access and visibility for the Chapel, allowing it to expand to better serve the needs of the growing neighborhood.
- **Visitor's Center**: A new Visitor Center will be located in the Block A building. The Center will provide the city an opportunity to market and promote the entire Seaport District as a new and vibrant area for living, working and shopping.
- **Off-Site Open Space Improvements:** The Proponent will work with the South Boston community to identify an off-site athletic field that can be utilized for athletic events related to the educational facility. As part of this arrangement, the Proponent will fund capital upgrades to the field(s) and fund a portion of the ongoing maintenance. Additional off-site improvements are planned for Northern Avenue, Farnsworth Street, Old Sleeper Street and Parcel E, located near the Children's Museum. The Proponent will also upgrade sidewalks adjacent to the Project Site, as well as improve the median of Seaport Boulevard.

ES.4 Summary of Impacts

ES.4.1 Transportation

Transportation conditions in the Seaport Square area were analyzed under the following scenarios:

- Existing Conditions;
- Mid-term No-Build Conditions;
- Seaport Square Build Conditions;
- Seaport Square Build with Mitigation; and
- South Boston Waterfront Long-term Conditions.

Today, the Seaport Square site is used for commuter parking lots and already generates a significant volume of peak hour vehicle trips. As these lots are replaced with Project buildings with underground parking to support on-site uses, the net increase in traffic activity associated with the Project will be disproportionately lower than if the Project was built on vacant land. Since the MBTA's Silver Line runs through a portion of the Project with the commuter rail and Red Line subway at South Station also within walking distance, and since the Project itself includes a mix of uses that will allow for a walkable neighborhood, the need for automobile use will be naturally minimized.

The transportation study found that Seaport Square contributes relatively less traffic to intersections that operate poorly under Existing and Mid-term No-Build Conditions than other area developments. With mitigation improvements, composed primarily of signal

timing phasing changes and travel lane use changes, only three of the 33 study intersections during the a.m. peak hour, two of the 33 study intersections during the p.m. peak hour, and one of the 33 study intersections during both the a.m. and p.m. peak hours will experience a relevant change in level of service between Mid-Term No-Build conditions and Seaport Square Build with Mitigation conditions.

Capacity on the Silver Line is anticipated to be adequate for the Project. Seaport Square and other area projects will not require as much capacity as initially envisioned, since the trip generation rates are lower because of the land use types and mixed uses. To some extent, development must occur along the Silver Line corridor so that Silver Line patronage will increase and follow the development patterns.

The Proponent is committed to implementing a transportation demand management (TDM) program that supports the City's efforts to reduce dependency on the automobile by encouraging travelers to use alternatives to driving alone, especially during peak periods. TDM will be facilitated by the mixed-use nature of the Project as well as its location adjacent to the Downtown, the Financial District, and to other offices, transit, and shopping in South Boston. The Proponent will commit to implementing this TDM program for Phase 1 of the Project as well as for the full build-out of the Project.

ES.4.2 Environmental Impacts

Wind

Generally, the wind conditions improved or stayed the same with the proposed Project in place. Of the 156 locations studied for annual wind conditions, 145 or approximately 93% of the locations had wind conditions which improved or remained the same from the Existing configuration to the Build with Mitigation configuration. For all test configurations, wind conditions are generally improved in the summer and fall seasons when wind conditions are more favorable and open space areas are generally more active.

Based on the results of the wind tunnel tests described, it is anticipated that the potential mitigation measures described in Section 4.1.5.3 or other mitigation measures will be implemented in order to eliminate dangerous pedestrian comfort conditions that exist today as well as with the proposed Seaport Square Project.

With mitigation, 138 of 156 locations are suitable for walking or better, only 18 of 156 locations have uncomfortable conditions, and no locations have dangerous conditions. The specific design or nature of any mitigation measures implemented is somewhat flexible, provided the aerodynamic effect is similar to or better than the mitigation measures described in Section 4.1.5.3. It has been noted that there are still a few areas where uncomfortable wind conditions remain. For these areas and others that may exceed the

appropriate pedestrian wind comfort criterion, it is anticipated that further wind tunnel studies will be performed for each individual Block in order to establish more precise mitigation during the design review process.

With respect to the as-of-right alternative, the primary difference from the proposed Project is the reduction in height of many of the buildings, while the majority if not all of the lower 60 foot to 65 foot podiums have remained unchanged. It is expected that the changes to the building height will have little influence on the pedestrian wind conditions which will be similar to those described for the Proposed Project. The fact that some of the taller portions of the larger buildings have been slightly reduced in the as-of-right condition ensures that the down-washing of wind from the upper towers to grade will be similar to the conditions described for the proposed Project. In addition, any other slight modifications to the buildings will be captured during the detailed wind tunnel testing set to occur for each separate block.

Shadow

The Project will create new shadows in the area since the existing Project Site generally consists of parking lots. The shadows resulting from the proposed Project and the as-of-right alternative are very similar. In many cases there are no net new shadows from the proposed Project beyond those created as a result of the as-of-right alternative, and in other cases, the proposed Project creates minor new shadows beyond those created by the as-of-right alternative. The Project is expected to result in shadows typical of densely-built urban areas. However, existing open spaces will generally be unaffected by new shadow, and much of the new shadow falls onto adjacent streets and the Project Site itself. As the design of buildings moves forward, and the massing is refined, it is anticipated that new shadow impacts will be reduced. In general, the area will include areas of sun and shade for residents and visitors to enjoy.

Daylight

The daylight analysis conducted for the Project describes existing, as-of-right, and proposed daylight obstruction conditions at the Project Site and in the surrounding area. Since the Project Site generally consists of surface parking lots, the results of the BRADA analysis indicate that the development of the Project will result in increased daylight obstruction at the Project Site over existing conditions. Overall, the daylight obstruction values for the proposed Project will be within the range or lower than daylight obstruction values of the surrounding area. The resulting conditions will be similar to the as-of-right conditions in most cases. The daylight obstruction values are typical of densely built urban areas. In addition, this analysis used the massing on each Block, and as the Project buildings are designed, it is anticipated that the addition of architectural features, such as setbacks and curved facades, will result in a decrease in the daylight obstruction values as presented above.

Solar Glare

Reflective glass is not proposed for any of the buildings at this time and therefore, no solar glare impacts are anticipated.

Air Quality

Using conservative estimates, the carbon monoxide (CO) concentrations at the nearest receptors for impacts from the intersection, the heating boilers, and emergency generator units, plus monitored background values, are well under the CO National Ambient Air Quality Standards (NAAQS). In addition, maximum cumulative impacts from the heating boilers, garage vents, cooling towers, and emergency generators plus monitored background values are also well below the NAAQS for sulfur dioxide (SO_2), nitrogen oxides (NOx) and fine particulate matter (PM-10 and PM-2.5).

Greenhouse Gas

Overall, the Project is expected to achieve a reduction in greenhouse gas emissions from the baseline case to the proposed Project of almost 15%. The reduction in emissions is generally attributed to a reduction in stationary source emissions through use of high efficiency Block designs and high efficiency equipment to reduce energy usage.

Noise

Noise levels due to the Project at studied receptor locations are below the most stringent City of Boston Noise Zoning requirements for a nighttime residential zone for street-level receptors, and they are below existing measured nighttime baseline noise levels. The increase in sound level is three dBA or less, which is generally imperceptible. Therefore, the results of the analysis indicate that the proposed Project can operate without significant impact on the existing acoustical environment.

Chapter 91

The Project complies with the South Boston Municipal Harbor Plan and will activate the South Boston waterfront with approximately 2,500 new residential units and ground-level uses that include restaurants, retail shops and commercial uses. The new neighborhood will provide activation and expanded public use of the South Boston waterfront and Fort Point Channel during weekend and evening hours. Ground-level restaurant uses will include outdoor seating and pedestrian connections to new open space areas and the waterfront. The community will enjoy the arts shows and exhibits, and gathering with neighbors and friends along this site, moving from open space areas to more intimate spaces. A new Cultural Corridor along with other community contributions will further enliven the area.

Geotechnical / Groundwater

A variety of foundation systems will be required based on the proposed building structural requirements, parking needs and site constraints. Groundwater level measurements obtained at monitoring wells throughout the area will be carefully reviewed and data will be incorporated into final plans for all below-grade construction.

The Proponent will coordinate all underground activities with the Boston Groundwater Trust. With the vast majority of the Project (with the exception of Blocks H, J, K and Q) located outside of the Fort Point Waterfront Subdistrict, impacts to existing groundwater conditions are anticipated to be negligible.

Hazardous Materials

Site history research and known environmental conditions indicate that no long-term remedial systems are expected for the Project.

Chemical testing of the fill materials at each Block will be undertaken as part of the planned subsurface exploration programs during Project design, prior to construction. This testing will identify any contaminants that may be present, characterize the material to be excavated as required by landfills, develop appropriate soil management protocols and identify regulatory requirements. The work will be coordinated with the proposed construction.

Solid Waste and Recycling

The Project will generate solid waste typical of other residential/mixed-use projects. Solid waste generated by the Project will be approximately 13,200 tons per year.

Recycling by residents and tenants of the Project will be encouraged and coordinated. To encourage recycling, the Proponent will implement a recycling program throughout the Project that focuses on the specific needs of each use type.

Construction

In accordance with the City of Boston's Construction Management Program, a Construction Management Plan (CMP), which will address public safety, construction schedule, staging areas, signage, perimeter protection, material handling, truck routes, air quality, noise, vibration, groundwater, protection of utilities, protection of adjacent structures and rodent control, will be prepared and submitted for BTD approval. Periodic meetings will also be held with neighborhood representatives to describe the ongoing work and to discuss measures that will be taken to minimize construction impacts on the community.

Sustainable Design

The Project will become a world-class example of a sustainably designed, mixed use urban infill development, as evidenced by its commitment to pursuing LEED-Silver certification on all major buildings as well as LEED-ND Silver or higher for the entire Project Site. Energy-efficient buildings, pedestrian-oriented activation of the streetscape and utilization of alternative transportation modes to facilitate a lifestyle that is less dependent on automobile-based transportation are fundamental to the design of the Project. Guidance will be provided both to design and construction teams as well as future office tenants and residents to minimize energy consumption, reduce waste generation, and optimize sustainable property management practices.

Open Space

The open space impact assessment found that overall, the open space ratio for the impact assessment Study Area, after completion of the Project, will be close to the City's planning goal of 2.5 acres of open space per 1,000 residents, with a total of 2.41 acres per 1,000 residents. The active open space ratio for residents and non-residents is currently below the City's planning goal, and will continue to be below the City's planning goals after completion of the Project. The passive open space ratio for residents and non-residents will be above the City's planning goals. This ratio, however, is above the open space ratios for similarly dense neighborhoods, such as Central Boston and the South End. In addition, if the Study Area excluded resident and non-resident populations that are unlikely to use the open spaces within the Study Area because they are beyond one-half mile and one-quarter mile (considered reasonable walking distances that users would travel to reach local open space and recreation areas) from the open spaces, the ratio would be above the City's planning goal.

ES.4.3 Historic Resources

The Project will include the demolition of the Chapel of Our Lady of Good Voyage at 65 Northern Avenue, a property included in the MHC Inventory. The Proponent has initiated consultations with MHC and BLC in an effort to identify appropriate means to mitigate the proposed demolition of the Chapel. The Proponent will also work with BLC staff regarding properties within the Protection Area of the Fort Point Channel Historic District. The sensitive design of the Project will complement the adjacent historic district, and design and visual impacts are anticipated to be limited. In addition, shadow impacts to historic resources from the Project are anticipated to be limited.

ES.4.4 Infrastructure

Due to the site's urban location and recent major infrastructure improvements in the area as part of the Central Artery/Tunnel and Silver Line Transitway, the area is generally well served by public and private utility infrastructure. Continued coordination with the City of Boston, Boston Water and Sewer Commission, private utility companies and other Project stakeholders is required and anticipated.

Stormwater

Due to the inclusion of large open spaces, green roofs and site landscape improvements, the Project will result in an approximately 20% reduction in the amount of impervious coverage on the site, significantly reducing the peak runoff rates from the site. Since the Project is reducing runoff generated from the Project, the Proponent does not anticipate significant stormwater infrastructure capacity issues.

Water

The Proponent has met with BWSC representatives and found that there are no known capacity issues with either the local water distribution system or the transmission main. As such, the distribution system should have sufficient capacity to supply all phases of the Project. In addition, the Proponent is committed to implementing practical measures to reduce its demand on the public water supply.

Wastewater

The wastewater infrastructure is anticipated to have adequate capacity for the Project. The Proponent intends to perform studies requested by the BWSC, and perform the detailed capacity analysis as part of the BWSC Site Plan Review Process and application for a General Services Agreement.

ES-5 Conclusion

Seaport Square, a new urban neighborhood that is a model of sustainable design and development, offers a broad range of public benefits, public improvements and cultural and community contributions to the City of Boston and its residents. The Project is designed to enhance recent public infrastructure improvements including public transportation, access to major roadways and access to Boston's Logan International Airport. Located on 20 city blocks in the center of South Boston's Seaport District, Seaport Square is uniquely positioned to significantly advance the goals of the BRA's Seaport Public Realm Plan to create a vital, new location, further enhancing the city's global competitiveness and stature as a world-class city.

9.0 RESPONSE TO COMMENTS

This Chapter provides responses to the BRA Scoping Determination, MEPA Certificate and the comment letters that were received on the Project Notification Form/Environmental Notification Form (PNF/ENF) filed with the BRA and MEPA on June 2, 2008, and on the Notice of Project Change (NPC) filed with MEPA on March 31, 2009. The letters have been reproduced and individual comments coded in the margins. Responses to the comments follow each individual letter and can be matched using the comment code numbers. Letters were received from the following State Agencies, City of Boston Departments, Organizations, and individuals:

BRA Scoping Determination, MEPA Certificate and Letters Received on the PNF/ENF
Boston Redevelopment Authority Scoping Determination
Massachusetts Environmental Policy Act Certificate
Department of Environmental Protection, Northeast Regional Office
Massachusetts Port Authority (two of the same letter sent to the BRA and MEPA, only one is responded to below)
Massachusetts Water Resources Authority
Office of Coastal Zone Management
Massachusetts Historical Commission
Boston Redevelopment Authority, Memo from Katie Pedersen
Boston Redevelopment Authority, Memo from Jim Fitzgerald
Boston Transportation Department
Boston Environment Department
Boston Groundwater Trust (two of the same letter sent to the BRA and MEPA, only one is responded to below)
Boston Fire Department
Boston Parks and Recreation Department
Public Works Department
Boston Water and Sewer Commission
Boston Preservation Alliance
The Boston Harbor Association (two of the same letter sent to the BRA and MEPA, only one is responded to below)
South Boston Neighborhood Development Corporation
Greater Boston Chamber
Seaport Transportation Management Association
WalkBoston
Poseidon Enterprises, Inc.
Goodwin Proctor LLP, on behalf of Brickman Real Estate Fund II, L.P. (two letters)
Berkeley Investments, Inc. (for CFS Seaport LLC)
Brickman

Linda Lukas
Dan Shea
Michael Panagako

Letters on the PNF/ENF Supporting the Project

Anne Allen
Tom Allen
Anne-Marie Joyce
Bill Ahern
Denise Nagle
Donna M. Casper
Donna Crosby
Ed Marenburg
Elizabeth J. Murphy
Ellen Cunniff
Flabbok7@aol.com
James Wool
Jean M. Carter
Jody Cullinan
John Hurley
Jon Cronin
Kathy Lafferty
Kelly Collins
Kim McDermott
Lorraine Ahern
Martin F. Walsh
Mary E. Quigley
Neal Kelleher
Nicole DiMaggio
Patty Hurley
Paul Greeley
Paula Ferris
Paula Wool
Renee Bothwell
Richard Keogh
Richard Neville
Rita McCarthy
Robert Butler
Russell Bartash
Steve Buckley
Thomas Downs

Letters Received on the NPC

Massachusetts Historical Commission
Poseidon Enterprises, Inc.
The Boston Harbor Association

BRA Scoping Determination, MEPA Certificate and Letters Received on the PNF/ENF

Boston Redevelopment Authority

Boston's Planning & Economic Development Office

Thomas M. Menino, *Mayor*
Clarence J. Jones, *Chairman*
John F. Palmieri, *Director*

One City Hall Square
Boston, MA 02201-1007
Tel 617-722-4300
Fax 617-248-1937

November 19, 2009

John B. Hynes III, President & CEO
Gale International
One Post Office Square
Suite 3150
Boston, MA 02109

Dear Mr. Hynes:

Re: **Seaport Square, Boston, Massachusetts**
Project Notification Form and Environmental Notification Form Phase I Waiver Request for the Proposed Seaport Square in South Boston Project Consisting of Twenty-Three (23) Acres of New Development on the South Boston Waterfront – Revised Scoping Determination

Please find enclosed the Revised Scoping Determination for the Seaport Square project with corrections made to comments on Urban Design. The proposal consists of twenty-three (23) acres of new development on the South Boston Waterfront which include 6.5 million square feet of new development, six (6) acres of open space and below grade parking for sixty-five hundred (6500) vehicles. The Scoping Determination describes information required by the Boston Redevelopment Authority in response to the Project Notification Form and Environmental Notification Form, which was submitted under Article 80 of the Boston Zoning Code on June 2, 2008 and noticed in the *Boston Herald* on the same day. Additional information may be required during the course of review of the proposal.

If you have any questions regarding the Scoping Determination or the review process, please contact me at (617) 918.4317

Sincerely,

Jay Rourke
Senior Project Manager

Cc. James M. Tierney
Brenda McKenzie
Heather Campisano

BOSTON REDEVELOPMENT AUTHORITY
SCOPING DETERMINATION

FOR

SEAPORT SQUARE, SOUTH BOSTON, PROJECT NOTIFICATION FORM, ENVIRONMENTAL NOTIFICATION FORM, PHASE I WAIVER REQUEST

PREAMBLE

Gale International, Morgan Stanley, W/S Development Associates, LLC, collectively MS Boston Seaport, LLC (the "Developer", "Proponent" or "Development Team") submitted to The Boston Redevelopment Authority ("BRA") a Project Notification Form / Environmental Notification Form / Phase I Waiver Request (collectively, the "PNF") under Article 80 of the Boston Zoning Code (the "Code") on June 2, 2008 and noticed in the *Boston Herald* on the same day, to construct twenty (20) new city blocks with approximately six (6) acres of open space, nineteen (19) buildings which will contain approximately 2.75 million square feet of residential use (approximately 2500 housing units), 1.4 million square feet of office and research space, 1.25 million square feet of retail space, 600,000 square feet of educational, civic and cultural uses, 500,000 square feet of hotel space (approximately 700 keys) as well as below-grade parking for approximately 6,500 vehicles (the "Proposed Project" or "Seaport Square"). These uses will be organized around two (2) major open spaces, Seaport Square and Seaport Hill, while Seaport Boulevard itself will become and extensively landscaped urban apace. All buildings with the exception of the proposed chapel and educational institutions will have ground-floor retail and restaurant uses to provide a safe, inviting, and animated pedestrian experience. Written comments constitute an integral part of the Scoping Determination and should be responded to in the Draft Project Impact Report (the "DPIR").

Specific concerns below are highlighted for additional emphasis and consideration:

- Careful planning and consideration must be the nucleus of the DPIR. When a project of this scale and size is proposed, sensitivity to the surrounding area is essential to the success of the planning and approval process. The Development Team has extended itself throughout this initial phase of review, meeting with local residents, abutters, and city agencies. These conversations need to continue ensuring that what is presented in the DPIR is

not only a benefit to Seaport Square but to local resident, abutting interests and the City of Boston as a whole. BRA.1 cont'd

- It is clear in reading through the comment letters that the Proposed Project has created excitement and also some concern. Many of the letters show a desire to see the Proposed Project implemented immediately while others request that more study be given to certain aspects or parcels slated for development. The BRA encourages the Development Team to work with those parties who have expressed concern so that any and all foreseen impacts can be resolved or mitigated when the DPIR is filed. BRA.2

- A greater understanding of design and programming must be a part of the DPIR filing. How will the transition from the Boston Wharf District blend with the Proposed Project? When one crosses over the Evelyn Moakley Bridge what will you see? How does old meet new? How does the programming of the Proposed Project mesh with the existing neighborhood? What will it feel like standing on Seaport Hill or walking down Autumn Lane? How will view corridors to the sea, convention center and financial district be enhanced by the architecture of the Proposed Project? These are just a few of the questions to be answered and this thought process should be evident in the DIPR. BRA.3

- The Proposed Project intends to provide approximately sixty-five hundred (6500) parking spaces. How will these be allocated? In today's world, less dependency on automobiles is not only better for the environment but also better for one's health in general. Alternative modes of transportation should be encouraged. Biking and walking are not only great forms of exercise but they also alleviate traffic while creating a healthier neighborhood and city. The Developer should work to encourage these modes of transit to new occupants and visitors to the site. BRA.4 BRA.5

- "Where are the kids going to play?" This is a question that is asked whenever a residential proposal is presented. Understanding that this is an urban setting and should have an urban feel the uses stated in the PNF suggest the number of children associated with this site will be high. Add to that future retail customers and abutters and you have an area that requires response to the question in the first sentence. Please do so in the DPIR. BRA.6

- A strong city is one that includes residents who have a balanced mix of income levels in its neighborhoods. The Mayor's Executive Order clearly outlines the parameters of development and how a proposal can provide affordable housing to those whose income levels might not allow them the opportunity. The Development Team should be applauded for its

commitment to not only achieve the goals of providing fifteen percent (15%) of the total units as affordable but also how it intends to provide another fifteen percent (15%) of the total units as "work-force housing". The BRA requests that the DPIR show a detailed plan of how the Development Team plans to implement the fifteen percent (15%) affordable units and a definition and implementation of the fifteen percent (15%) "work-force housing" units. BRA.7

- Construction Impacts. If approvals are to be granted the Development Team should take a pro-active approach to how the Proposed Project will be constructed. As with any urban development there needs to be a balance of construction related inconveniences and the day to day living, working, commuting and sightseeing that encompass the site. A detailed approach to the construction management needs to be included in the DPIR. BRA.8

- The Proponent needs to show how it intend to provide a high level of Leadership in Energy and Environmental Design ("LEED") standards. Integrating green building components into the planning and design of new projects improves energy efficiency and promotes responsible and sustainable building practices. BRA.9

- Please pay special attention to the comment letters. They represent the active residents, business leaders and elected officials of the community in which you intend to develop. BRA.10

SUBMISSION REQUIREMENTS

FOR

SEAPORT SQUARE, SOUTH BOSTON, PROPOSAL FOR TWENTY-THREE (23) ACRES OF NEW DEVELOPMENT ON THE SOUTH BOSTON WATERFONT - DRAFT PROJECT IMPACT REPORT

The Boston Redevelopment Authority ("BRA") is issuing this Scoping Determination ("Scope") pursuant to Section 80B-5 of the Boston Zoning Code (the "Code"), in response to a Project Notification Form / Environmental Notification Form / Phase I Waiver Request (collectively, the "PNF") which Gale International, Morgan Stanley, W/S Development Associates, LLC, collectively MS Boston Seaport, LLC (the "Developer", "Proponent" or "Development Team") submitted on June 2, 2008 to construct to construct twenty (20) new city

blocks with approximately six (6) acres of open space, nineteen (19) buildings which will contain approximately 2.75 million square feet of residential uses (approximately 2500 housing units), 1.4 million square feet of office and research space, 1.25 million square feet of retail space, 600,000 square feet of educational, civic and cultural uses, 500,000 square feet of hotel space (approximately 700 keys) as well as below-grade parking for approximately 6,500 vehicles (the "Proposed Project" or "Seaport Square"). Notice of the receipt by the BRA of the PNF was published in the *Boston Herald* on June 2, 2008 initiating the public comment period that ended on July 31, 2008. Pursuant to Section 80A-2 of the Code, the Notice and the PNF were sent to all public agencies of the City and other interested individuals and parties. Written comments in response to the Notice and the PNF that were received by the BRA prior to the end of the public comment period are included in the Appendices of this Scope. The Scope requests information that the BRA requires for its review of the Proposed Project in connection with the following:

(a) Certification of Compliance of the Proposed Project pursuant to Article 80, Section 80B-6 of the Code; and

(b) Preliminary Adequacy Determination pursuant to Article 80, Section 80B-5.4(c) of the Code; and

The BRA is reviewing the Proposed Project pursuant to Article 80, Section 80B, Large Project Review, which sets out comprehensive procedures for project review and requires the BRA to examine the urban design, transportation, environmental, and other impacts of proposed projects. The Developer is required to prepare and submit to the BRA a Draft Project Impact Report ("DPIR") that meets the requirements of the Scope by detailing the Proposed Project's expected impacts and proposing measures to mitigate, limit, or minimize such impacts. The DPIR shall contain the information necessary to meet the specifications of Section 80B-3 (Scope of Review; Content of Reports) and Section 80B-4 (Standards for Large Project Review Approval) as required by the Scope.

Subsequent to the end of the seventy-five (75) day public comment period for the DPIR, the BRA will issue a Preliminary Adequacy Determination ("PAD") that indicates the additional steps necessary for the Proponent to complete in order to satisfy the requirements of the Scope and all applicable sections of Article 80 of the Code. If the BRA finds that the PNF/DPIR adequately describe the Proposed Project's impacts and, if appropriate, proposes satisfactory measures to mitigate, limit or minimize such impacts, the PAD will announce such a determination and that the requirements for the filing and review of a Final Project Impact Report are waived pursuant to Section 80B-5.4(c)(iv) of the Code. Before

reaching said findings, the BRA shall hold a public hearing pursuant to Article 80 of the Code. Section 80B-6 requires the Director of the BRA to issue a Certification of Compliance before the Commissioner of Inspectional Services can issue any building permit for the Proposed Project.

I. PROPOSED PROJECT DESCRIPTON

The proposed Seaport Square project is located on an approximately twenty-three (23) acre parcel of land that is generally bound by Northern Avenue the Old Northern Avenue Bridge and the Moakley Federal Courthouse to the north, Northern Avenue and the Fan Pier Development to the east, Summer Street and the Boston Convention and Exposition Center to the south and existing buildings associated with the Fort Point District to the west (the "Project Site").

The project is a mixed-use development over twenty (20) new city blocks with approximately six (6) acres of open space, nineteen (19) buildings which will contain approximately 2.75 million square feet of residential use (approximately 2500 housing units), 1.4 million square feet of office and research space, 1.25 million square feet of retail space, 600,000 square feet of educational, civic and cultural uses, 500,000 square feet of hotel space (approximately 700 keys) as well as below-grade parking for approximately 6,500 vehicles (the "Proposed Project" or "Seaport Square"). These uses will be organized around two (2) major open spaces, Seaport Square and Seaport Hill, while Seaport Boulevard itself will become and extensively landscaped urban apace. All buildings with the exception of the proposed chapel and educational institutions will have ground-floor retail and restaurant uses to provide a safe, inviting, and animated pedestrian experience.

II. DEVELOPMENT REVIEW REQUIREMENTS - ARTICLE 80

SUBMISSION REQUIREMENTS

In addition to full-size scale drawings, sixty-five (65) copies of a bound report and one (1) digital PDF copy containing all submission materials reduced to size 8-1/2" x 11", except where otherwise specified, are required. The report should be printed on both sides of the page. In addition, an adequate number of copies must be available for community review. A copy of this Scope should be included in the report submitted for review.

A. GENERAL INFORMATION

1. Applicant Information
   a. Development Team
      (1) Names
         (a) Developer (including description of development entity and type of corporation)
         (b) Attorney
         (c) Project consultants and architect
      (2) Business address and telephone number for each
      (3) Designated contact for each

BRA.11

   b. Legal Information
      (1) Legal judgments or actions pending concerning the Proposed Project
      (2) History of tax arrears on property owned in Boston by the Applicant
      (3) Evidence of site control over the project area, including current ownership and purchase options of all parcels in the Proposed Project, all restrictive covenants and contractual restrictions affecting the proponent's right or ability to accomplish the Proposed Project, and the nature of the agreements for securing parcels not owned by the Applicant.
      (4) Nature and extent of any and all public easements into, through, or surrounding the site.

BRA.12

2. Design Development Information (See **Appendix 5** for required design development and contract document submissions).

BRA.13

3. Project Area

   a. An area map identifying the location of the Proposed Project
   b. Description of metes and bounds of project area or certified survey of project area

BRA.14

4. Public Benefits

   a. Anticipated employment levels including the following:
      (1) Estimated number of construction jobs
      (2) Estimated number of permanent jobs

      The Proponent is expected to provide a workforce development plan and needs assessment for the Proposed

BRA.15

Project. The Proponent should describe the efforts it will undertake to ensure that an appropriate share of new jobs and construction jobs will be filled by Boston residents.

b. Current activities and programs which benefit adjacent neighborhoods of Boston and the city at large, such as: child care programs, scholarships, internships, elderly services, education and job training programs, etc. BRA.15 cont'd

c. Other public benefits, if any, to be provided.

5. Regulatory Controls and Permits

a. Existing zoning requirements, zoning computation forms, and any anticipated requests for zoning relief should be explained. BRA.16

b. Anticipated permits required from other local, state, and federal entities with a proposed application schedule should be noted. BRA.17

c. A statement on the applicability of the Massachusetts Environmental Policy Act (MEPA) should be provided. If the Proposed Project is subject to MEPA, all required documentation should be provided to the BRA, including, but not limited to, copies of the Environmental Notification Form, decisions of the Secretary of Environmental Affairs, and the proposed schedule for coordination with BRA procedure. BRA.18

6. Community Groups

a. Names and addresses of project area owners, abutters, and any community or business groups which, in the opinion of the applicant, may be substantially interested in or affected by the Proposed Project. BRA.19

b. A list of meetings held and proposed with interested parties, including public agencies, abutters, and community and business groups.

B. PROJECT DESCRIPTION AND ALTERNATIVES

1. Project Description

The DPIR shall contain a full description of the Proposed Project and its components, including its size, physical characteristics, development schedule, costs, and proposed uses. This section of the DPIR also shall present analysis of the development context of the Proposed Project. Appropriate site and building plans to illustrate clearly the Proposed Project shall be required. BRA.20

2. Project Alternatives

A description of alternatives to the Proposed Project that were considered shall be presented and the primary differences among the alternatives, particularly as they may affect environmental conditions, shall be discussed. In addition, any alternative development studies requested by the Boston Landmarks Commission should be discussed. BRA.21

C. TRANSPORTATION COMPONENT

Please refer the comments and information requested by the Boston Transportation Department ("BTD") included in **Appendix 1**. BRA.22

D. ENVIRONMENTAL PROTECTION COMPONENT

Please refer to the comments and information requested by the Boston Environment Department ("BED") included in **Appendix 1**. In addition, the Proponent is requested to provide information on the following:

- The Proponent should consider and document how it would use the Leadership in Energy and Environmental Design (LEED) standards. Integrating green building components into the planning and design of new projects improves energy efficiency and promotes responsible and sustainable building practices. BRA.23

E. URBAN DESIGN COMPONENT

The Proposed Project consists of some 6.5 million SF and covers 27 acres of essentially empty land in the South Boston Waterfront District. The Seaport Square Project, while within the wide bounds of the Public Realm Plan for the area, connects and quite literally fills in the blocks between areas of the District that have had their own more specific planning: Fan Pier and the Courthouse, Pier 4, the World Trade Center and Commonwealth Flats, the Convention Center, the 100-Acre Plan PDA, and the now-official Fort Point Channel Landmark District. It is critical, therefore, that the Seaport Square Project and PDA complete with detail the planning for this interstitial zone that will spring into existence, possibly in the phased blink of an eye. The Seaport Square Project at its core is an urban renewal project. The key goals of such are to reinvent and renew the socio-economic and physical fabric of the City for its ultimate betterment...and to conform to the overall Plan for the District.

Gale International purchased the land in the South Boston Waterfront ('Seaport') District assembled by the McCourt company and has initiated, working in pre-Article 80 meetings required by the BRA, an Article 80 public process which seeks approval of up to 6.5 million SF of mixed-use development spread throughout the 27 acres (and about 17 parcels, depending on how they are counted). Only Parcel A, proposed as part of the first phase, is fully and directly subject to Chapter 91. A PNF was submitted June 2, 2008 and the Proponent is maintaining a website with meeting and Project information.

Similarly to the Fan Pier Project, the BRA will require that the Seaport Square Project Proponent apply for a Master Plan PDA designation, and Seaport Square will face many of the same immense infrastructure issues and questions as did Fan Pier - as well as the difficulties inherent in doing so. Gale International, per the PNF, nevertheless intends to start Phase 1 (less than 200,000 SF) in 2009, and may start Phase 2 as early as 2010, with continuous build-out until completion in 2015. Gale is basing this strategy on the success of Songdo City in Korea, and preliminary marketing is reported to have indicated some interest in building out a *full context* that a major tenant can be part of. Although possible, we feel it prudent nevertheless to proceed with a PDA Master Plan, which can accommodate either short or long time spans and variable phasings.

The Project as envisioned comprises a mixed-use project totaling approximately 6.5 million square feet of space, including about 1.5 MSF Office space, 2.65 MSF Residential (~2500 units), 500,000 SF Hotel (~700 keys), 650,000 SF cultural/education, and 1.25 MSF Retail/restaurant. The use distribution and square footage may change somewhat as the Project is realized, but the initial

Phase proposed, consisting primarily of the smaller parcels fronting on Sleeper Street and Seaport Boulevard, includes retail and residential. Parking for the Project will primarily be placed underground, in large interconnected garages, with surface parking along newly created streets. The Proposed Project will ultimately define the heart of the South Boston Waterfront District, joining the Fan Pier with the Boston Wharf Company buildings and Downtown, the World Trade Center and Commonwealth Flats, and the BCEC. KPF and a host of other consultants are working on the Master Plan and its aspects, including local firms ADD Inc. and Reed Hildebrand on the overall Plan. A large park is planned to augment the open space of Fan Pier's Public Green; a new street will lead from elevated Summer Street down through a new residential neighborhood, spanning Congress Street in so doing.

DAYLIGHT COMPONENT

A daylight analysis for both build and no-build conditions shall be conducted by measuring the percentage of skydome that is obstructed by the Proposed Project building(s) and evaluating the net change in obstruction. If alternative massing studies are requested or result as part of the Article 80 development review process, daylight analysis of such alternatives shall also be conducted for comparison. The study should treat three elements as controls for data comparisons: existing conditions, the 'as-of-right' (the applicable general area zoning), and context examples. The areas of interest include all new streets, and the Project facades along Summer and Congress streets, Seaport Boulevard, Old Northern Avenue, Boston Wharf Road, B Street, and East Service Road. Daylight analyses should be taken for each major building facade fronting these public ways. The midpoint of each public accessway or roadway should be taken as the study point. The BRADA program must be used for this analysis. BRA.24

If a Proponent wishes to substitute a more contemporary computer program for the 1985 BRADA program, its equivalency must first be demonstrated to the satisfaction of BRA staff before it is utilized for inclusion in the DPIR, and it must be commonly available to Boston development team users.

URBAN DESIGN

The BCDC voted to review the Proposed Project on June 3, 2008 and saw a preliminary presentation. The Commissioners present were supportive of the Project; the Project was referred to Design Committee. On August 5, 2008, the BCDC voted to recommend approval of Parcel A alone; the larger Project remains in Design Committee status. When sufficient progress in preparation of a Preferred Alternative in the DPIR in response to the Scoping Document has BRA.25

been made on the design pursuant to preliminary BCDC, IAG, and BRA staff comments, BCDC Design Committee meetings should be scheduled by contacting David Carlson, Executive Director of the BCDC. Minutes from the June 3, 2008 BCDC meeting are attached. BRA.25 cont'd

It should be noted that we will expect the evolution of design strategies, as well as the compilation of your planning studies and conceptual diagrams conceived as part of a logical procession arriving at an urban truth, or comprehensible vision, for this significant area of Boston's evolving new South Boston Waterfront District; this will allow more in-depth comment at the DPIR stage. We reserve the right to comment at that stage toward the submission of an FPIR. In general, we will ask for studies related to all requested alternatives, with certain modifications, as well as comparisons to both existing conditions and an 'as-of-right' alternative. In a PDA Master Plan, we are expecting flexibility in massing and details, yet with strong, expressed planning principles and urban design guidelines which will determine the direction of future implementation – equivalent to form-based zoning.

The following urban design objectives should be addressed in the DPIR submission for all variations on your proposed scenarios.

1) Identify all federal, state, and local regulations that apply to the Project both existing and as proposed. BRA.26

2) The Project shall take into account as strict (absolute) height limits the FAA limits as defined by the FAA and Massport, since the bounds impact this Project site. BRA.27

3) Include mitigations. Standard alternatives for study include no-build, and an 'as-of-right' build-out...in this case FAR 3, with a height of 155', although the case may be made for FAR of 4.25 and heights of 250' within the PDA Height Zone. It should be recognized that a portion of the Project lies within the Protection Area bounds of the Fort Point . We will expect that the Proposed Project as represented in the DPIR *will have taken into account any necessary mitigating factors,* for scenarios with densities and heights beyond those alternatives, discovered as a result of environmental and other studies by the Proponent. BRA.28

4) Performance Standard concept. The Proposed Project should meet the 'performance standard' of *generally* having the same or a lesser degree of environmental impacts than either the full 'as-of-right' build-out or existing conditions, whichever are most impactful. I.E., criteria such as daylight, BRA.29

shadows, and wind should be *at least* neutral or improved *on average*, recognizing that some elements or points may be worse, but proving that the whole is better as a Project. We will expect in fact that mitigations or positive urban benefits will result from this Project and in balance far outweigh *any* negative impact. Heights, tower locations and setbacks should be adjusted to minimize environmental and visual impacts on the park areas in the vicinity (including the Harbor) as well as park areas created by the Project itself. Another way of stating this is that the Project should set its open spaces to advantage in terms of strategic natural lighting and programming on a daily basis. BRA.29 cont'd

5) Sustainability. The DPIR design should bring a high degree of innovation and conceptually be able to achieve LEED ND Gold. This Project should set the bar very high for waterfront area projects in Boston, and incorporate bold energy, recycling, daylight/quality of environment, green roofs and plantings, innovative connections to the water, and transportation initiatives. The nearby Artists for Humanity building is Boston's first LEED platinum-rated building; this site presents an opportunity to be bold as well. BRA.30

6) Area Planning. DPIR submissions shall incorporate or consider the planning principles included in the South Boston Waterfront Public Realm Plan, the Commonwealth Flats Plan, and the Pier 4, Fan Pier and 100 Acre PDA plan areas, as well as the Fort Point Channel Landmark District. The planning studies and diagrams developed as part of the genesis of the Seaport Square Project should be brought into the DPIR document as a rationally ordered background planning exercise whose conclusions lead to the Proposed Project. Guidelines should be developed equivalent to form-based zoning to set the stage for the parameters in terms of building mass, treatment, uses, and open space strategies, such that they in turn may begin to form the basis of a PDA Master Plan with a presumed multi-phased, multi-designer strategy toward execution. BRA.31

7) The highest building elements generally should be *set back* from the primary adjacent streets to the extent possible, particularly in areas of high pedestrian use or sensitivity. They should be *separated* from each other, within the constraints of the site's infrastructure and dimensions. They should be as *differentiated in height* as possible, to break up the perceived skyline. The nature of the current proposal deliberately tends to aggregate use-related massings, making the perceived mass larger (i.e. along Old Northern Avenue); this notion should be reconsidered. Where desirable to create an emphasis or entry, certain high elements could come straight down to the ground...but only if wind conditions permit such. BRA.32

8) Enhance active ground floor program elements (local retail, hotels, cultural uses, galleries, restaurants) as a positive element of the Project, with BRA.33

entries *possibly* on all sides. Invite entry into and through the sites and through the buildings, in both directions if possible. A hierarchy of such uses should be clarified and considered further than demonstrated in the PNF, with most uses augmenting strong pedestrian corridors, but some uses encouraging the use of new transportation connections (bicycle, boat, Silver Line) as well. We do not necessarily believe in the *even* spreading of retail uses *everywhere*; this has not been the experience of success in most areas. Build upon the intended and beginning transformation of adjacent areas (such as Fan Pier Boulevard) in this regard. Transparency and views into the uses must be maximized on each frontage. Incorporate bicycle stations into the Project...both public and private (*see also* BTD scoping likely regarding this). BRA.33 cont'd

9) Multiple upper story uses in different areas are accordingly encouraged to be retained in the Proposed Project going forward to enliven the streets with a diversity of activity throughout the day. Work to minimize the impacts of necessary service and parking functions on adjacent sensitive interfaces, particularly at strong public circulation nodes. Necessary service and access functions should *not* occur *directly* on the arterial streets. BRA.34

10) Parking and Garage elements. The parking in general must be minimized. Submit information which justifies the scale and amount of parking proposed by analyzing both current levels of use and projected future levels with an expectation of expanded alternative modes of transit (also see the BTD scope). Parking here currently serves both the local and area workers, Fort Point residents and visitors to the area's attractions. The BRA asks that the infrastructure constraints (i.e. Silver Line, major conduits, etc.) be studied to clarify any limitations for the proposed phasing, given that a certain amount of the parking functions should continue unabated through all phases to serve the current and future demands of the area. The BRA expects that all service, parking, and transportation elements will be designed in harmony with the architectural treatments and integrated into the design. Above-grade garage floors should be avoided. MBTA entries should be incorporated into buildings or specially treated as airy pavilions; the easterly entries to the Courthouse station should be fully opened. BRA.35

11) Public Space(s). The Proposed Project contains public park elements which both augment existing open spaces (Parcel E/Children's Park, Sleeper Street treatment/Harborwalk, Seaport Square/Public Green) and create new ones (Courthouse Square area, Seaport Hill). Such elements should continue in the DPIR design; they must be viable proposals in terms of both execution, maintenance, and programming elements. Such elements should enhance both perceived and actual qualities of year-round usability, light and airiness, plantings and greenery, and open invitation and sense of welcome to the public BRA.36

as an essentially public space, and not act merely a forecourt for the building lobbies. The Courthouse Square space should be better defined...it is only hinted at in the PNF design. Connecting spaces must function as a public sidewalk 24 hours a day. More information on the public spaces and their function is requested in the DPIR; they should be demonstrated to be part of a system which connects to other parts of the neighborhood and the City. Higher public spaces – including the notion of a public observatory at some height – could be explored. BRA.36 cont'd

12) Street edges and new sidewalks created as a result of any version of the Proposed Project must conform to all applicable standards, including the use of wire-cut brick or other dimensionally stable concrete or stone pavers set and maintained to South Boston Waterfront and ADA standards, and be appropriately sized to bear pedestrian traffic peaks. Street trees and plantings should be included in site plans. Pedestrian paths in general should be reinforced, augmenting the multiple pathways around the site, and through the Project itself where possible. BRA.37

13) The architectural expression of the tower elements should begin to be clarified. They should be sufficiently differentiated, and shaped as part of the skyline, but not read as a single 'complex'. They should respond to each other, and to any shaping view lines from nearby streets. Consider the view studies requested in the list of materials later to achieve a massing and orientation which begins to break the scale of the towers and podium elements down to that of the appropriate scale-giving datum elements in the immediate area. This effect will be most noticeable from the intermediate range of direct views, including views from nearby neighborhoods and from the Harbor. BRA.38

14) The architectural expression of the podium elements in general should partake of the tower elements to connect the two vertically. Differentiation by programming elements (office, residence, hotel, etc.) lends itself to this effort, while possibly breaking up the podium wall. Again, it is anticipated that the Seaport Square Project will develop guidelines but also defined rough massing and use diagrams in these areas, for phased execution via the PDA. BRA.39

15) Public Art. Special attention should be paid to public art, both indoor and outdoor. The Proposed Project presents an opportunity to connect multiple interior and exterior spaces in many different ways, and it would be helpful if the Proponent consulted with local artists during the design period to allow for an integrated aesthetic effect. The Mayor's Office of Arts, Tourism and Special Events might also be consulted. BRA.40

16) Adhere to the spirit of the guidelines of the Fort Point Channel Landmark District. BRA.41

17) The nature of Harbor Street must be considered along its length. The BRA has consistently advocated for the street network in the Seaport area, whether public or private, both as an extension of the local grid and as a key new connector from elevated Summer Street down to Seaport Boulevard. Reinforce the idea of adding rich urban complexity to connections, especially at Summer Street and Autumn Lane. Consider the nature of the bridge over Congress Street in the light of other such street bridges in the District – and celebrate the moment appropriately, rather than just building an overpass. BRA.42

18) Pedestrian strategies. The Seaport Square plan as presented in the PNF is reasonably cohesive, with sectional studies to show the different walking environments, and this should be refined further in terms of hierarchy, shifts between open space and sidewalks and other alternative passages (i.e. through-building), and building strong connections to neighborhood and City walkways, paths and destinations. The pedestrian network should provide a sense of orientation and connection. This is also important from a vehicular point of view, but even more so for pedestrians traveling to and from (and within) the Seaport Square area. It is key that the Seaport Square project be subsumed seamlessly into the greater character of the larger District to which it is key. Pedestrian connection improvements should also be carefully considered in the light of phasing the overall Plan. BRA.43

19) Connections to the neighborhood. Develop diagrams and concepts, translatable into reinforcing action, that are clearly intended to animate and connect the edges of the Seaport
Square project with the surrounding institutions and neighborhoods, and to continue or enhance through-block pedestrian path connections such as the connection continuing into Stillings Street opposite Autumn Lane. Connections to MBTA services (Silver line, shuttles and ferries) should be clear, and space must be provided for bicycles. BRA.44

20) A PDA Master Plan implies area-wide thinking, regardless of the size of the overall project which is triggering the application. This should extend to ideas of transportation as well as water recharging and management, energy and communication/data systems. The percentage of employees, residents and visitors who bicycle may be limited by the amount of bicycle racks and reasonable storage facilities provided; this idea should be expanded as a strategy, and possibly extended into ideas of bicycle rental if applicable. BRA.45

21) Area networks. Develop diagrams and plans that show connections inside and outside of buildings. Develop a plan for the open space networks which might connect through blocks, along edges and along the major pathways, BRA.46

and will play a significant role in defining the nature of the overall Seaport neighborhood. Show how open spaces, including the spaces which are active, hidden, or which may serve as *ad hoc* places of relaxation and refuge, may be defined further in the future, even if not currently a part of the intended PDA entitlement.

BRA.46 cont'd

Among others, the refined Seaport Square Master Plan design included in the DPIR must satisfactorily address all the above parameters. An accurate sense of scale of the Proposed Project in its context must be achieved. Focus on key distanced views, as well as key intermediate/user viewpoints, to guide the design composition of the revised Proposed Project. Reinforce all pedestrian pathways; develop a plan which shows the potential building programs and how they support such activity within the future pedestrian/public access network. Active programming that will engage the public and ideally spill seasonally (at a minimum) into the public realm at the ground floor should remain (and should be maximized). Take note of the fundamental contextual strengths of the site, including its connections to Harborwalk and ferry and shuttle connections and the MBTA, Fort Point Channel, the Boston Wharf Company area, and the Convention Center, and incorporate that sense into the overall design approach...tempered by the proposed uses. To the maximum extent possible, provide publicly accessible interior or rooftop spaces.

We reserve the right to add additional concerns during the course of the process of combined BRA staff, IAG, and BCDC review which may affect the responses detailed in the DPIR. The following urban design materials for the Proposed Project's schematic design must be submitted for the DPIR. It is recognized that some of the below items may be too specific for a PDA Masterplan, but such will eventually be required as the overall Project moves forward.

1. Written description of program elements and space allocation (in square feet) for each element, as well as Project totals.

BRA.47

2. Neighborhood plan, elevations and sections at an appropriate scale (1"=100' or larger as determined by the BRA) showing relationships of the proposed project to the neighborhood context:
    a. massing
    b. building height
    c. scaling elements
    d. open space
    e major topographic features
    f. pedestrian and vehicular circulation
    g. land use
3. Color, or black and white 8"x10" photographs of the site and neighborhood.
4. Sketches and diagrams to clarify design issues and massing options.
5. Eye-level perspective (reproducible line or other approved drawings) showing the proposal (including main entries and public areas) in the context of the surrounding area. Views should display a particular emphasis on important viewing areas such as key intersections, pathways, or public parks/attractions. A few of these viewpoints have already been used in presentations to the public; others should include views along major streets and open spaces, possibly sequenced to give a sense of experiential space, views from nearby residential neighborhoods (South Boston, Fort Point, East Boston), from BCEC, from the Harbor, et al. Long-ranged (distanced) views of the proposed project must also be studied to assess the impact on the skyline or other view. At least one bird's-eye perspective should also be included. All perspectives should show (in separate comparative sketches) at least both the build and no-build conditions; any alternatives proposed should be compared as well. The BRA should approve the view locations before analysis is begun. View studies should be cognizant of light and shadow, massing and bulk. BRA.47 cont'd
6. Additional aerial or skyline views of the project, if and as requested.
7. Site sections at 1"=20' or larger (or other scale approved by the BRA) showing relationships to adjacent buildings and spaces.
8. Site plan(s) at an appropriate scale (1"=20' or larger, or as approved by the BRA) showing:
    a. general relationships of proposed and existing adjacent buildings and open spaces
    b. open spaces defined by buildings on adjacent parcels and across streets
    c. general location of pedestrian ways, driveways, parking, service areas, streets, and major landscape features
    d. pedestrian, handicapped, vehicular and service access and flow through the parcel and to adjacent areas
    e. survey information, such as existing elevations, benchmarks, and utilities
    f. phasing possibilities
    g. construction limits
9. Massing model (ultimately in basswood) at 1":40'0" for use in the Authority's Downtown Model
10. Study model at 1" = 16' or 1" = 20' showing preliminary concepts of setbacks, cornice lines, fenestration, facade composition, etc.

11. Drawings at an appropriate scale (e.g., 1":16'0", or as determined by BRA) describing architectural massing, facade design and proposed materials including:
    a. building and site improvement plans
    b. neighborhood elevations, sections, and/or plans showing the development in the context of the surrounding area
    c. sections showing organization of functions and spaces, and relationships to adjacent spaces and structures
    d. preliminary building plans showing ground floor and typical upper floor(s).
    e. phasing, if any, of the Proposed Project
12. A written and/or graphic description of the building materials and its texture, color, and general fenestration patterns is required for the proposed development. BRA.47 cont'd
13. Electronic files describing the site and Proposed Project at Representation Levels one and two ("Streetscape" and "Massing") as described in the document *Boston "Smart Model": CAD & 3D Model Standard Guidelines.*
14. Full responses, which may be in the formats listed above, to any urban design-related issues raised in preliminary reviews or specifically included in the BRA scoping determination, preliminary adequacy determination, or other document requesting additional information leading up to BRA Board action, inclusive of material required for Boston Civic Design Commission review.
15. Proposed schedule for submission of all design or development-related materials.
16. Diagrammatic sections through the neighborhood (to the extent not covered in item #2 above) cutting north-south and east-west at the scale and distance indicated above.
17. True-scale three-dimensional graphic representations of the area indicated above either as aerial perspective or isometric views showing all buildings, streets, parks, and natural features.

SHADOW AND WIND COMMENTS

In addition to the comments and scoping by others, the Proponent is directed to consider the use of color as an alternative to dark tonality to indicate new shadows; these should be clearly shown to their full plan extent, whether on street, park, or rooftop. The Proponent is additionally requested to provide continuous dawn-to-dusk digital shadow animations. Do NOT duplicate studies for months in which the information is identical (i.e., a single animation for November/January, or May/July). BRA.48

Regarding wind, all wind tunnel test points shall be approved by BRA staff before conduction of testing. Wind analysis may be requested at points within several blocks of the properties in question; where contiguous to open space, analysis may extend to likely bounds of no impact. Analysis of results and effective mitigation may need to be presented in the DPIR using diagram methodology so that the delta or changes BRA.49

manifested by the project relative to existing or as-of-right conditions...again, whichever provides the higher base impacts...are clearly understood. BRA.49 cont'd

INFRASTRUCTURE SYSTEMS COMPONENT

An infrastructure impact analysis must be performed.

The discussion of Proposed Project impacts on infrastructure systems should be organized system-by-system as suggested below. The applicant's submission must include an evaluation of the Proposed Project's impact on the capacity and adequacy of existing water, sewerage, energy (including gas and steam), and electrical communications (including telephone, fire alarm, computer, cable, etc.) utility systems, and the need reasonably attributable to the Proposed Project for additional systems facilities. Clarify sewage tributary flows and constraints as well as possible energy choices. The location of transformer and other vaults required for electrical distribution or ventilation must be chosen to minimize disruption to pedestrian paths and public improvements both when operating normally and when being serviced, and must be described. Storm drain and sewage systems should be separated or separations provided for in the design of connections. BRA.50 BRA.51 BRA.52

Any system upgrading or connection requiring a significant public or utility investment, creating a significant disruption in vehicular or pedestrian circulation, or affecting any public or neighborhood park or streetscape improvements, comprises an impact which must be mitigated. The DPIR must describe anticipated impacts in this regard, including specific mitigation measures, and must include nearby Proposed Project (i.e. Fan Pier, Russia Wharf, 316-322 Summer, 49-55-63 Melcher, Waterside Place, Pier 4, Congress Street Hotel, 100 Acre Plan, Jimmy's, et al.) build-out figures in the analysis. The standard scope for infrastructure analysis is given below: BRA.53

1. Utility Systems and Water Quality

   a. Estimated water consumption and sewage generation from the Proposed Project and the basis for each estimate. Include separate calculations for air conditioning system make-up water

   b. Description of the capacity and adequacy of water and sewer systems and an evaluation of the impacts of the Proposed Project on those systems; sewer and storm drain systems should include a tributary flow analysis as part of this description BRA.54

   c. Identification of measures to conserve resources, including any provisions for recycling or 'green' strategies, including green roofs

   d. Description of the Proposed Project's impacts on the water quality of Boston Harbor or other water bodies that could be affected by the Project, if applicable

e. Description of mitigation measures to reduce or eliminate impacts on water quality

f. Description of impact of on-site storm drainage on water quality

g. Information on how the Proposed Project will conform to requirements of the Ground Water Trust under Article 32, if applicable, by providing additional recharge opportunities or by describing any special provisions in a landfill area with presumed tidal groundwater levels

BRA.54 cont'd

h. Detail methods of protection proposed for infrastructure conduits and other artifacts, including the Turnpike tunnels and structures, and BSWC sewer lines and water mains, during construction

i. Detail the energy source of the interior space heating; how obtained, and, if applicable, plans for reuse of condensate.

Thorough consultation with the planners and engineers of the utilities will be required, and should be referenced in the Infrastructure Component section.

2. Energy Systems

a. Description of energy requirements of the project and evaluation of project impacts on resources and supply

BRA.55

b. Description of measures to conserve energy usage and consideration of the feasibility of including solar energy provisions or other on-site energy provisions, including wind, geothermal, and cogeneration.

Additional constraints or information required are described below. Any other system (emergency systems, gas, steam, optic fiber, cable, etc.) impacted by this development should also be described in brief.

BRA.56

The location of transformer and other vaults required for electrical distribution or ventilation must be chosen to minimize disruption to pedestrian paths and public improvements both when operating normally and when being serviced, and must be described. Storm drain and sewage systems should be separated or separations provided for in the design of connections.

This proposal calls for the radical transformation of a District. The Proponent should investigate energy source strategies that take advantage of this scale of construction, including those that incorporate green roof strategies as well as solar orientation and materials/systems that maximize efficiencies, daylighting, wind, tidal, and geothermal systems, and cogeneration.

BRA.57

Excerpted from the minutes of the BCDC of June 3, 2008:

The next item was a presentation of the **Seaport Square Project** in the South Boston Waterfront District. John Hynes (JH) handed out postcards and introduced his team, including Jamie Von Klemperer (JVK) of Kohn Pedersen Fox, the lead for Songdo City, with 50 buildings under construction at a cost of six billion dollars - who led us to new ideas about how to approach the development of a site. This has the makings of a decent location, but it's not there yet; there are synergies created by the *volume* of our construction. We are going from 3600 to 6500 parking spaces, all below grade. All the loading is below grade. JH continues: Our intent is to do buildings up front: Phase 1, to build connections to the City, and then do the entirety of the rest. There is a school, an International School, pre-K through 12, and also a Pilot School. And a cultural center with an auditorium that doubles duty for the school, and works as a performing arts center other times. Morgan Stanley is our financial partner in Songdo, at One Lincoln - and here. JH noted other members of their design team.

AL: What is the concept for the entire area? JH: We view it as a neighborhood (points out all the elements). We see it with larger units, families, a workforce housing mix, and a mix of rentals and condos - 2500 total. DS: What is the role of the BCDC? Reviewing the overall Plan, Phase 1, more? JH: The Article 80 process overall, and individual buildings. DC: The BCDC review will parallel those approvals asked of the BRA. DS: Massing, setbacks, parcels, etc.? JH: We are hoping that what you see will BE the plan. DC: Tonight is intended as an introduction; we will go into more depth in Committee.

JVK presented the Plan. The conceptual framework is that there is an existing array of abutting plans and zones; our intent is to mesh with those as fabric. It's an amalgam of pieces; they all relate. (Goes through Powerpoint show, showing diagrams of connecting streets, open spaces, framing views, and more.) JVK: There is an FAA datum line, and lower datum lines have been set to retail and the context. Street improvements and the public realm include Seaport Boulevard, with already established guidelines. The connection from Summer Street creates a new District topography; we are being mindful of how this is experienced both internally and from the outside. (Points out grid-to-grid alignments.) In the residential area, we are looking at comparable residential squares, including those in the South End and Beacon Hill (Worcester and Louisberg squares). It's not Gramercy Park, but a more public experience. We will have an Arts program. It will be a District, not a neighborhood; it brings together a number of elements. Seaport Square itself will be the most public. The spaces in the buildings around it are also thought of as public; how we think about the space is helped by comparisons (shows). There are larger district connections, to the City, to the Waterfront District overall. All the buildings, as in Songdo, will be LEED certifiable. If all green areas are counted, they become considerable.

Gary Hildebrand (GH2): The (public) realm may outlast the buildings we are creating. And it's ALL 'made' land. We're building a slope, and everything has to allow for exposure, built to last. We are building in a palette that progresses, and are mindful of the infrastructure below. JVK: Bryant Park is a good example, a civic space surrounded by private uses - about the same size. It's passive much of the year, but there are also events. JVK then thanked the other team members (notes BK, Tamara, and Larry of ADD Inc.)....And the international, wider-flung members - the team fits the aspiration of the District that it's not only local, Boston, but also international in its interest. JH: The idea is to attract corporate users not here now, to a location that's unique - to reverse the trend seen, and not just to take from Cambridge or Route 128. We will be doing international marketing; as in Korea, with government support.

LW: Are the parcels lettered in order of construction? JH: No, first are A, H, and J, the smallest and easiest. They are an introduction to the district (points out on model, and notes the land swap with the Chapel property). The masses are not yet designed; they will not connect to the existing buildings. LW: I agree with Gary on the scope of the undertaking. I saw the ground plane plan; I want to know more about the sense of the District, being there. JH (pointing to the commercial blocks): It should feel like a financial district, was the thought.

AL: There was a lot said about the green space, which is appreciated. What is the strategy about the massing? I get it to here (the 'L' blocks). JVK: Thought was given to standard approaches, at one scale or another. But we considered instead a transition in scales, with different architects, not a superblock. JH: At one time, we thought of this as another South End, but changed that scheme, and we now have Libeskind and HO+K on two blocks. AL: What are the *rules* which govern the massing, is my question. JVK: We haven't written the guidelines, but have started. We acknowledge the sun, to allow sunlight into spaces. We hope the buildings support the overall diagram, and that there is *some* similarity in heights. AL: I am thinking SE Washington, with an Urban Renewal mix of low and high rises, which was pretty successful. But your intentions should be stated specifically. JH: That was the intent of the team and the BRA. But also marketing...about 90% of the units have 'good' views. AL: One of the things that's being suggested is a massing system, which is emerging, but has inconsistencies. JVK: Maybe that's where we go next. We acknowledge the concern. (JH brings out the Daniel Libeskind model, with three curved, sculptural forms.) JH: This is just to give you an idea. The composition starts to work differently.

DS: The street grid is a question (in the residential neighborhood). Also, how do the parks work together? (Notes Monument Square and Winthrop Training Ground.) MD: This is the biggest project we're likely ever to see. Really, it's not how there's a there there, but how this fits into a new 21st century City, what it does for Boston. Its energy, the moves made. JH: It's a huge thing; we are competing in the international arena. (He then goes through the comprehensive thinking.) There's a need, say, for 500K SF of

office space. But, where do the execs live? We'll give you 200 residential units as part of the deal. But, where do the kids go to school? We'll give 200 seats. Like that. Interconnections. Synergy. There is 32 million SF under construction in Korea; a model for our thinking, and happening elsewhere. AL: Consider decking over Congress Street at the school. Also, I question the adjacency of the parks, and next to a boulevard. Each is justified, but together? GH2: We have worked hard to get an asymmetrical boulevard, and the nature of Seaport Square is different than the Public Green (on Fan Pier). We have tilted the lawn to a skating rink, with a level traversal. JVK: And pavilions. AL: I was wondering if...it's defined on three sides, but larger than above, and wide open on one side. Then the Harbor....Is it a park? A park with a road? JVK: It needs definition and engagement. (JH shifts the building around on the model.) Two conversations began around the model, with AL and JVK talking about the residential neighborhood and JH talking with DS and MD about open space and programming.

DC suggested the time was appropriate, and with that, the Seaport Square Project was duly sent to Design Committee by the Commissioners.

[*Note: Parcel A alone was recommended for approval on August 5, 2008, without otherwise modifying the above action. The BRA Board acted on Parcel A in November, 2008.*]

F. PLANNING COMPONENT

The proposed Seaport Square project (Project) involves the construction of a vibrant, mixed use neighborhood on what is now 23 acres of surface parking lots on the South Boston Waterfront. The project is generally located between Northern Avenue, Seaport Boulevard, Congress Street and Summer Street, and includes a mix of residential, office and research, retail, hotel, educational, civic and cultural uses.

The Project lies within the Fort Point Waterfront Harborpark Zoning District (Article 42E), except for Parcel Q, which is located in the M4 District. The entire project lies within the South Boston Interim Planning Overlay District (Article 27P) and the Restricted Parking District. Portions of the project are located in the Groundwater Conservation Overlay District and the Fort Point Channel Landmark District Protection Area. Planned Development Areas (PDAs) are permitted in the Project area.

Planning Context

The Seaport Public Realm Plan (1999)

The Seaport Public Realm Plan provides a planning framework for the development of the South Boston Waterfront. The Seaport Square project fits into the planning

framework provided by the Seaport Public Realm Plan by meeting basic objectives outlined in the Plan.

- To connect the Seaport with Boston Harbor and to encourage people to experience the water as well as the land.

The construction of new streets and the activation of existing streets, such as Seaport Boulevard and Northern Avenue will provide active pedestrian experiences and connections from the neighborhood to the water. The open space and vehicular connection from Summer Street to Seaport Square Park and Fan Pier Green will provide a necessary visual and physical connection to the water's edge.

- To create a vibrant, mixed-use neighborhood in the Seaport, with substantial residential and civic uses that will attract people to the area even after the end of the workday.

The Project provides a mix of uses which includes more than 1/3 residential, greater than the 1/4 that the Public Realm Plan required. The Seaport Public Realm Plan is exemplarily in its introduction of civic and cultural destinations as future uses in projects. The Proponent should be commended for providing ample civic and cultural uses in the Project program. While the PNF suggests that much of this space will be located along Summer Street, we believe these uses should be strategically located to activate the gateways to the South Boston waterfront including Seaport Boulevard and Northern Avenue, and the Project's open space system particularly Seaport Square. BRA.58
Additionally, the proponent should assist the City with coordinating the existing cultural anchors of the neighborhood including the Boston Children's Museum, the Fort Point Arts community and the ICA, and the civic and cultural spaces proposed in the Fan Pier and Pier Four developments. BRA.59

- To develop the Seaport within the economic context of the rest of Boston, adding to our City's commercial, office, hotel, retail, and tourist industries and enhancing our position as the economic engine of the region.

The Project provides a mix of uses including commercial, office, hotel and retail. Currently the mix includes only 8% hotel use. The proponent may want to consider increasing the amount of hotel space because of the project area's proximity to downtown Boston, nearby civic and cultural destinations and the BCEC. BRA.60

The Project will provide additional units of affordable housing and provide both construction and permanent jobs in South Boston.

The Public Realm Plan directs appreciable density and height to areas around Silver Line stations and the area between Summer Street and Northern Avenue, making the Seaport Square project area appropriate for density.

The Public Realm Plan aims to design a compact, walkable environment with small-scaled streets, blocks, and neighborhood parks all with localized connections to the waterfront. The Plan provides a street grid for improved access to and around the waterfront area, which was adopted by the Project.

The Project has the opportunity to activate the three main East to West Streets recognized in the Public Realm Plan: Seaport Boulevard, Summer Street, and Congress Street. Likewise, the Project can potentially activate West Service Road, an important North to South connection to the waterfront. The Project's proposed grade change from Summer Street to the waterfront by providing a new street and a series of open spaces leading to the water is commendable. The proponent should provide more detail regarding pedestrian connections and the activation of the proposed street and open space. BRA.61

South Boston Waterfront District Municipal Harbor Plan (2000)

The South Boston Waterfront District Municipal Harbor Plan (MHP) builds on the Seaport Public Realm Plan by providing additional guidance for the development of the South Boston Waterfront. In order to create a lively, urban waterfront, the MHP calls for a balanced mix of uses including at least 1/3 residential and no more than 1/3 office. These parameters help to ensure that there will be a critical mass of housing and a critical mass of neighborhood uses such as retail, civic/cultural, restaurants, and hotel.

The Seaport Square project provides a mix of uses which meets the specific parameters of the South Boston MHP, providing over 1/3 residential use and less than 1/3 office use. Other uses such as hotel, retail, civic/cultural, and open space are provided in the Project.

In order to create a vibrant, urban waterfront, the MHP provides relief from the Waterways Regulations (Chapter 91) to allow for increased height and lot coverage in certain locations within Chapter 91 jurisdiction.

Open Space and Lot Coverage

In order to create a neighborhood that reflects the urban form of Boston's other neighborhoods, the MHP provides relief from the Waterway's restriction of 50% lot coverage. The MHP allows for additional lot coverage as long as the required open space is provided elsewhere. The Secretary's Decision on the MHP provided very specific guidance regarding the amount and location of open space provided as an offset to additional lot coverage:

- McCourt/Broderick Parcel "E" (8,100+ SF), located immediately adjacent to the MBTA Mitigation Park (approximately three-quarters of an acre) off Sleeper Street, should be designated as public open space.

- The off-site open space area requirements for McCourt/Broderick Parcels "A", "B", "C", "D", and "F" shall be aggregated off-site on Parcel "E" within the Fort Point Historic North District, at a ratio of 1:1, until such time as the total area of Parcel "E" has been developed as public open space.

- Remaining open space requirements for McCourt/Broderick Parcels "A", "B", "C", "D", and "F" shall be aggregated off-site on the McCourt Fan Pier Gateway Project property (as it is referred to in the MEPA ENF filing) at the ratio of 1.25:1. (In other words, when open space is aggregated out of jurisdiction, the resulting area shall be 25% greater than that required under the Waterways Regulations.)

- All open space aggregated outside the harbor planning area shall be located adjacent to lands subject to Chapter 91 jurisdiction and establish a visual connection to the waterfront. I would encourage strongly that the open space provided outside the harbor planning area be located adjacent to the Fan Pier Public Green, or at the Courthouse Square location. Should Parcel C be developed after the completion of the McCourt Gateway project, open space may be aggregated outside of jurisdiction on Parcel C, subject to the same conditions set forth above.

- All open space provided must meet the standards for open space on Commonwealth Tidelands.

- All open space must be provided concurrent with the impacts associated with individual projects.

The Seaport Square project is proposing 25% of the total project to be open space. The Proponent should provide detailed calculations of open space required by the MHP and where those requirements will be met. BRA.62 Additionally, the Proponent should supply a calculation of the amount of open space provided that is not associated with Chapter 91 requirements. BRA.63

As directed by the Secretary's Decision on the MHP, the Project provides a significant amount of open space adjacent to Fan Pier Green. The Project also provides open space across Northern Avenue from the Moakley Courthouse. This open space should provide ample public open space as it is across from a civic use, and a pedestrian connection from Seaport Boulevard to the Moakley Courthouse.

The Secretary's Decision required that open space be provided concurrently with new construction. The Proponent should provide a detailed phasing plan for public benefits. BRA.64

The transformation of Sleeper Street adjacent to the Project's parcel A to a public promenade and Harborwalk link is a good early-on project benefit and we support its consideration as an open space offset.

Near-term public realm enhancements are critical to the existing neighborhood and the evolution of new development in the South Boston Waterfront District. The Proponent is considering a walkway/open space corridor connecting Seaport Boulevard and Northern Avenue in alignment with the Fan Pier development's Pier Street. We strongly encourage the Proponent to continue the design and implementation of this element.

The dedication of Parcel E to the Boston Children's Museum ("BCM") also provides an opportunity for the Project to offer open space enhancements ahead of new development. Parcel E is intended to be consolidated with the MBTA's open space and other publicly owned parcels into Children Wharf Park. The BCM and the City have worked on a conceptual design for this new park. The Proponent should consider supporting the implementation of this new neighborhood park. BRA.65

The Project will provide over 40% residential use in the project area. The Proponent should consider varied types of open spaces both active and passive to support the growing neighborhood. BRA.66

Court House Square is identified as a pedestrian way in the PNF. Earlier planning for this site anticipated not only a pedestrian link but also an open space along Northern Avenue. A more generous connection and set back will produce more usable open space and also address some of the concerns of building massing along Northern Avenue.

Height

The MHP provides guidance for height and massing to ensure that the ground-level environment remains pedestrian friendly. Building podiums should be scaled to provide a pleasant pedestrian experience, and tower elements should be designed with the massing of Fan Pier in mind.

The MHP provided height substitutions for several of the Seaport Square parcels, which were approved in the Secretary's Decision. The Secretary's Decision approved a height of 200' for Parcel A (Seaport Square Block B) and a height of 250' for Parcel B (Block G) and Parcel C (Block M1). The Secretary strongly suggests that the lower podium

elements (75') be located in Chapter 91 jurisdiction and the tower elements be set back from Chapter 91 jurisdiction.

Any shadow impacts resulting from the increased height are to be offset with additional open space. The quantity and location of the open space to offset any net new shadow impacts should be provided in a detailed chart that includes all open space (Chapter 91/MHP required, non jurisdictional requirements, offsets) and what it is counting towards.

Seaport Boulevard was designed and completed in anticipation of the density and height proposed in the various planning documents. The Public Realm Plan directs appreciable density and height to areas around Silver Line stations and the area between Summer Street and Northern Avenue. However tower elements along Northern Avenue should be positioned to avoid overpowering its pedestrian scale.

Inner Harbor Water Transportation Plan (2000)

The Boston Inner Harbor Passenger Water Transportation Plan provides a framework for a harbor-wide water transportation network and providing locations for water transportation facilities. The Project area will benefit from future water transportation infrastructure and services. There are water transportation terminals permitted for Russia Wharf and Fan Pier and a major terminal in design for Massport's World Trade Center. Since significant portions of the project area are within a ten minute walk to water transit services, the Proponent should consider support for water transit including subsidies as part of the Project's transportation analysis and also as a requirement for any extended Chapter 91 license terms. BRA.67

Fort Point Channel Watersheet Activation Plan (2002)

The Fort Point Channel Watersheet Activation Plan (FPCWAP) provides a vision of the Fort Point Channel as a year-round, active, defining public space that connects neighborhoods to the water. Access to and around the Channel, and the activation of the Channel's watersheet are detailed in the plan, with uses such as floating art, public landings, kayaks, water taxis, floating parks, etc.

The implementation of the FPCWAP relies on support and active participation from the surrounding neighborhoods. Projects in the proximity of the Fort Point Channel, such as Seaport Square, can contribute to the implementation of the Plan by providing public benefits that are required of landlocked tidelands. Implementation of watersheet infrastructure and support for on-going programming should be required for any extended Chapter 91 license terms. BRA.68

Public Infrastructure

The proposed Project will benefit from the significant public infrastructure investments completed in the South Boston Waterfront District, including the Silver Line, Central

Artery Project and I-90 extension, Logan Airport modernization project and the Boston Harbor Clean-up. Additional public infrastructure projects are pending, including the rehabilitation of the old Northern Avenue Bridge, the realignment of Northern Avenue and the completion of Children's Wharf Park.

The Proponent has proposed funding the Northern Avenue Bridge project as a project commitment. This project is currently proceeding with construction design and permitting and has over $9 million in federal earmarks.

The Proponent should continue discussions with the City regarding implementation priorities for nearby infrastructure projects in order to determine appropriate project commitments. BRA.69

The Proponent should coordinate with the BRA, Public Work Department, Fan Pier and Pier Four development teams and the Executive Office of Transportation on the realignment of Northern Avenue. BRA.70

The Proponent should also provide more details on their coordination with the MBTA and commitments for elevators and a new Court House Station entrance on the Silver line. BRA.71

G. HISTORIC RESOURCES COMPONENT

It is clear that the Proposed Project is adjacent to historic properties listed in the National and State Registers of Historic Places. The DPIR shall identify, map, and describe these historic resources and any other historic properties in the vicinity of the Proposed Project's site and shall evaluate the anticipated effects of the Proposed Project on these resources. Particular attention shall be given to the design, scale, height, massing, materials, and other architectural elements of the proposed buildings as these relate to the significant architectural and historic resources in the proposed project's vicinity. The DPIR must also include an assessment of the potential presence of archaeological resources that may be disturbed by the Proposed Project. The Proponents should also respond to the comments of the Boston Environment Department outlined in **Appendix 1**. BRA.72

H. INFRASTRUCTURE SYSTEMS COMPONENT

The standard scope for infrastructure analysis is given below:

1. Utility Systems and Water Quality

a. Estimated water consumption and sewage generation from the Proposed Project and the basis for each estimate. Include separate calculations for air conditioning system make-up water;

b. Description of the capacity and adequacy of water, storm drain and sewer systems and an evaluation of the impacts of the Proposed Project on those systems;

c. Identification of measures to conserve resources, including any provisions for recycling;

d. Description of the Proposed Project's impacts on the water quality of Boston Harbor and the Fort Point Channel or other water bodies that could be affected by the project, if applicable;

e. Description of mitigation measures to reduce or eliminate impacts on water quality;

f. Description of impact of on-site storm drainage on water quality;

g. Detail methods of protection proposed for infrastructure conduits and other artifacts, including BSWC sewer lines and water mains, during construction; and

h. Detail the energy source of the interior space heating; how obtained, and, if applicable, plans for reuse of condensate.

Thorough consultation with the planners and engineers of the utilities will be required, and should be referenced in the Infrastructure Component section.

2. Energy Systems

a. Description of energy requirements of the Proposed Project and evaluation of the Proposed Project's impacts on resources and supply; and

b. Description of measures to conserve energy usage and consideration of the feasibility of including solar energy provisions or other on-site energy provisions.

Additional constraints or information required are described below. Any other system (emergency systems, gas, steam, optic fiber, cable, etc.) impacted by this development should also be described in brief.

- The location of transformer and other vaults required for electrical distribution or ventilation must be chosen to minimize disruption to pedestrian paths and public improvements both when operating normally and when being serviced, and must be described.

- Sewer systems and storm water systems must be separated if possible; utilization of combined systems should be avoided. Thorough analysis and continuing discussions with BWSC are required.

- Water supply systems adjacent to the Proposed Project and servicing the Proposed Project should be looped so as to minimize public hazard or inconvenience in the event of a main break.

In addition, the Proponent should respond to the comments by the Boston Water and Sewer Commission found in **Appendix 1**.

I. PUBLIC NOTICE

The Proponent will be responsible for preparing and publishing in one or more newspapers of general circulation in the city of Boston a Public Notice of the submission of the Draft Project Impact Report (DPIR) to the BRA as required by Section 80A-2. This Notice shall be published within five (5) days after the receipt of the DPIR by the BRA. Therefore, public comments shall be transmitted to the BRA within seventy-five (75) days of the publication of this Notice.

Sample forms of the Public Notices are attached as **Appendix 4**.

Following publication of the Public Notice, the Proponent shall submit to the BRA a copy of the published Notice together with the date of publication.

9.1 BRA Scoping Determination on PNF/ENF

BRA.1 Conversations with BRA need to continue.

The Proponent will continue to meet with local residents, abutters and public agencies.

BRA.2 Development team to work with those parties who have expressed concern.

The Proponent has continued to meet with concerned parties. Please see Section 2.3 for more information.

BRA.3 Greater understanding of design and programming.

Please see Chapter 5 for a discussion of urban design.

BRA.4 How will parking spaces be allocated?

Please see Section 3.3.2.10 for a discussion of parking and space allocation.

BRA.5 Developer should work to encourage biking and walking.

The Proponent has made an effort to include pedestrian and cycling amenities. Please see Sections 3.3.3.2 and 3.3.3.3 for more information.

BRA.6 Where are the kids going to play?

The Project includes two open spaces, Seaport Square Green and Seaport Hill that will provide both passive and active recreation for both children and adults. Additional recreational opportunities exist in the surrounding area as well, such as Fan Pier Park, the Harborwalk, and the numerous recreational amenities in Downtown and South Boston.

BRA.7 Detail how Project will meet 15% affordable units.

The Project will include approximately 325 affordable units (15% of the total number of units) within the development.

BRA.8 Provide detailed approach to construction management.

Please see Section 4.12 for details on construction management.

BRA.9 Show how Project will meet high level of LEED standards.

Please see Section 4.13 for a discussion of how the Project will meet LEED standards.

BRA.10 **Pay special attention to comment letters.**

This chapter provides responses to comments submitted on the PNF/ENF.

BRA.11 **Provide name and addresses of the Project Development Team.**

Please see Section 2.1 for information on the Project team.

BRA.12 **Provide legal information including legal judgments or actions, history of tax arrears, and site control.**

Please see Section 2.5 for legal information related to the Project.

BRA.13 **Provide Design Development Information.**

The Proponent will submit all design information as required.

BRA.14 **Identify location of Proposed Project.**

Please see Section 1.1 for a description of the Project Site.

BRA.15 **Detail public benefits associated with Proposed Project.**

Please see Section 1.4 for a description of public benefits associated with the Project.

BRA.16 **Detail existing zoning requirements for site.**

Please see Section 2.4 for a discussion of zoning.

BRA. 17 **Detail anticipated permits for Seaport Square.**

Please see Section 2.2.2 for a description of anticipated permits.

BRA.18 **Provide statement of applicability and detail coordination with MEPA.**

Please see Section 2.2.1.2 for a discussion of applicability with MEPA.

BRA.19 **Provide name of community groups or abutters interested in project.**

Please see Section 2.3 for information on community groups and abutters interested in the Project.

BRA.20 **Provide description of Proposed Project components, including size, physical characteristics, schedule and costs.**

Please see Chapter 2 for a detailed discussion of the Project.

BRA 21 **Provide description of alternatives that were considered.**

Please see Section 1.8 for a discussion of alternatives studied for the Project.

BRA.22 **Refer to BTD Comments included in Appendix 1.**

Chapter 9 includes a response to BTD comments.

BRA. 23 **Document how Project will meet LEED standards.**

Please see Section 4.13 for a discussion of how the Project will meet LEED standards.

BRA.24 **Provide Daylight analysis for build and as-of-right alternative.**

Please see Section 4.2 for the Daylight Analysis which includes both the as-of right alternative and the proposed Project.

BRA.25 **Continue with BCDC Review.**

The Proponent will continue to meet with the BCDC as design progresses.

BRA.26 **Identify all federal, state, and local regulations that apply to the Project.**

Please see Section 2.2.2 for a description of anticipated permits and regulations that apply to the Project.

BRA.27 **Project shall take into account strict FAA regulations.**

The design takes into account FAA regulations, as required.

BRA.28 **Standard alternatives for study include no-build, as-of-right build out.**

Please see Section 1.8 for a discussion of alternatives studied for the Project.

BRA.29 **Proposed Project should meet "performance standard" concept.**

Please see Section 1.9 for a discussion of performance standards.

BRA.30 **DPIR design should bring high degree of innovation and be able to achieve LEED ND Gold.**

Please see section 4.13 on LEED ND.

BRA.31 **DPIR submission shall consider planning principles included in South Boston Waterfront Public Realm Plan, the Commonwealth Flats Plan, and the Pier 4, Fan Pier, and 100 Acre PDA plan areas as well as Fort Point Channel landmark District.**

Please see Chapter 5 for a discussion of how the Project considered planning principles from planning studies for the area.

BRA.32 **Highest building elements should generally be set back from the primary adjacent streets to extent possible.**

Please see Section 5.3.7 for information on massing.

BRA.33 **Enhance active ground floor program elements such as retail, hotels, cultural uses, galleries, restaurants.**

The Project includes active ground floor uses in most of the proposed buildings, as well as pedestrian connections through some buildings. Pedestrians corridors between buildings are also provided, including M Way, Harbor Way and Courthouse Square.

BRA.34 **Enliven streets with multiple upper story uses.**

The design includes a variety of uses throughout different areas of the Project to encourage active use throughout the day and night. Loading and access generally occurs away from major roadways.

BRA.35 **Parking in general should be minimized. Justify scale and amount of parking.**

Please see Section 3.3.2.10 for a discussion of parking. In addition, the Proponent will continue to coordinate with appropriate agencies as design continues.

BRA.36 **More information on public open spaces and their function should be included within the DPIR.**

Please see Section 1.2.1 for a discussion of the Project's open spaces.

BRA.37 **Provide detail on street edge and sidewalks.**

Please see Chapter 5.0. New sidewalks will conform to all applicable standards and ADA standards.

BRA.38 **Clarify architectural expression of tower elements.**

Detailed design of the Project's buildings has not been completed. The Proponent will continue to discuss the Project and its design with the BRA.

BRA.39 Architectural expression of the podium elements.

Detailed design of the Project's buildings has not been completed. The Proponent will continue to discuss with Project and its design with the BRA.

BRA.40 Special attention to public art.

The Proponent has proposed a Cultural Corridor that includes public art and connections to the cultural institutions in the Seaport District. Please see Section 1.2.1.5 for a discussion of the Cultural Corridor.

BRA.41 Adhere to spirit of Fort Point Channel Landmark District.

Please see Section 5.2 on area planning.

BRA.42 Consider nature of Harbor Street.

Please see Section 1.3 for information on Harbor Street as well as Section 5.3.2.3.

BRA.43 Present pedestrian strategies.

Please see Section 5.3.2.

BRA.44 Connections to neighborhood.

Please see Section 5.3.2.

BRA.45 Describe provisions for bikes.

Please see Sections 3.3.2.13 and 3.3.3.3 for information on bicycle amenities.

BRA.46 Develop diagrams and plans that show connections inside and outside buildings.

Please see Section 5.3.

BRA.47 PDA Master Plan items

Comment noted. The Proponent will submit the necessary information as required.

BRA.48 Provide dawn-to-dusk digital shadow animations.

Please see Section 4.3 for the shadow analysis. Shadow animations are included in the attached CD in Appendix B.

BRA.49 Present Wind analysis.

Please see Section 4.1 for the wind analysis.

BRA.50 **Infrastructure systems.**

Please see Chapter 7 for a discussion of infrastructure related to the Project.

BRA.51 **Provide location of transformer or other vaults.**

Please see Section 7.5.

BRA.52 **Storm drain and sewers should be separated.**

The Project will be served by separate sanitary and storm drain systems. Please see Section 7.1.4.

BRA.53 **Describe anticipated impacts.**

Please see Section 7.1.3.

BRA.54 **Utility system and water quality.**

Please see Chapter 7 for a discussion of the utility system and water quality.

BRA.55 **Energy systems**

Please see Section 7.4 for a discussion of energy systems.

BRA.56 **Include information on other system impacted by development.**

Please see Section 7.4.

BRA.57 **Green roofs, solar orientation, efficiencies, daylighting, geothermal.**

Please see Section 4.13.

BRA.58 **Civic and cultural space.**

Please see Section 5.3.4.

BRA.59 **Coordination with Children's Museum.**

Proponent will continue to coordinate with the Children's Museum as development on Block A moves forward.

BRA.60 **Consider increasing amount of hotel space.**

Comment noted.

BRA.61 **Provide more detail on pedestrian connections.**

Please see Section 5.3.2.4.

BRA.62 **25% of the total project be open space.**

Please see Section 4.8 for a discussion of how open space was calculated in relation to the MHP and Chapter 91.

BRA.63 **Total open space not associated with c. 91.**

Please see Table 4.8-2 for open space.

BRA.64 **Provide open space concurrent with construction.**

Please see Section 1.10 for a discussion of Project phasing, including the construction of open spaces.

BRA.65 **Support implementation of new neighborhood park.**

The Proponent will continue to coordinate with the Children's Museum as development on Block A moves forward.

BRA.66 **Consider both active and passive open space.**

The Project's open spaces include areas appropriate for both passive and active recreation.

BRA.67 **Consider support for water transit as part of c. 91 license.**

Comment noted. The Proponent will work with DEP to identify appropriate support for water transit during Chapter 91 licensing.

BRA.68 **Implementation of watersheet infrastructure and support for c. 91 license.**

Comment noted. The Proponent will work with DEP to identify support of watersheet infrastructure for c. 91 license.

BRA.69 **Proponent should continue discussions with City regarding implementation for nearby infrastructure projects.**

The Proponent will continue to work with the City regarding the implementation of nearby infrastructure Projects.

BRA.70 Coordinate with various agencies regarding realignment of Northern Avenue.

The Proponent will coordinate with the appropriate agencies regarding the realignment of Northern Avenue.

BRA.71 Provide more details on coordination with MBTA regarding new Court House Station entrance.

The Proponent agrees to work closely with MBTA officials on all proposed modifications to both Court House Station and the proposed new MBTA head house in Seaport Square Green.

BRA.72 Historic resources component

Please see Chapter 6 for information on Historic Resources.

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August 8, 2008

CERTIFICATE OF THE SECRETARY OF ENERGY AND ENVIRONMENTAL AFFAIRS
ON THE
EXPANDED ENVIRONMENTAL NOTIFICATION FORM

PROJECT NAME:	Seaport Square
PROJECT MUNICIPALITY:	Boston
PROJECT WATERSHED:	Boston Harbor
EEA NUMBER:	14255
PROJECT PROPONENT:	Gale International, Morgan Stanley and W/S Development Associates, LLC
DATE NOTICED IN MONITOR:	June 11, 2008

Pursuant to the Massachusetts Environmental Policy Act (G. L. c. 30, ss. 61-62H) and Section 11.06 of the MEPA regulations (301 CMR 11.00), I hereby determine that this project **requires** the preparation of an Environmental Impact Report (EIR). In a separate decision issued today I have proposed to grant a Phase 1 Waiver to allow the first phase of the project to proceed before the completion of MEPA review for the entire development.

The Proponents propose to make the Seaport Square project one of the largest sustainable neighborhoods in the country, and has targeted meeting Leadership in Energy and Environmental Design – Neighborhood Development (LEED-ND) at the Silver level for the entire twenty-block project area. Many of the LEED-ND Silver requirements are consistent with achieving significant energy reductions and subsequent reductions in greenhouse gases. The Proponents' commitment is timely, in light of the recent passage of comprehensive energy reform and economy-wide greenhouse gas regulatory mandates by the Legislature. Given the scale of the project and its current early stage in design, the development presents an opportunity to adopt innovative approaches to sustainability and energy use that go well beyond compliance with environmental regulations. I strongly encourage the Proponents to make a significant commitment related to clean energy and greenhouse gas emissions in the DEIR, so that this exciting project can be an integral part of the Commonwealth's effort to be a leader in clean energy and climate change solutions.

Project Description

As outlined in the Expanded Environmental Notification Form (EENF), the Seaport Square project will establish 20 new urban blocks in South Boston's waterfront district. The Proponents propose to construct of 19 new buildings on approximately 23 acres of land. The project site is generally defined by Northern Avenue, Seaport Boulevard, Congress Street and Summer Street. The building program includes approximately 6.5 million square feet (sf), consisting of 2.75 million sf of residential space, 1.25 million sf of retail space, 1.4 million sf of office and research space, a 500,000-sf hotel, and 600,000 sf of educational, civic and cultural uses. The project is proposed as a partnership between Gale International, Morgan Stanley and W/S Development Associates, LLC (the Proponents). The project is intended to be constructed continuously over seven to ten years.

The Proponents have designated a first phase of the project, and have requested a Phase 1 Waiver in the EENF. In Phase 1, the Proponents propose to develop three blocks of the project area, Blocks A, H and J. Block A will include 54,400 sf of residential space and 27,200 sf of retail/restaurant space for a total of 81,600 sf. Block H will include 72,700 sf of residential space and 19,400 sf of retail/restaurant space, for a total of 92,100 sf. Block J is the proposed new site of the Catholic Archdiocese of Boston's Our Lady of Good Voyage Chapel, which is currently located at 65 Northern Avenue. The relocated Chapel will be approximately 25,000 sf. The total gross floor area for the three blocks is 198,700 sf, or approximately 3 percent of the total project.

The project is envisioned as a transit-oriented development which will provide significant improvements to the public realm, including new public open spaces, new streets, extensive streetscaping and bicycle- and pedestrian-friendly areas. The proposed uses will be organized around two open spaces, Seaport Square and Seaport Hill, while Seaport Boulevard itself will become an extensively landscaped urban space. The Proponents have committed to working toward LEED-ND Silver for the overall project. In addition, the Proponents are targeting a LEED – New Construction (NC) Silver standard on Blocks A and H. Because construction on Block J will be directed by the Archdiocese, the final design parameters of the building have not been finalized.

The project site currently consists of public for-fee parking lots, which hold City of Boston's Air Pollution Control Commission permits for 3,647 commercial spaces. The Proponents propose to provide commercial parking spaces for 4,500 vehicles and 2,000 residential parking spaces in five new underground parking garages. The balance of the project after Phase 1 will be built on a series of large "bathtubs" with floor plates containing efficient below-grade parking and loading. Each of these bathtubs will provide platforms upon which multiple buildings will then be constructed. According to the Proponents, considerable construction efficiencies will be realized by constructing these bathtubs in a continuous sequence.

The project will create a number of new streets, continuing the grid layout of the Wharf District. New streets proposed in the EENF include extensions north of Farnsworth Street (as a pedestrian way), Thomson Place/Fan Pier Boulevard, and Pier Street. The Proponents will also construct a new street, Harbor Street that will connect the elevated Summer Street with Seaport Boulevard. Harbor Street will form a new T intersection with another new street, Autumn Lane,

which will provide access to Boston Wharf Road to the west and East Service Road to the east. Harbor Street will be continued as a pedestrian connection from Autumn Lane to Seaport Boulevard.

The EENF has been submitted as a joint EENF/Project Notification Form (PNF) to the Boston Redevelopment Authority (BRA). In response to this Certificate and the BRA Scoping Determination, the Proponents will prepare a combined Draft Project Impact Report (DPIR)/DEIR. While the EENF and DEIR will function as the PNF and DPIR for the BRA respectively, there is no formal linkage between the MEPA and BRA review of the project. The BRA will focus on the review of the project under the requirements of Article 80 of the City of Boston's zoning code, which generally includes more detailed review of building design. MEPA review will focus on the compliance of the project with the performance standards of required state permits, and with the intent of MEPA to ensure that the Proponents will avoid, minimize and mitigate Damage to the Environment.

Jurisdiction

The project is subject to environmental review and the preparation of a mandatory EIR pursuant to the following sections of the MEPA regulations: 301 CMR 11.03(5)(b)(4)(a), because it involves the new discharge of more than 100,000 gallons per day (gpd) of wastewater to a sewer system; 301 CMR 11.03(3)(a)(5), because it involves a new non-water dependent use on greater than one acre of tidelands; 301 CMR 11.03(6)(a)(6), because it will generate more than 3,000 new average daily trips (adt); 301 CMR 11.03(6)(a)(7), because it proposes the construction of more than 1,000 new parking spaces; and 301 CMR 11.03(10)(b)(1), because it will result in the demolition of a historic structure listed in the State Register of Historic Places.

The project requires the following permits and/or approvals from federal and state agencies: a National Pollutant Discharge Elimination System (NPDES) General Permit from the U.S. Environmental Protection Agency (EPA); a Height Restriction Notice and Section 19 Determination from the Federal Aviation Administration (FAA); a Chapter 91 License, a Sewer Connection/Extension Permit, and possible Air Plan Approval from the Department of Environmental Protection (MassDEP); a Sewer Use Discharge Permit and a Construction Dewatering Permit from the Massachusetts Water Resources Authority (MWRA); a Height Restriction Notice from the Massachusetts Aeronautics Commission (MAC); review by the Massachusetts Historical Commission (MHC); a possible Vehicular Access Permit from the Massachusetts Highway Department (MassHighway); approvals related to the Silver Line from the Massachusetts Bay Transportation Authority (MBTA); and compliance with MGL c. 40, Section 54A from the Executive Office of Transportation (EOT). Because the entire project site is within landlocked tidelands, the project will require a Public Benefits Determination from the Secretary of Energy and Environmental Affairs (Secretary), to be issued at the conclusion of the MEPA review process.

The project also requires numerous permits and approval from the City of Boston, including but not limited to: Article 80B Large Project Review and Article 80C Planned Development Area Review from the BRA; review and approval from the Boston Civic Design Commission; review from the Boston Landmarks Commission; Parking Freeze Permits from the Boston Air Pollution Control Commission; a Transportation Access Plan Agreement (TAPA) from the Boston Transportation Department (BTD); an Order of Conditions (OOC) from the

Boston Conservation Commission; and various permits from the Boston Water and Sewer Commission (BWSC).

The Proponents have indicated that they may seek financial assistance from the Commonwealth and that the project may involve land transfers from the Boston Redevelopment Authority and/or MassHighway. Given the possibility of financial assistance and/or a land transfer from the Commonwealth and the comprehensive subject matter of the required state permits, there is full-scope jurisdiction under MEPA for this project

Phase 1 Waiver Request and Criteria

The Proponents have requested a Waiver to allow Phase 1 of the project to proceed prior to the completion of the EIR for the entire project. Section 11.11 of the MEPA Regulations provides that the Secretary may waive any provision or requirement of 301 CMR 11.00 not specifically required by MEPA, and may impose appropriate and relevant conditions or restrictions, provided that the Secretary finds that strict compliance with the provision or requirement would: a) result in undue hardship to the Proponent, unless based on delay in compliance by the Proponent; and b) not serve to minimize or avoid damage to the environment.

In the case of a partial waiver of a mandatory EIR review threshold that would allow the Proponent to proceed to Phase 1 of the project prior to preparing an EIR, this finding shall be based on one or more of the following circumstances: 1) the potential environmental impacts of Phase 1 are insignificant; 2) ample and unconstrained infrastructure and services exist to support Phase 1; 3) the project is severable, such that Phase 1 does not require the implementation of any other future phases; and 4) the agency action on Phase 1 will contain conditions that ensure due compliance with MEPA.

Based on a review of the EENF and comment letters submitted to MEPA, and after consultation with state agencies, I propose to grant a Phase 1 Waiver for this project. This decision is detailed in the Draft Record of Decision (DROD), also issued today, which will be published in the next issue of the *Environmental Monitor* for a fourteen-day comment period, after which I shall reconsider, modify, or confirm the waiver.

SCOPE

General

As modified by this Certificate, the Proponents should prepare the DEIR in accordance with the general guidelines for outline and content found in Section 11.07 of the MEPA regulations. The DEIR should include a copy of this Certificate and of each comment letter submitted in response to the EENF. In order to ensure that the issues raised by commenters are addressed, the DEIR should include responses to comments. This directive is not intended to and shall not be construed to enlarge the scope of the DEIR beyond what has been expressly identified in this Certificate.

The Proponents should circulate the DEIR in accordance with Section 11.16 of the MEPA regulations; to those who commented on the EENF; to municipal officials in the City of Boston; and to any state and federal agencies from which the Proponents will potentially seek permits or approvals. MEPA.1

Project Description

The DEIR should include a thorough description of the entire project and all project elements and construction phases, including Phase 1. The DEIR should outline any changes to the project since the review of the EENF. It should describe the context of this proposal within the long-term redevelopment of the South Boston waterfront and address any redevelopment plans for abutting uses. The DEIR should provide a baseline of information about the project area and an initial analysis of the different types and levels of development that may be suitable for the Seaport Square area. The Proponents should use the DEIR as a tool to ensure appropriate planning for the full build-out of the site, analyze cumulative impacts, and provide an understanding of background conditions and resources present on the site. MEPA.2 MEPA.3 MEPA.4 MEPA.5

The DEIR should include an existing conditions plan illustrating resources and abutting land uses for the entire project area and a proposed conditions plan (or plans) illustrating proposed elevations, structures, access roads, stormwater management systems, and utility connections associated with each phase of the project. The DEIR should include an analysis of wind and shadow impacts of the proposed buildings on pedestrians, open space and historic resources. The DEIR should also include a site circulation plan illustrating how motor vehicles, pedestrians and cyclists will be accommodated on the site for each phase of the project. The site circulation plan should delineate paths and connections to and along the waterfront. Plans must be provided for the entire site at a reasonable scale (e.g. 40 or 60 scale). MEPA.6 MEPA.7 MEPA.8

The Proponents should discuss how it developed the schedule for development in the project area and what factors influenced decisions about the order of building projects. The DEIR should provide information on what uses and buildings will occur in the project area in the interim period. The DEIR should provide an overview of other projects planned in the project area by other Proponents and should discuss how these planned projects will affect Seaport Square development plans, existing infrastructure, and potential cumulative impacts. MEPA.9 MEPA.10 MEPA.11

Permitting and Consistency

The DEIR should include a brief description of each state permit or agency action required or potentially required, and should demonstrate that the project will meet applicable performance standards. The DEIR should contain sufficient information to allow the permitting agencies to understand the environmental consequences of their official actions related to the project. The Proponents should clarify whether the project requires a Vehicular Access Permit from MassHighway. MEPA.12

The EENF provided a discussion of the project's consistency with the BRA's *South Boston Waterfront Public Realm Plan* (also known as the *Seaport Public Realm Plan*); the *South Boston Municipal Harbor Plan (SBMHP)*; and the BRA's 2002 *Fort Point Channel Watersheet Activation Plan*. In the DEIR, the Proponents should expand this discussion to include the Metropolitan Area Planning Council's (MAPC) *MetroFuture* report. I note comments from the MEPA.13

Boston Parks and Recreation Department regarding the requirement for an Open Space Impact Assessment. The Proponents should consult with the Boston Parks and Recreation Department on open space requirements and should provide a discussion of the amount and types of open space that will be provided as part of the project. The DEIR should outline the project's consistency with the City of Boston's *Open Space Plan 2008-2012*. MEPA.14 MEPA.15

Alternatives

The Proponents state in the EENF that it considered earlier alternatives that included a greater amount of hotel and commercial uses, did not include a new road connecting Summer and Harbor Street, and did not fully realize the potential for open space at Seaport Square and Seaport Hill. The DEIR should contain a discussion of previously-considered site planning alternatives, and in particular, outline how site planning has been influenced by existing infrastructure, most notably roads and access to transit facilities, public access to the waterfront, and impacts to historic resources. The purpose of this discussion should be to evaluate how various frameworks that have informed the planning process have shaped the project and neighborhood and to demonstrate how the preferred alternative avoids, minimizes and mitigates environmental impacts to the maximum extent feasible. The Proponents should also evaluate the No Build alternative as required by MEPA regulation. In response to concerns regarding wind and shadow impacts along Northern Avenue, the Proponents should evaluate an alternative project layout that redistributes the proposed Northern Avenue buildings and heights. MEPA.16 MEPA.17 MEPA.18

Stormwater

The majority of the site currently consists of bituminous concrete used for surface parking. After construction, the site will consist of buildings, streets, sidewalks and landscaping. The Proponents assert that stormwater flows from the project area are anticipated to decrease as a result of the project due to a reduction in impervious area and more pervious areas consisting of open space and green roofs. New stormwater flows in the project area will consist primarily of rooftop drainage and runoff from paved surfaces.

The DEIR should provide a description, evaluation and mapping of existing drainage conditions and treatment systems in the project area. The DEIR should clarify whether the stormwater management system for the entire project area will be required to comply with MassDEP's Stormwater Regulations, or just that portion of the project located within the buffer zone to coastal wetland resource areas. The DEIR should provide drainage calculations, pre- and post-construction run-off rates and a detailed description of proposed stormwater best management practices (BMPs). The Proponents should provide sufficient information to demonstrate that the proposed stormwater management plan provides adequate protection for wetland resources, improves water quality and ecosystem function, manages surface and groundwater flows and integrates the environment fully into the urban infrastructure. MEPA.19 MEPA.20 MEPA.21 MEPA.22

The project provides an excellent opportunity to incorporate Low Impact Development (LID) techniques in site design and storm water management plans. LID techniques incorporate stormwater BMPs and can reduce impacts to land and water resources by conserving natural systems and hydrologic functions. The primary tools of LID are landscaping features and naturally vegetated areas, which encourage detention, infiltration and filtration of stormwater on-site. Other tools include water conservation and use of pervious surfaces. The DEIR should

include a discussion of LID measures that the Proponents will incorporate into project design. I note that the Boston Water and Sewer Commission (BWSC) has stated that the Proponents must fully evaluate methods for retaining stormwater on-site before the Commission will consider a request to discharge to the BWSC system. MEPA.23 MEPA.24

Wetlands

The Proponents note in the EENF that an Order of Conditions is required from the Boston Conservation Commission for activities proposed within the buffer zone to jurisdictional resource areas for development on Block A in the Phase 1 portion of the project. There are no additional wetland resource areas in the broader project area.

Chapter 91

Portions of the project site are within Chapter 91 licensing jurisdiction including all of Block A, the western end of Block B, the western end of Block H, the northeastern corner of Block G, and the northeastern portion of Block M. These areas total approximately 1.64 acres, or approximately 8 percent of the total project area. Phase 1 of the project includes 0.44 acres subject to Chapter 91. The entire project area is within landlocked tidelands and subject to a public benefits review and determination pursuant to Chapter 168 of the Acts of 2007. The Proponents have provided a review of the public benefits associated with Phase 1 as part of the EENF; a public benefits review for the remainder of the project should be presented in the DEIR. MEPA.25

The project site is located within the area of the existing South Boston Municipal Harbor Plan (SBMHP), which was approved in 2000. The Proponents assert that the proposed project will fulfill the goals of the SBMHP by activating the South Boston Waterfront and promoting public use of the Fort Point Channel and Boston Harbor. The Expanded ENF includes a general description of uses and structures and their consistency with Chapter 91. The DEIR should expand this discussion for parcels outside of the Phase 1 project area that are subject to Chapter 91, and should describe and illustrate how the project will achieve consistency with the Chapter 91 regulations, as amended by the SBMHP. The Proponents note in the EENF that it may seek one or more amendments to the SBMHP to allow additional height on a portion of Parcel B in exchange for additional open space or other offsets. The Proponents should provide additional detail on the potential need for and process related to a MHP amendment. MEPA.26 MEPA.27

Coastal Zone Management

The project site is located within the Coastal Zone. The Proponents should outline in the DEIR how the project will meet the consistency policies of the Office of Coastal Zone Management. MEPA.28

Water Resources

A study of surface and groundwater that includes inventory, mapping, water quality, and quantity assessment should be conducted for all surface and groundwater resources in the project area. The Proponents should identify potential impacts to groundwater from activities such as underground parking and remediation activities, and demonstrate the construction will not adversely impact groundwater. The Proponents state in the EENF that project-wide design MEPA.29

criteria will be developed to protect and maintain existing groundwater levels; the DEIR should provide further information on this effort. The Proponents should discuss compliance with the requirements of the City of Boston's Groundwater Conservation Overlay District for parcels within the District. The Proponents should outline a plan for monitoring groundwater levels before, during and after construction. MEPA.30 MEPA.31 MEPA.32

Wastewater

According to the EENF, the proposed development will generate approximately 988,000 gallons per day (gpd) of wastewater flows. Phase 1 of the project will generate approximately 27,000 gpd of wastewater. The DEIR should discuss how anticipated wastewater flows were calculated and indicate the percentage of sanitary and industrial wastewater in the projected flows. MEPA.33

The project will require a Sewer Connection Permit from MassDEP. The project area is served by the Boston Water and Sewer Commission's (BWSC) South Boston Interceptor – North Branch, at the Commission's Trilling Way Pumping Station. Flows to South Boston in Interceptor enter the MWRA's wastewater collection system at or near the Columbus Parks Headworks facility, prior to entering MWRA's Main Drainage Tunnel for transport to Deer Island. The Proponents propose in the EENF to route approximately 86 percent of the project's wastewater flows to the South Boston Interceptor – North Branch via A Street, avoiding Trilling Way. In response to comments from the BWSC, the Proponents should investigate other routes for sanitary flows that avoid pumping at Trilling Way. The Proponents should ensure that it has taken other planned developments into account in its analysis of the wastewater system's existing and future capacity. MEPA.34 MEPA.35

While the BWSC and MWRA systems have the capacity to handle project flows during dry weather, these systems surcharge and overflow during large storms. The MWRA and BWSC are currently implementing a long-term control plan to bring combined sewer overflow (CSO) discharges into compliance with federal Clean Water Act and state Water Quality Standards. The MWRA has undertaken a hydraulic modeling effort as part of the CSO control planning. The Proponents should demonstrate in the DEIR that project flows fall within the model assumptions and will not compromise the required levels of CSO control. If project flows exceed the MWRA planning assumptions, the Proponents should include measures to reduce infiltration/inflow (I/I) to offset the flows. The Proponents must confirm in the DEIR that the project will be served by separate sanitary and storm drain systems. MEPA.36 MEPA.37

The DEIR should provide a discussion of current infiltration and inflow (I/I) in the project area and identify any current City of Boston or state efforts to reduce I/I. Comments from MassDEP, the MWRA and the BWSC state that the Proponents will be responsible for removing I/I at a minimum ration of 4:1, which equates to a volume of 3,952,000 gpd of I/I that must be removed from the system. The Proponents should outline in the DEIR how it will meet I/I removal requirements for the project. MEPA.38

The Proponents should clarify in the DEIR whether any dewatering will be required during construction, and whether these flows can be discharged into existing storm drains, or if groundwater will be discharged into the sanitary sewer system. The Proponents should note comments from the MWRA regarding permitting requirements for construction site dewatering. MEPA.39

The Proponents should clarify the potential need for additional MWRA permits for the discharge of laundry effluent and/or process/laboratory wastewater. MEPA.40

Water

The project is anticipated to require approximately 1,087,000 gpd of water. Phase 1 will require 30,000 gpd. The Master Plan should describe, map and evaluate the existing water supply system. The Proponents should discuss whether the system is adequate for existing and proposed uses, fire protection and emergency connections. The Proponents should also estimate the volume of potable water that will be required for irrigation. The Proponents should provide more information on water conservation measures that will be implemented in the different uses proposed in the overall project. MEPA.41 MEPA.42

Transportation

The Proponents presented a preliminary analysis of the project's traffic impacts in the EENF. Trip generation rates for the project were developed using the following Institute of Traffic Engineers (ITE) Land Use Codes (LUC): LUC 220 – Apartment, LUC 230 – Residential Condominium/Townhouse, LUC 310 – Hotel, LUC 520 – Elementary School, LUC 560-Church, LUC 710 – General Office Building, and LUC 820 – Shopping Center. Trip generation rates for the Performing Arts Center were estimated using data collected at the Boston Opera House and the Boston Transportation Department's (BTD) Transportation Access Plan Guidelines. As outlined in the EENF, to more accurately reflect the project's urban location, the Proponents applied adjusted trip generation rates using factors provided by the BTD and ITE pass-by and internal trip rates. The development of the entire project is anticipated to generate 91,822 new daily vehicle trips (unadjusted), or 7,366 adjusted trips. Phase 1 of the project is anticipated to generate 2,658 new unadjusted trips, or 478 adjusted trips.

A full Traffic Impact and Access Study (TIAS) should be prepared for the DEIR in accordance with EEA/EOT Guidelines for Traffic Impact Assessments. The TIAS should analyze the impacts of the project related to vehicle trips; pedestrian, bicycle and transit trips; parking; and truck routes and loading activities. The project will be reviewed by the BTD as part of the Article 80 Large Project Review process. The TIAS presented in the DEIR may conform to the BRA/BTD Scope for the project to the extent possible; however I note that the build-out of the project area will also result in impacts to state-owned roadways. The Proponents must coordinate with the BTD, EOT, MassHighway, the Massachusetts Port Authority (Massport), the Massachusetts Turnpike Authority (MTA), and the Massachusetts Bay Transportation Authority (MBTA) and other abutting property owners in the area regarding long-term transportation planning for the area. The DEIR should discuss the consistency of the project with local, regional and state transportation plans. MEPA.43 MEPA.44 MEPA.45

The DEIR should describe and evaluate the adequacy of the existing City of Boston and state roadway network in the project area, with regard to the following: roadway design, construction and geometrics, roadway lighting, traffic signals and controls, current use and capacity, bridges, sidewalks, and any inactive roads. The DEIR should provide a plan of connections to other local, state and interstate roads and highways. The Proponents should evaluate traffic capacity of the existing roadway systems and identify any capacity or safety MEPA.46 MEPA.47 MEPA.48

problems on local roads or routes leading to the state and interstate network that would limit development.

The projected mode split for the project was developed based on the Proponents' review of the City of Boston's *South Boston Transportation Study* (1999), the State's *South Boston Transportation Summit* (2000), the BRA's *Seaport Public Realm Plan* (1999), and the City of Boston's *Fort Point District 100 Acres Master Plan* (2006). In addition, the Proponent's reviewed mode share assumptions that were used in the traffic analyses for the Commonwealth Flats Development Area (CFDA) projects, Fan Pier, Pier 4, and the Boston Exhibition and Convention Center. These developments incorporate mode shares that reflect the expansion of the Silver Line and changing travel characteristics in the project area. The DEIR should provide additional information related to trip generation, internal trips, pass-by trips, and mode split assumptions used in the TIAS. The DEIR should outline the Proponents' mode split goals for the project area. The Proponent's should discuss a plan for monitoring mode-split in the project area and should outline contingency measures that will be implemented if mode share goals are not met. MEPA.49 MEPA.50

The Proponent's should address concerns regarding proposed improvements to Seaport Boulevard. While Seaport Boulevard is envisioned as an extensively landscaped boulevard for pedestrians and vehicles alike, it is and will remain an important truck route for the Port of Boston and the South Boston waterfront. The DEIR should also address specific comments from Massport regarding vehicular circulation in the project area. MEPA.51

The DEIR should identify appropriate mitigation measures for areas where the project will have an impact on traffic operations. The Proponents should provide a clear commitment to implement and fund mitigation measures and should describe the timing of their implementation based on the phases of the project. MEPA.52

Transportation Demand Management

The DEIR should present a comprehensive Transportation Demand Management (TDM) program that investigates all feasible measures to reduce site trip generation. The TDM program should identify measures and incentives to encourage the use of alternative modes such as transit, walking, and bicycling. The TDM plan should identify the existing modes in the project area including transit, walking and bicycling, analyze their existing and future conditions based on the project's impacts, and provide improvements to attract mode usage. The Proponents should also discuss how plans for individual buildings and the development of the project area as a whole will encourage sustainable transportation choices. The Proponents should provide clear implementation commitments including funding for TDM measures deemed feasible and necessary to sustain and/or increase mode usage over time to ensure a balanced and functional transportation system in the Seaport Square area. MEPA.53 MEPA.54

Transit

The Proponents should provide a description and analysis of existing public transportation in the project area. Phase 1 of the project is anticipated to add 1,188 net new transit trips per day. The overall project is expected to generate 42,251 daily transit trips. The Proponents should discuss its goals for working with the MBTA to optimize transit service to the MEPA.55

project area. The DEIR should demonstrate that sufficient transit system capacity is available to meet the projected ridership increase. The Proponents should provide additional information on a proposed new headhouse connection between the Seaport Square open space parcel and the MBTA Silver Line waterfront route. MEPA.56 MEPA.57

The Proponents state in the EENF that it may create a hub for a car-sharing vehicle service by providing 100 or more car sharing spaces in one or more proposed parking garages. The DEIR should provide additional information on this proposal. MEPA.58

The DEIR should assess existing water transportation in the project area and outline how the Proponents will either expand water transportation service and/or promote water transit usage. MEPA.59

Pedestrian and Bicycle Facilities

The development of the Seaport Square neighborhood offers significant opportunities to improve pedestrian and bicycle access to and within the site. The DEIR should evaluate project-generated pedestrian and bicycle trips and distribution, identify intersections and other areas where mitigation may be required to ensure safe access, and commit to appropriate mitigation measures. It should identify how the project will improve and support connectivity to and within the site. The DEIR should outline a pedestrian and bicyclist activity monitoring plan that evaluates usage, level-of-service at pedestrian/bike path intersections, and signal timing, to ensure that proposed facilities are adequate and that crossing times are maximized and safe. Plans submitted with the DEIR should provide details on proposed pedestrian and bicycle infrastructure including design standards for plantings, street furniture, signage, sidewalk/crosswalk widths, paving, bike lanes, bike racks and employer shower facilities. The Proponents should respond to specific comments from WalkBoston about pedestrian connections in the project area and potential conflicts between vehicles and pedestrians. MEPA.60 MEPA.61

Parking

The project will provide approximately 6,500 underground parking spaces when complete; approximately 4,500 will be commercial public for-fee spaces and 2,000 will be residential. The project site has South Boston Parking Freeze permits from the City's Air Pollution Control Commission for 3,647 commercial parking spaces. The Proponents expect to seek new permits for approximately 850 additional commercial spaces from the Parking Freeze Bank. The Proponents should explain how the number of parking spaces was determined and discuss parking demand management for the project area. The EENF provided an overview of the project's consistency with BTD parking ratios. While proposed parking is less than the BTD parking ratio for residential, hotel and civic uses, the Proponents are proposing parking spaces at a greater ratio for office/research uses and for retail and other non-residential uses. The Proponents propose a ratio of 1 space per 1,000 sf of office/research, as compared to the BTD guideline of 0.7 spaces per 1,000 sf, and a ratio of 2 spaces per 1,000 sf for retail and other non-residential as compared to the BTD guideline of 0.7 spaces per 1,000 sf. MEPA.62

The DEIR should include a parking needs assessment and demonstrate that the parking supply is appropriate for a mixed-use development planned in conjunction with high-quality transit access. It should explain the nature of the on-site parking (i.e. commercial/visitor, MEPA.63

underground/surface, long-term/short-term), identify turnover rates for employees and others, and include an analysis of parking supply, demand and pricing in the project area. The DEIR should evaluate, and I strongly urge the Proponents to commit to, a project scenario in which the commercial parking supply is reduced, in light of the extensive public transit, bicycle and pedestrian opportunities in the project area. MEPA.64

Site Access/Loading

The DEIR should describe how the project intends to accommodate service and loading functions and the requirements of the project for service/loading infrastructure (e.g., projected demand, circulation, required turning radii, etc.). The Proponents should analyze the impacts of service and loading functions on the area traffic network. MEPA.65

Transportation Air Quality Impacts

The significant number of projected new daily vehicle trips has the potential to result in increased regional air pollutants. In response to comments from MassDEP, the Proponents should conduct an air quality mesoscale analysis comparing the Build and No Build conditions. The Proponents should consult with MassDEP regarding modeling protocol prior to conducting this analysis. The purpose of the mesoscale analysis is to determine whether, and to what extent, the proposed project will increase the amount of volatile organic compounds (VOCs) and nitrogen oxides (NOx) in the project area. The mesoscale analysis also will be used to determine if the project will be consistent with the Massachusetts State Implementation Plan (SIP). MEPA.66

If the mesoscale analysis of the Build condition, compared with the No-Build condition, indicates that the proposed project will result in an increase in VOC and NOx emissions, (which is expected given the large number of additional trips), the Proponents must develop, implement, or fund adequate mitigation measures to offset these increases to the maximum extent possible. The Proponents should note suggested Transportation Demand Management (TDM) measures recommended by MassDEP in its comments on the EENF. MEPA.67

Greenhouse Gas Emissions

The proposed project is subject to EEA's Greenhouse Gas Emissions (GHG) Policy that requires Proponents to quantify project-related GHG emissions and propose and quantify the impact of mitigation measures to reduce GHG emissions. The DEIR must include a GHG analysis that calculates emissions for both mobile and stationary sources and a corresponding mitigation program to reduce overall GHG emissions associated with the project. The GHG analysis should be conducted for each proposed building and use, and data inputs and modeling results should be provided for each building and cumulatively for the entire project. When evaluating emissions associated with indirect energy consumption, the Proponents should consider energy use associated with treating wastewater and transporting drinking water to the project area. I encourage the Proponents to quantify the GHG impacts of materials management for the project development and projected future operation. MEPA.68 MEPA.69 MEPA.70

The Proponents should demonstrate in the DEIR that it has evaluated and committed to GHG-reduction measures consistent with the GHG Policy. The Proponents should evaluate additional GHG mitigation alternatives as suggested by MassDEP and the Department of Energy MEPA.71

Resources (DOER) in their comments submitted on the EENF. The GHG analysis should clearly present modeling data inputs, the results of calculations used to establish the existing/baseline condition(s), the build condition(s), and the impact of proposed emissions-reduction mitigation. The Proponents should clarify which specific measures will be implemented, provide supporting modeling data that reflects the implementation of these measures, and clearly depict how these measures reduce GHG emissions in future build-with-mitigation scenarios.

The Proponents have committed to examining the feasibility of siting and sizing a central energy plant with cogeneration capabilities. As outlined in the EENF, the Proponents will compare emissions generated by this potential facility with a scenario in which existing utility services are used for each proposed building in the Seaport Square project area. As stated above, this project presents a unique and exciting opportunity to make a significant commitment related to clean energy and GHG emissions, in addition to the Proponents' goal of targeting LEED-ND Silver for the project. In light of the Proponents' stated sustainability goals and ongoing evaluation of measures including a cogeneration plant that have the potential to significantly reduce GHG emissions, I will entertain a request to engage the opt-out provision of the GHG policy, based on additional information provided by the Proponents. I encourage the Proponents to consult with the MEPA Office, MassDEP and DOER prior to submission of the DEIR regarding possible GHG mitigation measures or project-wide goals related to reducing GHG emissions.

Recycling/Solid Waste

The Proponents state in the EENF that it will present a recycling program for the project in the DEIR. This discussion should include a response to MassDEP's comments on materials management for the project. MEPA.72

Hazardous Waste

According to the EENF, one Release Tracking Number (RTN 3-13624) is associated with Block M1/M2. The EIR should map and identify known contamination sites in the project area and discuss the potential for additional sites to be encountered during construction. The Proponents should provide an overview of planned remediation efforts. MEPA.73

Historic Resources

The Chapel of Our Lady of Good Voyage located at 65 Northern Avenue is included in MHC's Inventory of Historic and Archaeological Assets of the Commonwealth. The project will result in the removal and relocation of the Chapel. MHC has determined that the project will have an adverse effect pursuant to 950 CMR 71.05(a) due to the demolition of an inventoried property. The Proponents should consult with MHC to resolve issues related to the adverse effect determination, and report on this consultation in the DEIR. MEPA.74

The EENF lists several other properties or sites within the project vicinity that are listed on the State and National Registers of Historic Places, including the Fort Point Channel Historic District. The Proponents assert that shadow impacts to the Fort Point Channel Historic District are anticipated to be minimal because the development blocks are generally north of the district. The DEIR should include a shadow study that will detail any impacts to historic resources in the MEPA.75

project area. Also within the project area is a proposed Landmark District currently under study by a committee of the Boston Landmarks Commission. One of two proposed "Protection Areas" associated with the proposed Fort Point Channel Landmark District - the Seaport Boulevard/Boston Wharf Road Protection Area - would encompass Blocks H, J, K and Q of the project. The goals of the Protection Areas are to protect view corridors into and out of the proposed landmark district and to ensure that the massing, land coverage, and height of new construction on adjacent lots is compatible with that of the proposed landmark district. Development in the Protection Area is subject to review by the Boston Landmarks Commission.

The Northern Avenue Bridge is listed on the National Register as a contributing resource within the Fort Point Channel Historic District and in the State Register of Historic Places. The Proponents should provide additional information to MHC regarding proposed improvements to the Bridge so that MHC can assess any potential adverse effects. MEPA.76

Construction Period Impacts

The DEIR should include a discussion of construction phasing, evaluate potential impacts associated with construction activities and propose feasible measures to avoid or eliminate these impacts. It should address impacts from erosion and sedimentation and address how dewatering will be managed. It should address the impacts of truck traffic on project area roadways and land uses. The Proponents must comply with MassDEP's Solid Waste and Air Quality Control regulations. The Proponents should implement measures to alleviate dust, noise, and odor nuisance conditions, which may occur during the construction activities. MEPA.77

I expect the Proponents will participate in MassDEP's Diesel Retrofit Program to minimize the air quality impacts of construction vehicles. The DEIR should include a commitment to participate in this program and describe the specific measures that will be employed including retrofitting of construction equipment with EPA-certified emission control devices and use of on-road Low Sulfur Diesel Fuel (LSD). MEPA.78

Mitigation

The DEIR should include a separate chapter on mitigation measures. It should include Draft Section 61 Findings for all state permits that include a clear commitment to mitigation, an estimate of the individual costs of the proposed mitigation, and the identification of the parties responsible for implementing the mitigation. A schedule for the implementation of mitigation, based on the construction phases of the project, should also be included. MEPA.79

Responses to Comments

The DEIR should include a copy of each comment letter submitted to MEPA as listed at the end of this Certificate. In order to ensure that the issues raised by commenters are addressed, the DEIR should include a response to comments. This directive is not intended to, and shall not be construed to, enlarge the scope of the DEIR beyond what has been expressly identified in this Certificate. MEPA.80

Circulation

The Proponents should circulate the DEIR in compliance with Section 11.16 of the MEPA regulations. Copies should be sent to those parties that submitted comments on the EENF, and to each federal, state and local agency from which the Proponents will seek permits or approvals.

August 8, 2008
Date

Ian A. Bowles

Comments received:

6/20/2008	Boston Groundwater Trust
7/2/2008	Epsilon Associates Inc., for the Proponent
7/9/2008	David D. Wamester, Gale International
7/10/2008	R. Jeffrey Lyman, Goodwin Procter
7/28/2008	Boston Preservation Alliance
7/30/2008	Massachusetts Water Resources Authority
7/30/2008	Poseidon Enterprises, Inc.
7/31/2008	Office of Coastal Zone Management
7/31/2008	Massachusetts Historical Commission
7/31/2008	City of Boston, Parks and Recreation Department
7/31/2008	WalkBoston
8/1/2008	Boston Water and Sewer Commission
8/1/2008	Massachusetts Port Authority
8/1/2008	Department of Environmental Protection, Northeast Regional Office
8/4/2008	The Boston Harbor Association
8/6/2008	City of Boston, Environment Department

IAB/BA/ba

9.2 MEPA Certificate on PNF/ENF

MEPA.1 Distribution

The Draft PIR/EIR has been circulated in accordance with Section 11.16 of the MEPA regulations. The circulation list includes all those who commented on the Environmental Notification Form/Project Notification Form and Phase 1 Waiver Request, as well as any state or federal agencies from which the proponent will seek permits or approvals.

MEPA.2 Project description.

Please see Sections 1.2, 1.3 and 1.9 for the project description.

MEPA.3 Changes since the EENF.

Based on numerous discussions and feedback, certain uses have been swapped among Blocks across the 23 acres. Additionally, some of the Blocks that once housed one large building now are proposed to have multiple, smaller buildings. Therefore, the number of buildings proposed has increased from 19 to 23. Please see Section 1.5 for a detailed discussion of changes since the EENF.

MEPA.4 Context and plans for abutting uses.

Please see Section 1.6 for information on the development context and other projects in the area.

MEPA.5 Existing conditions and analysis of types and levels of suitable development.

Please see Section 1.1 for a description of existing conditions. Please see Section 1.6 for information on the suitability of the site for the proposed development.

MEPA.6 Existing conditions plan.

Figure 1-2 shows the existing conditions.

MEPA.7 Analysis of wind and shadow impacts.

Please see Sections 4.1 and 4.2 for a discussion of wind and shadow impacts, respectively.

MEPA.8 Site circulation plan.

Figure 1-40 through 1-42 show site circulation as the phases of the Project are completed.

MEPA.9 Discuss how the schedule was developed.

Please see Section 1.9.3 for a discussion of the proposed development schedule.

MEPA.10 Discuss uses and buildings that will occur during interim period.

It is anticipated that the parking lots will remain in operation until such time as work commences on a specific phase. Sites used for construction staging and storage will be cleaned up after construction and returned to use as surface parking, unless the site is scheduled for construction activities in the short-term. Please see Section 1.9.3 for more information on the Project's schedule.

MEPA.11 Overview of projects planned in the project area, affect on Seaport Square, and cumulative impacts.

Please see Section 1.6 for an overview of projects planned in the area and a discussion of cumulative impacts.

MEPA.12 Permits and agency actions.

Please see Section 2.2.2 for a discussion of permits and agency actions related to the Project.

In regard to the need for a Vehicular Access Permit, there exists a "no access" sideline along Congress Street, between Boston Wharf Road and B Street, where curb cuts are proposed. Accordingly, the Project will request a change in designation of the "no access" area, as well as a Vehicular Access Permit for the proposed Congress Street curb cuts. As part of this request, the Project will submit a site plan, a curb cut plan, and a traffic study to MHD.

MEPA.13 Discuss consistency with *MetroFuture*

Please see Section 1.7.1 for a discussion of the Project's consistency with *MetroFuture*.

MEPA.14 Open space impact assessment and open space discussion.

Please see Section 4.14 for the open space impact assessment.

MEPA.15 **Discuss consistency with the City of Boston's *Open Space Plan 2008-2012*.**

Please see Section 1.7.2 for a discussion of the Project's consistency with the City of Boston's *Open Space Plan 2008-2012*.

MEPA.16 **Site planning alternatives and influence of infrastructure.**

Please see Section 1.8 for a discussion of alternatives and a discussion of the influence of transportation infrastructure on Project planning.

MEPA.17 **No Build alternative.**

Please see Section 1.8.2 for the No Build alternative.

MEPA.18 **Alternative layout that redistributes the proposed Northern Avenue buildings and heights.**

The Proponent studied various alternative configurations of buildings and heights along Northern Avenue, and has selected the current alternative (the proposed Project as described in Section 1.2) from among the variations studied which redistributes the massing away from Northern Avenue.

MEPA.19 **Existing drainage conditions and treatment systems in the project area.**

Please see Section 7.3.1 and Figure 7-5 for details on the existing drainage systems serving the Project Area.

MEPA.20 **Clarify compliance with MassDEP's Stormwater Regulations.**

Please see Section 7.3.5.

MEPA.21 **Provide drainage calculations, pre- and post-construction run-off rates and a detailed description of proposed stormwater best management practices.**

Please see Table 7-2 and Figure 7-6 for a summary of pre- and post-development run-off rates. Please see Sections 7.3.2 to 7.3.7 for a description of stormwater BMPs.

MEPA.22 **Provide sufficient information to demonstrate that the proposed stormwater management plan provides adequate protection for wetland resources, improves water quality and ecosystem function, manages surface and groundwater flows and integrates the environment fully into the urban infrastructure.**

The Stormwater Mangement Plans developed during the construction phases of the Project will comply with the conditions set forth in the NPDES Permit for Stormwater Discharges from Construction Activities and will be reviewed by the

BWSC prior to receiving authorization to discharge to BWSC drainage infrastructure. Post-development Stormwater Management Plans will be required by BWSC for all development Blocks prior to granting authorization to connect to the drainage system. Refer to Section 7.3.7.

MEPA.23 LID measures.

Please see Section 7.3.3 for a discussion of LID.

MEPA.24 Methods for Retaining stormwater on-site

The Project will result in a significant reduction in the peak rate of runoff being discharged from the Site due to a nearly 20% reduction in impervious coverage. As such, stormwater retention is not required. The Project is investigating ways to store run-off to offset irrigation and other non-potable demands. Please see Section 7.3.4.

MEPA.25 Public benefits review for the remainder of the project.

Please see Section 4.8.5 for the public benefits review for the Project.

MEPA.26 Expand discussion of uses and structures and their consistency with Chapter 91.

The Project will comply with Chapter 91. Please see Section 4.8 for a discussion of Chapter 91 in relation to the Project.

MEPA.27 Provide additional detail on the potential need for and process related to a MHP amendment.

The Project complies with the South Boston Municipal Harbor Plan and does not require any amendment to the Harbor Plan.

MEPA.28 Consistency with policies of the Office of Coastal Zone Management.

Please see Section 4.9 for a discussion of consistency with the policies of the Office of Coastal Zone Management.

MEPA.29 Study of surface and groundwater. Identify potential impacts to groundwater and demonstrate that construction will not adversely impact groundwater.

Please see Section 4.10 for a discussion of groundwater. The design criteria established Project-wide will be implemented to ensure that groundwater will not be lowered. No permanent, active dewatering systems, or perimeter drains below groundwater levels, will be allowed. No permanent groundwater treatment or remedial systems due to contaminated groundwater are required so there is no need for groundwater pumping for remediation.

MEPA.30 **Provide information on criteria developed to protect and maintain existing groundwater levels.**

Please see Section 4.10 for a discussion of groundwater. The design criteria established Project-wide will be implemented to ensure that groundwater will not be lowered. No permanent, active dewatering systems, or perimeter drains below groundwater levels, will be allowed. No permanent groundwater treatment or remedial systems due to contaminated groundwater are required so there is no need for groundwater pumping for remediation.

MEPA.31 **Discuss compliance with Groundwater Conservation Overlay District.**

The Project will comply with the Groundwater Conservation Overlay District. Please see Section 4.10.5 for more information.

MEPA.32 **Outline a plan for monitoring groundwater levels before, during and after construction.**

The Proponent will coordinate with the Boston Groundwater Trust (BGwT) in regard to groundwater monitoring. Groundwater monitoring wells will be installed to document existing groundwater levels and hydrogeologic conditions. The wells will be installed prior to the start of construction and in accordance with City and BGwT standards for permanent monitoring wells. The wells will be installed at locations where they will be accessible for long-term monitoring and will be turned over to the BGwT when no longer required for the Project, thereby increasing the inventory of wells available to the BGwT for their on-going monitoring program. The water level measurement data will be made available to the BRA and BGwT. Please see Section 4.10.5 for more information.

MEPA.33 **Discuss how anticipated wastewater flows were calculated and indicate the percentage of sanitary and industrial wastewater in the projected flows.**

Anticipated wastewater flows were calculated using the wastewater generation rates established in Title 7 of the State Environmental Code (310 CMR 15.00) as applied to the proposed development program. The development program consists primarily of retail, residential, and office development with predominantly domestic sanitary wastewater. Certain uses within the overall program may generate small amounts of industrial wastewater but those uses are not significant or definable at this time. Please see Section 7.1.3.

MEPA.34 **Investigate other routes for sanitary flows that avoid pumping at Trilling Way.**

The majority of sanitary flows from the Project will be directed to the A Street sewer rather than to the Trilling Way Station. Please see Section 7.1.3 for more information.

MEPA.35 **Ensure that other planned developments have been taken into account in the analysis of the wastewater system's existing and future capacity.**

Please see Section 7.1.2 for a discussion of proposed wastewater generation, which includes a discussion of other planned developments.

MEPA.36 **Demonstrate that project flows fall within the model assumptions and will not compromise the required levels of CSO control. Include measures to reduce infiltration/inflow to offset flows.**

Please see Section 7.1.2.1 for a discussion of the Project's consistency with the model assumptions. Please see Section 7.1.4 for a discussion of infiltration/inflow.

MEPA.37 **Confirm that the project will be served by separate sanitary and storm drain systems.**

The Project will be served by separate sanitary and storm drain systems. Please see Section 7.1.4.

MEPA.38 **Infiltration/Inflow.**

Please see Section 7.1.4 for a discussion of infiltration/inflow.

MEPA.39 **Dewatering.**

Temporary construction dewatering will be required for planned below-grade excavation and parking garage construction. A Massachusetts Water Resources Authority (MWRA) temporary Construction Dewatering permit is not required since storm drains discharge into outfalls in the Fort Point Channel and Boston Harbor water bodies, and not the MWRA system. Please see Section 4.12.7.1 for a discussion of dewatering during construction.

MEPA.40 **Clarify potential need for additional MWRA permits.**

The Project may include industrial tenants or owners with uses that will require Industrial Use Discharge Permits from the MWRA. As development plans advance, the Proponent will coordinate closely with the MWRA to evaluate specific permitting needs on a case-by-case basis.

MEPA.41 **Water supply system and irrigation.**

Please see Section 7.2 for discussions of the existing and proposed water supply system.

MEPA.42 **Water conservation.**

The Project is committed to implementing all practical measures to reduce its demand on the public water supply. The building program will include the latest technology in low-flow fixtures and other water conservation measures. The Project is currently investigating ways of offsetting its irrigation water demands through the capture and reuse of roof runoff which has the added benefit of further reducing the burden on the drainage system. Please see Section 4.13 for more information.

MEPA.43 **A full Traffic Impact and Access Study should be prepared.**

Please see Chapter 3 for the transportation study.

MEPA.44 **Coordinate with BTD, EOT, Mass Highway, Massport, MTA, MBTA and other abutting property owners reagarding long-term transportation planning.**

The transportation chapter contains a section on long-term transportation conditions in the South Boston waterfront area, including impact analysis for all known projects in and near the area. It is expected that further coordination with the agencies above will occur as this analysis is reviewed.

MEPA.45 **Discuss consistency with local, regional and state transportation plans.**

Seaport Square transportation planning was built upon and is consistent with recommendations, plans and policies from the BTD *South Boston Transportation Study* (July 2000) and the BRA's 2003 *Seaport Public Realm Plan.* The Project is also consistent with the *Journey to 2030: Transportation Plan* of the Boston Region Metropolitan Planning Organization prepared by the Central Transportation Planning Staff, the *Access Boston 2000-2010* (2002) prepared by the City of Boston, the Massachusetts Pedestrian Plan (1998), and *the Massachusetts Statewide Bicycle Transportation Plan*. The Project complies with these plans in that it proposes growth within close proximity to transit, provides streetscape and lighting improvements, and supports an increase in walking and bicycle trips, thereby reducing Single Occupant Vehicle travel.

MEPA.46 **Describe and evaluate the adequacy of the existing City of Boston and state roadway network in the project area.**

Please see Section 3.2.5.

MEPA.47 **Provide a plan of connections to other local, state and interstate roads and highways.**

Figure 3-30 shows connections to local, state and interstate roads and highways.

MEPA.48 **Evaluate traffic capacity of the existing roadway systems and identify any capacity or safety problems on local roads or routes leading to the state and interstate network that would limit development.**

The evaluation of roadway systems is provided in Sections 3.2.5, 3.3.1.10, 3.3.2.9 and 3.3.4.5 for Existing, Mid-term No Build, Seaport Square Build, Seaport Square Build with Mitigation and Long-term Conditions (40 or more years into the future). Some existing capacity deficiencies are being addressed through an area signal improvement project underway by BTD. Changes in land use both within and outside the district have alleviated some problems formerly identified by the CA/T models. And while some capacity issues could be associated with the Long-term Conditions, the changing nature of development over time, changes in commute patterns and mode, and interim adjustments such as those currently underway by BTD could resolve those issues as well. Area-wide monitoring of actual conditions at key intersections is one way of addressing issues as new projects come on line. The City should consider developing a mechanism by which developers and other interested parties could begin to develop monitoring procedures—perhaps under the aegis of the Seaport TMA.

MEPA.49 **Provide assumptions used in traffic analysis.**

Assumptions used in the analysis were carefully worked out with BTD and the BRA. They are discussed in Section 3.3.1 for the No-Build analysis and Section 3.3.2 for the Seaport Square Build and Seaport Build with Mitigation analysis.

MEPA.50 **Mode split contingency measures if mode share goals are not met.**

The mode shares developed for the study and approved by the BRA and BTD reflect a realistic assessment of future mode choice for this area. The comprehensive transportation demand management program described in Section 3.3.3.4, combined with parking pricing and management, will insure that the mode use targets are met. As the overall daily population density in the Seaport area increases, pedestrian, bicycle and transit travel will also grow. Overall monitoring of traffic conditions and transit ridership in the Seaport area is recommended as well. The City should consider developing a mechanism by which developers and other interested parties could begin to develop monitoring procedures—perhaps under the aegis of the Seaport TMA.

MEPA.51 **Address concerns regarding proposed improvements to Seaport Boulevard and vehicular circulation in project area.**

Massport comments are addressed specifically in Section 9.2.2. Seaport Boulevard is designated as a primary truck route west of Sleeper Street and east of B Street, and a secondary truck route between Sleeper Street and B Street. The design treatment of Seaport Boulevard will be determined in close consultation with the BRA, BTD and Massport.

MEPA.52 **Mitigation measures.**

Please see Section 3.3.3 for a discussion of transportation mitigation.

MEPA.53 **Transportation Demand Management.**

The Seaport Square Transportation Demand Management program is discussed in Section 3.3.3.4. The Proponent is already an active participant in the Seaport TMA and will work to implement TDM measures appropriate for the various Project land uses.

MEPA.54 **Discuss how plans for individual buildings and the development of the project area as a whole will encourage sustainable transportation choices.**

The density and mix of uses in Seaport Square, combined with its proximity to transit nodes and activity centers both in the Seaport District and Downtown will encourage sustainable transportation choices. A vigorous Transportation Demand Management program will facilitate alternative modes as well.

MEPA.55 **Provide a description and analysis of existing public transportation in the project area.**

Please see Section 3.2.7 for a discussion of existing public transportation in the Project area.

MEPA.56 **Demonstrate that sufficient transit system capacity is available to meet the projected ridership increase.**

The impacts of No-Build, Seaport Square Build, Seaport Square Build with Mitigation and Long-term Conditions development on Silver Line capacity are discussed in Sections 3.3.1.11, 3.3.2.11, and 3.3.4.6, respectively, and summarized in Table 3-35. While the MBTA's projected mid-term capacity of 3,997 seated and 4,920 crush-loaded is adequate to support Seaport Square and all the other mid-term projects only at crush loading, fewer peak hour trains than had been anticipated previously will be necessary in the mid-term development time frame – 50 peak hour peak direction trains vs. 41 projected under service policy loads.

Similarly, in the long-term time frame, only 64 peak hour peak direction trains under service policy or, 52 under crush loading will be necessary to support the complete Long-Term Conditions development build-out vs. an 88 train requirement in earlier projections. This shift is partially due to the introduction of new residential use into the Seaport District that had not been anticipated at the time of CA/T development forecasts.

MEPA.57 New headhouse connection.

As discussed in Section 3.3.3.1, Seaport Square will provide a new free-standing headhouse to the existing Silver Line Courthouse Station. The new headhouse will be located in Seaport Square Green along Seaport Boulevard, and will be easily accessible with direct connections to Logan International Airport and the South Station commuter rail and Red Line services.

MEPA.58 Provide additional information on car sharing.

The Proponent will provide spaces in one or more of its garages for car-sharing services. The Proponent is exploring providing 100 or more spaces in at least one garage, a hub for a car-sharing vehicle service.

MEPA.59 Water transportation.

Existing water transportation is described in Section 3.2.7.2, and water taxi access points are shown in Figure 3-11. None of the Seaport Square Blocks have direct waterfront access, but the Project will improve pedestrian access to water transportation and also add population density to support water taxi and scheduled water transportation service. Through participation in the Seaport TMA, the Proponent will promote water transportation options for residents, employees and visitors.

MEPA.60 Pedestrian and bicycle trips, access, activity monitoring plan and infrastructure.

Existing conditions for pedestrians and bicycle trips are discussed in Sections 3.2.8 and 3.2.9, respectively. Pedestrian access and levels of service for space and delay are discussed in Sections 3.3.1.12, 3.3.3.12 for the Mid-Term No Build and Seaport Square Build conditions. Preliminary streetscape details are provided in Section 1.3.1.7.

MEPA.61 Respond to comments from WalkBoston.

Please see Section 9.4.6 for responses to WalkBoston's comment letter.

MEPA.62 Parking spaces, parking demand management and Parking Freeze Bank spaces.

The numbers of parking spaces for each of the Seaport Square land uses is discussed in detail in Section 3.3.2.10 and Table 3-20. In general, the overall ratio of spaces per 1,000 sf for the Project as a whole is 1.0, generally consistent with BTD parking ratios for the area.

MEPA.63 Parking needs assessment and parking supply.

As discussed in Section 3.3.2.10, the retail parking demand of 2,600 was based on auto use of 39%, car occupancy of 1.8 and shopper parking turnover of 2.67, which yielded a demand for 2,672 spaces. Office demand calculated by the same method yields a demand for 1,781 spaces vs. 925 proposed, indicating a very constrained employee parking supply, consistent with City parking policy and Transportation Demand Management goals. The parking management plan will be developed more fully with the Boston Air Pollution Control Commission and BTD as permitting progresses.

MEPA.64 Reduction of commercial parking supply.

The current parking supply in the Seaport Square area is 3,647 commercial spaces and 91 employee spaces. Virtually all the spaces are used for low-cost daytime commuter parking. In the Seaport Square plan, 4,000 commercial spaces are proposed, an increase of 353 spaces from the freeze bank (reduced from the estimate of an 850 space request in the PNF/ENF). It is of note that of the 4,000 commercial spaces, 220 will serve hotel guests, 255 will serve cultural/recreational patrons, and 2,600 will serve shoppers, with only 925 spaces devoted solely to office worker parking. This space allocation and the proposed market rate pricing are consistent with South Boston Parking Freeze goals.

MEPA.65 Service and loading functions.

Loading is discussed in Section 3.3.2.14. Off-street service and loading locations are shown in Figure 3-2. Loading will be provided off-street to minimize impacts on area traffic. As individual buildings are designed, the loading areas will be designed in more detail and reviewed by BTD.

MEPA.66 Mesoscale analysis.

Please see Section 4.5 for the mesoscale analysis. The mesoscale analysis indicates that compared to the Existing conditions, the Seaport Square Build condition will reduce NOx by about 53% and VOC emissions by about 25%. The analysis also shows an increase in VOC and NOx emissions of about 2-5% for the Seaport Square Build with Mitigation condition versus the Mid-term No-Build condition, due to the increase in vehicular traffic.

MEPA.67 **Mitigation measures if Build Condition results in an increase of VOC and NOx emissions, in relation to the No Build Condition.**

The Project will result in an increase of VOC and NOx emissions due to the increase in vehicle trips. Mitigation includes a comprehensive transportation demand management program and signal improvements at area intersections which will reduce delay, and therefore idling times. Please see Section 4.5.4.1.

MEPA.68 **GHG analysis.**

Please see Section 4.6 for a detailed GHG analysis which addresses emissions from both mobile and stationary sources.

MEPA.69 **Consider energy use associated with treating wastewater and transporting drinking water to the project area.**

Energy use associated with treating wastewater and transporting drinking water has been included in the greenhouse gas analysis. Please see Table 4.6-3.

MEPA.70 **GHG impacts of materials management.**

Materials management is discussed in Section 4.6.1.2. Although the Project is committed to materials management during both construction and operation, it is too early in design to quantify GHG impacts.

MEPA.71 **GHG mitigation measures.**

Please see Section 4.6 for mitigation measures related to greenhouse gas emissions.

MEPA.72 **Recycling and materials management.**

Please see Sections 4.11.2, 4.11.3 and 4.11.4 for discussions on recycling and solid waste management. Please see Section 9.2.1 for responses to MassDEP's comment letter.

MEPA.73 **Hazardous waste.**

Please see Section 4.11.1 for a discussion of hazardous waste.

MEPA.74 **Consult with MHC.**

The Proponent has requested a meeting with the Massachusetts Historical Commission to review the proposed Project and to discuss potential impacts to historic resources, including the Chapel of Our Lady of Good Voyage and the Old Northern Avenue Bridge.

MEPA.75 **Shadow study detailing impacts to historic resources.**

Please see Section 6.3.2 for a discussion of shadow impacts on historic resources.

MEPA.76 **Provide MHC with additional information regarding proposed improvements to the Northern Avenue Bridge.**

The Proponent has shifted its funding commitment due to a request by the City of Boston to focus the improvements to Northern Avenue itself, including landscaping and other improvements.

MEPA.77 **Construction impacts.**

Please see Section 4.12 for information on construction impacts.

MEPA.78 **MassDEP's Diesel Retrofit Program.**

The Proponent plans to have all contractors use diesel equipment with after-engine emission controls wherever possible.

MEPA.79 **Mitigation measures.**

Please see Chapter 8 for mitigation measures and Draft Section 61 Findings.

MEPA.80 **Response to comments.**

Responses to comments are provided below.

COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENERGY & ENVIRONMENTAL AFFAIRS
DEPARTMENT OF ENVIRONMENTAL PROTECTION
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IAN A. BOWLES
Secretary

LAURIE BURT
Commissioner

August 1, 2008

Ian A. Bowles, Secretary
Executive Office of
Energy & Environmental Affairs
100 Cambridge Street
Boston MA, 02114

RE: South Boston
Seaport Square
Northern Ave., Seaport Blvd., Congress St., and Summer St.
EEA # 14255

Attn: MEPA Unit

Dear Secretary Bowles:

The Massachusetts Department of Environmental Protection (MassDEP) and the Executive Office of Environmental Affairs, Division of Energy Resources (DOER) have reviewed the Project Notification Form (PNF)/Environmental Notification Form (ENF) submitted by Gale International, Morgan Stanley, and W/S Development Associates, LLC to construct about 6.5 million square feet in 19 buildings on 23 acres in the vicinity of the South Boston waterfront (EEA #14255). The project would consist of 2.75 million square feet (sf) of residential space; 1.25 million sf of retail; 1.4 million sf of office and research; 500,000 sf of hotel; and 600,000 sf of educational, civic, and cultural uses. The project is categorically included for the preparation of a draft and final environmental impact report (DEIR, FEIR), and the proponents is requesting a Phase 1 waiver for three blocks (A, H, and J), which would include 127,100 sf for 110 residential units, 46,600 sf of retail/entertainment space, a 25,000 sf chapel, and a 43-space parking garage. The Department provides the following comments.

Waterways, Chapter 91

The Waterways Regulation Program (WRP) of MassDEP reviewed the PNF/ENF in developing the following comments, which are generally focused on the Phase 1 waiver project.

Jurisdiction -Two of the three parcels subject to the Phase 1 waiver request are located on filled Commonwealth tidelands within Chapter 91 (C.91) jurisdiction: Parcel A and Parcel H, (identified in the South Boston Municipal Harbor Plan (MHP) as Parcels D and F, respectively). The other parcels within the overall development are located on *landlocked tidelands*, which trigger a public benefit determination by the Secretary in accordance with Chapter 168 of the Acts of 2007.

Open Space - Given the location of the Phase 1 waiver parcels, the proposed design can serve as a gateway to the project from the Downtown Boston area and can improve the Fort Point Channel waterfront. To provide the adequate amount of open space required in Phase 1, (by the waterways regulations at 310 CMR 9.53(2) (b) as modified by the Secretary's decision on the South Boston MHP), the proponents have offered to create approximately 9,762 square feet of open space at Parcel E, which is within C.91 jurisdiction, and to design, develop, and maintain a pedestrian plaza on the layout of Old Sleeper Street as a Harborwalk connection. It was anticipated in the Secretary's decision on the South Boston MHP, (dated December 6, 2000), that Parcel E would be converted to open space when the Phase 1 waiver parcels were proposed for development. The design of the open space there should be compatible with the landscape design being developed at the adjacent Children's Wharf Park, and also, any activity and use limitation (AUL) that may be required under the Massachusetts Contingency Plan/ Chapter 21E. Since Old Sleeper Street is owned by the City of Boston, the city would need to either be a co-applicant for the license or provide written support for the private sponsorship of the improvements. DEP.1

In developing the pedestrian connections, the proponents need to ensure that deliveries can be provided for the existing operations at the Barking Crab restaurant and Neptune Seafood Market, as well as recognizing that Northern Avenue is a designated truck route for the South Boston Designated Port Area. DEP.2

Facilities of Public Accommodation - The proponents are aware of the need to provide facilities of public accommodation on the ground floor of nonwater-dependent use buildings on Commonwealth tidelands pursuant to 310 CMR 9.53(2)(c). The exterior and interior public facilities should be designed to optimize the gateway concept by providing uses such as public restrooms, informational displays of the area's history and existing attractions, and physical and/or operational support for water transportation. DEP.3

Waterways License Application - The proponents have not submitted a license application yet for the Phase 1 waiver parcels. The WRP will address the proponents' request for an extended license term, as stated on page 3-61, during the license application review as well as a draft management plan to be submitted for all public facilities.

Wastewater

The Seaport Square project will result in an estimated 988,000 gallons per day of new wastewater flow, including 27,000 gpd for the Phase 1 project. This is well above the threshold for a MassDEP Sewer Connection Permit, 50,000 gallons per day. As a result, the proponents will need to obtain a Sewer Connection Permit for this project. Given the flow volume, it will be critical that a capacity analysis of the local and regional sewer facilities be included in the DPIR/DEIR to ensure that all wastewater flows can be conveyed without risk of sanitary sewer overflows, or exacerbation of combined sewer overflows. The proponents should coordinate this analysis with the Boston Water and Sewer Commission (BWSC). If a Phase 1 waiver is issued by the Secretary for the initial phase of this project, the proponents should apply for and receive a Sewer Connection Permit prior to undertaking any construction (the permit can be phased to address the future work). DEP.4 DEP.5

The Department, in cooperation with the MWRA and its member communities (including the BWSC) are implementing a coordinated approach to flow control in the MWRA regional wastewater system, particularly the removal of extraneous clean water, (e.g., infiltration/ inflow (I/I)) from the system. The Department has been routinely requiring proponents proposing to add significant new wastewater flow to assist in the I/I reduction effort to ensure that the additional wastewater flows are offset by the removal of I/I. Currently, MassDEP is using a minimum 4:1 ratio for I/I removal to new wastewater flow added. This ratio may be increased if specific flow constrictions/overflows exist in the sewershed where the new flow is added. The proponents should work with the BWSC, and consult with MassDEP on this issue. Assuming that a 4:1 ratio is utilized, the proponents will need to remove, or cause to be removed, 3,952,000 gpd of I/I. DEP.6

Greenhouse Gas (GHG) Emissions

This project requires an environmental impact report and a Massachusetts Highway Department (MHD) access permit; therefore, the project is subject to the MEPA Greenhouse Gas Emissions Policy and Protocol. The PNF/ENF provided a conceptual discussion of sustainable measures to be included and considered for inclusion in the project, which will reduce the greenhouse gas emissions relating to the project. Among the measures that may be adopted are cogeneration of power, grey water reuse, and green roofs. Preliminary commitments also have been made to include cool roofs, high performance window glazing, recycled materials, enhanced interior daylighting through floor plates, and facilities to support alternate transportation uses, such as bicycling. The PNF/ENF also provided a LEED Neighborhood Development Pilot project checklist (Appendix D). A full analysis of GHG emissions will be provided in the DPIR/DEIR.

A project at this early stage of development provides a multitude of opportunities for designing buildings and transportation management measures that reduce energy consumption and substitute renewable energy sources for fossil fuel sources. MassDEP/EEA-DOER believes green developments are a smart financial investment. With a growing market demand for facilities that have reduced carbon footprints, rents are being driven higher for the US Building Council's Leadership in Energy and Environmental Design (LEED) certified buildings and Energy Star buildings than rents for less energy-efficient buildings, and occupancy rates are reported to be higher too by the CoStar Group[1], which released a study on rents, sales, and occupancy for energy efficient buildings in their commercial property database.

In a study from the New Buildings Institute (NBI), it was reported that building performance averages are 25-30 percent more efficient for LEED certified buildings than non-LEED buildings, and gold-platinum LEED rated buildings are 45 percent better than the national average, which approaches the interim goals of Architecture 2030, (a non-profit organization dedicated to reducing GHG emissions by changing the way developments are planned, designed, and constructed). The NBI study also shows a good correlation between modeled and actual building performance, providing assurances to developers and regulators that these measures will be effective. Additional information on energy efficiency/renewable rating systems is available at a number of websites including: http://www.buildinggreen.com/, http://energystar.gov/,

[1] The full study can be viewed at the CoStar Group Inc. website: http://www.costar.com/news/Article.aspx?id=D968F1E0DCF73712B03A099E0E99C679. CoStar Group Inc. is an information services organization serving commercial real estate in the United States and the United Kingdom.

www.architecture2030.org/. For new construction, core and shell, and commercial interiors relating to LEED certified buildings, information is available on the following website: http://www.usgbc.org/DisplayPage.aspx?CMSPageID=222. In addition, for a Massachusetts perspective, consultation with green building experts can be obtained through the Green Building Roundtable: http://www.greenroundtable.org, located in Boston.

Although it is unnecessary to provide a complete technological and financial analysis of all GHG reduction mitigation measures, it will benefit the proponents to use functional and quantitative analyses and mock ups to assess feasible greenhouse gas reduction measures for the project type, starting with measures that offer the greatest energy reductions, and then considering opportunities to improve ongoing operations. These assessments should either lead to commitments to adopt the LEED and/or Energy Star elements, or the DPIR/DEIR should do a credible job in explaining why a particular efficiency or green power generation component is impracticable. Many projects now routinely commit to orienting and designing buildings for energy efficiency. Additional information on building design energy reduction measures and standards is available on many websites, including the following: http://www.eere.energy.gov/, http://www.nahb.org,www.sbicouncil.org, http://www.aceee.org, http://www.ashrae.org/, http://www.coolroofs.org/ and http://www.ornl.gov. DEP.7

As explained in the MEPA Greenhouse Gas Emissions Policy and Protocol, the proponents' energy model must be optimized for the MA State Building Code, which is the baseline alternative for energy use in calculating GHG emissions. It should be noted that the recently passed Green Communities Act requires that the International Energy Conservation Building Code be adopted and fully integrated into the state building code and therefore the MA requirements will be changing. DEP.8

Consistent with the GHG Policy, the DPIR/DEIR also should model a mitigation alternative that would result in greater GHG reductions than the preferred alternative. Alternatives with greater energy efficiencies allow an understanding of potential opportunities for energy savings achievable by varying building design and layout strategies. Energy efficient techniques not selected should be thoughtfully explained to demonstrate that the alternative selected has avoided, minimized, and mitigated CO_2 emissions adequately. As the project moves forward, it is recommended that the project proponents contact the New Construction division of its electric utility provider, NStar, and its natural gas provider to take advantage of any potential rebates available for the installation of highly energy efficient equipment. DEP.9 DEP.10

The proponents are to be commended for targeting LEED-ND silver certification. Many of the potential points in the LEED-ND project list are consistent with achieving significant energy reductions and the subsequent reductions in greenhouse gases. Some of the items worthy of note are infrastructure energy efficiency, district heating and cooling, on-site energy generation, and on-site renewable energy sources.

- When submitting the DPIR/DEIR, the proponents should provide detailed information on the energy efficiency measures that will be incorporated into the project. DEP.11
- The site is suitable for consideration of a district energy system. As a new clustered, mixed-use development, the project meets some of the basic screening criteria for district heating and cooling, potentially in combination with combined heat and power DEP.12

(CHP) to all serve the development electric load. The following websites are recommended for additional information on feasibility and life-cycle costs analyses relating to district energy systems: the USEPA Combined Heat and Power Application Center, http://www.epa.gov/chp, RETScreen® International http://www.retscreen.net/ang/home.php, and the International District Energy Association (IDEA), www.districtenergy.org.

- As a new project, at a minimum, buildings can be constructed with roofs oriented and structurally able to support the added weight of a solar photovoltaic (PV) system. Subsidies offered by the Commonwealth Solar and Massachusetts Renewable Portfolio Standards programs make PV worthy of full consideration. Further information on the Commonwealth Solar program and feasibility for PV can be found on the following website: http://www.masstech.org/renewableenergy/commonwealth_solar/index.html#. DEP.13

Although the main sources of GHG associated with this proposed project include building heating and cooling, lighting, and vehicle travel to and from the proposed development, the energy required to provide potable water and treat wastewater also will be a source of GHG. To gain an understating of the correlation between water/wastewater volumes and energy use requirements, MassDEP has considered major utilities in the state and reviewed relevant research. For example, the Massachusetts Water Resources Authority (MWRA) estimates the average energy cost wastewater treatment at their Deer Island facility is 1.2 - 1.4 kWh/kgal. Similarly, a study of wastewater treatment plants in Wisconsin found that 1.5 kWh/kgal was required to treat wastewater in that state's wastewater treatment plants. This proposed development will generate approximately 988,000 gallons of wastewater per day or approximately 360,620,000 million gallons per year. Using an average energy cost of 1.3 kWh/kgal, the project will require approximately 4,688,060 kWh over the course of a year. The project proponents should consider this additional energy use when proposing measures to mitigate the additional GHG emissions that will result from treating wastewater from this proposed project. DEP.14

In addition, the MWRA estimates that treating and transporting drinking water at their John Carrol Water Treatment Plant requires 0.14 to 0.23 kWh/kgal. This is slightly less than the estimated 0.3 kWh/kgal required to treat and transport drinking water at the Worcester Water Filtration facility. As noted in the PNF/ENF, the proposed project will require 1,087,000 gallons of potable water per day, or 396,755,000 gallons per year. Using energy costs of about 0.2 kWh/kgal, approximately 79,351 kWh will be required to supply the proposed project with potable water annually. As with wastewater, the project proponents should consider this additional energy use when proposing measures to mitigate the additional GHG emissions that will result from providing potable water for this proposed project. In addition to water conservation, mitigation measures for water and wastewater may include improvements to the distribution systems for the public water supply to eliminate un-accounted for water losses and I/I removal from sewer mains, in addition to water conservation measures. DEP.15

The DPIR/DEIR needs to show that the preferred alternative would achieve significant reductions in GHG emissions with building designs, selection of building materials, and water and sewer infrastructure upgrades and efficiencies that reduce and/or offset the fossil fuel energy demand of the project. GHG emissions modeling for this project should include for reconsideration the mitigation measures identified herein, in order to quantify the additional DEP.16

emissions reductions that are potentially achievable. In the event that the proponents are not able to adopt any of these measures, the DPIR/DEIR should provide technical and cost analyses to document the rationale for not making a commitment to a mitigation recommendation. DEP.17

Construction and Demolition Waste Reduction

The project includes demolition and reconstruction, which will generate a significant amount of construction and demolition (C&D) waste. Although the PNF/ENF has not made a commitment to recycling construction debris (page 24), MassDEP requires C&D recycling activities to be incorporated as a sustainable measure for the project. DEP.18

The project proponents is advised that demolition activities must comply with both Solid Waste and Air Pollution Control regulations, pursuant to M.G.L. Chapter 40, Section 54, which provides:

> Every city or town shall require, as a condition of issuing a building permit or license for the demolition, renovation, rehabilitation or other alteration of a building or structure, that the debris resulting from such demolition, renovation, rehabilitation or alteration be disposed of in a properly licensed solid waste disposal facility, as defined by Section one hundred and fifty A of Chapter one hundred and eleven. Any such permit or license shall indicate the location of the facility at which the debris is to be disposed. If for any reason, the debris will not be disposed as indicated, the permittee or licensee shall notify the issuing authority as to the location where the debris will be disposed. The issuing authority shall amend the permit or license to so indicate. DEP.19

For purposes of implementing the requirements of M.G.L. Chapter 40, Section 54, MassDEP considers an asphalt, brick, and concrete (ABC) rubble processing or recycling facility, pursuant to the provisions of section (3) of 310 CMR 16.05 Site Assignment Regulations for Solid Waste Management Facilities, to be conditionally exempt from the site assignment requirements if the ABC rubble at such facilities is separated at the point of generation from other solid waste materials. Under 310 CMR 16.05(3), ABC can be crushed on-site with just a 30-day notification to MassDEP. However, the asphalt is limited to weathered bituminous concrete (no roofing asphalt) and the brick and concrete must be uncoated or not impregnated with materials such as roofing epoxy. If the brick and concrete are not clean, e.g., coated and/or impregnated, the material is defined as construction and demolition (C&D) waste and requires either a Beneficial Use Determination (BUD) or a Site Assignment and permit before it can be crushed.

Pursuant to the requirements of 310 CMR 7.02 of the Air Pollution Control Regulations, if the ABC crushing activities are projected to result in the emission of one ton or more of particulate matter to the ambient air per year and/or if the crushing equipment employs a diesel oil fired engine with an energy input capacity of three million or more British thermal units per hour for either mechanical or electrical power which will remain on-site for twelve or more months, then a plan application must be submitted to MassDEP for written approval prior to installation and operation of the crushing equipment. DEP.20

In addition, if it appears that significant portions of the demolition project contain asbestos, the project proponents are advised that asbestos and asbestos-containing waste material are a special DEP.21

waste as defined in the Solid Waste Management regulations (310 CMR 19.061). Asbestos removal notification on permit form ANF 001 and building demolition notification on permit form AQ06 must be submitted to MassDEP at least 10 working days prior to initiating work. Except for vinyl asbestos tile (VAT) and asphaltic-asbestos felt and shingles, the disposal of asbestos containing materials within the Commonwealth must be at a facility specifically approved by MassDEP (310 CMR 19.061). No asbestos containing material including VAT, and/or asphaltic-asbestos felts or shingles may be disposed at a facility operating as a recycling facility, (310 CMR 16.05). The disposal of the asbestos containing materials outside the jurisdictional boundaries of the Commonwealth must comply with all the applicable laws and regulations of the state receiving the material. DEP.21 cont'd

The demolition activity also must conform to current Massachusetts Air Pollution Control Regulations governing nuisance conditions at 310 CMR 7.01, 7.09 and 7.10. As such, the proponents should propose measures to alleviate dust, noise, and odor nuisance conditions, which may occur during the demolition. MassDEP must be notified in writing, at least 10 days in advance of removing any asbestos. MassDEP also must be notified in writing, at least 10 days prior to any demolition work. The removal of asbestos from the buildings must adhere to the special safeguards defined in the Air Pollution Control Regulations (310 CMR 7.15 (2)). DEP.22

Materials Management

MassDEP commends the proponents for recognizing the importance of materials management within its PNF/ENF filing for the Seaport Square project. In order to address GHG emissions related to materials management in the DPIR/DEIR, MassDEP requests that the proponents quantify the GHG impacts of materials management for the project development and projected future operation. By quantifying these impacts, the proponents' GHG mitigation efforts related to materials management can be more clearly identified and targeted appropriately. MassDEP seeks quantification to help guide changes in the project, which provide a comprehensive approach to materials management throughout the design, construction, and operational phases of the project. There are a number of resources available to help quantify GHG impacts associated with efficient materials management, including the USEPA Warm Model, available at the following website: http://www.epa.gov/climatechange/wycd/waste/calculators/Warm_home.html, and the Building Reuse Calculator at: http://www.wastematch.org/calculator/calculator.htm. DEP.23

During the **design phase**, MassDEP requests the proponents address waste reduction, environmentally preferable materials use, and the need to design for the storage and collection of recyclables. In order to plan for waste reduction, the proponents should consider implementing a waste prevention purchasing policy, which may include management options for reducing shipping and packaging materials and if necessary, managing excess materials through unused product return or donation. DEP.24

MassDEP also requests that the DPIR/DEIR provide the following information:

- a list of the environmentally preferred products to be used, and
- the GHG impacts of using these materials. DEP.25

MassDEP appreciates that the proponents will be providing for the storage and collection of recyclables, but requests that more specific information be provided on the square footage of the proposed storage area and the types of materials expected to be stored and recycled. The DPIR/DEIR should, at a minimum, demonstrate that the storage area would be sufficient to manage waste materials currently prohibited from disposal in Massachusetts. A list of these materials can be found on the MassDEP website: http://www.mass.gov/dep/recycle/solid/regs0201.htm. In addition, MassDEP requests that the proponents identify how hazardous materials generated during facilities' operations, e.g., spent fluorescent bulbs, lubricants, waste oil, and other hazardous materials, would be managed and stored. DEP.26 DEP.27

During the **construction phase**, MassDEP recommends that the proponents' material management efforts focus on material reuse and recycling, and requests that the proponents commit to developing a construction waste management plan that fully complies with the Massachusetts Waste Bans and establishes a minimum reuse/recycling goal of 50 percent. The Department has demonstrated through pilot construction projects that this planning results in significant reductions in waste and cost savings for developers. Information and resources to assist in the development and implementation of a construction management plan can be found at http://www.mass.gov/dep/recycle/reduce/managing.htm#project. DEP.28

In the **operations phase,** the proponents should develop and implement a waste management plan to ensure compliance with the MassDEP Waste Bans. The Department offers resources to assist in this area including planning tools, contracting language, and lists of service providers (http://www.mass.gov/dep/recycle/reduce/assistan.htm#reduce). The waste management plan should establish a target-recycling goal of more than 50 percent. This level of recycling has been achieved consistently in similar projects with demonstrated operational cost savings and capital asset appreciation benefits. DEP.29

Mobile Source (Transportation)

The proposed project is a multi-phased development of mixed-use, transit-oriented development consisting of nearly 6.5 million square feet of new office, retail, cultural, and residential space arrayed over 20 city blocks in South Boston. The full build out of the proposed project will contain 6,500 below grade parking spaces and will generate approximately 92,000 average daily trips before mode split adjustment, (i.e., once transit trips are factored in, automobile trip generation is estimated to be 7,366 average daily trips.)

MassDEP recognizes that the proponents are seeking a Phase 1 waiver for certain project parcels, specifically Blocks A, H, and J. The PNF/ENF describes the impacts of the Phase 1 development and indicates that additional information will be provided in the DPIR/DEIR. Although MassDEP comments below apply to the Phase 1 development, such as construction period mitigation and other Phase 1 project impacts, the proposed full build-out project scale and location warrant close attention to mobile source issues and opportunities early in the design and planning process to reduce or mitigate mobile source impacts on air quality. Accordingly, the following comments on the PNF/ENF also apply to the anticipated full project build-out as described in the PNF/ENF.

Mesoscale Analysis

The projected new daily vehicle trips even once adjusted for mode split triggers MassDEP's review threshold of 6,000 daily trips for mixed-use projects that requires the project proponent to conduct an air quality mesoscale analysis. The DPIR/DEIR should contain a mesoscale analysis comparing the indirect emissions from transportation sources under various, No Build, Build, and Build with Mitigation conditions. The DPIR/DEIR should include a demonstration that the proposed project mobile source emission impacts will not exceed or contribute to an exceedance of National/State Ambient Air Quality Standards. The mesoscale analysis also should determine to what extent the proposed project will increase the amount of volatile organic compounds (VOCs) and nitrogen oxides (NOx) emissions in the project study area as compared to the No Build condition. In addition, the analysis helps identify the efficacy of traffic mitigation measures and transportation demand management (TDM) necessary to reduce project generated emissions and project related trips. DEP.30

Greenhouse Gas Analysis

The mesoscale analysis described above also is used to estimate the indirect emissions from transportation CO_2 emissions associated with the additional project related vehicle trips. The calculation should compare CO_2 emissions for existing and future year (full) Build and No Build conditions and future year (full) Build with Mitigation conditions. The proponents should follow the procedures for the CO_2 analysis as described in the Policy. DEP.31

General Mobile Source Issues

The PNF/ENF is relying on a generous mode split adjustment to reduce the potential number of trips generated by Phase 1 and the full project build-out. The DPIR/DEIR should clearly identify all transit system assumptions used in the trip generation analysis with particular attention to Silver Line Phase 2 and Phase 3. The PNF/ENF indicates that full project build-out will generate more than 43,000 transit trips. The DPIR/DEIR should include a capacity analysis of transit system and road network to ensure the reported mode split assumptions are accurate and the required transit system capacity is available to meet the projected ridership increase. DEP.32

Table 3-19 in the PNF/ENF indicates that full project build-out will generate nearly 33,000 bicycle and pedestrian trips. However, the text describes these trips as pedestrian trips only. The DPIR/DEIR should identify the predicted bicycle generation trip rate and commit to all necessary facility enhancements to accommodate these trips. In addition to on-site amenities, such as secure storage and showers for non-residential users, facilitating bicycle travel to the project site also should include enhancement to the regional bicycle network. MassDEP encourages the proponent to work with city and state transportation officials and commit to improvements for the regional bicycle network to ensure maximum bicycle trip generation. DEP.33

The near doubling of the number of existing parking spaces associated with the project is a concern; the proponent is requesting an additional 850 commercial spaces from the South Boston Parking Freeze Bank to add to the existing 3,647 commercial spaces. The project also is proposing an additional 2,000 residential spaces, which are not subject to the parking freeze. MassDEP acknowledges that the residential and hotel project elements are within the Boston Transportation Department suggested guidelines for the South Boston waterfront area. However, the office, retail, and other non-residential project elements largely exceed these guidelines.

There are many positive environmental features of the proposed project including the below grade replacement of the existing parking supply resulting in enhanced open spaces. However, continuation of the substantial number of existing permitted commercial parking spaces and the request for an addition 850 spaces are both counter to the goals of sustainable design and transit oriented development. MassDEP recommends that the proponents reconsider the need for this level of commercial parking supply given the emphasis on the extensive public transit bicycle and pedestrian and bicycle opportunities discussed throughout the PNF/ENF. DEP.34

Construction Period Air Quality Mitigation Measures

MassDEP strongly recommends that the project proponents commit to requiring all project contractors to install after-engine emission controls, such as diesel oxidation catalysts (DOCs) or diesel particulate filters (DPFs), on diesel construction equipment. MassDEP's guidance document, "Diesel Engine Retrofits in the Construction Industry – A How to Guide," is available on MassDEP's website at http://www.mass.gov/dep/air/diesel/conretro.doc. DEP.35

As of June 2007, all standard off-road diesel fuel must have no more than 500-ppm sulfur, and in 2010 the maximum sulfur level in off-road fuel will be reduced to 15 ppm. The 500-ppm fuel is known as low sulfur diesel (LSD) fuel while 15-ppm fuel is referred to as ultra-low sulfur diesel (ULSD) fuel. Because of the current availability of ULSD, MassDEP recommends the early use of ULSD fuel to reduce additional amounts of fine particulate matter, which is associated with the state's high incidence of asthma and is a probable carcinogen. DEP.36

Recommended Transportation Demand Management (TDM) Measures

Section 3.1.4.3 of the PNF/ENF identifies several TDM measures that the proponents are committing to implement. The proponents also should consider implementing the following measures as appropriate to further reduce vehicle trips within the project study area:

- **Commuter Tax Benefit Program** - This transportation tax benefit program encourages employees to take transit or vanpools to work, providing transit and bus services are available within a mile of the project site. This program provides the added benefit of decreasing taxes for employers and employees.

- **Rideshare-Matching Program** - MassDEP recommends that the proponents establish a rideshare-matching program for employees to use carpools and/or vanpools. The project proponents also could enlist the services of a third-party provider to carry out this program. DEP.37

- **Guaranteed Ride Home Program** - MassDEP recommends that the proponents establish an emergency ride home program for all project employees who travel by carpools/vanpools.

- **Additional Bicycle Incentives** - MassDEP recommends that the proponents install adequate locker and shower facilities, and secure bicycle storage beyond Boston Transportation Department Standards.

- **SmartBike** - The proponents could convert the existing bicycle rental program designed for seasonal tourism to a SmartBike system designed more for year-round local commuting.

- **Parking Management** - Develop a parking management program to minimize parking requirements such as parking cash-out, parking charges, limiting parking available to employees, and preferential carpool and vanpool parking.

DEP.37 cont'd

Required Measures

In addition to the recommendations listed above, the proponents also must meet the following required measures.

Compliance with the Massachusetts Idling Regulation

MassDEP strongly recommends that the proponents commit to comply with the Massachusetts Idling regulation (310 CMR 7.11). The regulation prohibits motor vehicles from idling their engines more than five minutes unless the idling is necessary to service the vehicle or to operate engine-assisted power equipment (such as refrigeration units) or other associated power. The proponent should post idling restriction signs in all loading and drop-off areas within the site to remind all drivers, patrons, and delivery personnel of the state's idling regulation. Questions regarding this regulation should be directed to Julie Ross of MassDEP at 617-292-5958.

DEP.38

Compliance with the Massachusetts Rideshare Regulation

MassDEP strongly recommends that the proponents commit to comply with the Rideshare Regulation (310 CMR 7.16). The regulation applies to employers with 250 or more daily employees. Employers subject to the Rideshare Program must implement a series of incentives that are designed to reduce the number of trips made by employees who drive to work alone. To date, employers with 1,000 or more employees and employers with 250 or more employees that are also subject to the Air Operating Permit Program (as detailed in MassDEP regulation, 310 CMR 7.00, Appendix C) must comply with the Rideshare regulation. Questions regarding this regulation should be directed to MassDEP's Rideshare Helpline at 617-292-5663 for assistance in complying with this air quality program.

DEP.39

Massachusetts Contingency Plan (MCP)/M.G.L. Chapter 21E

The Department's records confirm an active 21E site (Release Tracking Number (RTN) 3-0013624) in the vicinity of the project at 145 Northern Avenue, as explained in the PNF/ENF. Remediation actions necessary on the project site should be described in the DPIR/DEIR, and if applicable, information should be included to explain the planned remediation for any new contamination sites that may be found as soil testing is undertaken. As the proponents are aware, removing and disposing of contaminated soil, pumping of contaminated groundwater, or working in contaminated media must be done under the provisions of MGL c.21E/21C and OSHA. It will be necessary to obtain the necessary permits under these provisions beforehand to avoid the potential for considerable project delay of the project, and potentially, administrative penalties.

DEP.40

The MassDEP and EEA-DOER appreciate the opportunity to comment on this proposed project. Please contact Andrea Langhauser for information on waterways issues and Jack Zajac

(978) 694-3240 for further information on wastewater issues. For further information on stationary source GHG issues, please contact Meg Lusardi at (617) 727-4732 x40164 and Jerome Grafe at (617) 292-5708 for issues relating to mobile sources. If you have any general questions regarding these comments, please contact Nancy Baker, MEPA Review Coordinator at (978) 694-3338.

Sincerely,

John D. Viola
Deputy Regional Director

cc: Brona Simon, Massachusetts Historical Commission
Phil Weinberg, Nancy Seidman, Meg Lusardi, John Felix, Christine Kirby, Ben Lynch, Andrea Langhauser, Jerome Grafe, Alissa Bilfield, MassDEP-Boston
Eric Worrall, Rachel Freed, Kevin Brander, Jack Zajac, Jill Provencal, MassDEP-NERO
Brad Washburn, Bob Boeri, MZCZM

9.3 State Agency Comments on the PNF/ENF

9.3.1 Department of Environmental Protection, Northeast Regional Office

DEP.1 Design of open space compatible with Children's Wharf Park and any use limitation required under MCP/21E.

Open space improvements for Parcel E will be made during construction of Phase 1 Waiver Block A. The design of the open space will be compatible with the landscaping and design of the adjacent Children's Wharf Park. During construction, the Project will follow applicable regulations under the Massachusetts Contingency Plan/Chapter 21E, including requirements of any Activity Use Limitations that may be in place or needed.

DEP.2 Deliveries to be provided for existing operations at Barking Crab and Neptune Seafood.

The Proponent will ensure that deliveries and operations for the Barking Crab Restaurant and Neptune Marine are not interrupted during construction nor after completion.

DEP.3 Facilities of Public Accommodation.

The Project will create a gateway to the South Boston waterfront by providing new open space areas on a fully activated site. Block A will provide interior space for a visitor's center which will reinforce the gateway concept.

All ground-floor building space within Blocks B, G and M1 will be occupied by Facilities of Public Accommodation (public uses), including those portions of Blocks B, G and M1 outside of licensing jurisdiction. In addition, Blocks B, G and M1 will include second level Facilities of Public Accommodation, thereby providing additional public benefits beyond those required by the SBMHP. A public restroom will be provided. A Chapel will be located on Block H.

A new water transportation kiosk will provide information and schedules for MBTA Silver Line and bus and taxi service providing easy connections to Downtown, the airport and surrounding communities. The kiosk will also provide public transportation schedules for all of the area's service lines creating a central hub for information for riders from the adjacent Fan Pier Marina which offers access to commuter boats and water taxis

A new Cultural Corridor will provide a physical link from Summer Street to Seaport Boulevard via Harbor Street; the Cultural Corridor will connect the Institute of Contemporary Art and the Boston Convention and Exhibition Center. With these two buildings, there will be a new cultural destination in the City that will include

sculpture gardens on Seaport Hill, a performing arts and education complex on Blocks P and N, exhibition space at Block G, arts-related retail on Block L1, public art and performance venues on Seaport Square Green, and a branch library at Block D. The Cultural Corridor will build on the arts identity of the neighboring Fort Point Channel District and create a strong cultural component that will activate and provide year-round use of Seaport Square.

Please see Section 4.8 for additional information.

DEP.4 Will need to obtain a Sewer Connection Permit.

The Project will complete applications and supporting documentation for Sewer Connection Permits on a site by site basis as development of specific program elements advances.

DEP.5 Capacity analysis of the local and regional sewer facilities.

Based on coordination with the Boston Water and Sewer Commission (BWSC) and review of available Massachusetts Water Resources Authority (MWRA) and BWSC wastewater infrastructure models, the Proponent believes the wastewater collection system is adequately sized for the anticipated needs of the Project. Additional detailed studies will be performed as required under BWSC Site Plan Review and General Services Agreement.

The Proponent has reviewed the MWRA's System-Wide InfoWorks CSO sewer model and has determined that the Project's proposed flows fall within those anticipated in the model. Please see Section 7.1 for more detail.

DEP.6 Infiltration/Inflow.

As a result of the proposed improvements, I/I contribution from the post-development Project area should be minimal. However, the Project is committed to working with BWSC to identify areas of concern and develop appropriate courses of action. Given the size of the proposed development, specific I/I mitigation commitments will be determined cooperatively with BWSC on a Block-by-Block basis as part of the completion of individual General Services Agreements with BWSC.

DEP.7 Analyses to address feasible greenhouse gas reduction measures.

Section 4.6 includes a detailed Greenhouse Gas Analysis and Section 4.13 includes a discussion of potential sustainability measures.

DEP.8 **Building code.**

Please see Section 4.6.1.1.

DEP.9 **Mitigation alternative.**

Please see Section 4.6.1.3 for a discussion of Case 3.

DEP.10 **Potential rebates from energy utilities.**

The Proponent has already been in contact with electricity and gas suppliers for the Project regarding available utility incentives and rebates for the purchase and installation of energy efficient equipment. The Proponent will continue to work with the local utilities, as well as the design and construction team, in order to take advantage of all available utility incentive programs.

DEP.11 **Energy efficiency measures.**

Section 4.6.1.2 includes a detailed description of energy efficiency measures the Project is incorporating as a part of the MEPA GHG analysis.

DEP.12 **District energy system.**

Please see Section 4.6.1.3 and Appendix D5 for analysis and discussion on the CHP (co-generation) studies done to date for the Project.

DEP.13 **At minimum the buildings can be constructed with roofs oriented and structurally able to support a solar photovoltaic system.**

All buildings will be constructed PV-ready, as described in Section 4.6.1.2. Please see Section 4.6.1.5 for a discussion of roof-top PV, including available area and orientation limitations.

DEP.14 **Include the energy needed to provide potable water and to treat wastewater in the GHG analysis.**

Please see Table 4.6-3.

DEP.15 **Mitigation measures for water and wastewater.**

The Project's I/I mitigation obligations will be administered as part of the BWSC General Services Application process.

DEP.16 **Show that the preferred alternative would achieve significant reductions in GHG emissions. Quantify additional emissions reductions that are potentially achievable.**

Please see Section 4.6.1.4.

DEP.17 **Provide technical and cost analyses to document rationale for not making a commitment to a mitigation recommendation.**

Please see Sections 4.6.1.3 and 4.6.1.5.

DEP.18 **C&D activities need to be incorporated as a sustainable measure for the project.**

Please see Section 4.12.8 for a discussion on Construction Waste Management. Also see Section 4.13.2 under "MRc2" for a discussion of LEED targets relating to Construction Waste Management.

DEP.19 **Demolition activities must comply with both Solid Waste and Air Pollution Control regulations.**

Please see Section 4.12.2 and 4.12.8 for discussions of Air Quality and Construction Waste Management, respectively.

DEP.20 **Crushing activities and compliance with Air Pollution Control Regulations.**

Crushing activities will comply with Air Pollution Control regulations.

DEP.21 **Asbestos removal.**

The Proponent will comply with regulations related to asbestos removal.

DEP.22 **Propose measures to alleviate dust, noise, and odor nuisance conditions during demolition.**

Please see Sections 4.12.2 and 4.12.3 for information about construction air and noise mitigation measures. In addition, steps will be taken on a site by site basis to mitigate any occurring odors that could affect the surrounding properties. During construction activities the only anticipated production of odors will be the result of vehicular traffic which will be controlled through adherence to the Massachusetts's Idling Regulations.

DEP.23 **Quantify the GHG impacts of materials management for the project development and projected future operation.**

Materials management is discussed in Section 4.6.1.2. Although the Project is committed to materials management during both construction and operation, it is too early in design to quantify GHG impacts.

DEP.24 **Address waste reduction, environmentally preferable materials use, and the need to design for the storage and collection of recyclables during the design phase.**

Please see Section 4.13.2 under "Materials and Resources" and "Indoor Environmental Quality" headings for a discussion of waste reduction, environmentally preferable materials use, and recycling facility provision. LEED checklists are available by use type in Appendix G. Please also see Section 4.6.1.2.

DEP.25 **List the environmentally preferred products to be used and the GHG impacts of using these materials.**

Please see Section 4.13.2 under "Materials and Resources" and "Indoor Environmental Quality" headings for a discussion of environmentally preferable product selection. Also see Sections 4.6.1.2 and 4.6.1.5 for discussions on construction material selection as related to GHG impacts.

DEP.26 **Provide more specific information on proposed storage area for recyclables and the types of materials expected to be stored and recycled.**

Please see Sections 4.11.3 and 4.11.4 for a discussion on anticipated recycling programs and extents by building use type.

DEP.27 **Identify how hazardous materials generated during facilities' operations would be managed and stored.**

Please see Section 4.11.4 for a discussion on waste management procedures by use type for building operations.

DEP.28 **Construction waste management plan.**

The Project is currently targeting at least a 50% reduction in construction debris diverted to landfill (by weight) and will work towards achieving a Project-wide 75% reduction by weight in construction waste debris sent to the landfill.

Please see 4.12.8.1 for a discussion on Construction Solid Waste diversion and recycling/reuse.

DEP.29 **Waste management plan during operations.**

Please see Sections 4.11.3 and 4.11.4 for a discussion on post-occupancy recycling and waste stream reduction efforts. The Project is currently targeting at least a 50% reduction in operational waste.

DEP.30 **Mesoscale analysis.**

Please see Section 4.5 for the mesoscale analysis.

DEP.31 **Use mesoscale analysis to compare CO_2 emissions for existing and future year Build and No Build conditions and future year Build with Mitigation conditions.**

Please see Section 4.5 for the mesoscale analysis. Section 4.6.2 includes the mobile source portion of the GHG analysis.

DEP.32 **Clearly identify all transit system assumptions in trip generation analysis. Include a capacity analysis of transit system and road network.**

Please see Section 3.3.1.4 for a discussion of mode split and Section 3.3.2.11 for the transit capacity analysis.

DEP.33 **Identify the predicted bicycle generation trip rate and commit to all necessary facility enhancements to accommodate these trips. Include enhancement to the regional bicycle network.**

The bicycle trip generation is estimated in Section 3.3.2.13. According to an estimate provided by the Massachusetts Bicycle Coalition, cyclists will account for approximately 1.5% of total daily person trips to and from the site, or 1,676 daily trips. BTD has established guidelines that buildings with more than nine residential units must provide secure bicycle parking at the rates of one bicycle space per three residential units. Accordingly, Seaport Square will provide secure on-site residential bicycle storage for at least 833 bicycles, plus an additional 400 spaces for the other land uses (one bicycle space for every 10 automobile parking spaces). Additionally, a bicycle rack will be provided near each public entrance for use by non-residential tenants. Bicycle enhancements are further outlined in Section 3.3.3.3.

DEP.34 **Reconsider need for amount of commercial parking supply.**

Please see Section 3.3.2.10 for information on parking. The anticipated request from the South Boston Parking Freeze bank is now only approximately 353 spaces, reduced from the prior estimate of 850 spaces, as the proportion of residential units has increased.

DEP.35 **Recommends a commitment to requiring all project contractors to install after-engine emissions controls.**

The Proponent plans to have all contractors use diesel equipment with after-engine emission controls wherever possible.

DEP.36 **Recommends the use of ULSD fuel.**

The majority of construction on the Project Site is anticipated to commence after the ultra low sulfur diesel mandate comes into full effect. Therefore, the majority of construction equipment running as a result of the Proposed Project will be using ULSD.

DEP.37 **Consider implementing the following measures to reduce vehicle trips: Commuter Tax Benefit Program, Rideshare-Matching Program, Guaranteed Ride Home Program, Additional Bicycle Incentives, SmartBike, and Parking Management.**

Transportation Demand Management measures are discussed in Section 3.3.3.6.

Patrons of the Seaport Square Parking Lots have access to a bicycle any day for free, while bikes are also available to rent for non-customers and tourists for a small fee. The process of borrowing a bike is simple, and the Park & Bike kiosk is located directly across from the Financial District in South Boston near the Northern Avenue Bridge. In addition, the Proponent will work with the on-site management team to assist tenants and residents and raise awareness of public transportation alternatives like the Ride Share Program. On-site management will keep a supply of transit information (schedules, maps, fare information) available on request by building tenants.

DEP.38 **Recommends a commitment to comply with the Massachusetts Idling regulation.**

The Proponent plans to have all contractors adhere to the Massachusetts Idling Regulation; signage will be posted in the appropriate areas.

DEP.39 **Recommends a commitment to comply with the Rideshare Regulation.**

The Proponent will work with the on-site management team to assist tenants and residents and raise awareness of public transportation alternatives like the Ride Share Program. On-site management will keep a supply of transit information (schedules, maps, fare information) available on request by building tenants.

DEP.40 **Remediation actions.**

Please see Section 4.11.1. Removal and disposal of any contaminated soils will be done in accordance with applicable regulations.

Massachusetts Port Authority
One Harborside Drive, Suite 200S
East Boston, MA 02128-2909
Telephone (617) 428-2800
www.massport.com

September 30, 2008

Mr. Jay Rourke
Boston Redevelopment Authority
Boston City Hall, 9th Floor
One City Hall Square
Boston, MA 02201

Re: Seaport Square ENF/PNF

Dear Jay:

Enclosed please find the comment letter that Massport has submitted to MEPA.

As a major landowner adjacent to the project site and owner and operator of facilities in the Port of Boston, Massport staff has had productive discussions with the Seaport Square proponent concerning topics of mutual interest – vehicular / truck circulation, pedestrian circulation and urban design.

In addition to topics contained in our earlier comment letter, we have also attached a sketch diagram to prompt discussion regarding the segment of Seaport Boulevard between B Street and East Service Road. This roadway segment will be vitally important to the proper flow of vehicles, bicycles and pedestrians in the district. As indicated by the diagram, it is important to:

- maintain two travel lanes in each direction with a minimum lane width of 11' to accommodate trucks (Seaport Boulevard will remain a truck route),
- provide the lane adjacent to the curb with sufficient width to accommodate bicycles in a 'share the lane' approach (where a striped bike lane is not possible given the cross-section of the roadway), MP.1
- provide a parking lane (on the south side of Seaport Boulevard on Block M) to ensure vehicles to not stop in a travel lane to patronize or service adjoining uses, and,
- implement a parking lane (not shown in diagram) or implement and enforce off-street loading and 'no stopping' curbside on the north side of Seaport Boulevard.

While the last bullet addresses an area that is not part of the Seaport Square project, currently there are many times where curbside delivery to the adjacent restaurants completely blocks one travel lane and backs up traffic or the delivery trucks park on the sidewalk blocking pedestrian movement. There is a double left turn from B Street where this curbside delivery practice creates bottlenecks and unsafe traffic conditions. If a parking lane cannot be implemented due to limited land area, the informal off-street parking areas that exist next to the restaurants should be eliminated in favor of creating an off-street delivery area and the curb should continue to be regulated and enforced as 'no stopping'.

Finally, with respect to the existing lane markings and regulatory signs, the eastbound travel lane next to the curb on Seaport Boulevard approaching B Street should be changed to 'through / right' vs. the 'right only' that exists today. This would provide for better traffic flow including the heavily used right turn into the WTC parking that is just to the east of B Street on Seaport Boulevard. MP.2

We look forward to coordinating these important issues with the BRA and BTD to ensure that passenger vehicles, trucks, bicycles and pedestrians are properly accommodated for the collective interests in the district. Please feel free to contact me with any questions you may have.

Sincerely,

James P. Doolin, AICP
Deputy Director for Planning and Development
Economic Planning and Development Department
Massachusetts Port Authority

Cc: V. Gupta (BTD), P. Hoey (BTD), D. Carlson (BRA), D. Wamester (Gale Intl.), L. Grymek (Seaport TMA).

Massachusetts Port Authority
One Harborside Drive, Suite 200S
East Boston, MA 02128-2909
Telephone (617) 428-2800
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August 1, 2008

Secretary Ian A. Bowles
Executive Office of Energy and Environmental Affairs
Attn: MEPA Office
Briony Angus, EEA No. 14255
100 Cambridge Street, Suite 900
Boston MA 02114:

Re: **Seaport Square Environmental Notification Form (ENF) EEA 14255**

The Massachusetts Port Authority (Massport) has reviewed the Seaport Square ENF / PNF. Massport complements the proponent for holding public meetings and for their willingness to meet with us to discuss their project and the interests Massport has as the owner and operator of Logan International Airport, the Port of Boston and as an abutting landowner in the South Boston Waterfront.

We believe the mix of proposed uses is consistent with the overall vision for the South Boston Waterfront. In general, we also believe the proposed street and pedestrian infrastructure are consistent with the overall planning for the area. In addition to the more specific issues described below, Massport's vital interests continue to include protecting important truck routes including Seaport Boulevard, the South Boston Bypass Road, Massport Haul Road, D Street, Summer Street and portions of Congress Street.

There are several areas on which Massport wishes to provide comments to inform the subsequent scope and context for the Environmental Impact Report (EIR) that will define, evaluate and propose mitigation for the Full Build program.

Overall Vehicular Circulation

1. Seaport Boulevard is and will remain an important truck route for the Port of Boston as well as many industrial / freight forwarding businesses located with the South Boston Waterfront. It is and will remain the most direct route to many truck destinations within the waterfront area for trucks coming from points north using I-93 southbound. In addition, it will continue to be a direct route to I-93 northbound from the waterfront area.
    a. The proposed typical roadway section for Seaport Boulevard incorporates two 11' wide travel lanes, a 5' wide bike lane and an 8' wide parking lane in each travel direction (in addition to a generous median). As a typical section, this can function adequately to meet the multiple demands on the roadway including through truck movements. However, as shown in

Figure 2.3 – 27, there is a transition required in the section in the block between B Street and East Service Road where the curb to curb section narrows. Today there are two travel lanes in each direction and a narrow median that does not allow for a parking lane(s). With the proposed uses on Block M1 (retail / entertainment and residential), the proposed uses across Seaport Boulevard at Pier 4 (office) and the existing restaurants that will remain, the Proponent needs to demonstrate that in the Full Build two travel lanes and the bike lane (in each direction) will be able to be maintained without the friction of casual curbside drop-off and curbside loading/ servicing disrupting traffic flow. This problem now occurs regularly at the existing restaurants on the north side of Seaport Boulevard (not part of Seaport Square) blocking one travel lane and causing traffic backups and unsafe left turns from B Street onto Seaport Boulevard westbound. MP.3

2. The westbound side of Congress Street, from B Street to Boston Wharf Road, must continue as it does today to include two travel lanes (11' wide minimum) and a parking lane with a median that can accommodate a left turn lane where needed. MP.4
3. Massport objects to locating the loading docks for M1 Block on B Street (Figure 2.4 -1). B Street southbound will experience a very high volume of traffic heading towards Congress Street and the ramp to I-93 and it is a relatively short street. The loading docks will be busy as they are proposed to serve retail and grocery store type uses and could be problematic along this street. In addition, the main pedestrian entry door and outdoor plaza to the West Office Building is directly opposite the proposed loading dock location which would create an incompatible situation with an existing condition. East Service Road would be a better alternative as an 'internal' street to the proposal. MP.5
4. Intersection LOS Assessment – Full Build
    a. The West Service Road / South Boston Bypass Road (Massport Haul Road) intersection needs to be added to study area intersections (Figure 3-1.2). This is important as the SBBR and MHR provide a vital truck route between the working port and other industrial uses and the interstate highway system. MP.6
    b. The Saturday midday traffic analysis needs to be included in the Full Build assessment, especially given the amount of retail and other program elements that may have a high level of activity on Saturdays. MP.7
    c. The No-Build background projects should include Waterside Place, CFDA Parcels A2, H, K and D3 in the background growth assumption. MP.8
    d. The traffic operations analysis should account for the projected increase in pedestrian activity. MP.9
    e. Forecasting assumptions such as background growth rates and seasonal adjustments to count data should be stated in the narrative with justification in the Appendix. MP.10
5. Figures 2.4-1 and 2.4-5 appear to show curb extensions and a drop-off loop on Seaport Boulevard in front of Block K. Figure 2.3-27 does not show this

treatment. The Proponent should clarify the intent on this block: a drop-off loop on Seaport Boulevard is not recommended. MP.11

6. The parking access for Block L at Congress Street, between Boston Wharf Road and East Service Road should be re-evaluated given the short span of this section of Congress Street and the proposed elevated Harbor Street directly above. MP.12
7. The Transportation Demand Management (TDM) measures outlined in the ENF in section 3.1.4.3, include membership of the proponent of the 'local TMA'. This commitment should be clarified to require membership by all subsequent business tenants within the development. The TMA should be specifically identified as the Seaport TMA, an existing organization that has effectively coordinated commuter / employee transportation needs for many years in the South Boston Waterfront area. MP.13

Trip Generation

The Proponent should provide more detailed methodology and assumptions on the trip generation analysis for the Full Build. Details were not provided in the Appendix for the Full Build trip generation estimate. For Phase 1 trip generation:

- a 29 percent reduction was credited for internal trips from residential to retail uses that presumably do not spill onto adjacent streets;
- a 25 percent pass-by rate was credited for retail trips, which assumes that these are impulse trips that are already on the street system; and MP.14
- Mode shares do not appear to be consistent with BTD splits for the area (Zone 13), nor do they match CFDA mode share assumptions. Table 3.1-9 shows different mode splits for entering vs. exiting trips for the same use, same period.

Reasonable justification for these methods and assumptions should be provided in the narrative or in the appendix of the EIR.

Trip Distribution

The Proponent proposes not to rely solely in Central Artery TranPlan model for trip distribution, rather a blend of TranPlan and count data. The methods used should be clearly explained in the EIR. MP.15

Parking

Do the Proponent's mode share goals match with their parking supply? How is the project constraining parking in order to achieve mode share targets? These questions should be addressed in the EIR. MP.16

Pedestrian Circulation

Massport agrees in principle that a through block pedestrian connection to the proposed 'Autumn Lane' is desirable for the M1 / M2 block. This will facilitate pedestrian flows between the Seaport Square retail / destinations, Commonwealth Flats including the

proposed Waterside Place mixed-use retail center, and the Boston Convention and Exhibition Center via World Trade Center Avenue and Congress Street. However, Massport believes other options should be studied for the this pedestrian connection and the M1 / M2 block that consider;

- the larger urban design relationships with buildings to the east along Congress Street (notably the West Office Building, Renaissance Boston Waterfront hotel, John Hancock office building and the future World Trade Center South office building);
- the need to contain the Congress and B Street intersection with building edges; and
- providing a cover over the pedestrian way to make it more functional and environmentally friendly in a variety of weather / wind conditions.

MP.17

Airspace

Massport as the owner and operator of Logan International Airport has previously provided the proponent with a map that we have prepared that identifies the maximum height for obstructions that will not impact the safe and efficient operation of the airport. While there are no specific building heights provided other than a 'maximum building height of 240 feet (as defined by the Boston Zoning Code), from discussions with the proponent Massport understands it is their intention to have building heights (inclusive of all penthouses and mechanical equipment, etc.) that are in compliance with our map. It is important to note that each building will need to apply and obtain a 'no hazard' determination from the Federal Aviation Administration (Part 7460) and Massport's mapped information in no way is intended to replace or reduce the scope of the FAA's permitting authority.

MP.18

Wastewater Planning and Capacity

We are pleased that the proponent has had initial coordination with the Boston Water and Sewer Commission and that they have been directed not to send the vast bulk of the wastewater generated to the existing Seaport Boulevard sewer line. Massport has made significant investments in wastewater capacity, including the Seaport Boulevard / Northern Avenue sewer line (from B Street to Congress Street) to meet the existing and planned development needs on its property in the Commonwealth Flats Development Area. As such, Massport has a direct interest in ensuring that the intentions for wastewater flow described in the ENF are implemented along with a flow monitoring program.

MP.19

Base Map Information

The proponent's base map shows out-of-date information for the area east of D Street on Massport property (see Figure 3-1.2) for streets (Congress Street extends and curves to return to Northern Avenue, Silver Line Way, Harborview Lane, Port Lane and Starboard Lane) and three significant existing developments (John Hancock, Renaissance Boston

MP.20

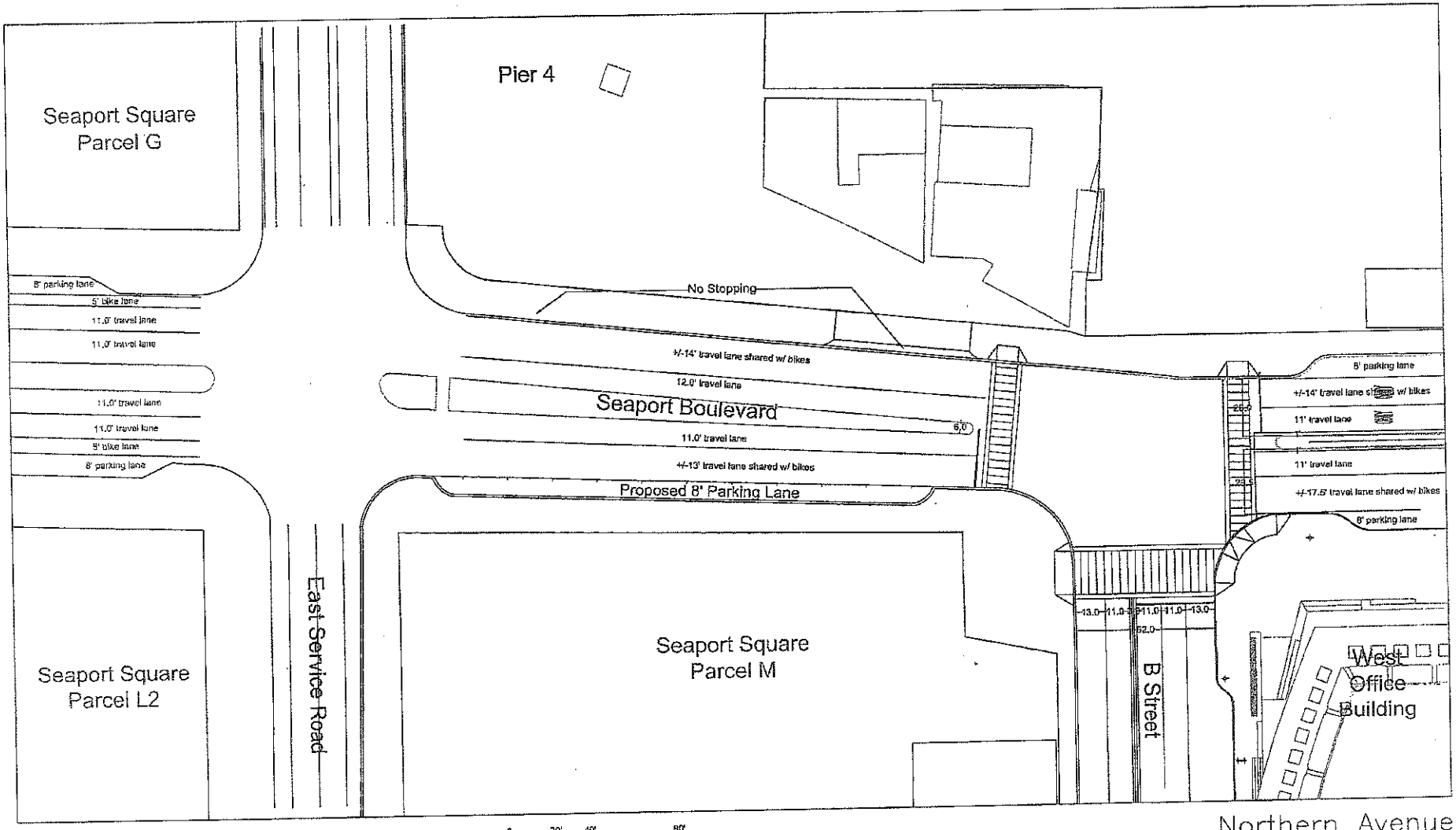
Waterfront, Seaport Park Lane Apartments). Massport will coordinate providing updated information to the proponent.

As the owner / operator of Logan International Airport, the Port of Boston and an abutting landowner, Massport would appreciate being placed on the Circulation List for all subsequent documents and notifications.

We look forward to continuing coordination and discussions with the proponent as the project moves forward.

Sincerely,

James P. Doolin
Deputy Director for Planning and Development
Economic Planning and Development Department
Massachusetts Port Authority



Massachusetts Port Authority
Economic Planning & Development Department
September 2008

Northern Avenue
South Boston

Notes:
This drawing is intended for conceptual planning purposes only. It may not be used without the express written permission of the Massachusetts Port Authority ("Massport"). Massport does not certify the accuracy, information or title to the properties contained in this plan nor make any warranties of any kind, express or implied, in fact or by law, with respect to any boundaries, easements, restrictions, claims, overlaps or other encumbrances affecting such properties. DA/T roads and MBTA South Boston Trackway as depicted represent future conditions scheduled to be completed between approximately 2002 to 2004.

9.3.2 Massachusetts Port Authority

MP.1 Seaport Boulevard.

The Project will not change the roadway cross section on Seaport Boulevard between East Service Road and B Street. Seaport Boulevard will have two lanes in each direction.

The Project does not propose changing the roadway cross section on Seaport Boulevard. Should such changes be undertaken by the City or another entity, accommodation for bicycles through a shared lane approach could be incorporated.

The Project will provide a parking lane on the south side of Seaport Boulevard adjacent to Block M.

The Project does not propose to change the cross section on Seaport Boulevard. Curbside management on the north side of Seaport Boulevard could be undertaken by Massport with the Boston Transportation Department.

MP.2 Eastbound travel lane on Seaport Boulevard.

The Project proposes to convert the Seaport Boulevard eastbound right turn lane at B Street to a shared through/right turn lane as part of the mitigation at the intersection.

MP.3 Traffic flow on Seaport Boulevard.

The Proponent will work with the Boston Transportation Department (BTD) to develop a plan that will effectively accommodate loading and pick-up/drop-off activity associated with the development as part of the Transportation Access Plan Agreement (TAPA) process. The Proponent is committed to working with the City to develop appropriate curb-use regulations adjacent to the Project Blocks; these regulations will also be negotiated as part of the TAPA.

MP.4 Westbound side of Congress Street, from B Street to Boston Wharf Road, must continue to include two travel lanes and a parking lane with a median that can accommodate a left turn lane where needed.

The analysis assumptions on Congress Street are consistent with this comment, as confirmed in the Synchro worksheets (Appendix B-3).

MP.5 **Locating the loading docks for M1 Block on B Street. East Service Road would be a better alternative as an 'internal' street.**

The MBTA Silver Line tunnel runs diagonally beneath Block M and it is impossible to reach the loading docks beneath Block M1 from East Service Road. In addition, East Service Road is not an "internal road" and is as much a major part of the street system servicing this area as B Street.

MP.6 **Add the West Service Road / South Boston Bypass Road intersection to the study area intersections.**

The intersection has been added.

MP.7 **The Saturday midday traffic analysis needs to be included in the Full Build assessment.**

The analysis includes existing conditions Saturday midday peak hour traffic and pedestrian counts for the area north of Summer Street, and estimated Project trips for Saturday midday as well. Because the combination of Saturday background trips plus Project-generated trips is lower than the pm peak hour combined trips, detailed analysis of Saturday midday traffic peak operations has not been conducted.

MP.8 **The No-Build background projects should include Waterside Place, CFDA Parcels A2, H, K and D3 in the background growth assumption.**

These projects have all been included, as enumerated in Sections 3.3.1 and 3.3.4.

MP.9 **The traffic operations analysis should account for the projected increase in pedestrian activity.**

The traffic operations analysis includes projected Mid-term No-Build and Seaport Square Build pedestrian activity as outlined in Section 3.3 and summarized in the Synchro reports (Appendix B-3).

MP.10 **Forecasting assumptions should be stated in the narrative with justification in the appendix.**

Forecasting assumptions are spelled out in Section 3.3; detailed land use assumption worksheets are included in Appendix B-6; and trip generation tables are included in Appendix B-7.

MP.11 **Clarify the intent on Block K, a drop-off loop on Seaport Boulevard is not recommended.**

The present concept design for Block K contains a hotel and residential units. These facilities, especially the hotel, will require some form of drop-off to facilitate normal activities of these uses. As the design of this Block develops, the Proponent will work with all agencies to find the proper configuration and design for this function. It could be changed to a curb layby lane.

MP.12 **Re-evaluate the parking access for Block L at Congress Street, between Boston Wharf Road and East Service Road.**

Parking driveways for Block L are now on East Service Road and Boston Wharf Road. There is no Block L parking driveway on Congress Street. However, service access/egress for Block L is on Congress Street between East Service Road and Boston Wharf Road.

MP.13 **Clarify commitment to the Seaport TMA by requiring membership by all subsequent business tenants within the development. The TMA should be specifically identified as the Seaport TMA.**

The Proponent has been an active member of the Seaport TMA. The Proponent will encourage membership in the Seaport TMA by all new businesses. On-site management will also work with the TMA to assist tenants to raise awareness of public transportation alternatives available, and to encourage the use of ride sharing, bicycling and walking.

MP.14 **Provide more detailed methodology and assumptions on the trip generation analysis for the Full Build.**

The methodology and assumptions used to develop the Mid-term No-Build Conditions and the Seaport Square Build Conditions are outlined in Sections 3.3.1 and 3.3.2, respectively. The methodology for the South Boston Waterfront Long-term Conditions is summarized in Section 3.3.4. Trip generation worksheets are included in Appendix B-6.

MP.15 **Methods for trip distribution should be clearly explained.**

Please see Section 3.3.

MP.16 **Do the Proponent's mode share goals match with their parking supply? How is the project constraining parking in order to achieve mode share targets?**

Basically, the parking supply for both the retail and office use is constrained below what the market would require, as explained in Section 3.3.2.10. Both a constrained supply and market pricing will help discourage Single-Occupancy Vehicle commuter trips and encourage use of alternate modes.

MP.17 Other options should be considered for the through block pedestrian connection to 'Autumn Lane' and the M1 / M2 Block.

The pedestrian connection between Blocks M1 and M2 is intended to allow a pedestrian connection between Autumn Lane and the intersection of B Street and Congress Street. Previous options continued Autumn Lane straight to meet the existing building on B Street, which resulted in a random ending to Autumn Lane in front of the parking entrance to the B Street building. The current option of curving the pedestrian passage towards Congress and B streets works better for pedestrian flow through the larger pedestrian network, by collecting and distributing sidewalk movement along Congress Street eastwards. It also offers to break up the corner of the M Block as it meets Congress Street and B Street, and substitutes what could have been a back side of a large building with an open space for pedestrian movement and visual relief.

MP.18 Each building will need to apply and obtain a 'no hazard' determination from the Federal Aviation Administration.

The Proponent has designed the proposed building heights to be consistent with the composite map prepared by Massport. The Proponent will submit a 7460 Application to the FAA and include all necessary information for each of the proposed buildings to demonstrate consistency with FAA requirements.

MP.19 Intentions for wastewater flow and flow monitoring program

The Project continues to plan on utilizing the A Street Sewer for nearly all of the proposed wastewater flow from the development, and intends to conduct flow monitoring investigations as part of the BWSC Site Plan Review process. The scope and details of the monitoring program have yet to be determined, but will be coordinated closely with BWSC.

MP.20 Base map shows out-of-date information.

The base map has been updated, but the Proponent will confirm and accept updated information as provided by Massport.

MASSACHUSETTS WATER RESOURCES AUTHORITY

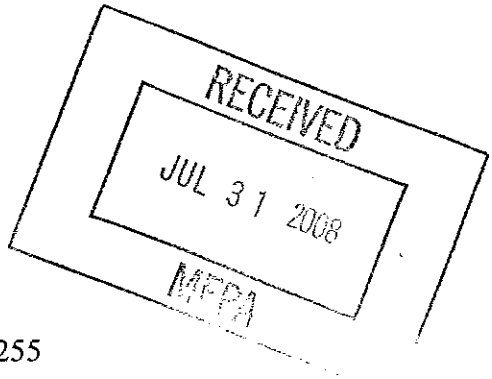
Charlestown Navy Yard
100 First Avenue, Building 39
Boston, MA 02129

Frederick A. Laskey
Executive Director

Telephone: (617) 242-6000
Fax: (617) 788-4899
TTY: (617) 788-4971

BA ✓

July 30, 2008



Ian A. Bowles, Secretary
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston MA 02114
Attn: Briony Angus, MEPA Unit

Subject: Expanded Environmental Notification Form #14255
Seaport Square, Boston, MA

Dear Secretary Bowles:

Thank you for the opportunity to comment on the Expanded Environmental Notification Form (EENF) for the proposed Seaport Square Project in the Seaport neighborhood of Boston. The Seaport Square Project will establish 20 new urban blocks in an area bounded by Northern Avenue, Seaport Boulevard, Congress Street, and Summer Street in South Boston. MWRA's comments focus on the following areas: Wastewater Flows and Sewer Discharge Issues.

Wastewater Flows

The EENF reports that the full-build project will increase wastewater flow to the BWSC and MWRA systems by nearly 988,000 gallons per day (gpd). The portion of the project for which the Proponent seeks a Phase I Waiver is estimated to increase wastewater flow by 27,000 gpd. These flows will be discharged to local BWSC sewers in the project area as identified in the EENF and will eventually tie into the BWSC South Boston Interceptor (North Branch). Flows in the South Boston Interceptor enter MWRA's wastewater collection system at or near the Columbus Park Headworks facility, where flows are screened prior to entering MWRA's Boston Main Drainage Tunnel for transport to the Deer Island Wastewater Treatment Plant. While the BWSC interceptor and MWRA's facilities may have adequate capacity to convey project flows during dry weather, these systems surcharge and overflow during large storms. Combined sewer overflows (CSO) potentially affected by the project's new flows are permitted at BWSC outfalls along the Reserved Channel (at the upstream end of the South Boston Interceptor (North Branch), along Fort Point Channel, and along the South Boston beaches.

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MWRA, with the assistance of BWSC, is implementing a $925 million long-term control plan to bring CSO discharges into compliance with the Federal Clean Water Act and state Water Quality Standards, pursuant to the Federal District Order in the Boston Harbor Case. The approved long-term control plan, Water Quality Standards and the Federal Court Order require specific long-term levels of CSO control to be met. These levels are defined as limits on average annual discharge activation and total volume at each outfall. These levels of control were determined by MWRA using hydraulic model predictions to support its CSO control planning. The model assumed that redevelopment of the South Boston Waterfront, including the area of the Seaport Square project would result in separate sanitary and storm drain systems serving the area and was based on certain sanitary flow assumptions.

The Proponent should demonstrate in the EIR that project flows fall within the model assumptions and will not compromise the required levels of CSO control. The EIR should identify the required levels of control at the CSO outfalls along the Reserved Channel, Fort Point Channel and the South Boston beaches and the long-term wastewater flow assumptions used in MWRA's CSO modeling. The EIR should clearly show that the project's flows are consistent with the modeled flows. If project flows exceed the MWRA planning assumptions, the Proponent should include measures to reduce infiltration (groundwater) and/or inflow (stormwater) to offset the project flows exceeding those assumptions. The EIR should also confirm that the project will be served by completely separate sanitary sewer and storm drain systems, with stormwater flows discharged to local water bodies and not tying into the wastewater collection system. MWRA.1

Sewer Discharge Issues

Pursuant to 360 C.M.R. 10.091-10.094, the construction activities associated with the Seaport Square Project may require a MWRA Temporary Construction Site Dewatering Discharge Permit during the construction phase. If so, both the Proponent and the Contractor (the individual that will conduct the construction) should contact Dennis Capraro, Industrial Coordinator in MWRA's Toxic Reduction and Control (TRAC) Group, (617) 305-5620, TRAC, and obtain an MWRA Construction Site Dewatering Discharge Permit Application and submit it to Mr. Capraro at MWRA, TRAC, 2 Griffin Way, Chelsea, MA 02150. The Proponent and Contractor shall not discharge groundwater into the sanitary sewer system unless they have a Construction Site Dewatering Discharge Permit from the MWRA and Boston Water Sewer Commission. The EIR should clarify whether these flows can be discharged into existing separate storm drains. MWRA.2 MWRA.3

Once the 700-room hotel is completed on the Seaport Square Project site and if the Owner of the hotel intends to operate a laundry on the premises a Sewer Use Discharge Permit is required from the MWRA for the discharge of laundry effluent into the sanitary sewer system. If a commercial company intends to discharge process and/or MWRA.4

laboratory wastewater to the sanitary sewer system, an MWRA Sewer Use Discharge Permit will also be required. All permits must be in place prior to discharging into the MWRA sanitary sewer system and coordinated through MWRA's Industrial Coordinator, Mr. Capraro. MWRA.4 cont'd

The Seaport Square Project must also comply with 360 C.M.R. 10.016, if it intends to install gas/oil separator(s) in the below-grade parking garages planned throughout the site. In addition to complying with 360 C.M.R. 10.000, the Seaport Square Project should also conform to the regulations of the Board of State Examiners of Plumbers and Gas Fitters, 248 C.M.R. 2.00 (State Plumbing Code), and all other applicable laws. The installation of the proposed gas/oil separator(s) will require MWRA approval and may not be back filled until inspected and approved by the MWRA and the Local Plumbing Inspector. To obtain an inspection for each garage the Owner of each garage should contact Paul Pisano, MWRA, Source Coordinator, (617) 305-5661. MWRA.5

If you have questions or need additional information, please feel free to contact me at 617 788-1165.

Very truly yours,

Marianne Connolly

Marianne Connolly,
Program Manager, Regulatory Compliance

cc: David Kubiak, MWRA, E&C
Kattia Thomas, MWRA, TRAC

C:MEPA:14254SeaportSqSoBoston.doc

9.3.3 Massachusetts Water Resources Authority

MWRA.1 Demonstrate that project flows fall within the model assumptions and will not compromise the required levels of CSO control. Identify the required levels of control at the CSO outfalls along the Reserved Channel, Fort Point Channel and the South Boston beaches and the long-term wastewater flow assumptions used in MWRA's CSO modeling. Confirm the project will be served by completely separate sanitary sewer and storm drain systems.

Please see response to comment DEP.5 above.

MWRA.2 Construction Site Dewatering Discharge Permit.

Please refer to Section 4.12.7.1. An MWRA temporary construction dewatering permit is not required since storm drains discharge into outfalls in the Fort Point Channel and Boston Harbor water bodies, and not the MWRA system.

MWRA.3 Clarify whether groundwater from dewatering activities can be discharged into existing separate storm drains.

Please see Section 4.12.7.1. Groundwater from dewatering activities can be discharged into the existing separate storm drains.

MWRA.4 Sewer Use Discharge Permit.

Permits for sewer connection and sewer use will be applied for on a Block-by-Block basis as the development of specific program elements advances. If any facilities require a Sewer Use Discharge Permit, that permit will be secured as applicable regulations dictate.

MWRA.5 Gas/oil separators.

Gas/oil separators will be installed in covered parking facilities as required by the MWRA and BWSC. All required installation permits and inspections will be secured prior to discharge.

THE COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENERGY AND ENVIRONMENTAL AFFAIRS
OFFICE OF COASTAL ZONE MANAGEMENT
251 Causeway Street, Suite 800, Boston, MA 02114-2136
(617) 626-1200 FAX: (617) 626-1240

MEMORANDUM

TO:	Ian Bowles, Secretary, EEA
ATTN:	Briony Angus, MEPA Unit
FROM:	Leslie-Ann McGee, Director, CZM
DATE:	July 31, 2008
RE:	EEA 14255 – Seaport Square, South Boston

The Massachusetts Office of Coastal Zone Management (CZM) has completed its review of the above-referenced Expanded Environmental Notification Form (EENF), noticed in the *Environmental Monitor* dated June 11, 2008, and offers the following comments.

Project Description

The project site is located in the South Boston Waterfront and is bounded by Northern Avenue, Seaport Boulevard, Congress Street, and Summer Street. The proposed project is a mixed-use development consisting of approximately 6.5 million square feet. Approximately 2.75 million square feet is proposed as residential space, 1.4 million square feet for office and research use, 1.25 million square feet for retail use, 600,000 square feet for educational and civic/cultural uses, and 500,000 square feet for hotel use. The EENF states that the project will be completed in two phases. The proponent has applied for a Phase I waiver through the Massachusetts Environmental Policy Act (MEPA) process to allow permitting of Phase I to move ahead of the MEPA review of the full project. The first phase consists of three parcels (A, H, and J) which compromise approximately 3% of the total project's square footage and include the construction of residential and retail space and a new chapel.

Project Comments

South Boston Municipal Harbor Plan

The EENF states that all of Parcel A and a portion of Parcel H (approximately 2,444 square feet) are located within Chapter 91 jurisdiction on filled Commonwealth Tidelands. The EENF also states that the remainder of Parcel H and all of Parcel J are exempt from Chapter 91 licensing but are located on landlocked tidelands and are therefore subject to a public benefit determination by the Secretary of Energy and Environmental Affairs. The proposed project must also conform to the approved South Boston Municipal Harbor Plan (SBMHP).

The Secretary's Decision for the SBMHP approved a substitution to the Chapter 91 open space requirement for Parcels A and H. The approved open space substitution did not modify the amount of open space required by the Chapter 91 regulations (50% of the project site) but instead allowed for 100% lot coverage and for the open space to be aggregated on a 1:1 ratio within jurisdiction and on a 1.25:1 ratio on land outside of jurisdiction. The EENF states that the proposed building footprint for Parcel A is approximately 17,080 square feet, and for Parcel H, the proposed building footprint within jurisdiction is approximately 2,444 square feet. The total building footprint within Chapter 91 jurisdiction on Parcels A and H is approximately 19,524 square feet and would require approximately 9,762 square feet of open space.

The Secretary's Decision required that the open space requirements for Parcel A and H be met through the provision of open space on "Parcel E" (as described in the SBMHP) and at the "McCourt Fan Pier Gateway Project property" (as described in the SBMHP). The decision also required that open space benefits be provided concurrent with associated project impacts. Therefore, open space that is proposed to be provided in future phases of this project will not count towards the open space requirement for Phase I. The open space currently proposed on Parcel E totals approximately 8,100 square feet. Therefore, in order to satisfy the open space requirement for Phase I, the project will require approximately 1,662 square feet of additional open space.

The EENF states that the proponent is working with the City to make improvements to Old Sleeper Street in order to (1) meet the Phase 1 open space requirement and (2) make an active open space area that could provide a missing Harborwalk link along the Fort Point Channel. CZM is encouraged by the proponent's proposal to improve Old Sleeper Street and to establish it as a pedestrian way. CZM is supportive of the proposal to count Old Sleeper Street towards the open space requirement for Phase I of this project and encourages the proponent to continue discussions with the City.

The EENF indicates that if Old Sleeper Street is not counted towards the Phase I open space requirement that the proponent will instead contribute to an open space improvement fund. The Secretary's Decision on the SBMHP did allow for contributions to the City's Open Space Fund as an offset to the open space requirement. This offsetting measure was approved for parcels located in the Fort Point Historic North District, however, and not for the parcels located in Phase I of this project. CZM.1

Federal Consistency Review

The proposed project may be subject to CZM federal consistency review, in which case the project must be found to be consistent with CZM's enforceable program policies. For further information on this process, please contact Robert Boeri, Project Review Coordinator, at 617-626-1050, or visit the CZM web site at www.mass.gov/czm. CZM.2

LAM/bw

cc: Brad Washburn,
CZM Boston Harbor Regional Coordinator
Ben Lynch & Andrea Langhauser,
MassDEP Waterways Regulation Program
Richard McGuinness,
Deputy Director of Waterfront Planning, Boston Redevelopment Authority
Kristin Kara,
Senior Project Manager, Boston Redevelopment Authority
Elizabeth Grob,
Epsilon Associates

9.3.4 Office of Coastal Zone Management

CZM.1 Open space off-setting.

Please see Section 4.8.4 for detailed information on open space offsetting measures.

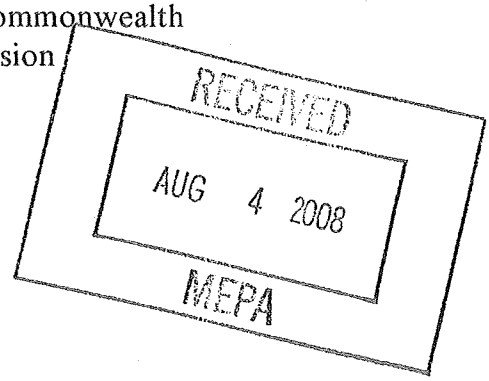
CZM.2 Federal Consistency Review

The Project complies with the program policies of Massachusetts' approved Coastal Zone Management program and will occur in a manner consistent with such policies. Please see Section 4.9.1.

✓ BA

The Commonwealth of Massachusetts

William Francis Galvin, Secretary of the Commonwealth
Massachusetts Historical Commission



July 31, 2008

Secretary Ian A. Bowles
Executive Office of Energy and Environmental Affairs
100 Cambridge St.
Boston MA 02114

ATTN: Briony Angus, MEPA Unit

RE: Seaport Square, Boston, MA; EOEA# 14255; MHC# 44481

Dear Secretary Bowles:

The Massachusetts Historical Commission has reviewed the Environmental Notification Form submitted for the above referenced project. After a review of the information submitted and MHC files, MHC has the following comments.

The property known as the Chapel of Our Lady of Good Voyage is within the project site and is proposed for demolition. The Chapel of Our Lady of Good Voyage is included in MHC's Inventory of Historic and Archaeological Assts of the Commonwealth and meets the criteria for listing in the National Register of Historic Places under Criteria A and C and under criteria considerations (36 CFR 60). The property is an interesting example of post-World War II ecclesiastical architecture and one of five such post-War properties built within the city of Boston. The project site is also within proximity to the Fort Point Channel Historic District which is listed in the State and National Registers of Historic Places.

After review of materials submitted, I have determined that the proposed project will have an adverse effect" (950 CMR 71.05(a)) through the demolition of an inventoried property.

MHC understands that phase 1 of the project will involve new construction on Blocks A, H and J and that this construction will serve as a transition between the historic district and taller new construction planned for later phases. The MHC does not object to the Phase I waiver provided that the proponent consult with the MHC and any interested parties to resolve the adverse effect of the proposed demolition.

MHC notes that the project proponent intends to facilitate improvements to the Old Northern Avenue Bridge, a property that is listed in the State Register of Historic Places,

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www.sec.state.ma.us/mhc

as part of the project. The MHC will require additional information concerning the proposed improvements in order to determine their effects to this historic property. MHC.1

These comments are offered to assist in compliance with Massachusetts General Laws, Chapter 9, Section 26-27C, as amended by Chapter 254 of the Acts of 1988 (950 CMR 71.00) and MEPA. Please do not hesitate to contact Ann Lattinville of my staff, should you have any questions.

Sincerely,

Brona Simon

Brona Simon
State Historic Preservation Officer
Executive Director
Massachusetts Historical Commission

xc: Phil Weinberg, DEP
John Hynes, III, Gale International
Taya Dixon, Epsilon Associates
Ellen Lipsey, Boston Landmarks Commission
Sarah Kelley, Boston Preservation Alliance
Richard McGuiness, BRA

9.3.5 Massachusetts Historical Commission

MHC.1 Old Northern Avenue Bridge.

The Proponent has requested a meeting with the Massachusetts Historical Commission to review the proposed Project and to discuss potential impacts to historic resources, including the Chapel of Our Lady of Good Voyage and the Old Northern Avenue Bridge.

BRA MEMORANDUM

TO: Kristin Kara

FROM: Katie Pedersen

DATE: August 4, 2008

RE: Seaport Square in South Boston
Comments on Project Notification Form/Environmental Notification Form
Phase 1 Waiver Request

I have reviewed the Project Notification Form/Environmental Notification Form (PNF/ENF) Phase 1 Waiver Request dated June 2, 2008 and submit the following comments for the Environmental Protection Component. Gale International, Morgan Stanley and WS Development Associates, LLC (the Proponent) propose the development of more than 23 acres of land, devoting approximately 36% (approximately 8 acres) of the total land area to streets, sidewalks and public open space, and constructing 19 new buildings (the Proposed Project).

The Proponent is requesting that the BRA Scoping Determination waive further review of Phase 1(approximately 200,000 square feet or roughly 3% of the Proposed Project) of the Proposed Project based on the analysis in the PNF/ENF of the impacts of this phase, while providing a Scope for the Draft PIR/EIR for the entire project.

I propose to grant the requested waiver for Phase 1 (Blocks A, H and J) of the Proposed Project. The Proponent has adequately demonstrated, in the PNF/ENF, that the environmental impacts of Phase 1, taken alone are insignificant. The Phase 1 waiver approval shall not constitute an approval of the full-build of the Proposed Project, nor shall it constitute a waiver of performing the following environmental assessments for the full-build of the Proposed Project. The PNF/ENF does not provide a sufficient assessment of the Proposed Project's potential environmental impacts with regard to the full-build of the Proposed Project.

Wind

As described in PNF/ENF, the buildings to be built in Phase 1 (Blocks A, H and J) of the Proposed Project range in height from 75 to 85 feet and thus are not anticipated to create adverse wind impacts. The Proponent has stated that the Phase 1 buildings will be similar in height to the surrounding buildings, consequently limiting impacts on pedestrian level winds. For this reason, it is estimated that the overall impact of the Phase 1 development will be negligible on the pedestrian level winds. However, the Proponent shall be required to conduct a quantitative wind analysis for the Proposed Project, as 14 of the 19 proposed buildings will be taller than 150 feet, ranging to 200-250 feet.

BRAK.1

The Proponent shall be required to conduct a comprehensive quantitative wind analysis for the full-build Proposed Project, thus providing a sufficient assessment of existing (no-build) and build conditions. It is not clear what the anticipated impacts of the Proposed Project buildings will be, as they have not been assessed. Wind speeds increase with the elevation above the ground surface, and taller buildings intercept these faster winds and deflect them to the pedestrian level. Due to the fact that the Proposed Project includes 19 buildings, 14 of which will be taller than 150 feet, ranging to 200-250 feet to be located on a site that is approximately 23 acres currently composed of parking lots and fencing.

Shadow

Due to the fact that the existing site is primarily vacant, Phase 1 of the Proposed Project is anticipated to create a net new shadow, although as the Proponent has demonstrated, shadows are not likely to result in a significant adverse impact. Shadow impacts will be substantially reduced due to the sufficient distance between Building H and the identified sensitive areas, the water and existing open space at the Children's Museum.

The Proponent shall be required to perform a shadow analysis for the full-build Proposed Project, analyzing existing and build conditions for the hours 9:00 a.m., 12:00 noon, and 3:00 p.m. for the vernal equinox, summer solstice, autumnal equinox, and winter solstice and for 6:00 p.m. during the summer and autumn, it should be noted that due to the time differences (daylight savings v. standard), the autumnal equinox shadows would not be the same as the vernal equinox shadows and therefore separate shadow studies are required for the vernal and autumnal equinoxes. BRAK.2

The shadow impact analysis shall include net new shadow as well as existing shadow and must clearly show the incremental impact of the Proposed Project. For purposes of clarity, new shadow should be shown in a dark, contrasting tone distinguishable from existing shadow. The shadow impact study area shall include, at a minimum, the entire area to be encompassed by the maximum shadow expected to be produced by the Proposed Project. The build condition(s) shall include all buildings under construction and any proposed buildings anticipated to be completed prior to the completion of the Proposed Project. Shadow from all existing buildings within the shadow impact study area shall be shown. A North Arrow shall be provided on all figures. Shadows shall be determined by using the applicable Boston Azimuth and Altitude data.

Particular attention shall be given to existing or proposed public open spaces and pedestrian areas, including, but not limited to, the existing sidewalks and pedestrian walkways within, adjacent to, and in the vicinity of the proposed project and the existing and proposed plazas, historic resources, the Harborwalk, and other open space areas within the vicinity of the Proposed Project.

Noise

The Proponent will comply with the City of Boston Noise Ordinance during the construction of Phase 1 of the Proposed Project. No significant impacts due to increased

noise from the construction activities are anticipated as a result of the mitigation measures described in Section 3.3.11.2 of the PNF/ENF.

The Proponent shall establish the existing noise levels at the proposed project site and vicinity based upon the noise-monitoring program. The Proponent shall also calculate future noise levels after project completion based on appropriate modeling and demonstrate compliance with the Design Noise Levels established by U.S. Department of Housing and Urban Development for residential and other sensitive receptors and with all applicable Federal, State and City of Boston Noise criteria and regulations. BRAK.3

Solar Glare

The Proponent has stated that the Proposed Project design will not include the use of reflective glass or other reflective materials that would result in adverse impacts.

Air Quality

The Proponent has identified potential long-term air quality impacts are being limited to emissions from Proposed Project-related mechanical equipment and pollutant emissions from vehicular traffic generated by the development of the Proposed Project. Impacts to air quality during Phase 1 would potentially occur due to the operation of construction equipment on site and vehicular traffic going to and from the site. The main air pollutant of concern from construction-related activities is particulate matter due to fugitive dust and from the exhaust from diesel-powered construction equipment, trucks, and worker vehicles. In addition, carbon monoxide from mobile source emissions is also a pollutant of concern. Possible impacts could include sedimentation of surface water resources, as well as construction activities that would increase traffic and decrease air quality. However, the Proponent has identified mitigation measures in Section 3.3.11.1 of the PNF/ENF to be incorporated in the Proposed Project that will offset these potential impacts.

The Proponent shall provide a description of the existing and projected future air quality in the Proposed Project vicinity and shall evaluate ambient levels to determine conformance with the National Ambient Air Quality Standards (NAAQS). Careful consideration shall be given to mitigation measures to ensure compliance with air quality standards.

A future air quality (carbon monoxide) analysis shall be required for any intersection (including garage entrance/exits) where the level of service (LOS) is expected to deteriorate to D and the Proposed Project causes a 10 percent increase in traffic or where the level of service is E or F and the Proposed Project contributes to a reduction in LOS. BRAK.4

The study shall analyze the existing conditions, future No-Build and future Build conditions only. The methodology and parameters of the air quality analysis shall be approved in advance by the Boston Redevelopment Authority (BRA) and the

Massachusetts Department of Environmental Protection (DEP). Mitigation measures to eliminate or avoid any violation of air quality standards shall be described. BRAK.5

A description of the Proposed Project's heating and mechanical systems, including the location of buildings/garage intake and exhaust vents and specifications, and an analysis of the impact on pedestrian level air quality and on any sensitive receptors from operation of the heating, mechanical and exhaust systems, including the building's emergency generator, shall be required. Measures to avoid any violation of air quality standards shall be described. BRAK.6

Stormwater Management

The Proponent has stated that the existing stromwater infrastructure will support Phase 1 of the Proposed Project. As illustrated in the PNF/ENF, the Proposed Project will be designed to meet Department of Environmental Protection's (DEP) Stormwater Management Policy and Boston Water and Sewer Commission (BWSC) standards and practices. In order to reduce stormwater-induced impacts from the Proposed Project during construction, it is essential to design and implement adequate erosion and sedimentation control measures to mitigate potential impacts. The Proponent has indicated in the PNF/ENF that such measures will be employed during the construction of Phase 1.

The Proponent shall provide an evaluation of the Proposed Project's existing and future stormwater drainage and stormwater management practices. The Proponent shall also provide an illustration of existing and future drainage patterns from the Proposed Project site and as well as describe and quantify existing and future stormwater runoff from the site and the Proposed Projects' impacts on site drainage. The analysis shall be based on 2-, 10-, 25-, 100- year rainfall events based on a 24-hour duration. The Proposed Project's stormwater management system, including best management practices to be implemented, measures proposed to control and treat stormwater runoff and to maximize on-site retention of the stormwater, measures to prevent groundwater contamination, and compliance with the Commonwealth's Stormwater Management Practices Policies, shall be described. BRAK.7

Stormwater management controls will be established in compliance with Boston Water and Sewer Commission (BWSC) standards; the Proposed Project is not anticipated to introduce any increased peak flows, pollutants or sediments that would potentially impact the Boston Harbor. The Proponent has provided a description of the Proposed Project area's stormwater drainage system to which the Proposed Project will connect, including the location of the stormwater drainage facilities and ultimate points of discharge. To assure compliance with BWSC's requirements, the Proponent shall submit a site plan showing the location of all existing and proposed water lines, sewers and storm drains that serve the site. BRAK.8

Municipal Harbor Plan/Chapter 91

The Proponent shall be required to ensure that the Proposed Project be built in full compliance with the South Boston Municipal Harbor Plan (SBMHP), and the five blocks within the Proposed Project (Block A, and portions of B, G, H and M) that are subject to Chapter 91 licensing jurisdiction comply with all applicable design and environmental guidelines. BRAK.9

Geotechnical Impact

The Proponent shall provide a description and analysis of the existing sub-soil conditions, including the potential for ground movement and settlement during excavation and potential impact on adjacent buildings and utility lines shall be required. This analysis shall also include a description of the foundation construction methodology, the amount and method of excavation, and the need for any blasting and/or pile driving and the impact on adjacent buildings and infrastructure. BRAK.10 A Vibration Monitoring Plan shall be developed prior to commencing construction activities to ensure that impacts from the project construction on adjacent buildings and infrastructure are avoided. Mitigation measures to minimize and avoid damage to adjacent buildings and infrastructure must be described. BRAK.11

Groundwater

Parcels H, J, K and Q are within the Groundwater Conservation Overlay District, however within this section of the GCOD there is no requirement for groundwater recharge, but there is a requirement to demonstrate that the Proposed Project does not cause a reduction of groundwater levels on the site or on abutting lots. The areas of concern are those that immediately abut the Fort Point Channel area of South Boston, where the majority of the buildings are supported on vulnerable wood foundations.

The Proponent has stated that groundwater monitoring wells will be installed during planned future subsurface explorations. The Proponent is encouraged, if possible, to install in locations that will be accessible in the future and should be made available to the Boston Groundwater Trust (the Trust) to incorporate into its' observation well network when no longer needed for construction. BRAK.12 Groundwater levels should be monitored before construction to establish a baseline and then during construction to assure that they are not being drawn down. Results should be made available to the BRA and to the Trust shortly after they are gathered. BRAK.13

Rodent Control

The Proponent has stated that a rodent extermination certificate will be filed with the City of Boston as well on-going monitoring and treatment, in compliance with the City's requirements.

Sustainable Design/Green Buildings

The purpose of Article 37 of the Boston Zoning Code is to ensure that major buildings projects are planned, designed, constructed and managed to minimize adverse environmental impacts; to conserve natural resources; to promote sustainable development; and to enhance the quality of life in Boston. Any proposed project subject to the provisions of Article 37 shall be LEED Certifiable (U.S. Green Buildings Council) under the LEED rating system. Proponents are encouraged to integrate sustainable building practices at the inception of the design process.

The Proponent has provided a completed LEED for Neighborhood Development Pilot checklist for which the Proposed Project purporting to achieve 55 points. The Proponent has also provided three separate LEED-NC checklists for Parcel A, Parcel H and Parcel J, each indicating 26 points which are "strongly pursuing." The Proponent shall be required to provide three updated LEED-NC checklists and narrative and indicate which points are fall into the yes, no and maybe categories. BRAK.14

9.4 City of Boston Department Comments on the PNF/ENF

9.4.1 Boston Redevelopment Authority

BRAK.1 Quantitative wind analysis is required.

Please see Section 4.1 for the wind analysis.

BRAK.2 Shadow analysis is required.

Please see Section 4.2 for the shadow analysis.

BRAK.3 Noise Analysis.

Please see Section 4.7 for the noise impact analysis.

BRAK.4 Air quality analysis.

Please see Section 4.5 for the air quality analysis.

BRAK.5 Air quality mitigation.

Please see Section 4.5.4.

BRAK.6 Air quality analysis of building equipment and intake and exhaust vents.

Please see Section 4.5.2.3 and 4.5.4.3 for information on building equipment, intake and exhaust valves and their air quality impact.

BRAK.7 Stormwater management and drainage.

Please see Section 7.3 for information on stormwater management and drainage.

BRAK.8 Submit a site plan showing the location of all existing and proposed water lines, sewers and storm drains that serve the site.

Please see Sections 7.1, 7.2 and 7.3.

BRAK.9 Ensure that the project be built in full compliance with the South Boston Municipal Harbor Plan and that the blocks within Chapter 91 licensing jurisdiction comply with all applicable design and environmental guidelines.

Blocks A, B, G, H, and M1 are within Chapter 91 jurisdiction and are in full compliance with the South Boston Municipal Harbor Plan. Please see Section 4.8.4 for a detailed analysis regarding compliance with the South Boston Municipal Harbor Plan as well as compliance with all applicable design and environmental guidelines.

BRAK.10 **Geotechnical impact analysis.**

Please see Sections 4.10.1 and 4.10.2.

BRAK.11 **Vibration Monitoring Plan and mitigation.**

Please see Section 4.10.1 for an analysis of the existing subsurface geotechnical conditions. Please see Section 4.10.2 for the analysis of impact of the conditions. A variety of foundation systems and solutions will be required based on proposed structural requirements, site constraints and subsurface conditions. Refer to Section 4.12.7.2 for a description of the vibration monitoring and mitigation plan.

BRAK.12 **Encourage the installation of groundwater monitoring wells in locations that are accessible in the future, and should make them available to the Boston Groundwater Trust to incorporate into its observation well network.**

Groundwater monitoring wells will be installed to document existing groundwater levels and hydrogeologic conditions. The wells will be installed prior to the start of construction and in accordance with City and BGwT standards for permanent monitoring wells. The wells will be installed at locations where they will be accessible for long-term monitoring and will be turned over to the BGwT when no longer required for the Project, thereby increasing the inventory of wells available to the BGwT for their on-going monitoring program.

BRAK.13 **Groundwater levels should be monitored before construction to establish a baseline and then during construction. Results should be made available to the BRA and the Boston Groundwater Trust shortly after they are gathered.**

Please refer to Sections 4.10.3, 4.10.4 and 4.10.5. Groundwater was measured at depths of approximately 4 and 14 feet below existing site grades at existing monitoring wells.

BRAK.14 **Provide three updated LEED-NC checklists and narrative for Blocks A, H, and J and indicate which points fall into the yes, no and maybe categories.**

Refer to Appendix G for LEED checklists by use type, as well as LEED checklists for Blocks A and H. Section 4.13.2 discusses the pursuit of individual LEED credits.

MEMORANDUM

Date: July 1, 2008

To: Kristin Kara, Project Manager
Jay Rourke, Project Manager

From: Jim Fitzgerald, Senior Manager for Transportation and Infrastructure

Re: **Comments on the Project Notification Form for the proposed Seaport Square project**

The following are comments related to the Project Notification Form (PNF) for the proposed Seaport Square project:

Phase 1

- *Block A Access:* As proposed, the location of the driveway to access the parking and loading for Block A conflicts with the future plan to open the Old Northern Avenue Bridge to general vehicular traffic. The current plan for the bridge would open the south lane (nearest the Barking Crab) for vehicles and the planned access apron and a portion of the residential lobby would be in the same alignment of this lane of traffic. Having the vehicular access at this location also raises concerns with potential conflicts with the high volume of pedestrians that utilize the Old Northern Avenue Bridge. Alternatives for relocating this access will need to be considered during the design review process and in joint consultation with the Boston Transportation Department (BTD). JF.1

Full-Build Analysis

- *Traffic Study Area Intersections:* The following three intersections that had been previously requested to be included in the study area need to be added: JF.2
  - Summer Street/Dry Dock Avenue/Pappas Way
  - L Street/1st Street
  - L Street/Day Boulevard

- *Transit:* The PNF proposes using a more generous transit mode split for its analysis based on changes to the transportation system and in particular the competed Silver Line Phase II and the anticipated Silver Line Phase III. While Phase II certainly had a significant positive impact on transit capacity to the area, the completion of the Silver Line with Phase III may actually result in less capacity than currently is enjoyed, when a mostly exclusive service switches to a through connected service with

Roxbury. Therefore, the proponent must conduct a thorough and detailed analysis of future transit capacity versus the full build transit demand from the South Boston Waterfront neighborhood. JF.3

- *Parking:* The proposed parking ratios for most of the uses are acceptable and should be commended. The exception are the proposed 2,500 retail spaces that results in a 2.0 ratio that is over double the BTD proposed ratio of 0.7. Keeping this high ratio will make it doubtful that the future proposed aggressive transit mode share could ever be met, and the 2,500 spaces is over two times the PM peak vehicular trip generation rate of 1,176 trips (with only 578 entering and 598 exiting). The management, public accessibility and potential rate structure for these spaces needs to also be clearly articulated by the proponent. JF.4

- *Bicycling*: The proposal to incorporate bike lanes on Seaport Boulevard will be a welcome addition to the emerging and proposed bike facility system in the area. Bike planning for the South Boston Waterfront envisions 5' bike lanes for West Service Road in the 100 Acres area to provide a connection to the off-road South Bay Harbor Trail. To this end, the Seaport Square project must continue this connection on West Service Road (Boston Wharf Road) out to Seaport Boulevard, and then along Pier Street to connect out to Fan Pier. JF.5

cc: Kairos Shen
Richard Garver
Richard McGuiness
Valerie Gingrich

9.4.2 Boston Redevelopment Authority Memorandum

JF.1 Block A Access

Access to the 28 parking spaces proposed for Block A will occur from Old Northern Avenue. With this low number of spaces, it is not likely that a driveway on Old Northern Avenue would present any significant conflicts with potential vehicle traffic or pedestrians crossing the bridge. Alternative access to the garage will be explored with the BRA and BTD as suggested in the comment.

JF.2 Include the following intersections in the Full Build analysis: Summer Street / Dry Dock Avenue / Pappas Way, L Street / 1st Street, and L Street / Day Boulevard.

These intersections have all been included in the analysis.

JF.3 Conduct a thorough and detailed analysis of future transit capacity versus the Full Build transit demand from the South Boston Waterfront neighborhood.

This detailed analysis is found in Section 3.3.1.11 for Mid-term No-Build Conditions, Section 3.3.2.11 for Seaport Square Build Conditions, and Section 3.3.4.6 for South Boston Waterfront Long-term Conditions.

JF.4 The number of retail parking spaces is too high. The management, public accessibility and potential rate structure for these spaces needs to be clearly articulated.

Seaport Square Build Conditions parking is discussed in Section 3.3.2.10. Proposed Transportation Demand Management (TDM) measures are outlined in Section 3.3.3.6.

JF.5 Project must continue the bike connection to the South Bay Harbor Trail on West Service Road out to Seaport Boulevard, and along Pier Street to connect out to Fan Pier.

The Project will not preclude future bicycle routes along Seaport Boulevard, Boston Wharf Road, Pier Street, or other adjacent surface street systems, and is committed to working with the City as future bicycle planning and feasibility studies advance. Please see Figure 1-42 which provides potential bicycle routes for the Project area.

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August 11th, 2008

Attn: Kristin Kara

Boston Redevelopment Authority
Boston City Hall
Boston, MA 02201

RE: **Seaport Square PNF/ENF Phase One**

Dear Ms. Kara,

Thank you for the opportunity to comment on the PNF/ENF Article 80 Large Project Review for the Seaport Square Phase I development. The Phase I Project consists of three prominent parcels located along the entranceway to the emerging South Boston Waterfront. Parcels A, H, and J will consist of less than 200,000 square feet of the overall proposed 6 million square foot Seaport Square Project but will begin to lay the foundation for the overall development. Phase I includes three new buildings with approximately 110 residential units, 46,600 square feet of retail space and a 25,000 square foot Chapel.

The Boston Transportation Department has reviewed the proponent's PNF submittal for the Parcel A, H, and J Phase I development and has concluded that the project is a beneficial one for the City's emerging South Boston Waterfront. There are however certain transportation related issues to address before moving forward. The following is a summary of comments and questions pertaining to the submittal:

Existing Conditions & Future Build

- In the near term, as part of an Access Plan Agreement, the intersection of Seaport Boulevard and Sleeper Street will have signal analysis and design recommendations provided to BTD by others. As mitigation for the Seaport Square Project, the proponent has clearly stated its commitment (Section 4.2.1) to providing the necessary hardware (signal equipment, pavement markings, signage) to improve the same intersection's LOS. Following BTD acceptance of the new design by others, the proponent must work closely with BTD to coordinate implementation of new design and hardware items. BTD.1
- Similarly, the intersection of A Street and West Broadway is also in the process of being redesigned by others and agreements are in place for signal upgrades. The Seaport Square proponent must collaborate with BTD and the developers to ensure Phase I and Full build analysis is incorporated into the new design. BTD.2
- Additional No Build projects were omitted from the existing conditions report. Namely, the Cargo Terminal redevelopment, the Channel Center Phase II mixed use project, the 49, 51, 63 Melcher Street redevelopment, the Cruise Port Terminal and the USPS relocation. BTD.3

- The following intersections must be added to the Full Build Study Area list that was presented in the PNF: Summer Street/Pappas Way, L Street/1 St Street and L Street/Day Boulevard. BTD.4

Mode Share and Trip Generation

- The proponent has presented an adjusted mode share allocation in the PNF which concludes daily trips for Phase I will total just 708 trips as opposed to an unadjusted ITE figure of 2,888. The Full Build comparison between adjusted and unadjusted ITE calculations also presents a sharp contrast between the estimated 24,660 vehicles as opposed to 99,116. Even when taking into consideration the excellent public transit proximity and possible Phase III Silver line connection, these adjustments appear to be extremely optimistic. The proponent must clearly explain in detail how it arrived at the generous transit and walk share splits. BTD.5
- No Build and Full Build Intersection conditions must be presented in the context of an accurate mode split assumption. Build Condition level of service calculations require accurate data assessments in order to determine adequate mitigation proposals. BTD.6

Parking

- The Parcel A parking space allocation is forty three (43) spaces. The per unit ratio (.81) is well within BTD waterfront residential guidelines. The retail component of the Parcel A is also expected to be served by nearby surface lots until completion of future underground garage space.
- The proposed Parcel H structure includes approximately fifty seven (57) units of housing and approximately 20,000 sf retail space with no built in parking component. Parcel J proposes a 25,000 sf Chapel. Do the existing surface lots adjacent to blocks H and J have the capacity to support the needs of the new buildings until construction of the underground garage? BTD.7
- The overall full build proposal (6,500 spaces) for the residential, hotel and office space allocations are all within the BTD guidelines for parking ratio with the exception of the retail. The proponent needs to clarify how this is reduced "over time" as stated in the PNF. BTD.8

Service & Loading Operations

- The Parcel A confinement presents a service/loading and parking garage entrance challenge. The pedestrian only aspect of the Northern Avenue Bridge and the travel lane uses of Sleeper Street and Seaport Boulevard limit access. The proponent will need to provide a scaled site plan including turning templates for applicable vehicles. BTD.9
- The proponent must submit a scaled site plan depicting the truck access operations for Parcel H via Farnsworth Street for review by BTD. BTD.10
- There is no ground floor connection between the east and west wings of the structure. Will vehicular access be permitted on any of the pedestrian plaza areas of Parcel H? BTD.11

Public Transit

- The MBTA Silver Line Courthouse Station is ideally situated alongside Parcel J adjacent to the proposed Chapel. The MBTA Red line and Commuter Rail service located at the South Station transportation hub is with in a short walking distance from both the Phase I and Full Build Parcels. The proponent must work through aggressive TDM measures and coordination with the MBTA and transit authorities to take full advantage of the access. BTD.12

Pedestrian Issues/ Improvements

- The Seaport Square Project has significant public benefits in terms of improved pedestrian access, connections, new streets and improvements to existing roadways.

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Walkway widths range from 12' to 70' in some instances. BTD is particularly pleased that the proponent has included an expansion of the Harborwalk connection between the Children's Museum and the new Federal Courthouse.

- BTD also supports the proponent's commitment to funding infrastructure improvements for the Old Northern Avenue Bridge and promoting the bridge as a pedestrian friendly gateway.
- Parcels A, H and J also integrate significant sidewalk with and pedestrian plaza area into their respective designs. Conflicts between the service and loading activities and pedestrian pathways must be avoided. BTD.13
- In the Full Build Scenario it is not clear what scale and function the new Harbor street connection to Seaport Hill has as an urban street. Is it predominantly a pedestrian connection with minimal one way vehicular travel and curbside parking? The roadway is also sloped and then abruptly ends at the square. Harbor Street will have to undergo extensive design review with in BTD and BPWD. BTD.14

Bicycles

- The Seaport Boulevard cross section includes a 5' bike lane as well as full travel lane capacity and parking lanes. BTD supports the possibility of including bike lanes along the Boulevard and elsewhere with in the project area. BTD encourages the proponent to work with the City's Bike coordinator, BTD, BPWD and the BRA to determine precisely where other opportunities exist to incorporate bicycle accommodations. (see attached guidelines) BTD.15
- The proposed two bicycle space per residential unit is consistent with BTD guidelines and should be applauded. It is not clear however what bicycle amenities are associated with the Phase I program aside from bike storage within the Parcel A building. The proponent must provide more detailed information relative to a Phase I bike strategy. BTD.16
- BTD is encouraged by the proponent's commitment to including substantial numbers of bicycle parking and storage facilities within the context of the Full Build as well as expanding its existing bike rental program.

Transportation Demand Management

- BTD suggests that all developers implement TDM measures to encourage alternative modes of transportation. This is especially important in the case of the Seaport Square Phase I and Full Build scenarios. BTD wishes to emphasize and endorse the following items related to mixed use development referenced in the PNF: BTD.17

    - An on site Transportation Coordinator.
    - Participation in a Transportation Management Association. (Seaport TMA)
    - Car/Vanpool Parking
    - Encourage Tenants to offer Transit Pass subsidies for retail and office employees.
    - Distribution of transit information in orientation packets, building lobbies and on a project Web site.
    - Market-rate public parking as a disincentive to use single occupant vehicles (SOV)
    - Car-Sharing Program (as proposed in the PNF but distributed not centralized)
    - Secure indoor storage for resident's bicycles.
    - Bicycle racks for visitors.
    - Post information regarding public and private transit routes, schedules and rates in prominent common areas and on any project Web sites.
    - Provide transit pass subsidies for al employees.
    - Offer pre-tax payroll deduction for transit pass purchase.
    - Maintain database of employee information for ride-matching purposes.

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- Offer Guaranteed Ride Home Program
- Flextime/Telecommuting
- Sell MBTA link passes on site.

BTD.17 cont'd

Construction Management Plans

- The City requires the proponent submit a Construction Management Plan to BTD. The CMP will detail the schedule, staging, parking and other impacts of the construction activities.

BTD.18

Transportation Access Plan Agreement

- As required by the Article 80 process, the proponent will prepare and submit a Transportation Access Plan Agreement (TAPA) for review by BTD. The TAPA is a legally binding agreement between the developer and the Boston Transportation Department.
- The TAPA will specifically address the assessment of overall traffic impacts and mitigation adequacy, assessment of construction impacts and mitigation, monitoring of traffic impacts and management of loading and deliveries.

BTD.19

Thank you again for the opportunity to comment on the Large Project Review/Article 80 PNF submittal for Seaport Square Phase I Development. If you have any questions please feel free to contact me at 617-635-2454

Sincerely,

Patrick E. Hoey
Transportation Planner
BTD Policy and Planning

Cc: Vineet Gupta, Director, BTD Planning
John DeBenedictus, Director, BTD Engineering

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Space Guidelines

Residential Development:

- Two bicycle parking spaces per unit
- 50% Indoor/Secure facilities (primarily for residents), 50% Outdoor/Covered or Outdoor/Open facilities (primarily for visitors)

Retail Development:

- Spaces for 5% of the planned occupancy
- 25% Indoor/Secure facilities (for employees), 75% Outdoor/Covered or Outdoor/Open facilities (for patrons)

Commercial Office Development:

- Spaces for 5% of the planned occupancy, with a minimum of 2 bicycle parking spaces
- 75% Indoor/Secure facilities (for employees), 25% Outdoor/Covered or Outdoor/Open facilities (for visitors and/or customers)

Industrial Development:

- Spaces for 5% of the planned occupancy, with a minimum of 2 bicycle parking spaces
- 75% Indoor/Secure facilities (for employees), 25% Outdoor/Covered or Outdoor/Open facilities (for visitors and/or customers)

Transit Facility:

- Spaces for 10% of the planned occupancy, with a minimum of 4 bicycle parking spaces
- 50% Indoor/Secure facilities, 50% Class Outdoor/Covered or Outdoor/Open

Enforcement

- Bicycle parking guidelines will be enforced by the City of Boston.
- If Boston Bikes finds a violation of the requirements, he or she will provide written notice to the responsible party offering thirty days to cure the violation.
- If the violation has not been cured within the thirty days, a penalty of $50/day will be assessed by the City of Boston, commencing with the first date of the violation.
- All fines collected for violations will be deposited for expenditure by Boston Bikes.

Technical Information

- When calculating average patron and employee load as well as number of bicycle parking spaces, round down to the nearest whole number.

Bicycle Parking Guidelines

Bicycle parking should be provided to encourage and facilitate bicycling. Bicycle parking requirements will vary depending on the type of development, as described below. Failure to comply with these requirements will result in a fine.

Definitions

- Indoor/Secure facilities are defined as bicycle parking areas that protect the entire bicycle, its components and accessories against theft and against inclement weather, including wind-driven rain. Examples include lockers, check-in facilities, monitored parking, restricted access parking, and personal storage.
- Outdoor/Covered facilities are defined as bicycle parking areas that provide some protection against the elements, such as an awning or tented roof, as well as access to bicycle racks to which the user can lock the bicycle frame and one wheel while the bicycle is supported in a stable position.
- Outdoor/Open facilities are defined as bicycle parking areas that permit the locking of the bicycle frame and one wheel to a bicycle rack and which supports the bicycle in a stable position without damage to wheels, frame or components.
- Bicycle parking spaces refers to the number of bicycles that can be accommodated by the bicycle racks or facility, as defined by the users manual for the rack or facility referenced. For the remainder of this document, guidelines refer to spaces, or number of bicycles for which the facility is designed to accommodate.

General Guidelines

- All racks and other fixtures must be securely affixed to the ground or a building.
- Areas used for bicycle parking should be secure, well-maintained, well-lighted and easily accessible to bicycle riders.
- No bicycle parking areas should impede sidewalk or pedestrian traffic.

Location Guidelines

- No bicycle parking shall be located farther from the entrance of a building than the closest automobile parking space.
- Retail establishments shall have Outdoor/Covered or Outdoor/Open facilities within 50 ft. of the primary entrance.
- All bicycle parking shall be separated by a physical barrier or sufficient distance from car parking and vehicular traffic to protect parked bicycles from damage.
- Prominently placed signs should direct users to all Class 1 facilities that are not immediately visible from the street.

9.4.3 Boston Transportation Department

BTD.1 **Work closely with BTD to coordinate implementation of new design and hardware items for the intersection of Seaport Boulevard and Sleeper Street.**

The Proponent will work with BTD on this issue.

BTD.2 **Collaborate with BTD and other developer to ensure that Phase 1 and Full Build analyses are incorporated into the new design for the intersection of A Street and West Broadway.**

The Proponent will work with BTD and the other area developers on this issue.

BTD.3 **Additional No Build projects were omitted from the existing conditions report.**

The expanded list of area development projects for the Draft PIR/EIR was reviewed with BTD and the BRA. This list of projects can be found in Appendix B-6 and is summarized in Table 3-10 and Table 3-32.

BTD.4 **Add the following intersections to the Full Build Study Area: Summer Street/Pappas Way, L Street/1st Street, and L Street/Day Boulevard.**

These intersections have been added to the study area.

BTD.5 **Clearly explain in detail how the generous transit and walk share splits were arrived at.**

The methodology is explained in Sections 3.3.1.4 and 3.3.2.4.

BTD.6 **No Build and Full Build intersection conditions must be presented in the context of an accurate mode split assumption.**

The mode split assumption for the Draft PIR/EIR has been reviewed with BTD and the BRA.

BTD.7 **Do the existing surface lots adjacent to Blocks H and J have the capacity to support the needs of these new buildings until construction of the underground garage?**

Although 922 spaces will be removed from Lot A, adjacent to Blocks H and J, during construction of the underground garage, there will still be 1,417 spaces on Lot F and 579 spaces on Lot G nearby to supplement the 28 spaces that will be on-site for the Phase 1 Blocks. These adjacent lots have an available capacity of 360 spaces. These lots are currently not filled to capacity on a regular basis and would absorb demand created by H and J.

BTD.8 **Allocation for retail parking spaces is not within BTD guidelines. Clarify how this is reduced "over time" as stated in the PNF.**

"Reduced over time" is wording that appears in the BTD guidelines. The idea is that area parking is more generous in the early phases of development as new garage capacity is added to the capacity of existing surface lots. At Project completion, when all the existing lots have been redeveloped and transit service improved, the parking supply will be constrained closer to the recommended 0.7 spaces/1,000 sf BTD ratio.

BTD.9 **Provide a scaled site plan including turning templates for applicable vehicles for Block A.**

As part of the TAPA process, the study team will work closely with BTD to determine the most appropriate solution to accommodate loading and service activities and garage access for Block A. The TAPA will include an engineered site plan illustrating the turning radii for the anticipated design vehicles.

BTD.10 **Submit a scaled site plan depicting the truck access operations for Block H via Farnsworth Street.**

As part of the TAPA process, the study team will work closely with BTD to determine the most appropriate solution to accommodate loading and service activities and garage access for Block H. The TAPA will include an engineered site plan illustrating the anticipated truck access routes and the turning radii for the anticipated design vehicles.

BTD.11 **Will vehicular access be permitted on any of the pedestrian plaza areas of Block H?**

Blocks H and J have swapped uses as requested by the BRA. Block H will be the new home for the Chapel of Our Lady of Good Voyage, and Block J will be a retail/residential building. Vehicular access to pedestrian plaza areas will be limited to off hour deliveries and emergency vehicles only. Access to pedestrian plaza areas by vehicles will be carefully managed by onsite security and property management personnel.

BTD.12 **Work through aggressive TDM measures and coordinate with the MBTA and transit authorities to take full advantage of the access to surrounding transit facilities.**

A comprehensive TDM plan is included in Section 3.3.3.6. The Proponent is also committed to working with the MBTA to construct a new Silver Line entrance to the existing Courthouse Station (see Section 3.3.3.1).

BTD.13 **Conflicts between service and loading activities and pedestrian pathways must be avoided.**

Sketches in the Draft PIR/EIR are indicative of movements along streets and blocks. Loading activity in Blocks A, H and J is quite limited and all loading will occur curbside. As noted in Table 3-29 of the Draft PIR/EIR, Block A (primarily residential) is expected to generate only two trucks per day, Block H (Chapel) is expected to generate only one truck per day, and Block J (primarily residential) is expected to generate only five trucks per day. It is not likely that this level of delivery activity will significantly conflict with pedestrian movement. Detail design activities will be performed as each Block reaches that appropriate stage and submissions will be made to City departments as per the usual design review processes.

BTD.14 **Harbor Street.**

The intent behind the design of Harbor Street is to provide a connection between the higher Summer Street and the lower Congress Street both for vehicles and pedestrians. Its function is envisioned as mainly local; it ends and provides access in or out at Autumn Lane as a measure to discourage more rapidly traveling through traffic from using the connection. The slope allows for loading and parking access to take place at the ground level beneath Harbor Street, improving pedestrian connections on Harbor Street itself. It is understood that Harbor Street will need to undergo extensive design review with BTD and BPWD.

BTD.15 **Bike lanes.**

The traffic analysis assumed that bicycle lanes will be constructed along Summer Street, consistent with the current proposal for the Summer Street Crossroad Initiative. No other bicycle lanes were assumed to be constructed in the area as definitive long-term planning efforts for evaluating bicycle accommodations on other streets have not yet been initiated. The Project will not preclude future bicycle routes along Seaport Boulevard or other adjacent surface street systems, and the Proponent is committed to working with the City as future bicycle planning and feasibility studies advance.

BTD.16 **Provide more information relative to a Phase 1 bike strategy.**

More detailed information will be provided as the Proponent works with BTD on the Phase 1 TAPA.

BTD.17 **Encouraged Transportation Demand Management items.**

TDM measures are summarized in Section 3.3.3.6.

BTD.18 Construction Management Plan.

A Construction Management Plan will be developed and coordinated with BTD prior to issuance of any building permits.

BTD.19 Transportation Access Plan Agreement.

It is anticipated that specific Transportation Access Plan Agreements (TAPAs) will be negotiated with BTD as individual phases of the Project are ready for implementation.

August 6, 2008

Ian A. Bowles, Secretary
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, 9th Floor
Boston, MA 02114
Attention: Briony Angus, MEPA Office

John Palmieri, Director
Boston Redevelopment Authority
Boston City Hall, Room 925
Boston, MA 02201
Attention: Kristin Kara, Project Manager/Planner

Re: Seaport Square – Environmental Notification Form/Project Notification Form/Phase I Waiver Request - EEA #14255

Dear Secretary Bowles and Director Palmieri:

The City of Boston Environment Department has reviewed the Environmental Notification Form/Project Notification Form/Phase I Waiver Request (ENF/PNF) and offers the following comments.

The Proponent is a partnership of Gale International, Morgan Stanley and W/S Development Associates, LLC. The proposed project is a 23-acre development on land on the South Boston Waterfront now primarily occupied by surface parking. The project is to consist of 20 newly constructed blocks roughly bounded by Northern Avenue, Summer Street, Congress Street, B Street, East Service Road, Boston Wharf Road, Stilllings Street, improved properties and the Fort Point Channel. It will include eight acres of streets, sidewalks, pedestrian ways and open space; 19 buildings and 6,500 parking spaces. Parking will be located under Blocks A, B, C, D, F, G, K, Q, L1 through L6, M1, M2 and N. Building zoning heights are expected to range from 35 feet to 240 feet. Uses are to include 2.75 million square feet (sf) of residential (2,500 units); 1.25 million sf of retail; 1.4 million sf of office and research; 500,000 of hotel (about 700 units); and 600,000 sf of educational, civic and cultural. Retail uses will occupy the ground floor of all buildings except the Chapel and schools. Acres of new non-water dependent use of tidelands or waterways will be 0.44 for Phase I and 1.64 at full build.

The project site is in the Fort Point Waterfront Subdistrict of the Harborpark District, the South Boston Inner Harbor Subdistrict of the South Boston Interim Planning Overlay District and the Restricted Parking District. An exception is Block Q which, rather than being in the Fort Point Waterfront Subdistrict of the Harborpark District, is in the M-4 Restricted Manufacturing Subdistrict. Blocks H, J, K, and Q are in the Groundwater Conservation Overlay District (GCOD). Zoning relief may be required for some blocks for uses, including parking, and for dimension (such as maximum height and Floor Area Ratio [FAR], minimum parapet setback, minimum lot size and lot width, minimum yard and parking and loading requirements).

Seaport Square is within close proximity to the pending Fort Point Channel Landmark District (FPCLD), and Blocks H, J, K, and Q fall within the boundaries of the Seaport Boulevard/ Boston Wharf Road Protection Area abutting the FPCLD. The proposals for Blocks H, J, K, and Q will require Boston Landmarks Commission (BLC) staff review in accordance with the process established by the BLC and the BRA for review of projects within the district and protection areas, in advance of designation and activation of the FPCLD. Once the FPCLD is activated, review will be conducted by the Commission.

The Proponent is requesting a waiver of further review for Phase I, three percent of the project's total floor area (one acre). In addition, the Proponent will seek for Blocks A, H and J, at a minimum, an Interim Planning Permit, conditional use permit and Planned Development Area (PDA) designation.

WAIVER BLOCK DESCRIPTIONS AND BLC COMMENTS

BLC Staff have reviewed the proposed development with the project team in advance of this ENF/PNF filing; the project team has been very receptive to working with BLC staff, and understands the need for sensitive design development for parcels within the Seaport Boulevard/ Boston Wharf Road Protection Area.

BLC staff is pleased to see the continuation of historic Sleeper, Farnsworth, and Thompson Streets across Seaport Boulevard, (Farnsworth as a pedestrian way). The continuation of these streets will encourage physical and visual connections to and from the FPCLD. The BLC encourages proposed new construction to maintain open view corridors on Sleeper, Farnsworth and Thompson Streets, as well as the alleys that run perpendicular to Congress Street and Seaport Boulevard. BLC staff finds the overall development to be generally appropriate in layout, scale and density and is pleased to see the incorporation of generous public open space. Staff is especially pleased to see improved vehicular and pedestrian access to and from the project site, connecting to the FPCLD, Convention Center, and adjacent proposed developments. BLC staff suggests that connections to the FPCLD could be strengthened near Blocks N and L5, as well as along the eastern edge of the District and Block Q. The proposed connection to the new Autumn Lane at Block Q may be refined through the design development of a future specific proposal for Blocks K and Q, which will require BLC staff or Commission review. BED.1

It has come to this department's attention that Block A will now contain 34 residential units and 31 parking spaces. We do not know if these changes have resulted in modifications to the proposed structure. The number of residential units in Blocks A and H combined will be about 93 if the number in A has been reduced.

Block A – The site is bounded by New Sleeper Street, Seaport Boulevard, Northern Avenue and the Fort Point Channel. It is in C. 91 jurisdiction.

The ENF/PNF indicates that this project is construction of a six-story, 75-foot high (zoning height; 87 feet to top of mechanicals) building with 43 parking spaces in one below-grade level, two stories of retail space, four stories (51 units) of residential condominiums and a public plaza, landscaped with paving, trees, benches, planters and lighting, where Old Sleeper Street is now located.

The plaza is described as a link with the linear space to the continuous Harborwalk at the water's edge. It must be clear in the description of this parcel that it is not directly along the water and does not add Harborwalk; it is not a Harborwalk link. What is shown as Old Sleeper Street (Pedestrian) in Figure 2.3-34 appears to have a set of steps up to the Harborwalk that runs southwest of the Barking Crab; no ramps are evident. A lack of universal access would diminish the benefit of this area.

Bicycle parking for residents will be provided in the parking garage with the location to be provided to BTD with the Transportation Access Plan Agreement (TAPA).

Block A is outside of the Seaport Boulevard/ Boston Wharf Road Protection Area but occupies a prominent site that will be seen in context with the FPCLD. BLC staff generally finds the site and building design appropriate in articulation of detail and suitable in scale and massing; staff appreciates modern design that is refined in proportion and detail. However, staff understands that environmental issues remain for BED staff as wind and shadow analyses have not been conducted for this and other waiver parcels.

BLC staff is pleased with the idea that the second floor retail space has some flexible outdoor space that visually connects to the public plaza below. Staff would encourage the expansion of this idea with a physical connection to the second floor retail space from the southeastern corner of the project to provide even more opportunity for pedestrian flow.

Block H - Construction of a building with two floors of retail and residences on the upper five floors on the Sleeper Street side and upper eight floors on the Farnsworth Street side. Zoning heights are identified in the ENF/PNF as 85 feet on Sleeper Street side and 116 feet on Farnsworth. It appears that there may be mechanical penthouses on the roof of each element. The site is bounded by Seaport Boulevard, Sleeper Street, Farnsworth Street and a parking lot. Part of the building is in Chapter 91 jurisdiction.

Block J - Construction of a new Our Lady of Good Voyage Chapel from Block D. Plans and Elevations in the ENF/PNF show three stories with a zoning height of 45 feet and a 65 foot element. The design has not yet been finalized.

The proposed plans for the new chapel will require ongoing design review with BLC and BRA staff in advance of designation of the FPCLD. The proposed demolition of the existing chapel at 65 Northern Ave requires Article 85 Demolition Delay review by the Boston Landmarks Commission. The Article 85 Demolition Delay application can be found online at www.cityofboston.gov/environment.downloads.asp. Contact Gary Russell at 617-635-3850 if you have questions about the application. BED.2 BED.3

Blocks H and J are within the boundaries of the Seaport Boulevard/ Boston Wharf Road Protection Area and will require ongoing BLC staff or Commission review. BLC staff has met with the project team and BRA design review staff in advance of this ENF/PNF filing and understand that the development team may be exploring options for the parcels that are significantly different from those seen in the ENF/PNF. Currently the proposal for Block H is a building that is generally appropriate in scale and articulation. However, the proposed building spans across the alley on the upper floors. While the pedestrian access remains a two-story open space and the volume above is somewhat articulated as distinct from the main volumes of the building, the building massing clearly cuts off the alley view corridor into and out of the district, a violation of the standards and criteria for projects within the Seaport Boulevard/ Boston Wharf Road Protection Area. Staff notes that the standards and criteria, listed below, apply equally to public streets and alleys and private ways open to public travel. BED.4

> *The goals of the Seaport Boulevard/Boston Wharf Road Protection Area are to:*
> *1. Protect view corridors into and out of the adjacent Fort Point Channel Landmark District along streets and alleys that run perpendicularly from Seaport Boulevard into the Landmark District, including Sleeper, Farnsworth, and Pittsburg (Thompson Place) Streets.*
> *2. To ensure that massing, land coverage, and height of new development is compatible with the adjacent Landmark District.*

BLC staff notes that there has been some discussion about building the new chapel on Block H, rather than J. Locating the chapel on Block H could be beneficial in many ways and the site is an appropriate location for a building of the chapel's scalel; the unique corner site would be highly visible and have a direct connection to the park across the street. BLC staff would be open to discussing the idea of the

chapel at Block H as the revised proposal would require ongoing design review of a design specific to that parcel.

Locating a retail/residential building at Block J would require a new, specific proposal for review. The same concern about protecting the alley view corridor will apply to Block J as well. BLC staff would also note that any potential future development that may connect or integrate with adjacent properties within the FPCLD will require detailed ongoing design review. The project team should refer to the draft standards and criteria for guidance in design proposed changes, alterations or additions to historic buildings within the FPCLD. The draft standards and criteria can be found at: http://www.cityofboston.gov/environment/fpc/guidelines.asp

The BLC requests that dated cornerstones be incorporated into all new construction. This element will allow those who are attentive to and value the architecture of the City to appreciate the historical context in which structures were conceived. | BED.5

BLC staff looks forward to a continued cooperative relationship with the project team as design review of revised and refined specific proposals moves forward.

ENVIRONMENTAL COMMENTS

We note that there was no mention in meetings with the Proponent at which we were present that the uses on Blocks H and J might be reversed. Such a change would require additional review.

The ENF/PNF states that Blocks A, H and J generally range in height from 75 to 85 feet and, "...future shadow impacts are anticipated to be similar to other dense urban areas." It notes that the South Boston Municipal Harbor Plan (SBMHP) "contemplated" that, "...buildings ranging from in height from 75 to 85 feet would not result in significant shadow impacts" and that regarding Chapter 91 jurisdiction, "...the Secretary's Decision on the SBMHP states that for projects ranging in height from 75 to 85 feet, 'it would appear that ground level conditions will be conducive to pedestrian level activities'." Any impacts will be included in the Draft PIR/EIR.

The references from the SBMHP and the Secretary's Certificate are qualified and do not seem to represent conclusions based upon analyses of shadow and ground level conditions.

Shadow studies are an essential part of project review and should be conducted for Parcels A, H and J. Shadow diagrams should include: | BED.6

- a north arrow;
- street names;
- the identification of doorways, bus stops, open space. areas where pedestrians are likely to walk or congregate (in front of historic resources or other tourist destinations, for example) and watersheet;
- clear delineation of shadow on both rooftops and facades;
- clear distinctions between existing shadow and new shadow; and
- analyses for 6:00 p.m. for the Summer Solstice and Autumnal Equinox.

Diagrams should be oriented and scaled consistent with diagrams depicting wind monitoring locations, for both the Build and No Build conditions.

Regarding wind, the ENF/PNF notes that 14 of the planned 19 buildings will be greater than 150 feet in height – in the 200- to 250-foot range, similar to existing and proposed buildings in the vicinity. The Proponent suggests a quantitative wind analysis for buildings in excess of 150 feet.

Based upon the proposed heights and designs of Blocks A and H, qualitative wind studies should be | BED.7

conducted so that the affect on the pedestrian realm, open space and sidewalks, are identified. Information about expected conditions will be necessary as part of the baseline upon which wind data will be used to confirm at full build and then utilized to progressively evaluate and respond to project wind levels.

Attention of shadow and wind will continue to be important elements of review with mitigation clearly identified, as necessary. We ask that information be provided so that their combined affects on open space and the general pedestrian realm can be understood.

The sole reference to sound, other than that generated by construction, is that levels are expected to increase. Potential noise impacts of A, H and J are to be included in the Draft EIR/PIR. BED.8

It is standard that ambient sound conditions be assessed during large project review. They provide information about the levels of sound that may be experienced by occupants of new projects and can help to inform decisions about envelope and window choices. Where existing levels exceed those allowed under the Regulations for the Control of Noise in the City of Boston, ambient sound becomes the cap for projects. In addition, expected levels generated by Blocks A, H and J can be compared with actual levels in measuring ambient for Blocks B, C, D and K, allowing for adjustments as necessary.

In the ENF/PNF and in several meetings with City agencies that included this department, the Proponent's strong commitment to developing a sustainable neighborhood and individual elements was evident in the description of project plans. A Draft Preliminary LEED for Neighborhood Development (Pilot) checklist was submitted as part of the ENF/PNF. It shows a current estimate of 55 points, within the range for a Silver designation. The ENF/PNF indicates that the Proponent intends to target LEED Silver for Blocks A and H. The Archdiocese of Boston will be directing the construction of Block J and design parameters have not been established.

Section 3.3.14, *Sustainable Design/Reduction in Greenhouse Gases* (GHG), identifies many ways in which Seaport Square will be a neighborhood that is highly environmentally sensitive and sustainable in the long term. Significant public land, the efficient delivery of water and energy, energy efficiency and recycling are some planned measures. Specific targets for minimizing GHG are not identified and we look forward to more detailed information in the Draft EIR/PIR. BED.9

Preliminary Draft LEED-NC checklists have been amended to reflect four categories of consideration:

- Tier 1 - "Strongly Pursuing"
- Tier 2, - "Recommended for Further Investigation"
- Tier 3 – "Not likely for pursuit"
- Tier 4 – "Not Possible or Not Feasible:

For each of the waiver parcels, 26 credits are in the Tier 1 category. The number of credits in other tiers is variable. There is no discussion of the difference in credit choices.

The ENF/PNF checklists do not include LEED information typically provided in a PNF. We understand that a representative of this department and Katie Pedersen of the BRA will meet with the Proponent to review updated checklists. Those checklists should use the standard LEED categories. An additional important LEED-related discussion will be the way in which commercial and retail tenants will be approached regarding LEED-CI when a building has been rated under LEED-CS. BED.10

Missing from the Master Plan Framework sustainability synopsis is any reference to technologies such as distributed generation to serve the neighborhood-at-large. We understand that a Request for Proposals (RFP) had been issued in April, 2008 for an energy feasibility study and we suggest that a discussion in the near term with Brad Swing, Director of Energy Policy, may be timely. BED.11

We look forward to information in the Draft EIR/PIR in fulfillment of the MEPA Greenhouse Gas Emission Policy and Protocol. In addition, we ask that the subject of adaptation to climate change be discussed. BED.12

This department recommends that, once the hotel brand is chosen, the proprietor contact Boston Green Tourism (BGT). BGT is dedicated to increasing tourism in Boston, reducing the operating costs to the industry in areas such as energy, water and waste disposal and showcasing to the public and media the environmental best practices employed by the visitor industry. The BGT can be contacted at bostongreentourism@usa.net or through Dan Ruben at 617-527-7950.

Grow Boston Greener, a campaign to plant 100,000 new trees in the city by the year 2020, is a collaboration between the City of Boston, the Commonwealth of Massachusetts, the U.S. Forest Service and Boston's Urban Forest Coalition. By increasing the city's tree canopy cover by 20%, Grow Boston Greener will make our city a healthier place to live and visit by improving air quality, shading and cooling our neighborhoods, and lowering energy consumption (and therefore carbon emissions). At the same time, the initiative will make Boston a safer, stronger city by providing beautiful spaces for families and neighbors to meet. We look forward to Seaport Square's contribution to this effort.

As LEED emphasizes, once plants are established, native and drought-tolerant groundcover and plants generally require little water. To eliminate or minimize the use of potable water, the potential for stormwater retention and reuse or the use of grey water, a measure the Proponent plans to evaluate, are useful measures. During the period when plants and trees are being established, the manner of irrigation is important. Sprinklers spray water into the air first, before it ever reaches the ground. Wind can carry airborne water away, distributing it away from plants. Drip irrigation systems preclude this water loss by taking the water right to the roots; the location of the open holes is tailored to irrigate specific areas. We recommend evaluating their temporary use. BED.13

The quality of stormwater is an increasingly important environmental issue. We ask that the Proponent help to educate the public and further improve the water quality of local water bodies by agreeing to the permanent installation at all new catch basins (or catch basins around which road work is done) plaques that bear the warning "Don't Dump - Drains to Boston Harbor." Information on the casting can be obtained from the Operations Division of the Boston Water and Sewer Commission (617-989-7000). BED.14

Exterior lighting should meet safety needs while not contributing to light pollution. Fixtures should be shielded (full cut-off) and downward directed. We recommend as a resource, the Campaign for Dark Skies which can be accessed at 'http://www.britastro.org/dark-skies/goodvbad.htm'. BED.15

Save That Stuff, a Charlestown company, has recently initiated a composting program, one of the few available in the Boston area. We ask that the Proponent encourage restaurant and other food service tenants to consider participating in this program which will turn their organic waste into a useful product while helping to control waste removal costs and, when properly managed, assist with pest control. Save That Stuff can be reached at 617-241-9998. BED.16

Some excess building materials from each building at the project may be suitable for donation to the Building Materials Resource Center (BMRC). The BMRC is a nonprofit building materials reuse project that accepts donations of good-quality used and surplus building materials and sells them to the public at low prices. Low- and moderate-income customers and nonprofits are eligible for a considerable discount on those prices. The BMRC also offers a wide range of homeowner support services, including home improvement classes, in-home consultations and a do-it-yourself window repair shop. The BMRC can be contacted at 617-442-8917. BED.17

The ENF/PNF indicates that a Transportation Demand Management (TDM) program will be described and evaluated in the Draft Project Impact Report/Draft Environmental Impact Report (DPIR/DEIR) and

during work to establish the terms of a Transportation Access Plan Agreement (TAPA). A TDM plan may include:

- An on-site Transportation Coordinator.
- Participation in a Transportation Demand Association (TMA).
- Car/Vanpool Parking.
- Encouraging tenants to offer Transit Pass subsidies for retail and office employees.
- Distribution of transit information in orientation packets, building lobbies and on a project Web site.
- Market-rate public parking as a disincentive to use single occupant vehicles (SOV).

The ENF/PNF indicates that, within the overall project, one bicycle storage space will be provided for every three residential units. Shared bicycle rooms with racks will be in the parking garages of several buildings. The Proponent will continue to offer a low-cost bicycle rental program, an innovation that we hope will be expanded over time.

The potential 100+ vehicle car-sharing service for the overall project would be a strong TDM measure. A single hub within the Seaport Square boundaries, however, may limit use. Zipcar, currently the only such service in Boston, operates in 48 U.S. municipalities and regions in addition to Vancouver, Toronto and Edmonton, Alberta and London; members may use vehicles in all locations worldwide. Zipcar's Z2B program, designed specifically for businesses, can be a tenant amenity, an employee benefit or a part of standard business practice. With Zipcars available, those working in Seaport Square who occasionally need a vehicle during the workday would not have to drive to work. Those coming to Boston to do business in Seaport Square and/or lodging in Seaport Square while working or on holiday may find Zipcar access desirable. We suggest that the Proponent evaluate the benefits of locating Zipcars in several pods for easy access for residents, visitors and business travelers. BED.18

The TDM commitments for Blocks A and H will set the standard and precedent for residential and retail uses at Seaport Square. We believe that a strong, comprehensive program is necessary and suggest that the following be included (some of which are already under consideration by the Proponent). BED.19

Residence-specific

- Car-sharing, such as Zipcar, for A and H.
- Secure, indoor storage for residents' bicycles.
- Bicycle racks for visitors.
- Posting information about public and private transit routes (including water), schedules and rates in prominent common areas and on any project Web sites.
- Electric vehicle/alternative fuel charging stations for Zero Emission Vehicles (ZEV), as classified by the California Air Resources Board, or are low-emitting, having achieved a minimum score of 40 on the American Council for an Energy Efficient Economy (ACEEE) annual vehicle rating guide.

The accessibility of transit, including water transportation, may provide an additional incentive for the ownership of only one vehicle, resulting in reduced vehicle trips and an increase in transit mode share. An increasingly common residential TDM measure for condominiums being marketed to buyers not presently living in urban areas is offering one Massachusetts Bay Transportation Authority (MBTA) subway pass for each unit during the six months to one year after the initial sale of each unit. Such subsidies encourage residents to try the transit system and emphasize that city living at the project can be comfortable without a vehicle or with a single vehicle.

Commercial/Retail/Mixed-Use

- On-site Transportation Coordinator (to provide services to residents, as well).
- Joining or establishing a Transportation Management Association (TMA).

- Providing transit pass subsidies for all employees, including contract workers, with a *pro rata* subsidy for part-timers. Consider making this a lease term for retail/commercial tenants.
- Offering pre-tax payroll deduction for transit pass purchase.
- Offering on-site transit pass distribution or sales.
- Maintain a database of employee information for ridematching/planning purposes – home address, commuting mode, work hours, etc. (Best done through membership in a TMA or, in the alternative, MassRIDES.)
- On-site information about MassRIDES.
- Offering a Guaranteed Ride Home program for non-drivers and high occupancy vehicle (HOV) users. (Often a TMA service.)
- Posting and on-site availability of public and private transit schedules with rate information.
- Providing the same information on Web sites and through e-mails, newsletters and at employee orientations.
- If parking is a perquisite, offer a parking "cash out" option.
- Additional bicycle storage for short-term users.
- Payroll deduction for the purchase of bicycles and accessories.
- Showers and changing rooms/lockers for commuters who bike or walk (can be a shared amenity amongst commercial occupants or through an arrangement with a health club in proximity to an employee's workplace).
- Flextime.
- Telecommuting.
- Direct deposit of paychecks.
- On-site ATMs.
- A local hiring program.
- If offering shuttle services: share cost with other employers, allow free resident use, serve major transit hubs offering multiple transportation modes and contract with one that uses clean (alternative) fueled vehicles.
- Offer occasional parking for transit commuters who may sometimes need to drive.
- Structure parking rates to discourage all commuter, not just SOV commuter, use.
- Provide fueling stations for alternative fuel vehicles.

Please note that in order to accommodate MassRIDES vehicles, the height of the first level of a parking garage must be at least 6 feet, 10 inches.

Hotel-specific

- Offer on-site car rental or special arrangements with car rental agency to provide car at hotel so that trips to and from the airport or rail are not necessary.
- Offer on-site trip-planning assistance.
- Send transit information (MBTA, water shuttle, etc.) and special car rental information to all who reserve a room and to all registrants of conferences or seminars to be held at hotel.
- Sell MBTA Link Passes on-site.
- If offering shuttle services, share with other hotels, serve major transit hubs for multiple modes and contract with one that uses clean (alternative) fueled vehicles.

An expanded and enhanced, first-rate water transportation system has the potential to link destinations harbor-wide for commuting and leisure, including access to retail, cultural and entertainment venues and commercial locations. Such a system would be a benefit for Seaport Square residents, employees and

visitors. We encourage the Proponent to consider ways to contribute to the development and maintenance of water transportation. BED.20

According to the Massachusetts Department of Environmental Protection (DEP), about 33 percent of mobile source particulate matter (PM) and ten percent of all nitrogen oxide (NO_x) pollution in the northeast is caused by construction vehicles. More than 90 percent of diesel engine particulate emissions are highly respirable and carry toxins deep into the lung, exacerbating human respiratory ailments. The U. S. Environmental Protection Agency (EPA) has proposed classification of diesel exhaust as "highly likely to be carcinogenic in humans." It estimates that diesel engines currently on the road can run for 1,000,000 miles and remain in operation for as long as 20 to 30 years. This amounts to 160 to 240 tons of pollution over the life of each engine.

The use of flow-through filters and, diesel particulate filters on pre-2007 diesel vehicles can reduce air quality degradation caused by emissions of carbon monoxide (CO), volatile organic compounds (VOC), NO_x and air toxins generated by heavy-duty equipment. Oxidation catalysts and catalyzed particulate filters reduce toxic emissions of formaldehyde, benzene, acrolein and 1-3 butadiene by as much as 70 percent, decrease localized adverse impacts and reduce dust and odor complaints from project abutters and regulatory agencies. Experience with a pilot project that retrofitted 83 pieces of equipment working on the Central Artery/Tunnel (CA/T) project showed that:

- Vehicles did not experience significant power loss.
- There are no additional operation and maintenance (O & M) or fuel costs.
- Engine manufacturers continue to honor vehicle warranties.

We ask that all post-2007 diesel construction vehicles working on the project be retrofitted using retrofit technologies approved by the United States Environmental Protection Agency (EPA). BED.21

We look forward to a broad program in the Draft PIR/EIR that will outline construction-period best practices and plans in the areas of air quality, stormwater quality, erosion prevention, noise, vibration, demolition and construction waste management, hazardous waste management and TDM for workers. BED.22

CHAPTER 91/PUBLIC BENEFITS DETERMINATION

Block A and portions of Blocks B, G, H and M are within C. 91 jurisdiction and subject to licensing. The projects on Blocks A and H are nonwater-dependent. Pursuant to 301 CMR 13:00, *Public Benefit Determination Regulations*, the entire Seaport Square project area is also subject to a Public Benefits Review and determination by the Secretary. Individual licenses with extended terms will be sought for each parcel.

The ENF/PNF identifies public benefits associated with the waiver parcels are to be in, but not limited to, the following categories:

- Creation of public open space, pedestrian connections and a Harborwalk link
- Funding for open space improvements
- Seasonal programming for community events
- New facilities of public accommodation
- Protection of adjacent open spaces

The ENF/PNF states that the Proponent will manage and maintain improvements for Block A and Old Sleeper Street and that it is likely that there will be no restriction on the hours of use of the public open space. Gates and fencing will not be associated with the public areas. We look forward to the draft management and operations plan for the entire project that will be included in the C. 91 license application.

The ground floors (and second floors) of Blocks A and H will be occupied by Facilities of Public Accommodation (FPA); accessory uses to upper floor private uses will not exceed 20 percent of the building footprint. We assume that the 20 percent limit applies to Block A but, given that Block H is under partial jurisdiction, the limit may be 20 percent of the area under jurisdiction. We ask that this be clarified. BED.23

This department requests that public restrooms, open hours to be determined on a project-by-project basis, be provided on the ground floors of each building within C. 91 jurisdiction. Signage indicating the availability of restrooms should be posed in prominent outdoor locations. Access during business hours would seem to appropriate for Blocks A and H. BED.24

The *Benefits to the Public Trust in Tidelands or Other Associated Rights* describes a number of significant initiatives. Particularly exciting are the Harborwalk connection under the Evelyn Moakley Bridge to the Old Northern Avenue Bridge and to a broad variety of seasonal programming and community events that, along with the expanded open space, will invite the general public to all that Seaport Square will offer. We also look forward to information on options for the Northern Avenue Bridge.

This department supports the Proponent's request for a wavier for Parcels A, H and J should the following information be provided to this department and, as requested by her, to Katie Pedersen of the BRA within one month:

- A shadow study.
- A qualitative wind study.
- A noise study.
- Updated LEED-NC checklists.

A meeting to review the checklists will be set up by Ms. Pedersen.

We look forward to the evolution of this project and to working with the Proponent as it progresses. Thank you for the opportunity to offer comment.

Sincerely,

Bryan Glascock
Director

Cc: Kathleen Pedersen, BRA
Brad Swing, Environmental and Energy Services

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9.4.4 Boston Environment Department

BED.1 Connections to the Fort Point Channel Landmark District could be strengthened near Blocks N and L5, as well as along the eastern edge of the District and Block Q.

Block Q is designed in height and massing to fit the Fort Point Channel District. Block L5 is made up of a lower slab and a residential tower east of it. The lower slab, which faces the Fort Point Channel District, is designed in height and massing to fit the District's urban fabric and to complete an evenly proportioned section of Boston Wharf Road. The higher residential building is situated behind it, farther away from the District. Blocks L5 and N are outside the area of the historic district. The building on Block N is more complex and has other urban functions. Block N is a strategically located site -from an urban point of view –as it marks the curving of Congress Street and bridges between the elevated Summer Street, Boston Wharf Road and Congress Street. The Block N building functions as an "urban landmark" to mark the curve on Congress Street and the calumniation of the view corridor of Congress Street from the Fort Point Channel (Congress Street bridge) eastward. The design of Block N, as it further develops, will take into consideration its strategic location also in terms of relating to the smaller scale and character of Congress Street as it crosses through the Fort Point Channel District.

BED.2 Proposed plans for the new chapel will require ongoing design review with BLC and BRA staff.

Comment noted.

BED.3 Article 85 application required.

The Proponent will file an Article 85 application as part of the Phase 1 portion of the Project.

BED.4 Blocks H and J are within the boundaries of the Seaport Boulevard/ Boston Wharf Road Protection Area and will require ongoing BLC staff or Commission review.

Comment noted.

BED.5 Dated cornerstones should be incorporated into all new construction.

As part of the ongoing design review process with the BRA and other City agencies, the Proponent will identify appropriate locations for dated cornerstones identifying the year of the new buildings' construction.

BED.6 Shadow studies should be conducted for Blocks A, H and J.

Please see Section 4.2 for the shadow analysis.

BED.7 **Quantitative wind studies for buildings over 150 feet and Qualitative wind studies should be done for Blocks A and H.**

Please see Section 4.1 for the wind analysis.

BED.8 **Include noise impacts of A, H and J in the Draft PIR/EIR.**

Please see Section 4.7 for the noise impact analysis.

BED.9 **Provide more detail on specific targets for minimizing GHG.**

Please see Sections 4.6.1.2 and 4.6.1.4.

BED.10 **LEED checklists.**

Please see Appendix G for LEED checklists by use type for all buildings in the proposed Project Site.

BED.11 **Distributed generation.**

Please see Section 4.6.1.3 for a discussion on CHP (co-generation) studies and investigations done to date. Also, please see Appendix D5 for co-generation Pre-Concept study results.

BED.12 **Greenhouse Gas Emission Policy and discuss adaptation to climate change.**

A detailed GHG analysis is included in Section 4.6. The Proponent has discussed climate change and rising sea level issues with its various consultants, including both geotechnical and civil engineering. The site is generally at an elevation of 11.0-13.0 (NGVVD datum reference). It is anticipated that building finish floors will be no lower than an elevation of 13, which is 3 feet above the current FEMA 100-year flood plain. In addition, the Project is set back from FEMA velocity zones and most of the existing roadways surrounding the site are at elevations higher than current flood plains.

BED.13 **Evaluate the use of drop irrigation systems.**

Please see Section 4.6.1.2, Native/Adapted Vegetation sub-heading, under "Water Use / Wastewater Generation" heading for a discussion on the landscape design as it relates to reduced water consumption in the Project.

BED.14 Install "Don't Dump – Drains to Boston Harbor" plaques at all new catch basins.

Please see Section 7.3.2. The Project will incorporate best stormwater management practices to satisfy the MassDEP's stormwater management policy standards. Permanent plaques bearing the warning "Don't Dump—Drains to Boston Harbor" will be installed at all new catch basins and at any existing catch basins that are adjacent to a reconstructed area.

BED.15 Exterior lighting.

Exterior lighting will be incorporated in accordance with LEED requirements, and shielded exterior light fixtures and LED technology will be incorporated where applicable.

BED.16 Consider participating in a composting program.

The Proponent will include information on voluntary composting programs within the Tenant Operations Manual to be provided as part of the building hand-over process. Additionally, the Proponent will keep updated with ongoing efforts by the City of Boston to implement various voluntary composting programs for tenants and residents. See Section 4.6.1.2 "Tenant Manuals" sub-heading for a brief description of the proposed tenant manuals, and Appendix D3 for a sample Table of Contents of the tenant manuals.

BED.17 Consider donating suitable surplus building materials to the Boston Materials Resource Center.

The Proponent will work with the contractor on individual buildings to publicize the BMRC as a resource for donating surplus building materials and will encourage contractors to do so when possible.

BED.18 Evaluate benefits of locating Zipcars in several pods.

The Proponent plans to provide spaces in one or more of its garages for a car-sharing service. The Proponent is investigating providing 50-100 or more spaces to serve as a hub or nest for a car sharing program.

BED.19 TDM measures.

Section 3.3.3.6 includes a list of Transportation Demand Management measures.

BED.20 **Consider ways to contribute to the development and maintenance of water transportation.**

While all proposed buildings in the Project are located at some distance from the water's edge and do not have project shorelines or water-dependent uses, the Proponent will work with the City to implement a Transportation Demand Management program that supports the City's effort to reduce automobile dependency. On-site management will provide transit information in various building lobbies for residents and guests in an effort to raise awareness of public transportation alternatives like water transportation.

BED.21 **Post-2007 diesel construction vehicles working on the project should be retrofitted using retrofit technologies approved by the US EPA.**

During the construction period, all diesel powered equipment will use fuels and technologies in compliance with city, state and federal regulations.

BED.22 **Construction-period best practices and plans.**

A Construction Management Plan will be approved prior to construction. Please see Section 4.12 for more detailed information.

BED.23 **Clarify that 20 percent of the area of Block H within Chapter 91 jurisdiction will be occupied by accessory uses to upper floor private uses.**

The portion of Block H within Chapter 91 jurisdiction is now proposed to be open space as the proposed relocated Chapel of Our Lady of Good Voyage building will be located outside of jurisdictional tidelands.

BED.24 **Public restrooms.**

As the design develops, the request for public restrooms on all ground floors of each building under Chapter 91 jurisdiction will be reviewed on a Block-by-Block basis.

Boston

Groundwater Trust

234 Clarendon St., Third Floor, Boston, MA 02116
617.859.8439 voice • 617.266.8750 fax
bostongroundwater.org

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Honorable Michael P. Ross
Peter Sherin
James W. Stetson

Executive Director

Elliott Laffer

June 20, 2008

Ms. Kristin Kara, Senior Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Subject: Seaport Square

Dear Ms. Kara:

Thank you for the opportunity to comment on the Project Notification Form for this significant development. The Boston Groundwater Trust was established by the Boston City Council to monitor groundwater levels in sections of the City where the integrity of building foundations is threatened by low groundwater levels and to make recommendations for solving the problem. Therefore, my comments are limited to groundwater related issues.

I am pleased that the proponent has acknowledged in the PNF that Parcels H, J, K, and Q within the overall plan are included in the Groundwater Conservation Overlay District. As stated in the PNF, within this section of the GCOD there is no requirement for groundwater recharge, but there is a requirement to demonstrate that the project cannot cause a reduction of groundwater levels on the site or on abutting lots. These sections of the project immediately abut the Fort Point Channel area of South Boston, where the majority of the buildings are supported on vulnerable wood piling foundations.

On Parcels H and J, which are included in the request to waive further Article 80 review, there is a small underground construction planned. The proponent did state at the scoping session that there would be a partial basement on Parcel H that would likely not extend below Elevation 7 BCB, but also confirmed that there are no planned underdrains and that any underground sections would be waterproofed. I am pleased with their positive statements of support and compliance with GCOD requirements.

The buildings planned for Parcels K and Q will include a substantial underground garage. I am again pleased with the proponent's pledge that the buildings will comply with the GCOD. At this location it will be important to understand how the standards will be met. This should be addressed in the DPIR covering these parcels.

BGWT.1

The PNF states that groundwater monitoring wells will be installed during planned future subsurface explorations. If possible, these wells should be installed in locations that will be accessible in the future and should be made available to the Trust to incorporate into our observation well network when no longer needed for construction. Groundwater levels should be monitored before construction to establish a baseline and then during to construction to assure that they are not being drawn down. Results should be made available to the Authority and to the Trust shortly after they are gathered. BGWT.2

The attitude expressed by the proponent toward groundwater issues both in the PNF and during the scoping session has been very positive. I look forward to working with them and the Authority to assure that this project cannot have a negative effect on groundwater levels.

Very truly yours,

Elliott Laffer
Executive Director

Cc: Jay Rourke, BRA
Kathleen Pedersen, BRA
Maura Zlody, BED

9.4.5 Boston Groundwater Trust

BGWT.1 Address how the GCOD standards will be met at Blocks K and Q.

Please see Section 4.10.5 for a description of design criteria to meet GCOD standards. The Project design will comply with GCOD and City standards by establishing design and construction methodology which protects groundwater. The Proponent will demonstrate that the Project results in no negative impacts to groundwater levels.

The Proponent will coordinate with the Boston Groundwater Trust (BGwT) in regard to groundwater monitoring. Groundwater monitoring wells will be installed to document existing groundwater levels and hydrogeologic conditions. The wells will be installed prior to the start of construction and will be installed in accordance with City and BGwT standards for permanent monitoring wells. The wells will be installed at locations where they will be accessible for long-term monitoring and will be turned over to the BGwT when no longer required for the Project, thereby increasing the inventory of wells available to the BGwT for their on-going monitoring program.

BGWT.2 Groundwater monitoring wells.

Please refer to above Response to Comments BRAK.12, BRAK.13 and BGwT.1, as well as Sections 4.10.3, 4.10.4 and 4.10.5

Boston

Kristin Kara
Senior Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

June 3, 2008

Dear Mr. Rourke:

Regarding the Project Notification Form for the Seaport Square project submitted to the BRA on June 2, 2008 the Boston Fire Department requires the following issues addressed by a qualified individual.

1. Emergency vehicle site access to the new buildings as well as existing buildings that might be affected. BFD.1
2. Impact on availability and accessibility of hydrant locations for new buildings as well as for any existing buildings that might be impacted. BFD.2
3. Impact on availability and accessibility to siamese connection locations for new buildings as well as for any existing buildings that might be impacted. BFD.3
4. Impact that a transformer vault fire or explosion will have on the fire safety of the building. Particularly as it relates to the location of the vault. BFD.4
5. Need for Boston Fire Department permit requirements as outlined in the Boston Fire Prevention Code, the Massachusetts Fire Prevention Regulations (527 CMR), and the Massachusetts Fire Prevention Laws (MGL CH148). BFD.5
6. For projects involving air-supported structures, it is critical that the impact of the design has on fire safety relative to the interaction of the area underneath the structure to the structure as well as to the interaction of the structure to the area underneath the structure. BFD.6

These items should be analyzed for all phases of the construction as well as the final design stage. This project will need permits from the Boston Fire Department as well as the Inspectional Services Department.

Respectfully,

David Joseph
Acting Fire Marshal

Cc: Paul Donga, FPE, Plans Unit, BFD

9.4.6 Boston Fire Department

BFD.1 Emergency vehicle site access.

The Project will be accessible to emergency vehicles from all major roads. Access to the site for emergencies will be dramatically improved by new roadways and access points.

BFD.2 Hydrant locations.

Detailed plans identifying the locations of all proposed hydrants and mitigation for any impacted existing hydrants will be provided during the Boston Water and Sewer Commission Site Plan Review process, and will be documented on site plans submitted with applications for Building Permits with Inspectional Services. Plans will be designed and endorsed by a qualified design professional.

BFD.3 Siamese connection locations.

Detailed plans identifying the locations of all proposed siamese connections will be provided during the Boston Water and Sewer Commission Site Plan Review process, and will be documented on site plans submitted with applications for Building Permit with Inspectional Services. Plans will be designed and endorsed by a qualified design professional.

BFD.4 Address the impact that a transformer vault fire or explosion will have on the fire safety of that building, particularly as it relates to the location of the vault.

The NSTAR transformer vaults will be designed with a three-hour fire rating. HVAC plans will incorporate a two-speed ventilation system. The ventilation system design will incorporate a fire mode, which will be initiated by the vault smoke detector.

To allow NSTAR to perform routine maintenance, the smoke detectors can be taken out of service. NSTAR must notify the property manager prior to performing this maintenance. A placard shall be installed on all vault doors reading "Caution: Smoke detector installed in the vault. Contact building owner/manager to disable smoke detectors before working within the vault."

BFD.5 Need for BFD permit requirements.

Fire Department permit regulations will be complied with as part of the process of review of documents with the department and the process of filing Project details and permit applications.

BFD.6 Address fire safety of air-support structures, if applicable.

There are no air supported structures currently anticipated in the proposed master plan or in the construction process.

BOSTON

Thomas M. Menino, Mayor

July 31, 2008

Secretary Ian A. Bowles
EOEEA, Attn: MEPA Office
Briony Angus, EEA No. 14255
100 Cambridge Street, Suite 900
Boston MA 02114

Kristin Kara
Senior Project Manager
Boston Redevelopment Authority
One City Hall Square, 9th Floor
Boston, MA 02201-1007

RE: Seaport Square Environmental Notification Form/Project Notification Form Scoping Comments

Dear Secretary Bowles and Ms. Kara:

We have reviewed the above-referenced document and have the following comments on this proposed project.

Seaport Square is located on approximately 23 acres in the South Boston seaport industrial district. The proponent desires to construct 6.5 million square feet, distributed among 19 buildings. This mixed use development will contain approximately 2.75 million square feet of residential space (approximately 2,500 dwelling units), 1.4 million square feet of office and research space, 1.25 million square feet of retail space, 0.6 million square feet for educational, civic and cultural uses, 0.5 million square feet for hotel uses (approximately 700 rooms), and below-grade parking for approximately 6,500 cars. The proponent is requesting a Phase I waiver for construction of 3 buildings on 3 small parcels on the northwest section of the project area.

Phase I of this project is relatively modest, and can proceed without addressing most of the issues this Department has considered (please see below for the specific issue that does require further consideration).

The increase in residents alone generated by this project (~4,000-5,000 people) would increase Boston's population by nearly 10%. This population increase would likely stress the area's open space resources. We believe several issues must be addressed in an environmental/project impact statement that does include the impacts of both Phase I and later phases.

Boston Parks and Recreation Department
Antonia M. Pollak, Commissioner
1010 Massachusetts Ave., Boston, MA 02118 / Tel.: (617) 635-4505 / Fax: 635-3173

- In Phase I, the proponent proposes to build a section of Harborwalk. We welcome this aspect of the project, but are concerned at how this new pedestrian environment, which together with the pedestrian environments of the Old Northern Avenue Bridge and the Fan Pier Harborwalk of the Moakley Courthouse form a key pedestrian node, will be impacted by the car/truck drop-off/pick-up area proposed for the building at Parcel A. We feel that such a car/truck drop-off/pick-up area would be better designed to avoid this pedestrian area. It might be better relocated to the New Sleeper Street frontage. PRD.1
- As stated in pre-scoping and in the scoping meeting, given the size and scale of this project, the proponent should undertake the detailed open space impact assessment (see attached) which our agency requires for review of open space impacts of large-scale development projects. To summarize why this is necessary, the Department's open space impact assessment method provides a guideline for inner-core urban neighborhoods, such as South Boston, of 2.5 acres of open space allocation per 1000 residents. To meet this goal, a project that generates 4,000 to 5,000 residents would need to provide 10 to 12 acres of open space to meet that guideline. The subject ENF/PNF shows only three open spaces, the Seaport Square Park, the Seaport Hill Park, and the Seaport Square Harborwalk (part of Phase I), which by our reckoning total 1.87 acres. Such underserved demand will likely cause these new residents to seek open spaces elsewhere, burdening other neighborhood's open space resources, including those of nearby environmental justice communities. PRD.2
- Further, the open space impact assessment method provides a guideline that 80% of an area's open space should be oriented to active recreation. We note that the ENF/PNF shows the only active open space to be provided by the project is a children's playground, which typically occupies one-quarter (1/4) acre. Eighty percent (80%) of 2.5 acres per thousand is 2.0 acres per thousand. Again, this underserved demand will likely cause these new residents to seek active recreation spaces elsewhere, burdening other neighborhood's active recreation resources, including those of nearby environmental justice communities.
- While we mentioned that the amount of open space currently proposed for this project is extremely limited, quality as well as quantity is another of our concerns. We found the location of Seaport Hill Park to be contrary to the concepts of public access and public realm. It is located within a superblock of high- and mid-rise buildings such that the view to it by the public will be extremely limited, giving rise to a perception that the available open space is in fact private. Further, it is surrounded by streets and parking, which is more typical for very small decorative South End square type parks that provide visual enhancement, not actual physical enjoyment. (The project elsewhere provides such pedestrian enhancements as at the Seaport Boulevard and other small pedestrian-oriented spaces between the high-rise towers.) Placing a children's PRD.3

play area in a substantially larger park at the southwest corner of such a superblock would allow for better public visual and physical access (for both the public and for the schools to be located nearby) as well as for access to sunlight. In contrast, the location proposed in the ENF/PNF would likely be shaded from the sun for long periods of time. The EIR/PIR should address shadow impacts on open spaces in this area, both within and outside the project area. PRD.4

- The proponent should also describe how this project will support the recommendations of the City of Boston Open Space Plan 2008-2012, as well as Goal #23 of the recently released Metropolitan Area Planning Council (MAPC) plan for the region, *MetroFuture* (http://www.metrofuture.org/goal/23). PRD.5
- We also wish to note that after the scoping meeting, a member of the proponent's consulting staff provided information on a bicycle share program. We encourage such efforts. We also wish to note that while Tables 3.1-18 and 3.1-19 include the word "Bicycle" in the title, the discussion makes it clear that bicycle trips were not counted. We look forward to the proponent's effort to remedy this oversight; we also look forward to a more full description as to how bicycles will be accommodated on the road network of the project area. PRD.6

We look forward to working with the proponent and your respective offices on developing the EIR/PIR. Should you have any further questions, please feel free to contact our office at either 617 961-3033 or at aldo.ghirin@cityofboston.gov.

Sincerely,

Aldo Ghirin
Senior Planner
Design & Construction Unit
City of Boston Parks & Recreation Department

Attachment:
Impact Assessment Method: Open Space

Copy: Ken Crasco, Chief Landscape Architect, BPRD

Impact Assessment Method: Open Space

I. DEFINITIONS

For purposes of this section, open space is defined as publicly or privately owned land that has been designated for leisure, play, or sport, or land set aside for the protection and/or enhancement of the natural environment. Under Article 80 – Large Project Review of the Boston Zoning Code, an analysis of open space is conducted to determine whether or not a proposed action would have either a direct impact resulting from elimination or alteration of open space or an indirect impact resulting from overtaxing available open space.

Open space may be public or private and may include active and/or passive areas:

A. ***Publicly Accessible Protected Open Space.***

Only open space that is accessible to all members of the public on a constant and regular basis or for designated daily periods is defined as "publicly accessible" and analyzed for impacts under Article 80, Large Project Review. "Protection" refers to legal protection against a change in the use of the subject open space property from publicly accessible open space to another use. Publicly accessible and protected open space may be under government or private jurisdiction and may include, but is not limited to, the following: parks and parkways under the jurisdiction of the City, State, and Federal governments (for the City and State properties, such lands protected by Article 97 of the Amendments to the state Constitution) (only the non-roadway portions of parkways are included); open spaces permanently protected by easements or deed restrictions for public access outdoor recreation or natural resource conservation purposes; and such other spaces considered protected by other long-term or permanent means as defined by the EOEEA Division of Conservation Services in the current edition of the *Open Space Planner's Workbook*. The initial quantitative impact analysis/assessment described in Part III below focuses only on this type of open space. This type of open space remains the primary, but not sole, focus of further detailed impact analyses/assessments described below. (Generally, the term "open space" used throughout the remainder of this document will most likely refer to publicly accessible protected open space.)

B. ***Publicly Accessible Unprotected Open Space.***

These are open spaces that are publicly accessible but not permanently protected as defined by the EOEEA Division of Conservation Services in the *Open Space Planner's Workbook*. Examples include outdoor public school yards, institutional campuses, and open spaces generated by regulatory approvals such as zoning but not governed by a legal instrument that permanently preserves its open space status per the *Open Space Planner's Workbook*. This type of open space may

also be considered qualitatively in the detailed impact analysis/assessment described in Part III below.

C. ***Private Unprotected Open Space***.
This includes open space that is not publicly accessible or is available only to limited users and is not available to the public on a regular or constant basis. It is not included in the initial quantitative impact analysis/assessment described in Part II below, but may be considered among the qualitative factors of the detailed impact analysis/assessment of potential open space impacts. For example, private-access fee-charging spaces, such as the outdoor tennis courts of health clubs, are considered private open spaces. In addition, the following are also considered private and are not included in the definition of public open space: privately owned natural areas or wetlands with no public access, and vacant lots. These types of spaces are only considered after an assessment of the proposed action's effects on publicly accessible and protected open space has been completed. If the action is likely to have indirect effects on public open space (such as greater use or demands), the ability of private open space to influence or alter those effects may be considered. This type of open space may also be considered qualitatively in the detailed impact analysis/assessment described in Part III below.

D. ***Active and Passive Open Space.***
Open space includes both "active" and "passive" areas as described below.

1. **Active open space**. Open space that is used for sports, exercise, or active play is classified as "active open space." Active open space consists mainly of recreational facilities, including the following: playground equipment, playing fields (baseball, soccer, football, track), playing courts (basketball, handball, tennis), beach area (swimming, volleyball, frisbee, running), pools, outdoor ice skating rinks, greenways and esplanades (running, biking, rollerblading, hopscotch, and other active play), multipurpose play area (open lawns and paved areas for active recreation, such as running games, informal ball-playing, skipping rope, etc.), and golf courses, including pitch and putt.

2. **Passive open space**. Open space that is used for relaxation, such as sitting or strolling, is classified as "passive." Facilities may include the following: plazas or medians with seating, a percentage of beach areas (sunbathing), picnicking areas, greenways and esplanades (sitting, strolling), paths, accessible restricted use lawns, gardens, church yards or cemeteries, and publicly accessible natural areas used, for example, for strolling, dog walking, and bird watching. In many cases open space can be used for active or

passive recreation. These include lawns and beaches, which permit both sunbathing and ad hoc ball or frisbee games.

E. ***Direct and Indirect Effects***.
A proposed action's effects on open space may be either direct or indirect. These are defined as follows:

1. **Direct effects** may occur when the proposed action would encroach on or cause a loss of open space. Direct effects may also occur if the facilities within an open space would be so changed that the open space no longer serves the same user population. Limitation of public access and changes in the type and amount of public open space may also be considered direct effects.

   Other direct effects include the imposition of noise, air pollutant emissions, odors, or shadows on public open space. Assessment of these effects is addressed in the relevant technical chapters of the project impact report and should be referenced in the open space impact assessment.

2. **Indirect effects** may occur when the population generated by the proposed action overtaxes the capacity of existing open spaces so their service to the existing or future population of the affected area would be substantially or noticeably diminished.

II. DETERMINING WHETHER AN OPEN SPACE ASSESSMENT IS APPROPRIATE

An open space assessment may be necessary if an action could potentially have a direct or indirect effect on open space. A direct impact would physically change, diminish, or eliminate an open space or reduce its use or aesthetic value. An indirect impact could result if an action would introduce a substantial new user population that would diminish the service capacity of open space resources or create or exacerbate an overuse of open space resources.

Direct effects may not always result in adverse effects to open space. Alterations and changes to parks may be beneficial or may result in beneficial changes to some resources while having an adverse effect on others. In determining whether or not to prepare an open space assessment, consider whether the changes are likely to adversely affect use of existing resources or specific user groups of these resources.

A. Direct Effects
If a proposed action would have a direct effect on an open space, an assessment of the effects on open space and its users may be appropriate. Direct effects would

occur if the action would result in the physical loss of public open space (by encroaching on an open space or displacing an open space); change the use of an open space so that it no longer serves the same user population (e.g., elimination of playground equipment); limit public access to an open space; or cause increased noise or air pollutant emissions, odors, or shadows on public open space that would affect its usefulness, whether on a permanent or temporary basis. Consideration of these effects during the construction phase of a project should also be taken into account when determining whether an open space assessment is required. The analysis of construction impacts, as described in the project impact report, should be consulted for a detailed discussion of impacts on parkland during the construction phase of a proposed project.

When the direct effect would be very small, however, so that it would be unlikely to change use of the open space, an assessment may not be needed. For example, a small widening of a roadway within a public park or the loss of a small amount of open space to support infrastructure may not warrant a full open space analysis. When few users or a limited age group of users would be affected, when new and comparable open space would be provided at the same location, or when the proposed alterations to an existing open space would be considered improvements by creating comparable updated or better (e.g., enhanced) facilities, significant adverse impacts are unlikely and a full assessment may not be needed. A simple comparison of conditions with and without the action and a discussion of the users affected may be adequate. However, most direct effects on open space do require assessment, particularly when there is any ambiguity as to whether the action would reduce the usability of an open space, detract from its aesthetic qualities, or impair its operation, or when more information on users of that open space may be appropriate.

In addition to consideration of direct effects on open space, in Massachusetts if an action entails the use of parkland for a non-parkland purpose or the conveyance of municipal parkland, it may constitute "parkland conversion." Authorization of the General Court of Massachusetts (by a two-thirds vote of the House of Representatives and the Senate of the Massachusetts legislature) is required for parkland conversion, in accordance with Article 97 of the Amendments to the state Constitution. Prior to the vote on the home rule petition by the General Court, the parkland conversion measure must be approved by the Boston City Council and the Mayor. In addition, if federal funds were provided for the affected parkland, the action may also be governed by the rules and regulations of the National Park Service of the U.S. Department of the Interior for conversion of parkland. If state funds were provided, the action may also be governed by the rules and regulations of the Division of Conservation Services of the Massachusetts Executive Office of Energy and Environmental Affairs for the conversion of parkland. Conversion of parkland is also affected by the Executive Office of Energy and Environmental

Affairs Article 97 Land Disposition Policy (http://www.mass.gov/envir/dcs/pdf/article97.pdf). The project sponsor should contact the City of Boston Parks and Recreation Department's Design and Construction Unit at the earliest stage of the project's conception if conversion of parkland (whether owned by the city or other governmental agency) is contemplated.

The U.S. Department of Transportation Act of 1966 Section 4(f) requires the Federal Highway Administration (FHWA) to assess the environmental effects of an action through the NEPA process. The FHWA is directed not to approve any program or project that requires the use of any publicly owned public park, recreation area, or wildlife or waterfowl refuge, or any land from an historic site of national, state, or local significance, unless there is no feasible and prudent alternative to the use and all possible planning to minimize harm resulting from such use is included. The environmental regulations for applying Section 4(f) to transportation project development are found at 23 CFR 771.135.

B. Indirect Effects

If an action would add population to an area, the additional population would typically place an added demand on existing open space facilities. Indirect effects may occur when the population generated by the proposed action would be sufficient to noticeably diminish the ability of an area's open space to serve the existing or future population. Typically, an assessment is conducted if the proposed action's population is greater than 200 residents or 500 employees, or a similar substantial number of other users (such as the temporary user population that might be introduced by a large shopping area).

III. ASSESSMENT METHODS

Detailed analyses of open space may be conducted in stages of successively greater detail. In many cases it will be clear that a full, detailed open space analysis is necessary—if the action would displace a highly utilized open space or introduce a large population in an area underserved by open space. In some cases, however, it may be less clear and an initial quantitative assessment may be useful in determining the need for a more detailed analysis of open space. Often, when potential effects from the proposed action are limited, the assessment can be targeted to address only those effects. In any case, the initial step is to define and map a study area.

A. Study Areas and Mapping of Existing Open Space

The open space study area is defined to analyze both the nearby open spaces and the population using those open spaces. It is generally defined by a reasonable walking distance that users would travel to reach local open space and recreation areas—typically a one-half-mile radius for residential users and ¼ mile from commercial projects with a worker population. For actions that would result in mixed-use projects (e.g., residential/commercial buildings), it may be appropriate to analyze two study areas—one for residential users and another for nonresidential users. However, the boundaries are often adjusted and the study area may be irregularly shaped. The following steps may be used to define an open space study area:

1. Use a legible map of appropriate scale as a base map. Locate the site of the proposed action and draw the physical boundary of the area affected by the action (aka "the project site"). (Include a graphic scale for the map.)

2. From the boundary of all sites that would be developed as a result of the proposed action, delineate a radius of one-quarter mile for commercial/non-residential projects or one-half mile for residential projects to create the generalized open space study area boundaries. As noted, it will be necessary to define two study areas for mixed-use projects—one for residential users and another for commercial users.

3. Identify all census block groups with at least 50 percent of their area within the generalized study area. The study area should include each of those census block groups in their entirety. Exclude all census block groups that have less than 50 percent of their area within the study area.

4. Identify all open spaces within the study area defined in step 3. Field surveys of the study area are usually important to be certain that all appropriate open spaces are included. Determine the acreage for each of the open spaces within the study area as well.

   If an action would displace an open space, or where the action would take place on an extremely large site, the boundary may also need to be adjusted to reflect additional open space resources likely to be affected. For example, if a tot lot would be eliminated under a proposed action, other existing tot lots should be included in the map—even if they are located beyond the one-half-mile radius. If only direct effects from the action are expected, it may be possible to target the assessment to spaces that would be similar to those affected by the action. If the action is programmatic or generic, prototypical sites may have to be chosen for the analysis.

5. Other boundary adjustments may be necessary to account for natural boundaries (ravines, rock outcroppings, water bodies, very steep slopes, wetlands) or built features (depressed highways, canals, railroad rights-of-way, etc.) that preclude access to open spaces within the study area. A written rationale for any adjustment of the boundary shall be provided.

B. Analysis Techniques

If an open space assessment is appropriate (see Section II, above), the analysis examines the type of open space and user population affected by the proposed action. (For example, a commercial or mixed-use project may introduce a large worker population, which would tend to place greater demands on passive open space. The analysis would examine in further detail the amount of passive open space available with and without the project to quantify the impact, and hence, the mitigation, more specifically.) Overall, the goal of the open space assessment is to determine the significance of the change in the availability of open space relative to the demand from the population, and/or the significance of change in the enjoyment potential of open space affected by the proposed action.

For actions that would have a direct effect on a specific type of open space without introducing a significant new user population, it may be possible to target the assessment. The open space analysis may be targeted toward those open space resources that are similar to the space that would be eliminated or altered by the action. For example, if the direct effects are limited to an open space resource targeted for a certain age group, such as a tot lot for toddlers and preschoolers, the impact assessment may be targeted to assess only that age group and nearby tot lots.

1. Initial Quantitative Assessment

An initial quantitative assessment may be useful if it is not clear whether a full, detailed open space analysis is necessary or whether the open space assessment can be targeted to a particular user group. Because the full, detailed open space analysis includes substantial data collection and analysis, this first level of quantitative assessment may be useful in determining the need for a full assessment or in narrowing the focus of that assessment. When it is clear from the outset that the open space assessment can be targeted or that a full open space assessment would be necessary, this level of analysis may not be useful. However, this methodology also may not be useful in addressing direct qualitative changes to open space that could result from an action (such as loss of space for a particular user group, or air pollutant emissions, noise, or shadows that could make a space less useable). In other circumstances—for example, where a study area appears to have a shortfall of open space that would be exacerbated by an action—this first level of quantitative

analysis may be useful in clarifying the degree to which an action would affect open space and the need for further analysis.

The following methodology examines the change in total population relative to total open space (publicly accessible and protected (see I.A. above)) in the study area, to determine whether the elimination of open space and/or increase in user population would significantly reduce the amount of available open space for the area's population:

a. Using the study area defined above, calculate total population at the time of the last (most recent) census, as described below. Census data can be obtained from the US Bureau of the Census (http://factfinder.census.gov/home/saff/main.html?_lang=en) or the Boston Redevelopment Authority, Research Division (http://www.cityofboston.gov/bra/pdr/pdr.asp).

   - *Actions that would result in an increase in residential population.* Calculate the residential population of the study area. If the action would occur in an area with a substantial nonresidential population (i.e., employees, visitors, students, etc.), also calculate the nonresidential population of the study area.

   - *Actions that would result in an increase in nonresidential population (i.e., employees, visitors, students, etc.).* Calculate the nonresidential population. If the action would occur in an area with a substantial residential population, also calculate the residential population of the study area.

   - *Actions that would result in an increase in both residential and nonresidential population.* Calculate the residential and nonresidential population of the study area.

b. Calculate total open space (publicly accessible and protected (see I.A. above)) in the study area, using the information gathered above (Section III.A.).

c. Determine the open space ratio in the study area, using the information from steps a. and b., as described below. The open space ratio is expressed as the amount of open space acreage per 1,000 user population.

   - *Actions that would result in an increase in residential population.* Calculate the open space ratio for the residential population. If the action would occur in an area with a substantial nonresidential population, also calculate the open space ratio for the nonresidential population of the study area.

- *Actions that would result in an increase in nonresidential population (i.e., employees, visitors, students, etc.).* Calculate the open space ratio for the nonresidential population. If the action would occur in an area with a substantial residential population, also calculate the open space ratio for the residential population of the study area.

- *Actions that would result in an increase in both residential and nonresidential population.* Calculate the open space ratio for both the residential and nonresidential populations of the study area.

d. Add the population expected with the proposed action to the total population at the time of the last census (step 1, above).

e. Calculate any changes in the acreage of open space in the future with the action (accounting for increases and/or decreases resulting from the action).

f. Calculate the open space ratio with the action.

If the open space ratio would increase or remain substantially the same with the action in place, no further analysis of open space will likely be appropriate (unless direct, qualitative changes to an open space may occur because of the action).

If the ratio would decrease as a result of the action, the existing open space ratio and the extent to which the action would alter that ratio should be considered. As a planning goal, the City attempts to achieve a ratio of 2.5 acres of publicly accessible protected open space per 1,000 residents for large-scale plans and proposals in inner core urban neighborhoods, and 5.0 acres per 1,000 residents in all other neighborhoods[1]. In both types of neighborhoods, the City benchmark goal is 80% active and 20% passive publicly accessible protected open space. However, this goal may not feasible for some areas of the City and does not constitute an impact threshold. Rather, it is a benchmark that represents an area well served by open spaces.

Nonresidents also use both passive and active open space. Typically, 0.15 acres of passive open space per 1,000 nonresidents in addition to the residential passive open space ratio has been found to be adequate, while an additional 0.5 acres of active open space per 1,000 non-residents in addition to the residential active open space ratio has been found to be adequate.

Decreases in the open space ratio would generally warrant a more detailed analysis under the following conditions:

- If the decrease in the open space ratio would approach or exceed 5 percent, it is generally considered to be a substantial change, warranting more detailed analysis.

- If the study area exhibits a low open space ratio (e.g., below 1.5 acres per 1,000 residents or 0.15 acres of passive space per 1,000 nonresidential users), indicating a shortfall of open space, even a small decrease in that ratio as a result of the action may have an adverse effect.

More detailed analysis of open space effects on residents for most actions will generally be unnecessary if the open space ratio decreases by less than 1 percent. However, the existing open space ratio may be so low that even an open space ratio change of less than 1 percent may result in potential significant open space impacts and should be further assessed. Typically, a 1 percent change should only be considered if open space resources are very scarce (e.g., below 1.5 acres per 1,000 residents) in the study area. For example, the closer the ratio is to 1.5 acres per 1,000 residents (and certainly the more it exceeds this ratio), the greater percentage of change that can be tolerated. This type of assessment is also applicable to the nonresidential population. The more the ratio drops below 0.15 acres of passive space per 1,000 non-residents, the more likely the action is to have an effect on the nonresidential population's use of passive open space. This assessment may also consider and compare the amount of open space in the study area relative to the neighborhood and the city as a whole to assess the relative shortfall or availability of open space in the study area. If this analysis suggests the need for additional assessment, the guidelines below may be followed.

2. Detailed Assessment – Existing Conditions

The detailed open space assessment typically analyzes study area population and details the amounts and quality of various types of open space to assess the availability of particular types of open space. In conducting this assessment, the analysis focuses on where shortfalls in open space exist now or would exist in the future, to identify whether they result from the action and to identify what sort of mitigation would be necessary. Where it is clear from the outset that the action would affect a particular type of open space or particular age group, this detailed assessment may focus on those issues.

a. Identify Study Area Population. Determine the population in the study area using the most recent census for all census block groups in the study area as described above in Section III.B.1. Depending on the amount of time that has passed and the level of development that has occurred in the study area since the last census, the study area population data may need to be adjusted to account for increases or decreases in population. Analyze the population by the demographic and socio-economic variables used in the City of Boston's 2008-2012 open space plan

(*Open Space Plan 2008-2012*), available from the City of Boston Parks and Recreation Department, Design and Construction Unit. (Please provide the discrete block group tables in the appendix of the project impact report.) Using these variables, compare the study area population to the City of Boston population (see Section 3 of the *Open Space Plan 2008-2012*), and the population of the neighborhood(s) in which the study area is located (see Section 7.2 of the *Open Space Plan 2008-2012*).

If it is clear that the area supports a substantial weekday population, such as workers, college students, or tourists, data on the size of such population and the source of this data may be appropriate. Data on daytime worker population can also be obtained from the Boston Redevelopment Authority, Research Division. Daytime college population can be determined by contacting administrative officers of colleges and other postsecondary educational institutions in the study area. Visitor population can be estimated using information from visitor attractions and major shopping attractions; this may include daily, weekend, or annual visitor counts and estimates of daily or weekend shoppers.

For an analysis targeting a specific open space and user population, this assessment may be focused on only that user population comparable to that which would be displaced. For example, if only a tot lot is to be affected by the proposed action, the demographic analysis can focus on the appropriate age group 4 years old and younger.

b. Identify and Describe Study Area Open Spaces. Identify and describe (see below) open spaces included in the study area. Provide a map on 8-1/2" by 11" paper showing the study area boundary and its open spaces This description may also note any major regional facilities (such as the Charles River Reservation or Franklin Park) that may be proximate to the study area boundary. Information about those resources may be obtained from the City of Boston Parks and Recreation Department, Design and Construction Unit.

Data collection may include field surveys of the open space resources if current secondary data are not readily available, or use of aerial photographic analysis.

Using a table, the open spaces shall be described as follows:

- Name and address of each open space facility.
- Map key number. This ties the description to the map of open spaces described above.
- Owner (public/private). The fee simple owner should be described, as well as owners of open space, conservation, or public access easements or deed restrictions. If managing or jurisdictional entities differ from the fee simple owner, please list name and level of management control.

- Protection Status and Method of Protection. Indicate degree (does it meet the definition of I.A. above?) and method of protection as noted in the table of the City of Boston's *Open Space Plan 2008-2012*, Section 5, Open Space Inventory.
- Acreage.
- Open Space Type. Use the categories found in the open space inventory found in Section 5 of the *Open Space Plan 2008-2012*.
- Percent of acreage devoted to active and to passive uses. Estimates based on the facility type and equipment should be provided. In general, the following assumptions may be appropriate: esplanades are typically 50 percent active, 50 percent passive, whereas greenways are typically more active than esplanades; beaches can be considered 20 to 40 percent active, and 60 to 80 percent passive; sitting areas are 100 percent passive; ball fields are 100 percent active; areas with children's play equipment (pre-school and pre-teen) are 100% active; multipurpose play areas are generally all active, unless field surveys confirm limiting conditions. Greenways can be assumed as 100 percent active; a greenway is the pathway itself. For greenways within park boundaries, the area beyond the pathway is active or passive depending on the nature of its use. Golf courses tend to serve a very limited portion of the population. The assessment may consider that although the golf course may contribute a substantial amount of open space acreage, it may not serve a comparable amount of the study area's active open space needs. Generally, the following Open Space Types (see above) are considered passive open space: Malls, Squares, and Plazas; Cemeteries and Historic Burying Grounds; Community Gardens; and Urban Wilds and Natural Areas.

  The Parks and Recreation Department may determine that other percent breakdowns for the affected resources may be more appropriate, based on information as to how these resources actually function.

- Open space features, types of equipment, facilities, etc. In many cases, the features of an open space area (or lack thereof) may be important in assessing how the open space is currently used, and how it may be used in the future condition. For example, a passive open space area with no seating may not be useful; provision of seating and other attractive features, such as planters, can make that area more useable by both the existing community and new population introduced by a project.

- Other factors affecting usability. Some factors, either permanent or temporary, may affect the usability of open spaces. Various factors to consider include, but are not limited to, adjacent/proximate land uses (e.g., conflicting uses in a multiuse area), urban design elements, transportation, shadows, daylight, solar glare, wind, water, air, and noise quality, wetlands, geotechnical/groundwater,

solid and hazardous waste, stormwater management, construction effects, wildlife habitat, and safety. These should be summarized in the table, but more fully discussed in the text of the open space impact assessment section. Some of the more likely factors to discuss are further described below.

- *Adjacent Land Uses*. Certain land uses can have a deterrent or adverse effect on potential users of an open space located nearby. Note and discuss such land uses, and their potential effects on open spaces in the study area.

- *Urban Design.* The arrangement of land uses, building types, massing, linkages, corridors, and other place-making and –functioning elements can have deterrent or adverse effects on potential users of an open space nearby or within an area. Note and discuss these and any other urban design elements and their potential effets on open space in the study area.

- *Transportation.* Proximity (or the lack of) to mass transit routes, bicycle paths and routes, and sidewalks can affect use of open space. Please import or reference the relevant portions of the transportation impact assessment performed for the proposed action's project impact report. Heavily trafficked arterials may limit usability of open spaces. Off-road bicycle paths connecting to open spaces can offer better access for a greater proportion of the population.

- *Shadows*. Shadows on sun-sensitive uses, such as botanical or landscape attractions, swimming pools, or benches, can affect use of an open space. This information may be noted during a field survey. If a shadow assessment is being performed for the proposed action's project impact report, the technical analyses and graphics presented in the shadow chapter should be considered and referenced in the open space assessment.

- *Air Quality/Odors*. These can also affect use of an open space. If the action is likely to have a significant air quality/odor impact on open space resources, the technical analyses presented in the project impact report should be referenced and considered in the open space analysis.

- *Noise*. Excessive noise, including traffic noise, can prohibit specific types of use from an open space. If the action is likely to have a significant noise impact on open space resources, the technical analyses presented in the project impact report should be referenced and considered in the open space analysis.

- *Safety*. Poor safety conditions can also deter use. Typically, important factors include access, crime, pedestrian safety, nearby construction, and

other transportation issues. Note and discuss such factors, and their potential effects on open spaces in the study area.

c. Assess the Adequacy of Open Space Use the data gathered in the tasks above to provide a brief evaluation of the study area's existing open space conditions relative to the open space needs of the study area users.

First, calculate the existing open space ratio for the study area, using the population and open space acreage data identified in III.B.2.a. and b. above. The open space ratio is expressed as the amount of publicly accessible protected open space acreage per 1,000 population, and is calculated by dividing the total acres of open space by the population and multiplying by 1,000. This ratio may be tailored to age groups and types of facilities that would be affected by the proposed action. It is also usually appropriate to calculate separate open space ratios for active open space, passive open space, and total open space, based on the information gathered in III.B.2.b., above.

Typically, it would be appropriate to provide the following information when calculating the open space ratio:
1. *Actions that would result in an increase in residential population.* Calculate the open space ratio for the residential population:
- Number of acres of active open space per 1,000 residents;
- Number of acres of passive open space per 1,000 residents; and
- Number of acres of total open space per 1,000 residents.

If the action would occur in an area with a substantial nonresidential population, also calculate the open space ratio for the nonresidential population of the study area:
- Number of acres of passive open space per 1,000 non-residents; and
- Number of acres of active open space per 1,000 nonresidents.

2. *Actions that would result in an increase in nonresidential population (i.e., employees, visitors, students, etc.).* Calculate the open space ratio for the nonresidential population:
- Number of acres of passive open space per 1,000 nonresidents; and
- Number of acres of active open space per 1,000 nonresidents.

If the action would occur in an area with a substantial residential population, also calculate the open space ratio for the residential population:
- Number of acres of active open space per 1,000 residents;
- Number of acres of passive open space per 1,000 residents; and
- Number of acres of total open space per 1,000 residents.

3. *Actions that would result in an increase in both residential and nonresidential population.* Calculate the open space ratio for the residential and nonresidential populations of the study area:

- Number of acres of active open space per 1,000 residents;
- Number of acres of passive open space per 1,000 residents;
- Number of acres of total open space per 1,000 residents; and
- Number of acres of passive open space per 1,000 nonresidents.

Second, assess the adequacy of open space.

Typically, for the assessment of both direct and indirect effects, citywide local norms have been calculated for comparison and analysis. In Boston, existing local area open space ratios vary widely. For large-scale actions (and for planning purposes), the City seeks to attain a planning goal of 2.5 acres per 1,000 residents, if appropriate and feasible, in inner core urban neighborhoods; in neighborhoods outside the inner core, the City seeks to attain a planning goal of 5.0 acres per 1,000 residents. (The City's planning goal is based, in part, on National Recreation and Park Association guidelines from 1.25 to 2.5 acres per 1,000 residents of neighborhood parks within one-half mile, 5 to 8 acres per 1,000 residents of community parks within one to two miles, and 5 to 10 acres per 1,000 residents of regional parks within one-hour drive of urban areas. In addition, the City also consulted open space literature, Boston open space studies, and the citywide figure of parkland of 7+ acres per 1,000 residents to develop the 2.5-acre goal for inner core urban neighborhoods and the 5.0 acre goal elsewhere in the city.)

For nonresidential populations, especially worker and student populations, generally ratios of 0.15 acres of passive open space per 1,000 non-residents and 0.5 acres of active open space per 1,000 non-residents in addition to the benchmark figures for the residential population represent a reasonable amount of open space resources for that population.

For large-scale actions (and for planning purposes), the City seeks to attain its planning goal of a balance of 80 percent active open space and 20 percent passive open space. Similar to the open space ratio discussed above, this planning standard is not a regulatory standard. Although a typical population mix may call for such a goal, it may not be appropriate or attainable for some areas of the City or for certain populations skewed toward certain age groups. Analyzing the breakdown of open space into the categories of passive and active uses often requires judgment, and for any particular case, typical open space resources may be used very differently.

To assess the adequacy of existing open space within the study area, consider the following factors:

- Is the open space ratio for the population of the study area less than 2.5 acres per 1,000 residents, the City's planning goal for inner core urban neighborhoods and 5.0 acres per 1000 residents (all other neighborhoods)?

- Do effects of air or noise quality, shadows, extreme wind conditions, or issues of safety or the lack of safe non-motorized access to or within open space resources cause a decrease in the usability of the open space supply? Do the streets and off-street paths encourage movement and access that promotes the usability of the existing open space resources and network?

- Is the proportion of active and passive open space appropriate for the population and age groups served? Note that for areas in which there is a substantial worker, student, or visitor population, typically there is a need for more passive and active space resources.

- Is the project or proposed action compliant with or consistent with the city's current open space plan (*Open Space Plan 2008-2012)*, the open space plan elements of the current regional plan by the Metropolitan Area Planning Council, and the state's current Statewide Comprehensive Outdoor Recreation Plan (SCORP), *Massachusetts Outdoors 2006*?

- Other data gathered in III.B.2., above, including the following: user population profile; types of facilities; the variety of active and passive uses; and factors that may encourage or deter use including but not limited to accessibility of different types of open space (physical location and barriers to access), competing uses, and fee or hour restrictions. Are there a considerable concentration of persons who are more in need of close-to-home recreation resources due to age, mobility, socio-economic status, etc.?

- Such other factors as the availability of any major regional facility (e.g., Charles River Reservation), the predominant housing type, and the availability of publicly accessible unprotected and private open space facilities to serve the existing population.

These questions may be evaluated in context with the study area and the neighborhood.

For actions that would have direct effects on specific facilities, this assessment may be focused on only those open spaces that are comparable to those that would be displaced.

3. Detailed Assessment – Future No Action Condition

The future no action analysis projects conditions in the study area for the build year without the proposed action, providing a baseline condition against which the impact of the action can be measured. The analysis includes data on projected population as well as recreational facilities/open space facilities that are not associated with the proposed action built or approved to be constructed by the build year. The same level of analysis provided for the assessment of existing conditions is applied here. The analysis will consider any changes to the following factors expected in the future without the project.

- *Study area population*. Based on the development and population projected for the future build year, estimate the projected population profile in the study area. Consider changes in nonresidential population for actions that would increase the nonresidential population.

- *Identify and describe study area open spaces*. Identify any changes to open space anticipated by the future build year. Include new open space and alterations/deletions to existing open space. Also include changes that have been adopted or officially approved by a public agency. This inventory may include publicly accessible protected open space projects under construction, publicly accessible protected open spaces that have been approved as mitigation for other projects, or new open spaces that are committed in the Parks and Recreation Department's capital budget. The same information gathered in III.B.2.b. above will be appropriate for this inventory as well. If the project may have potential significant impacts in certain categories, or alter the accessibility of open space resources, these conditions in the Future No Action Condition should be analyzed and described.

- *Assess the adequacy of open space*. The purpose of this step is to determine the open space conditions in the future no action condition as it relates to the needs of the number and types of users predicted for the future no action condition. This assessment is performed in the same way as the assessment of existing adequacy, described in III.B.2.c., above. This includes calculating the open space ratio for the future no action condition, and qualitatively assessing whether or not the area is sufficiently served by open spaces, given the types of open space and the profile of the study area population.

4. Detailed Assessment – Future Action Condition

The future action assessment analyzes conditions in the study area for the build year with the proposed action/project. Both the quantitative and qualitative factors are considered in the assessment to the extent to which the action may affect the existing open space resources and their capacity to serve the study area population. This assessment typically begins with a brief description of the project, considering how

it might affect open space—by displacing or encroaching on open space, introducing a population that would place demands on open space, etc. Then, the analysis is performed using the same methodology as for existing conditions and for future no action conditions, described above. This includes the following.

- *Identify changes to study area population*. This projection will be based on population projections for the proposed action together with future no action conditions determined above. For the project population, provide a breakdown of its projected profile, and a description of the estimated nonresidential population (workers, students, tourists), as appropriate.

- *Identify and describe changes to study area open spaces*. Describe the open space changes from the no action condition, both on site and off site, which would occur as a result of the proposed action. Describe the open space that would be eliminated, altered, created, and/or improved, if any, as a result of the action.

- *Assess the adequacy of open space*. Calculate the ratio of acres of open space per 1,000 population. Indicate the additional users as a result of the proposed action and assess the adequacy of open space resources to accommodate these users. Note whether the project would provide on-site open space resources and whether it is accessible to the public or to the project-related population only.

If the action is likely to have potential significant shadow, air quality/odor, noise, or other effects on open space resources, consider those effects as well. Refer to the appropriate technical analyses elsewhere in the project impact report.

IV. DETERMINING IMPACT SIGNIFICANCE

In this step, the level of significance of an action's effects on an area's open spaces is defined, qualitatively and quantitatively. It is generally appropriate for actions to undergo both the quantitative and qualitative evaluation compared with the future no action condition.

A. *Quantitative Impact*

The proposed action may result in a significant impact on open space in the following circumstances:

- There would be a direct displacement/alteration of existing open space within the study area that has a significant adverse effect on existing users, unless the proposed action would provide a comparable replacement (size, usability, and quality) within the study area (net loss of publicly accessible protected open space).

- The action would reduce the open space ratio and consequently result in overburdening existing facilities or further exacerbates a deficiency in open space.

When assessing the effects of a change in the open space ratio, consider the balance of passive and active open space resources appropriate to support the affected population. A larger percent of active space is usually preferred, because the physical space requirements for active open space uses are significantly greater. That is, a greater number of passive open space users, such as those sitting on a park bench to enjoy fresh air, can be accommodated within a smaller space. Active open space users have greater physical space needs for the movement and activity required for active recreation, such as children's play equipment, organized or spontaneous sports such as frisbee or ball playing, hopscotch, or other outdoor exercise.

In assessing the effects of changes in the open space ratio, the active/passive nature of the resources affected should be considered. As noted earlier, for large-scale actions (and for planning purposes), the City seeks to attain a planning goal of a balance of 80 percent active open space and 20 percent passive open space. Although a typical population mix may call for such a goal, it may not be appropriate or attainable for some areas of the city or for certain populations skewed toward certain age groups. Analyzing the breakdown of open space into the categories of passive and active uses often requires judgment, and for any particular case, typical open space resources may be used very differently.

The Parks and Recreation Department will review existing open space norms for the area and the quality of existing open space. Actions that may result in significant quantitative impacts on open space resources are typically further assessed in the qualitative assessment approach (described below) to determine overall significance of the impact.

B. ***Qualitative Impact***

Identify the type (active or passive), capacity, conditions, and distribution of open space. Determine whether the change in open space conditions and/or use results in a substantial change or an adverse effect to open space conditions.

Significance is generally determined according to the following guidelines:

- If the proposed action results in a significant physical impact on existing open space in terms of increasing shadow, noise, air pollutant emissions, odors, etc. compared to the future no action condition, then there is a significant impact requiring mitigation.

- If the proposed action addresses the quantitative open space needs, but causes a qualitative impact compared to the no action condition, then there may be a

significant impact on open space, requiring mitigation. This could occur if a specific user group would be affected (such as young children or bocce players), even though the overall open space ratio would be adequate; if certain age groups would be underserved; or there would be conflicts in the use of open space as a result of the action.

V. DEVELOPING MITIGATION

If the proposed action results in significant adverse open space impacts, on site or off site mitigating measures are identified to the greatest extent practicable.

Some ways in which open space impacts may be mitigated are as follows:

- Create new open space on site of the type needed to serve the proposed population and to offset their impact on existing open space in the study area.

- Create new open space elsewhere in the study area of a type needed to serve the needs of the added population.

- Improve existing open spaces in the study area to increase their utility, safety, and capacity to meet identified needs in the study area.

- Mitigation for the removal or conversion of public parkland typically involves the acquisition of replacement parkland of equal or greater size and value servicing the same community of users.

VI. DEVELOPING ALTERNATIVES

Alternatives to the proposed action that would avoid significant impacts on open space resources could include a smaller project (creating less demand for open space) or an alternate site (transferring the open space demand to an area with sufficient supply to accommodate the added demand). If an action may involve the removal or conversion of parklands, the possible use of alternative sites should be given ample consideration as early as possible in the planning process.

Alternatives to the proposed action are analyzed using the methods described under the future build condition and impacts are compared to those of the proposed action.

Notes:

1 The following BRA Planning Districts are inner core urban neighborhoods for purposes of the open space impact assessment: Back Bay/Beacon Hill, Central Boston, Charlestown, East Boston, Fenway/Kenmore, South Boston, and the South End.

9.4.7 Boston Parks and Recreation Department

PRD.1 Car/truck drop-off/pick-up area proposed for Block A.

The specifics of vehicular and pedestrian access to Block A and its relationship to the Old Northern Avenue Bridge and adjacent Harborwalk will be subject to detailed reviews with the various City departments during subsequent detailed design processes.

PRD.2 Open space impact assessment.

Please see Section 4.15 for the open space impact assessment.

PRD.3 Location of Seaport Hill park.

Seaport Hill is situated on both sides of Harbor Street and at the center of the new residential buildings of the L Blocks. The massing of the L Blocks was designed to have the buildings align the adjacent streets, leaving the middle of the Block as open green space. The continuation of street wall, and 'fitting-in' to the urban fabric, were top priorities in guiding the design. Seaport Hill is open to access for pedestrians from all of its sides, through a series of pocket park public stairs that connect from Boston Wharf Road, Congress Street, East Service Road and Autumn Lane, to Seaport Hill's open green space. A publicly accessible elevator will be included within the building on Block N or Block P for handicap accessibility between Summer Street and Congress Street.

PRD.4 Shadow impacts on open spaces.

Please see Section 4.2 for the shadow analysis.

PRD.5 Consistency with City of Boston Open Space Plan 2008-2012 and MetroFuture.

Please see Sections 1.7.1 and 1.7.2 for information on the Project's consistency with *MetroFuture* and the City of Boston *Open Space Plan 2008-2012*.

PRD.6 Bicycles.

Regarding bicycle trip generation, please see Response to Comment DEP.33, above. The Proponent will investigate a shared bicycle program, and will work with the City on such a program if one is instituted in Boston. Proposed bicycle facilities are discussed in Sections 3.3.2.13, 3.3.3.3 and 3.3.3.6.

From: Giers, Bob
Sent: Thursday, July 24, 2008 10:42 AM
To: Kara, Kristin
Cc: Jayasinghe, Para; Leo, Vincent; Banks, Joseph; Spinetto, Stephen; Crasco, Ken - Parks Dept.; McCarthy, Timothy (Public Works)
Subject: Seaport Square

hi Kristen,

Here are PWD comments for the subject project Seaport Square in South Boston bounded by Northern Avenue, Sleeper, Congress, Summer Streets, and Seaport Boulevard, where the developer is estimating the cost of the projects to be approximately $ 3,000,000,000:

Site Plan:
Developer must provide an engineer's site plan at an appropriate engineering scale, that shows curb functionality on both sides of all streets that abuts the property. PWD.1

Sidewalks:
Developer is responsible for the reconstruction of the sidewalks including the resetting of the existing curbing abutting the project, and to extend the limits to the nearest intersections. The reconstruction effort must meet current ADA/AAB guidelines, including the installation of new or reconstruction of existing compliant pedestrian ramps at all corners of all intersections, to encourage and compliment pedestrian improvements and travel along all streets within the development limits. This effort also may constitute a License, Maintenance and Indemnification (LM&I) agreement with the Public Improvement Commission (PIC). PWD.2

Discontinuances:
Any and all discontinuances (sub-surface, surface or above surface) within the Public Right-of-Way (ROW) must be processed through the PIC. PWD.3

Landscaping:
Developer must seek approval from Ken Crasco, Chief Landscape Architect with the Parks and Recreation Department for all landscape elements. Program must accompany a LM&I with the PIC. PWD.4

Street Lighting:
Street lighting needs must be consulted with Mr.. Joe Banks of the Street Lighting Division with the PWD, and where needed, be installed by the developer, and must be consistent with the area lighting, to provide a consistent urban design. PWD.5

Roadway:
Based on the extent of construction activity, including utility connections and taps, the Developer will be responsible for the reconstruction of the roadway sections that immediately abuts the property, and where appropriate, extend the limits on re-construction to the nearest intersection and to insure compliance to ADA/AAB guidelines. PWD.6

Public Trash Receptacles:

Developer to consult with Tim McCarthy of BPWD, and is responsible for purchasing solar powered trash compactors to be used in Public space consistent with City of Boston's plan. PWD.7

Public Art:
Developer is encouraged to contact the Boston Arts Commission to participate with the City's public arts program, creating notable art pieces in public spaces. PWD.8

Groundwater:
Developer should install groundwater-monitoring wells in accordance to ISD standards, to monitor groundwater levels during construction, and convey the wells to the Groundwater Trust through the PIC after the completion of the project. PWD.9

Note: these are the general standard BPWD requirements applicable to every project, more detailed comments will be addressed during the PIC review process;

Any questions please give me a call at 617-635-4966

thank you, Bob Giers

9.4.8 Public Works Department

PWD.1 Provide site plan.

At this planning level, site plans and drawings are still at the conceptual level. As engineered site drawings are developed for each Block in the course of advancing the design for the development phases, they will be available for review by City agencies. Detailed plans for all development parcels will be provided as part of the required approvals by the City of Boston Public Improvements Commission (PIC) for the extensive improvements anticipated within the public right-of-way.

PWD.2 Reconstruction of sidewalks.

The Proponent understands its responsibility to reconstruct the sidewalks abutting the Project, and where appropriate, extend the limits to the nearest intersection.

PWD.3 Discontinuances.

The Proponent will process any and all discontinuances through PIC.

PWD.4 Approval of landscape elements.

The Proponent will consult with the Parks and Recreation Department, Public Works Department and BRA for all landscape elements.

PWD.5 Street lighting.

The Proponent will consult with the Public Works Department with regard to the street lighting requirements.

PWD.6 Reconstruction of roadway segments.

The Proponent acknowledges that the reconstruction of roadway sections that will be directly impacted by project construction will be under their responsibility.

PWD.7 Public trash receptacles.

The Proponent will consult with the Public Works Department on the type and location of trash receptacles on City sidewalks adjacent to the property.

PWD.8 Public art.

The Proponent will consult with the Boston Art Commission concerning the installation of public art.

PWD.9 Groundwater monitoring wells.

Please see Response to Comments BGwT.1 and BGwT.2

Boston Water and Sewer Commission

980 Harrison Avenue
Boston, MA 02119-2540
617-989-7000

August 1, 2008

Secretary Ian A. Bowles, Jr., Secretary
Executive Office of Environmental Affairs
Attn: Briony Angus, MEPA Reviewer
100 Cambridge Street, Suite 900
Boston, MA 02114

and

Mr. Jay Rourke
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Re: Seaport Square, ENF/PNF, EOEA No. 14255

Dear Secretary Bowles and Mr. Rourke:

The Boston Water and Sewer Commission (Commission) has reviewed the Environmental Notification Form /Project Notification Form (ENF/PNF) for Phase 1 Waiver Request of the Seaport Square Project. Seaport Square is a large development project which proposes to construct 19 buildings over about 23 acres in South Boston. The project site is generally bounded to the north by Northern Avenue, to the east by B Street, to the south by Congress Street and to the west by Sleeper Street. The Phase 1 proposal contains three of these buildings along the western portion of the site.

Two of the Phase 1 buildings will be used for retail/commercial on the lower stories and residential on the upper stories. The third building will become the relocated Our Lady of Good Voyage Chapel. Block A of Phase 1 is located on New Sleeper Street, where the proponent proposes to construct a 6-story, 81,600 square foot building with below grade parking for 43 vehicles. Block H, on Seaport Boulevard, is the proposed location for a 92,100 square foot building; the lower two stories allocated for retail with residential use on the floors above. Block J also on Seaport Boulevard is the proposed relocation of Our Lady of Good Voyage Chapel, a 25,000 square foot building.

Wastewater and Stormwater

The proponent estimates that Seaport Square will generate about 988,000 gallons per day of wastewater; Phase 1's flow will be approximately 27,000 gallons per day of this total. The Commission's Northern Avenue sewer serves the Seaport Square site. Sanitary flows in this sewer are lifted into the South Boston Interceptor – North Branch at the Commission's

Trilling Way Pumping Station. The Commission would like the proponent to investigate other routes for the sanitary flows from Seaport Square to avoid pumping at Trilling Way. The proponent proposes in the ENF/PNF to route about 86 percent of the wastewater (about 850,000 gallons per day) to the South Boston Interceptor – North Branch (SBI-NB) via A Street, avoiding Trilling Way. Routing this amount of flow via A Street may be adequate to the Commission's concerns. However, it appears that the proponent has not taken into consideration future developments and recent improvements when this plan was developed. BWSC.1 BWSC.2

The Seaport Square site is served by storm drains that discharge into Boston Harbor and Fort Point Channel. The Commission will require the proponent to route the stormwater from this project to these drains. BWSC.3

The realignment of Northern Avenue will require the proponent to relocate the 15-inch sanitary sewer and related structures. If necessary the proponent will also be responsible for installing storm sewers in the realigned Northern Avenue. BWSC.4

Project Study

The proponent needs to take into consideration the information on other projects that will be developed in future near Seaport Square along with recent improvements. The Commission requests that the proponent conduct a study that includes the following:

1. A review of information on the existing conditions and the plans for future developments in South Boston. Some of these notable projects are the Fan Pier Project and Commonwealth Flats.
2. Flows measurements in the collection system and a comparison to the pumping records at the Commission's Trilling Way Pumping Station.
3. An estimate of stormwater contributions to the existing drains.
4. An evaluation of the capacity of the sanitary and stormwater systems.
5. A plan to route sanitary and stormwater flows for the entire Seaport Square project.
6. Recommendations for improvements.

BWSC.5

The study must identify the extent of the improvements for conveying flows from this area and their costs.

Water

The proponent estimates that the project will demand about 1,087,000 gallons per day, 30,000 gallons per day for Phase 1. The realignment of the Northern Avenue will require the proponent to relocate two water mains; a 16-inch main and a 30-inch transmission line. BWSC.6

Mitigating Impacts

The proponent is advised that the Massachusetts Department of Environmental Protection (DEP) routinely requires proponents to assist the agency in its program for reducing infiltration and inflow (I/I). In cooperation with this effort, the Massachusetts Water

Resources Authority (MWRA) and its member communities are implementing a coordinated approach to control extraneous flows such as I/I into the wastewater system. In this regard, the DEP has routinely required projects that add a significant amount of new wastewater flows to offset the increase with a reduction in I/I. Typically, the DEP uses a minimum ratio of 4 to 1; 4 gallons of I/I removed for each gallon of proposed wastewater. As a member community, the Commission supports the DEP and the MWRA, and will require the proponent to develop an I/I reduction plan that is consistent with their policy. BWSC.7

The Commission has the following general comments regarding the proposed Seaport Square:

General Comments

1. All new or relocated water mains, sewers and storm drains must be designed and constructed at the proponent's expense. They must be designed and constructed in conformance with the Commission's design standards, Water Distribution System and Sewer Use Regulations, and Requirements for Site Plans. To assure compliance with the Commission's requirements, the proponent must submit a site plan and a General Service Application to the Commission's Engineering Customer Service Department for review and approval when the design of the new water and wastewater systems and the proposed service connections to those systems is 50 percent complete. The site plan should include the locations of new, relocated and existing water mains, sewers and drains which serve the site, proposed service connections as well as water meter locations. BWSC.8 BWSC.9

2. Prior to demolishing any structures, above or below grade, all water, sewer and storm drain connections must be cut and capped at the main pipe in accordance with the Commission's requirements. The proponent must complete a Termination Verification Approval Form for the Demolition Permit, available from the Commission, and submit a completed form to the City of Boston's Inspectional Services Department before the Demolition Permit will be issued. BWSC.10

3. The proponent is advised that the discharge of any dewatering drainage to the Commission's drainage system, whether it is temporary or on a permanent basis, requires a Drainage Discharge Permit issued by the Commission. *An NPDES Permit issued by the EPA and/or DEP does not relieve the proponent of the responsibility to obtain authorization from the Commission.* Failure to obtain a Drainage Discharge Permit from the Commission for any dewatering discharge may result in a fine of up to $ 1,000 per day per violation. BWSC.11

4. Seaport Square should be aware that the US Environmental Protection Agency issued a draft Remediation General Permit (RGP) for Groundwater Remediation, Contaminated Construction Dewatering, and Miscellaneous Surface Water Discharges. If groundwater contaminated with petroleum products, for example, is encountered, Seaport Square will be required to apply for a RGP to cover these discharges. BWSC.12

5. Seaport Square must submit a General Service Application and site plan to the Commission for review and approval. The site plan should show the location of all existing and proposed water lines, sewers and storm drains that serve the site. Separate service connections for sanitary flow and storm water will be required. BWSC.13

6. To assure compliance with the Commission's requirements, site plans and General Service Applications should be submitted to the Commission for review when project design is 50 percent complete. BWSC.14

7. With the site plan, the proponent must provide detailed and updated estimates for water demand, sanitary sewer flows and stormwater runoff generation for the proposed project. The amount of potable water required for landscape irrigation must be quantified. The proponent must also provide an analysis of the impacts of the proposed project on the Commission's water, sewer and storm drainage systems. BWSC.15

Water

8. The proponent is required to obtain a Hydrant Permit for use of any hydrant during the construction phase of this project. The water used from the hydrant must be metered. The proponent should contact the Commission's Operations Division for information on and to obtain a Hydrant Permit. BWSC.16

9. The proponent should explore opportunities for implementing water conservation measures in addition to those required by the State Plumbing Code. In particular the proponent should consider outdoor landscaping which requires minimal water. If the proponent plans to install in-ground sprinkler systems, the Commission recommends that timers, soil moisture indicators and rainfall sensors be installed. The use of sensor-operated faucets and toilets in common areas of buildings should also be considered. BWSC.17

10. The Commission utilizes a Fixed Radio Meter Reading System to obtain water meter readings. If a new water meter is needed for the proposed project, the Commission will provide a Meter Transmitter Unit (MTU) and connect the device to the meter. For information regarding the installation of MTUs, the proponent should contact the Commission's Meter Installation Department. BWSC.18

Sewer and Drains

11. The proponent must fully investigate methods for retaining stormwater on-site before the Commission will consider a request to discharge stormwater to the Commission's system. The site plan should indicate how storm drainage from roof drains will be handled and the feasibility of retaining their stormwater discharge on-site. Under no circumstances will stormwater be allowed to discharge to a sanitary sewer. BWSC.19

12. The site plan must show in detail how drainage from building roofs and from other impervious areas will be managed. Roof runoff and other stormwater runoff must be conveyed separately from sanitary waste at all times. BWSC.20

13. In conjunction with the site plan and General Service Application, the proponent will be required to submit a Stormwater Pollution Prevention Plan. The plan must:

    - Identify specific best management measures for controlling erosion and preventing the discharge of sediment, contaminated stormwater or construction debris to the Commission's drainage system when construction is underway.

    - Include a site map which shows, at a minimum, existing drainage patterns and areas used for storage or treatment of contaminated soils, groundwater or stormwater, and the location of major control or treatment structures to be utilized during construction. BWSC.21

    - Specifically identify how the project will comply with the Department of Environmental Protection's Performance Standards for Stormwater Management both during construction and after construction is complete.

14. The Commission requires oil traps on drains within an enclosed parking garage. Discharges from oil traps must be directed to the sanitary sewer and not to a storm drain. The requirements for oil traps are provided in the Commission's Requirements for Site Plans. BWSC.22

15. In accordance with the Commission's Sewer Use Regulations, grease traps will be required in any restaurant or commercial kitchen. The proponent is advised to consult with Mr. Richard Fowler, Supervisor for the Commission's Grease Trap Program, prior to preparing plans for a restaurant or commercial kitchen. BWSC.23

16. The project proponent will be required to obtain coverage under the EPA's NPDES General Permit for Construction. A copy of the Notice of Intent and the pollution prevention plan prepared pursuant to the Permit should be provided to the Commission, prior to the commencement of construction. BWSC.24

17. The Commission requests that the proponent install a permanent "Don't Dump, Drains to Boston Harbor" castings next to any new catch basin installed as part of the projects. BWSC.25

18. The proponent should be aware that the US Environmental Protection Agency issued a draft Remediation General Permit (RGP) for Groundwater Remediation, Contaminated Construction Dewatering, and Miscellaneous Surface Water Discharges. If groundwater contaminated with petroleum products, for example, is encountered, the proponent will be required to apply for a RGP to cover these discharges. BWSC.26

Thank you for the opportunity to comment on this project.

Yours truly,

John P. Sullivan, P.E.
Chief Engineer

JPS/pwk

c.

John P. Hynes, III, Gale International
M. Zlody, Boston Environment Department
Katie Pederson, BRA
P. Laroque, BWSC

9.4.9 Boston Water and Sewer Commission

BWSC.1 Sanitary flow routes.

The Proponent is directing nearly all of its proposed wastewater flow away from the Trilling Way pump station. The only exception applies to flows from Block G which is prevented from using the southern wastewater route by the Silver Line tunnel.

BWSC.2 Consider future developments and recent improvements.

Most of the recently approved projects utilize the Trilling Way Station pathway and will not significantly impact the A Street sewer. However, the Project intends on conducting a capacity study of the downstream portions of the A Street Sewer as part of the BWSC Site Plan Review Process.

BWSC.3 Stormwater routing.

The Project will route stormwater to the drains as directed by BWSC.

BWSC.4 Installation of storm sewers in realigned Northern Avenue.

The Project will install the required sanitary sewer relocations necessary for the proposed development.

BWSC.5 Study of stormwater and sanitary systems.

Detailed studies will be performed as part of the BWSC Site Plan Review Process.

BWSC.6 Relocation of water mains.

The Project will relocate the water mains as required.

BWSC.7 Infiltration/Inflow reduction plan.

The Project is committed to reducing I/I in the Project area and specific commitments will be determined cooperatively with BWSC as part of the Site Plan Review and General Service Agreement processes.

BWSC.8 New and relocated water mains, sewers and storm drains.

This work will be detailed and proposed as part the Site Plan and General Service Application Review process.

BWSC.9 Site plan.

The Project will provide detailed site plans for review by BWSC as required.

BWSC.10 Cut and cap connections.

All demolition work will be coordinated and performed as required by BWSC.

BWSC.11 Dewatering drainage,

All dewatering discharges will be properly permitted and managed in compliance with BWSC requirements as well as other state and federal requirements.

BWSC.12 Contaminated groundwater.

The discharge of contaminated groundwater will be managed according to the applicable local, state and federal regulations.

BWSC.13 General Service Application and site plan.

The Project will provide all of the information required for BWSC Site Plan Review and General Service Application.

BWSC.14 Submit General Service Application and site plan when design is 50% complete.

The Project will provide all of the information required for BWSC Site Plan Review and General Service Application at the 50% design stage of each Block.

BWSC.15 Estimates of water demand, sanitary sewer flows and stormwater runoff generation.

Revised estimates will be provided as requested.

BWSC.16 Hydrant Permit.

The required permits will be obtained prior to use of any hydrants.

BWSC.17 Water conservation.

The Project is committed to environmentally responsible development and will take all reasonable measures to reduce or offset water demand. Specific measure will be detailed as part of the BWSC Site Plan Review process.

BWSC.18 Water meters.

The Project will use the meters requested by BWSC.

BWSC.19 Retention of stormwater on-site.

The Project plans on utilizing extensive green roofs as its principal means of retaining stormwater on-site. This will be supplemented by a program of rainwater re-use that will offset building mechanical system and irrigation demands. These systems will be detailed as part of the Site Plan Review process.

BWSC.20 Management of drainage from building roofs and other impervious areas.

This information will be provided as part of the Site Plan Review process.

BWSC.21 Stormwater Pollution Prevention Plan.

Details on the proposed Stormwater Management Plans and BMPs are provided in Sections 7.3.3 to 7.3.7. Additional detail will be provided as part of the Site Plan Review process.

BWSC.22 Oil traps.

Oil traps will be used as required.

BWSC.23 Grease traps.

Grease traps will be used as required.

BWSC.24 NPDES General Permit for Construction.

All applicable local, state and federal permits required for managing stormwater runoff from the construction sites will be obtained prior to discharge.

BWSC.25 "Don't Dump, Drains to Boston Harbor" castings.

The plaques will be installed as directed by BWSC.

BWSC.26 Contaminated groundwater.

The discharge of contaminated groundwater will be managed according to the applicable local, state and federal regulations.

BOSTON PRESERVATION ALLIANCE

July 28, 2008

Ms. Kristen Kara
Boston Redevelopment Authority
One City Hall Square, Floor 9
Boston, MA 02118

Ms. Briony Angus
MEPA Office
Executive Office of Energy and Environmental Affairs
100 Cambridge Street
Boston, MA 02114

RE: Seaport Square ENF/PNF

Dear Ms. Kara and Ms. Angus:

The Boston Preservation Alliance has reviewed the Environmental Notification Form (ENF) and Project Notification Form (PNF) for Seaport Square in South Boston. The Alliance believes that this ambitious project offers enormous potential to integrate the historic Fort Point Channel neighborhood into the South Boston waterfront. While few historic structures will be impacted directly by the project, the Alliance believes the project will enliven and activate the adjacent historic district of the Fort Point Channel and will provide an opportunity for the preservation of key nearby historic structures, such as the Old Northern Avenue Bridge. The Alliance commends Gale International for its proposal, which promises to enhance Boston's existing built environment while creating a new neighborhood of the highest quality design for the benefit of future generations of Bostonians.

Adjacency to Historic Fort Point Channel District

The proposed project includes a transition zone of 5-6 story buildings that steps down to the historic Fort Point Channel neighborhood. Because of this, shadow impacts are minimized on the low-scale 19th century warehouse buildings. The stepping down of building heights also assists in creating a visual transition between the two neighborhoods, which successfully bridges to the taller heights toward the Harbor.

Blocks H and J of Seaport Square are located within the proposed Seaport Blvd./Boston Wharf Road protection area of the pending Fort Point Channel Landmark District. The Alliance appreciates the proponents' recognition of the purpose of this protection area—to protect view corridors to and from the historic district and ensure that the massing, land coverage, and height of new construction on adjacent lots is compatible with that of

the proposed Landmark District. As noted in the ENF/PNF, proposed development in this area will be subject to ongoing review by the Boston Landmarks Commission staff.

The Alliance supports the great variety of building materials proposed for the buildings in Seaport Square which draw from some of the commonly found materials of the historic district, like brick and terracotta, while integrating new materials, such as steel and glass. In addition, Seaport Square provides a successful transition in street grid patterns from the intimacy of the historic district to the more massive scale of proposed new building on Fan Pier and closer to the harbor.

Old Northern Avenue Bridge

The Alliance commends the project proponent for committing $5 million to infrastructure improvements for the Old Northern Avenue Bridge. The Alliance has strongly advocated for the preservation, stabilization and restoration of the Old Northern Avenue bridge for many years. One of the area's most iconic structures, the bridge was constructed in 1908 and is one of only three surviving swing bridges built by the City of Boston in the late 19th and early 20th century.

The Alliance requests being involved in ongoing plans for the Old Northern Avenue bridge, including proposals to paint, repave, or relight the structure. The Alliance believes that seasonal kiosks and public art, as proposed, have the potential to contribute positively to the public's experience at the bridge and appreciation for it. We look forward to commenting on more detailed plans for these amenities as they evolve. BPA.1

Chapel of Our Lady of Good Voyage

The Chapel of Our Lady of Good Voyage is proposed for demolition as part of the Seaport Square development. Demolition during Phase I of the project is cited as critical to the ability of the entire project to move forward. The Chapel was constructed in 1952 and is a one story, flat roofed, brick building with little ornamentation. Its simplicity in design and modesty in scale reflect its function as a "workers chapel" in an industrial area that was built for use by seamen and waterfront workers.

The Chapel is not listed on the State or National Registers of Historic Places and is not located in the pending Fort Point Channel Landmark District. The building is included in the Massachusetts Historical Commission's (MHC) Inventory of Historic and Archaeological Assets of the Commonwealth. The Chapel was also part of the Boston Preservation Alliance's 2003 survey of properties owned by the Boston Archdiocese and was recommended for listing on the National Register in that Survey.

The project proponent will be required to consult with the Massachusetts Historical Commission in accordance with the Chapter 254 process and will undertake the Article 85 Demolition Delay process with the Boston Landmarks Commission. During the Article 85 processes, the proponent will be required to demonstrate that there is no feasible alternative to demolition. Should it be demonstrated that the chapel cannot be feasibly preserved, the Alliance recommends that the proponent work with the MHC and the BLC to determine suitable ways to commemorate the history of this chapel. BPA.2

Sincerely,

Sarah D. Kelly
Executive Director

Susan Park
President

cc: Senator Jack Hart
Representative Brian Wallace
City Council President Maureen Feeney
City Councilor Bill Linehan
City Councilor Michael Flaherty
Brona Simon, Massachusetts Historical Commission
Ellen Lipsey, Boston Landmarks Commission

9.5 Organization Comments on the PNF/ENF

9.5.1 Boston Preservation Alliance

BPA.1 Involvement in ongoing plans for the Old Northern Avenue Bridge.

The Proponent hopes to work closely with City officials in the ongoing plans for the City-owned Old Northern Avenue Bridge. The Proponent would welcome the involvement of the Boston Preservation Alliance.

BPA.2 Chapel.

The Proponent has initiated consultations with MHC and BLC in an effort to identify appropriate means to mitigate the proposed demolition of the Chapel of Our Lady of Good Voyage. The Proponent will file an Article 85 application as part of the Phase 1 portion of the Project.

The Boston Harbor Association
for a clean, alive and accessible Boston Harbor

4 August 2008

Mr. John Palmieri
Director
Boston Redevelopment Authority
City Hall
Boston, MA 02201
ATT: Kristin Kara

RE: Project Notification Form
Seaport Square, South Boston

Dear Mr. Palmieri:

The Boston Harbor Association (TBHA) is a non-profit, public interest organization founded in 1973 by the League of Women Voters and the Boston Shipping Association to promote a clean, alive, and accessible Boston Harbor. For the past few months, The Boston Harbor Association has attended a series of meetings convened by the Boston Redevelopment Authority to discuss the proposed 23-acre development known as Seaport Square in the South Boston Seaport district. We commend the BRA for initiating these meetings, and Gale International and its president, John Hynes, for their thoughtful participation and responses during each of the meetings.

Gale International proposes 6.5 million sq. ft. of development on twenty new blocks, the largest proposed development near Boston's waterfront, and

one of the largest in Boston. 2500 residential units, approximately 1.4 million sq. ft. of office and research space, 1.25 million sq. ft. of retail uses, 700 hotel rooms in three hotels, public pilot school, international private school, gallery space, community facility such as a library branch, relocated church, gallery space, and 6,500 parking spaces are proposed. The project proponent will provide six acres of open space for public enjoyment and recreation, comprising approximately 25% of the site.

We commend the project proponent for actively promoting a lively 24/7 neighborhood which recognizes not only the need for a mix of residential units but also provides for a grocery, community, and cultural facilities. In addition, two larger public spaces are integrated into the project, a 1.25 acre "Seaport Square" envisioned as a "grand civic lawn large enough to support active recreation and concerts" (page 2-34 of PNF) and the 0.75 acre "Seaport Hill" grassy area with a playground, flower garden, dog park, and seating areas.

We further commend the project proponent for supporting Mayor Thomas Menino's and Governor Deval Patrick's efforts to make Boston and Massachusetts the "greenest" city and state in the country by making the Seaport Square project one of the largest sustainable neighborhoods in the United States through at least LEED-ND standard at the Silver Level.

As the Seaport Square project continues through state and municipal environmental review, we ask that the following issues be thoroughly addressed:

Massing along Northern Avenue: as proposed, Buildings B, C, and D on Northern Avenue will each have a maximum height of 250 ft., the limit set by the FAA. Both the project model and Figures 2.3-13 and 2.3-14 of the PNF clearly show that the proposed heights of the new buildings together with the buildings across the street create a canyon-like effect for pedestrians and park users on Northern Avenue. The Project Environmental Impact Report needs to clearly model the wind and shadow impacts of the proposed buildings upon the pedestrian experience on Northern Avenue and adjacent side streets. Particular attention should also be given to the wind and shadow impacts of these three buildings to park users utilizing the project's "Seaport Square" park and the adjacent Fan Pier "Public Green." Alternative massing schemes which re-distribute the height and eliminate the canyon-like effect should be included in the alternatives analysis in the Draft PIR.

TBHA.1

TBHA.2

Transit-oriented development: The project proponent proposes 6,500 parking spaces in five new underground parking garages to replace the existing 3,647 parking spaces on surface lots. The project proposes to secure 853 additional parking spaces from the City of Boston's parking bank administered by the Air Pollution Control Commission, and to build 2,000 additional residential parking spaces

(latter not subject to the regulations of the Air Pollution Control Commission).

We encourage the project proponent to incorporate additional steps to become a transit-oriented project. We support the project's stated intention of working with the MBTA to develop a new head house connection between "Seaport Square" open space and the MBTA Silver Line waterfront route, although it is not clear from the ENF whether the project proponent will pay for the construction of the new head house. We strongly support the project proponent's innovative "Park and Bike" program at its existing parking lots in the Seaport District, where parking customers get free use of a bicycle, while others can rent a bike for only $11 a day. To further support the city's "Boston Bikes" initiative, we are hopeful that some of the project's ground floor spaces will have reasonably-priced shower facilities for bikers and bike repair services, similar to the amenities at Chicago's Millennium Park. TBHA.3 TBHA.4 TBHA.5

The PNF does not specifically identify water transportation as a transit option for workers, residents, or visitors. The Draft and Final PIR should provide descriptions of water taxi and water ferry service in the project catchment area (e.g., World Trade Center, Fan Pier, Moakley Courthouse, InterContinental Boston, Barking Crab Restaurant), and outline how the project proponent will promote water transit usage, such as possible service subsidies for water transportation and employee discount coupons for water transit. TBHA.6

Transportation Planning: The Project Notification Form makes a number of assumptions about existing roadways and proposes a number of new roads within the project site. As a more complete, comprehensive transportation analysis is prepared for the Draft and Final Project Impact Reports, the following should be incorporated:

In considering background conditions of other projects in the project area, the traffic analysis of "No Build Background Conditions" (pages 3-21 and 3-22 of PNF) appears to under count the scale of other, already permitted projects. For example, only 493,000 sq. ft. of office space is included for the Fan Pier, with no mention of the hotel, residential, civic/cultural or retail components; only 225 hotel rooms are considered for Pier 4, with no mention of the residential, office, civic, or retail uses; and only 3,000 sq. ft. of retail space is included for the FP3 project on Congress Street when there is actually 17,000 sq. ft. of retail uses on the ground floor with 92 residential units. To adequately assess the environmental impacts of the proposed project, the traffic analysis in the Draft and Final PIR should consider "worst case" scenario, i.e., background conditions should assume full build-out of all other permitted projects in the immediate area. TBHA.7

With regards to the existing roadway system, better descriptions should be included of the major east-west roadways which provide access to the Seaport District: Seaport Boulevard, Northern Avenue, TBHA.8

Congress Street. There also needs to be a recognition that Northern Avenue/ Seaport Boulevard and A Street, among others, are truck routes which serve the South Boston Designated Port Area, and which provide access to and from the Boston Marine Industrial Park. While we support making Seaport Boulevard an attractive street, the description in the PNF cites a boulevard type that is a "retail promenade, favoring the pedestrian experience", with discussion of gracious sidewalks, double-row trees to accommodate outdoor seating and sidewalk entertainment. The Draft and Final Project Impact Reports should include better narrative and maps of the truck routes and the Designated Port Area, and indicate what, if any, impacts will occur to the truck routes from the proposed project.

TBHA.8 cont'd

TBHA.9

Besides including a more detailed inventory of water transportation options (e.g., water taxi services; $2 Seaport Express weekday service between the Seaport World Trade Center and Central Wharf; Massport's plans for an expanded water transportation facility at Commonwealth Pier), we ask that a more thorough analysis be included of existing and future mass transit options for residents, workers, and visitors to Seaport Square. The PNF does not include any Silver Line Waterfront ridership information in the modal split analysis (page 3-34). The Draft and Final PIR should include this information as part of the mass transit analysis regarding existing and future demand.

TBHA.10

Additional information should be provided in the Draft and Final Project Impact Reports regarding the new Harbor Street Bridge, proposed over Congress Street to connect Summer Street to Seaport Boulevard. Additional analysis is needed about the impacts of such a bridge over a major east-west corridor, including any impacts or implications for truck and pedestrian usage of the street. As presented, we assume that Harbor Street Bridge will be privately funded: please indicate the timetable for permitting and funding of the proposed infrastructure. TBHA.11

Open Space: The PNF provides good detail of the mix of open spaces which comprise slightly more than 25% of the site area (35% if one includes streets and sidewalks). "Seaport Square", a 1.25 acre open space area, is envisioned as a "grand civic lawn large enough to support active recreation and concerts" (page 2-34 of PNF), while a 0.75 acre "Seaport Hill" is envisioned for a playground, dog park, and passive recreation, with landscaped areas serving as a buffer for ground floor residences at the sidewalk.

"Seaport Square" Park is directly across from Fan Pier "Public Green", and close coordination should occur between the two property owners to maximize public use of these open space areas. During the Chapter 91 process, additional information should be provided regarding the programming of both "Seaport Square" Park and "Seaport Hill", as well as the coordination with Fan Pier "Public Green." Outstanding free waterfront programming to emulate TBHA.12

include the Boston Harbor Hotel's ten weeks of free summer concerts, dance, and movies along the HarborWalk; the Institute of Contemporary Art's free Thursday night HarborWalk Sounds series in conjunction with Berklee College of Music; Boston Children's Museum's Summer Outdoor Music Series Fridays at noon in conjunction with the Friends of Fort Point Channel and Passim Folk Music and Cultural Center; City of Boston's free Waterfront Performing Arts Series on Thursdays at Christopher Columbus Waterfront Park; Boston Natural Areas Network's free weekly Greenway Festival Family Movies Series at Pope John Paul II Park in Dorchester; and the John F. Kennedy Library and Museum's free year-round Kennedy Library Forums.

TBHA.12 cont'd

It is not clear from the PNF submission whether the required open space offsets for the entire project (versus only Phase I offset) are satisfied with the conveyance of Parcel E. As part of the Phase I Waiver Request approval, we strongly urge that the open space requirement be satisfied at the start of the project, similar to the timing of public amenities for the adjacent Fan Pier project.

TBHA.13

Consistent with the Secretary's Decision on the South Boston Municipal Harbor Plan Amendment, the City of Boston is required "to develop a system that accounts for the status of aggregation program, maintain a running balance tracking the amount of open space, where it has been provided, and which McCourt Parcel it shall be credited to. Using this open space accounting system, the City shall include a certification of open status to DEP

as part of its Section 18 recommendation on Waterways licenses" (page 49, 8 December 2000 Decision).

We ask that the City begin this process as soon as possible to allow for sufficient public involvement and comment, so that the required Section 18 certification by the City does not hold up the project proponent's Phase I Chapter 91 License, if the waiver request is granted.

Planning for Community Facilities: Earlier this year, Boston Mayor Thomas Menino appointed the able Kairos Shen to be the City's Chief Planner. In that capacity, we hope that Mr. Shen will begin to work with city agencies to determine the appropriate mix of community facilities such as schools, libraries, public safety facilities including police and fire stations, health clinics, community centers, and civic facilities in the Seaport District. We highly commend the project proponent for setting aside sites for two schools, library branch, and performance center in anticipation of the need for such facilities to support a lively new neighborhood.

PHASE 1 WAIVER REQUEST

As part of this filing, the project proponent is requesting a Phase I Waiver Request to construct three buildings prior to the preparation of a project-wide Environmental/Project Impact Report. Ninety-three residential units, 46,600 sq. ft. of retail, 25,000 sq. ft. for the relocation of Our

Lady of Good Voyage Chapel, and 31 parking spaces comprise the Phase I Waiver Request.

Subsequent to the filing of the Environmental/Project Notification Form and in response to concerns raised by The Boston Harbor Association and others, the project proponent has scaled back the Phase I Waiver Request. Block A will now house 34 one, two and three bedroom units rather than 51 units as described in the ENF, with 31 below-grade parking spaces rather than the 43 spaces outlined in the ENF/PNF. We strongly support these changes to minimize environmental impacts from Phase I of the project.

Traffic Issues: Block A, located on Old Sleeper Street between Seaport Boulevard and the Old Northern Avenue Bridge, is proposed to be a six-story residential building, with ground floor restaurant/retail uses and parking beneath the building.

Because the Block A building is built to the property line and because of its proximity to the Old Northern Avenue Bridge, future plans for the Bridge are particularly relevant. It is our understanding that the City's redevelopment plans for the bridge call for one lane of vehicular traffic, one lane for pedestrian use, and one lane for commercial activity.

If vehicular traffic is permitted on the bridge in the future, safe pedestrian connections to the HarborWalk between the Evelyn Moakley Bridge and

TBHA.14

the John Joseph Moakley Federal Courthouse are necessary; and access for deliveries, trash removal, and emergency response at the nearby Barking Crab Restaurant and the water-dependent Neptune Marine Services LLC need to be provided. TBHA.14 cont'd

At the same time, the project proponent should continue to examine ways to avoid queuing of vehicles entering the single-lane below-ground parking facility, thereby causing back-ups onto the Old Northern Avenue Bridge and at locations where pedestrians will be trying to access different segments of the HarborWalk. The proposed below-ground parking facility will only hold 31 vehicles, which with proper attention by the management entity should not experience queuing on to public streets even at rush hour. TBHA.15

HarborWalk: The ENF/PNF incorrectly indicates that one of the Public Benefit Determination factors of this project is the creation of a missing HarborWalk segment or link as part of Block A development. Because Block A is not on the water's edge, the proponent can not construct the missing HarborWalk segment unless he acquires the waterfront parcel next to Block A, which is not proposed in the ENF/PNF (see discussion below regarding Public Walkway). Furthermore, the ENF/PNF attributes an existing HarborWalk segment to the Boston Children's Museum, when in actuality the segment nearest to Block A was built by the Mass. Highway Department as part of the Evelyn Moakley Bridge project using taxpayer's funds. TBHA.16

In conversations subsequent to the filing of the ENF/PNF, the project proponent has expressed a willingness to construct a new public segment from the Evelyn Moakley Bridge HarborWalk to the proposed public walkway along the alignment of Old Sleeper Street between the Barking Crab Restaurant and the property line of Block A. Currently, the temporary segment is not in good condition and awkward to access. We support the construction of this missing segment by the project proponent as part of the Chapter 91 License requirement, and as a factor in the Public Benefit Determination, assuming that the property owner of the segment is amenable to the construction of a new segment by Gale International. TBHA.17

Public walkway along Old Sleeper Street: The alignment of Old Sleeper Street, which runs between the Barking Crab Restaurant and the property line of Block A, is owned by the City of Boston. Currently, the alignment is used for drop-off and pick up and deliveries and for emergency access to the Barking Crab Restaurant and to Neptune Marine Services LLC, and by pedestrians going between the Evelyn Moakley Bridge HarborWalk segment and the Old Northern Avenue Bridge and/or to the HarborWalk at the John Joseph Moakley Federal Courthouse. The alignment is not pedestrian-friendly and in poor condition along some sections.

The project proponent proposes to activate the City-owned alignment through physical improvements which will make it more user-friendly including new landscaping, outdoor dining as well as free tables

for the general public, and rotating outdoor public art. We support these measures to make the public alignment more functional and safer for pedestrians and families, consistent with plans by the City of Boston.

At the same time, these improvements must be implemented in such a way as to not adversely impact the existing water-dependent use (Neptune Marine Services LLC) nor the existing facility of public accommodation (Barking Crab Restaurant). By working together with the City, the project proponent, Neptune Marine Services LLC, and the Barking Crab Restaurant can all benefit from a more attractive, better-designed alignment. As a condition of any Phase I Waiver Request approval, an agreement regarding Old Sleeper Street alignment and its uses should be executed between the project proponent, the abutters Neptune Marine Services LLC and the Barking Crab Restaurant, and the City of Boston. TBHA.18

<u>South Boston Municipal Harbor Plan Amendment</u>:
Under the South Boston Municipal Harbor Plan Amendment approved by the Environmental Secretary on 6 December 2000, Block A of the project has a maximum height envelope of 75 feet.

The Amendment also approved a maximum height of 75 feet on the Barking Crab Restaurant site. As part of the substitution provision, the Secretary required that the Barking Crab Restaurant site must provide a minimum 12-foot wide water dependent use zone concurrent with any new or expanded non-water-

dependent use building construction, and that if a combined boat access and waterside walkway is not feasible to accommodate ADA requirements, then the Barking Crab site may satisfy any ADA requirement with a harborwalk walkway along the existing Sleeper Street sidewalk, in addition to the 12-foot wide HarborWalk waterside access (page 52, 6 December 2000 Decision).

If a Phase I Waiver Request is granted to the proponent, we ask that the proposed project be permitted in such a way so as to not impede the operations of the existing or expanded Neptune Marine Services and/or Barking Crab Restaurant, consistent with the Secretary's 6 December 2000 Decision. TBHA.19

Open Space Requirement: Under the Secretary's 6 December 2000 Decision, a substitution provision allowed for 100% lot coverage and therefore 0% open space for Block A. The proposed offset would be an equal area of open space provided somewhere on the project site.

In the 23 June 2006 Written Determination of the Boston Children's Museum's Chapter 91 License, the donation of Parcel E to the Museum by the prior property owner was allowed to be banked as part of the offset for the future development of Block A and the project site. The Secretary's Decision further required that, "At a minimum, the final design and construction of open space provided to meet these requirements shall satisfy the Chapter

91 standards for open space located on Commonwealth tidelands" (page 57, 6 December 2000 Decision).

Parcel E, as conveyed, does not meet the open space standard for Commonwealth tidelands, and it is not clear from the filing how the project proponent will meet the standard. To put any future improvements for Parcel E into context, the Boston Children's Museum has for the last 18 months engaged a landscape architectural firm with the assistance of a planning committee chaired by the president of Legal Sea Foods and the executive director of The Boston Harbor Association to develop plans for a signature waterfront park. Two community meetings have been held to solicit community input on the plans. Construction costs are estimated to be between $7 to $9 million. TBHA.20

Public Benefit Determination/ Phase I Waiver Request Requirements: As part of the landlocked tidelands legislation signed by Governor Deval Patrick on 15 November 2007, the Energy and Environmental Secretary is designated as the "administrator of tidelands", must conduct a "public benefit review" for projects on tidelands, and must issue a written determination for any proposed project located on tidelands or on landlocked tidelands that requires an Environmental Impact Report.

As part of the public benefit determination and the Phase I Waiver Request review, the ENF/PNF filing was mistaken regarding the project proponent's ability to effectuate a new HarborWalk segment and

to enliven the water's edge since the project is not located on the water's edge. It appears that the remaining major benefit which the project proponent had identified in the Phase I Waiver Request is the proposed improvement of the city's Old Sleeper Street alignment with landscaping, outdoor seating, and public art, and a commitment to work with community groups and institutions to provide year-round events and programming in existing and new open spaces and in the facilities of public accommodation. The Phase I Waiver Request does not demonstrate any undue hardship from strict compliance with the MEPA regulations requiring an EIR.

While The Boston Harbor Association does not generally support segmentation of a project, we are supportive of this Waiver Request, given the reduction in the size of the Block A building since the ENF submission, and with appropriate conditions. If a Waiver Request is granted, we ask that your office incorporate the following conditions to meet the public benefit determination, satisfy Phase I Waiver requirements, and meet the open space offset for the entire project, not just the Phase I parcels:

1. Block A, located completely on Commonwealth tidelands, will be reduced from 51 residential units as stated in the Environmental/Project Notification Form to no more than 34 units and will have no more than 31 below-ground parking spaces, rather than 43 parking spaces as stated in the Environmental/Project Notification Form; TBHA.21

2. The project proponent, with the concurrence of the property owner, will construct and maintain a public, ADA accessible segment connecting the HarborWalk segment beneath the Evelyn Moakley Bridge to the public way on the Old Sleeper Street alignment;

3. The project proponent will provide free space for a visitor information facility or kiosk on the ground floor of the Block A "gateway" building, with access to a public restroom for the general public;

4. That portion of Block H within Commonwealth tidelands and closest to the Parcel E open space donated to the Boston Children's Museum shall have a public restroom available for use by park users;

TBHA.21 cont'd

5. At the time of the granting of an extended term Chapter 91 License for buildings in the Phase I Waiver Request, the project proponent shall provide funds to the Boston Children's Museum to ensure that Parcel E/ Children's Wharf Park meet Chapter 91 standards for open spaces located on Commonwealth tidelands. Because Parcel E currently does not meet Chapter 91 open space standards for tidelands, because additional open space offsets may be required for the entire project, and because the City of Boston may decline the $5 million contribution the project proponent has offered to help repair the Old Northern Avenue Bridge, we ask that the project proponent provide funding which will make the open space a significant destination

and resource for the new workers, residents, and visitors of the 6.5 million sq. ft. development within the Seaport District. Up to $5 million shall be provided by the project proponent to the Boston Children's Museum to construct a park to the standards required for open space on Commonwealth tidelands if the City of Boston decides not to accept the proponent's $5 million contribution for repairs to the Old Northern Avenue Bridge. A smaller amount of funding to meet the standards required for open space on Commonwealth tidelands will be provided by the project proponent if the City of Boston accepts the $5 million for improvements to the Old Northern Avenue Bridge.

TBHA.21 cont'd

Thank you for your consideration. We look forward to continuing to work together with the project proponent as he finalizes plans for Seaport Square.

Sincerely,

Vivien Li
Executive Director
The Boston Harbor Association

9.5.2 The Boston Harbor Association

TBHA.1 Analyze wind and shadow impacts.

Please see Sections 4.1 and 4.2 for the wind and shadow analyses.

TBHA.2 Alternative massing schemes that re-distribute the height and eliminate the canyon-like effect should be analyzed.

In response to feedback, massing of the residential tower has been shifted away from the Northern Avenue side to the Seaport Boulevard side of the Project to avoid a "canyon effect." Please see Sections 1.5 and 1.8 for additional information.

TBHA.3 Incorporate additional steps to become a transit-oriented development.

The redevelopment of this site into an attractive mixed-use development will help create a thriving urban community in the South Boston area. With 2,500 residential units located in the middle of a commercial employment core, the site is ideal for promoting walking between home and work. As a mixed-use development in close proximity to the MBTA's Red and Silver Lines, the Project embodies the major tenets of transit-oriented development (TOD), and includes the construction of a new MBTA headhouse in Seaport Square Green. In addition to being located within a quarter-mile of public transit, Seaport Square has planned for and designed a compact, walkable development incorporating approximately 100 retail stores, housing, hotels, offices, educational facilities, a library, a performing arts center and other recreational opportunities for pedestrians. The Proponent also anticipates continuing with the bike share program which it has successfully operated at the site for the past three years. A large car share program available to neighborhood residents and visitors will also operate from the Project's underground parking garage. Please see Section 1.4.

TBHA.4 New MBTA headhouse.

The Proponent plans not only on incorporating the existing 'temporary' MBTA headhouses into the development of the new buildings, but also on building a new separate headhouse into the open space at Seaport Square Green. Please see Figure 1-24.

TBHA.5 Bicycle facilities and amenities.

Please see Response to Comment PRD.6, above.

TBHA.6 **Water transportation.**

Water transportation routes and services are described in Section 3.2.7.2.

TBHA.7 **Traffic analysis should assume full build-out of all other projects in the immediate area.**

The analysis does so, as explained in Section 3.3.1: Mid-term No-Build Conditions, and Section 3.3.4: South Boston Waterfront Long-term Conditions.

TBHA.8 **Existing roadway system.**

Descriptions of Seaport Boulevard, Northern Avenue and Congress Street are included in Section 3.2.1. Trucks serving facilities located in the Designated Port Area, including the Boston Marine Industrial Park, use the designated routes shown in Figure 3-20. The proposed Seaport Square Project will not alter these truck routes.

TBHA.9 **Truck routes.**

Trucks serving facilities located in the Designated Port Area, including the Boston Marine Industrial Park, use the designated routes shown in Figure 3-20. The proposed Seaport Square Project will not alter these truck routes.

TBHA.10 **Include a more thorough analysis of existing and future transit options.**

This detailed analysis is found in Section 3.3.1.11 for Mid-term No-Build Conditions, Section 3.3.2.11 for Seaport Square Build Conditions, and Section 3.3.4.6 for South Boston Waterfront Long-term Conditions.

TBHA.11 **Include more information on the new Harbor Street Bridge.**

The intent behind the design of Harbor Street is to provide a connection between the elevated Summer Street and the lower South Boston waterfront, mainly Seaport Boulevard, Boston Wharf Road and East Service Road. Its function is envisioned as mainly local yet also has a significant role in the larger context of the whole Seaport District and South Boston. It ends and provides access in or out of Autumn Lane as a measure to discourage more rapidly traveling through-traffic from using the connection. The slope allows for loading and parking access to take place at the ground level beneath Harbor Street, improving pedestrian connections on Harbor Street itself. It is understood that Harbor Street will need to undergo extensive design review with BTD and BPWD. This street will be privately funded. It is anticipated that it will be permitted and funded in conjunction with Phase 5-6 development. Harbor Street will also play an important role in allowing pedestrian movement between Summer Street and the Boston Convention and Exhibition

Center to Seaport Boulevard, the ICA and the waterfront. It forms the main spine of the 'Cultural Corridor' (see Section 5.3.4). The part of Harbor Street which acts as a bridge over Congress Street will be designed to give a sense of a continued streetscape, as much as possible, so that Harbor Street would be experienced as one continuous street.

TBHA.12 Coordination of new and existing open spaces with nearby businesses.

The Proponent will work with adjacent property owners and businesses to activate and maximize the public use of all open space areas. In addition, the Project intends to coordinate open space activation efforts with the already existing artist community as well as the adjacent Children's Museum.

TBHA.13 Open space offsets.

Phase 1 Waiver offsets will be provided concurrently with development impacts, as required by both the South Boston Municipal Harbor Plan as well as the Chapter 91 regulations. Please refer to Section 4.8 for additional information.

TBHA.14 Safe pedestrian connections to the Harborwalk between the Evelyn Moakley Bridge and the Courthouse.

The Proponent will work closely with City planning and transportation officials to create safe pedestrian connections to the Harborwalk between the Evelyn Moakley Bridge and the Federal Courthouse. In addition, the Proponent will ensure that deliveries and operations for the Barking Crab Restaurant and Neptune Marine are not interrupted during construction nor after completion.

TBHA.15 Ways to avoid queuing of vehicles entering parking facility.

As noted in the comment, the 28 spaces proposed for Block A (revised from 31 spaces in the PNF/ENF) will not generate enough activity to cause any queuing either inside of the garage or on-street. All Seaport Square off-street parking facilities will be designed with sufficient entry and exit capacity to avoid queuing of entering vehicles on the street or exiting vehicles within the garages.

TBHA.16 Harborwalk as part of Block A.

The Project will create a new pedestrian connection along the City-owned Old Sleeper Street to link existing sections of the Harborwalk from the Children's Museum to the Federal Courthouse.

TBHA.17 **New segment from the Evelyn Moakley Bridge Harborwalk to the proposed public walkway along the alignment of Old Sleeper Street.**

The Proponent is willing to consider reconstruction of this segment of the Harborwalk as part of the Chapter 91 licensing process.

TBHA.18 **Agreement regarding Old Sleeper Street.**

The Proponent anticipates an agreement among the City and all abutters regarding the future use, maintenance, and operation of Old Sleeper Street.

TBHA.19 **Project not to impede the operations of the Neptune Marine services and/or Barking Crab Restaurant.**

The Proponent will ensure that deliveries and operations for the Barking Crab Restaurant and Neptune Marine are not interrupted during construction nor after completion.

TBHA.20 **Open space standard for Commonwealth Tidelands.**

Parcel E will meet the open space standard for Commonwealth tidelands. Further details will be worked out during Chapter 91 licensing.

TBHA.21 **If a waiver request is granted, we ask that the following be incorporated: reduction in Block A, ADA Accessible Harborwalk segment, a Visitor Information Kiosk, public restrooms and funds for open space.**

The number of underground parking spaces and residential units have decreased on Phase 1 Waiver Block A. In addition, a visitor's center will be located on the ground floor of Block A. The portion of Block H within Chapter 91 jurisdiction is now open space as the building will be outside of jurisdictional tidelands. Additional Project commitments will be further detailed during the Chapter 91 licensing process.

July 31, 2008

Kristen Kara

Boston Redevelopment Authority

City Hall

Boston, MA 02210

Seaport Square Comments
Dear Ms. Kara:

I am writing in response to the request for comments on the proposed Seaport Square development in South Boston. I support the developer's request to move forward with review of Parcels A, H, and J while the Article 80 process continues for the other much larger parcels. It is important to continue to involve neighborhood residents in the review of Parcels A, H, and J. In particular, I am concerned about the location and type of affordable housing to be created under the City's Inclusionary Zoning requirements and about the design of the buildings on Parcels A and H.

Affordable Housing:

South Boston residents continue to be displaced because of increased rents and condominium conversions. As a neighborhood resident, as well as Executive Director of South Boston Neighborhood Development Corporation, I see the need for affordable housing in our community every day. Those most in need of housing in the community are families, the elderly, and veterans with incomes below 80% of median income . Creation of condominiums in the Seaport Square area will not address the housing needs of the people we serve because they cannot afford to buy even the affordable units, and they generally prefer to live closer to their families and supportive services such as health care providers and supermarkets. South Boston NDC has been trying to acquire multi-family rental properties in South Boston to preserve affordable rental housing in our neighborhood. As a non-profit, we have found it difficult to compete with private developers . In lieu of on-site affordable units, I encourage the developer to seek off-site locations, closer to the existing residential South Boston neighborhood. NDC.1

I also encourage the BRA and the developer to assess the affordable housing needs for the Fort Point Channel area to determine if the need is greater for rental or homeownership. Given the proximity of these buildings to the Fort Point residential area and the dramatic impact the larger Seaport Square development will have on this part of the neighborhood, priority should be given to developing these sites in a manner that is sensitive to the needs of the existing residents. NDC.2

Design:

The proposed designs for Parcels A and H need more review. While the height and massing seem to work with the existing buildings in the neighborhood, the brick buildings in Fort Point and the Moakley Courthouse, the glass exteriors do not. Also, the curve at the corner of the building proposed for Parcel H is not in keeping with the corners of other nearby buildings. I am also concerned that the developer has not included parking in the plans for Parcel H. As discussed at the last meeting at the Condon School, abutters have concerns about the setbacks from existing residences.

Overall, the plan for Seaport Square is an impressive, high quality urban design concept. The amount of planned open space and its location and design will greatly enhance this new neighborhood in South Boston. The development team has obviously invested significant time and resources to work with the neighborhood to create this plan. Allowing Parcels A, H, and J to move forward as quickly as possible, as long as the community continues to have input into the design of the buildings, is important to the successful and timely completion of the entire Seaport Square plan. I strongly support moving forward on these parcels.

Thank you for your consideration. I look forward to participating in the review process as a member of the IAG.

Sincerely

Donna Brown

Executive Director

South Boston Neighborhood Development

365 West Broadway

South Boston, MA 02127

9.5.3 South Boston Neighborhood Development Corporation

NDC.1 Evaluate offsite locations for affordable housing closer to the existing residential neighborhood.

The Proponent will work with the BRA and City officials to explore opportunities for off-site affordable housing in existing South Boston neighborhoods.

NDC.2 Affordable housing needs.

The Proponent agrees to work with the BRA to assess and understand the affordable housing needs of the Fort Point Channel area.

GREATER BOSTON CHAMBER

265 FRANKLIN STREET, BOSTON, MA 02110-3113

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Greater Boston Chamber
The Hub of Business

July 30, 2008

Mr. John Palmieri, Director
Boston Redevelopment Authority
Once City Hall Square
Boston, MA 02201

In re: Seaport Square Development Project

Dear Director Palmieri:

On behalf of the Greater Boston Chamber of Commerce, I am writing to provide comment on the ongoing effort to enhance the City of Boston's important seaport district.

The city's long-term economic success relies on the continued growth and advancement of its neighborhoods and waterfront districts. The South Boston Waterfront has become an important economic engine that has ushered in significant new commercial development, attracted major corporations and employers, and provided affordable and market rate housing.

Anchor tenants like the Boston Convention and Exhibition Center, the Institute of Contemporary Art, the Moakley Federal Courthouse, John Hancock and several leading employers, have flourished as a result of the current build-out of the waterfront. Their presence has sent a strong signal that the future of Boston's economic growth lies just across the channel. Once completed, Seaport Square will also become an important anchor in this vital growth district.

And with the opening of the Turnpike Turnaround Ramp at the Allston Toll Plaza last year, accessing the seaport district is now more convenient than ever. The turnaround ramp, a concept which the Chamber proposed as part of its 2003 transportation improvement study, "Total Access to the BCEC", allows convention attendees staying at Back Bay hotels to reach South Boston quickly by utilizing a seamless directional switch at the turnaround ramp, rather than a time-consuming trek through clogged city streets.

That is why projects like Fan Pier, Waterside Place, Seaport Square and others in the waterfront pipeline are essential to enhancing existing services and the city's reputation as a world-class destination. The Chamber fully supports development projects that enhance the ability to grow the economy, create jobs, and retain a talented workforce. Therefore, we look forward to working with you to achieve these goals.

GBC.1

Sincerely,

Paul Guzzi

Paul Guzzi
President & CEO

9.5.4 Greater Boston Chamber

GBC.1 Supports project.

Comment noted.

July 31, 2008

Kristin Kara
Boston Redevelopment Authority
One City Hall Square, 9th Fl
Boston, MA 02201

Kristin.Kara.BRA@cityofboston.gov

Dear Ms. Kara:

The **South Boston Seaport Transportation Management Association** (Seaport TMA), a non-profit association of 28 employers, businesses and developers in the South Boston Waterfront dedicated to reducing traffic congestion, easing commutes and promoting alternative transportation, is pleased to submit our comments regarding the **Seaport Square Project** being developed by Gale International.

Gale International joined the Seaport TMA in March 2007 and remains an active organizational member. The developer's commitment to transportation demand management (TDM) aspects related to Seaport Square is evidenced by their membership in the Seaport TMA and they have, on several occasions, participated in our membership meetings and events in order to directly dialogue with the business community that already exists in the South Boston Waterfront.

The Seaport TMA supports the proposed mixed uses of Seaport Square which will help to activate the South Boston's Waterfront and will complement other projects in the area. We strongly support the Project Proponent's plans, bearing in mind that they will remain committed to the following TDM measures:

TMA Participation: The Proponent is currently a member of the Seaport Transportation Management Association (TMA) and will remain active in the Seaport TMA, which is the only TMA that serves the South Boston Waterfront, throughout the duration of the project.

Car-Sharing Service: The Proponent is considering providing spaces in one or more of its garages for car-sharing services. The Seaport TMA applauds the Proponents efforts to work with a car-sharing company but recommends the Proponent consider "clustering" car-sharing vehicles in more than one of the garages in order to make the more vehicles easily accessible to a greater amount of both residents and employees in the area.

SOUTH BOSTON SEAPORT TMA
TRANSPORTATION MANAGEMENT ASSOCIATION

Car Pool/Van Pool Parking: The Proponent is considering providing preferential parking spaces. Providing preferential parking that is easily accessible to all tenants is a critical component to encourage ridesharing. The Seaport TMA strongly urges the proponent to not only ensure that preferential parking exists, but to also consider spreading out these spaces over multiple garages. The Seaport TMA is willing to work with the Proponent to determine the demand for such spaces in each parking facility. TMA.1

Transit Passes: The Proponent is considering participating in a transit pass program for tenants' employees and residents through the TMA and will encourage commercial tenants to subsidize transit passes for their employees.

Orientation Packets: The Proponent will provide orientation packets to new residents containing information on the available transportation choices, including transit routes and schedules.

Transportation Coordinator: The Proponent will designate a transportation coordinator to manage loading and service activities and to provide alternative transportation materials to residents. This person will also work directly with the Seaport TMA staff to promote transportation alternatives.

Bicycle Amenities: The Proponent will provide bicycle racks in secure, sheltered areas for residents and tenants' employees. Additional bicycle parking will be provided on the sidewalks within the Project proximate to main building entrances. The Seaport TMA recommends that the Proponent remain open to increasing bicycle parking on an as-needed basis as bicycle commuting will continue to be a mode of alternative transportation that increases over the years. TMA.2

The Seaport TMA recognizes that many of the TDM measures above, as well as other efforts, will be outlined in detail in the Transportation Access Plan Agreement that the Proponent will have to commit to and we look forward to providing our support to see that those measures are met accordingly.

Sincerely,

Lauren Grymek

Lauren Grymek
Executive Director

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9.5.5 Seaport Transportation Management Association

TMA.1 Ensure preferential parking in multiple garages.

Parking management is discussed in Section 3.3.3.6. Preferential carpool and vanpool parking will be provided in all non-residential garages. Gale is currently a member of Seaport TMA.

TMA.2 Remain open to increasing bicycle parking on an as-needed basis.

The Proponent is open to increasing bicycle parking on an as needed basis as the number of residents and guests using bicycle transportation grows in future years.

July 29, 2008 DRAFT

Secretary Ian Bowles
Executive Office of Environmental Affairs, MEPA Office
100 Cambridge Street, Suite 900
Boston, MA 02114

RE: Comments on Environmental Notification Form/Project Notification Form/Phase 1 Waiver Request
Seaport Square
Boston, MA

EOEA # 14255

Dear Mr. Bowles:

WalkBoston has reviewed the Environmental Notification Form/Project Notification Form for Seaport Square in Boston, MA. The project comprises 23 acres, divided into 20 city blocks, with 6.5 million sq ft in 19 buildings, 6 acres of open space (25% of the project area,) 2 schools (K-12 for 1800 students, and a pre-K - 1 privately-funded, public pilot school for 200 students), a library, 2500 units of housing, 1.4 million sq ft of office/research, 700 rooms in 3 hotels, a grocery store, possibly a skating rink and outdoor sculptures.

The proposal will have very significant impacts on future pedestrian activity in the seaport area of South Boston, and is projected to generate 32,650 daily walk trips and 42,251 daily transit trips that require a walk trip to or from the site. Combining walk and transit trips, the Project will generate 74,901 daily pedestrian trips. This averages approximately 110 pedestrian trips per minute during the morning and afternoon peak hours distributed over all the sidewalks and crosswalks provided in the Seaport Square area. By our calculation the project will result in almost two miles of new sidewalks along streets and around open spaces.

We are pleased that the project proponent has made so many substantial efforts to create an attractive, lively and integrated pedestrian environment. We are particularly pleased that the proponent will contribute $5 million in infrastructure improvements for the Old Northern Avenue Bridge, where WalkBoston has long sought permanent improvements. In general, we think the proponent is open to constructing a vibrant pedestrian network on the site to help draw neighbors together.

Serving pedestrians in this project
With so many anticipated daily walking trips, the proponent will need to be cognizant of detailed pedestrian needs throughout the development. The pedestrian aspects of the site will play an extremely important role in the way it meshes with its surroundings and the ways pedestrian access might help alleviate traffic congestion. In particular the proposal has provided for

continuity of pedestrian routes throughout the project and routes have been designed to connect the components of the project to each other. In addition, it will be essential to provide pedestrian connections to the adjacent neighborhoods and nearby large developments, and provide routes for walkers to all public facilities, including schools, libraries, and the convention center.

We request that the proponent use design standards for sidewalks that provide a minimum of 12' wide for busy sidewalks, and 8' in all other areas. These widths should be clear and continuous in all affected blocks. Street trees, lighting fixtures and other street furniture should not intrude on these minimum clear and continuous widths. Smooth, easily snow-shoveled sidewalk paving should be used (WalkBoston has established draft guidelines that may be of use to the proponent.) WB.1

We have couched most of our comments as questions to be addressed in the next phase of project planning and environmental review submissions. Our questions focus on:

- Sidewalk width
- Pedestrian safety at intersections
- Character of streets/sidewalks that is differentiated based on use and volumes

Two of our concerns are not covered in this analysis, but are related to many pedestrian issues:

1. The project calls for a vast quantity of retail uses at ground level adjacent to the sidewalks where it should add considerably to a lively and interesting walk. We are concerned that much of the retail space may not be in use until the project reaches full buildout, leaving vacant space and empty sidewalks that are relatively unsafe for pedestrians walking alone. Ultimately, the retail market may fill the space; in the meantime (perhaps over many years) pedestrians may not have either a lively or safe environment in which to walk. WB.2
2. The intersection of B Street and Congress Street is not a friendly pedestrian environment. The addition of the Autumn Lane pedestrian way into this intersection seem intended to help change that character, but we are concerned whether this will be effective. We are worried about high traffic volumes and the need to address issues of overhead signage and lighting that creates a busy highway character where drivers to not expect to encounter pedestrians. WB.3

Each of the proposed pedestrian corridors in this project have been classified somewhat differently, based on a street typology that is a general guide to function and potential design. It is not yet known what pedestrian traffic volumes and issues may arise. The differences between thoroughfare types led to the following analysis.

Pedestrian Corridors: Seaport Boulevard

The proponents envision Seaport Boulevard as a major east-west promenade through the Seaport Square development. The boulevard is considered a retail promenade, with pedestrians, bicycle, vehicular, and truck circulation and a 20' wide planted median. It has two traffic lanes in both directions plus left-turn lanes. Service vehicles will be directed to below-grade service areas, with principal access from streets other than Seaport Boulevard. It appears that no vehicle access points are located directly on the boulevard.

- A sidewalk with a double-row of trees is planned for the sunny, north side of Seaport Boulevard, with a total width of 28' with the rows of trees occupying perhaps 16' of that width, leaving a 12' wide continuous strip of sidewalk. Is this adequate for the proposed retail and office facilities fronting the Boulevard? WB.4
- The shady south sidewalk on the Boulevard has a single row of trees and appears to be a total of 14' wide, with space reserved for a tree/light/street furniture strip of what appears to be 8', and a sidewalk width of 6' (from Figure 2.3-28). WalkBoston recommends a minimum of 8' and preferably 12' for the continuously clear walking surface on all major streets such as the boulevard, particularly if the abutting uses are predominantly retail and office uses. WB.5
- The "Children's District'' proposed to extend along south side of the boulevard is an interesting idea. Will this sidewalk reflect that concept with changes in width? WB.6

Pedestrian Corridors: Congress and Summer Streets
The connector street pattern (Congress Street, Summer Street) calls for a layout similar to the boulevard, but has no bicycle lanes. Pedestrians are accommodated on 18' or 19' sidewalks, which, with 8' of width for the trees and lights, leaves a 10' width of continuous sidewalk - adequate depending on the future uses which might attract pedestrians.

The future of Congress Street as a pedestrian facility is unclear from this plan. It is projected to carry fairly heavy traffic and is does not appear to be a focus of retail activity. In addition, Congress Street will pass under the new Harbor Street Bridge. Congress Street is also a direct route between this project, the World Trade Center subway station on the Silver Line, and the proposed Waterside Place shopping mall. The walking route requires an at-grade intersection with B Street, which appears to have high traffic volumes because of its location at the entrance and exit ramps to the westbound interstate highway.

- What can be done to make Congress Street into a relatively desirable location for walking? How can Congress Street under the Harbor Street overpass become a pleasant place for walking? WB.7
- Will the B Street/Congress Street intersection be an attractive and safe place for pedestrians? WB.8
- Will there be a stairway or other connection between Congress Street and Harbor Street? How can it be designed to make it attractive to pedestrians? WB.9

- Is there a pedestrian link between the off-site Congress Street hotel and the Harbor Street elevation at Summer Street? Is such a link feasible working with the hotel proponent? WB.10

Pedestrian Corridors: Northern Avenue
Northern Avenue is envisioned to be a local street - not a major vehicular thoroughfare. The street could become a very interesting, relatively quiet and rewarding pedestrian corridor. On one end of the corridor is the Fort Point Channel with the landmark pedestrian-only Northern Avenue Bridge and the dramatic downtown skyline. At the other end is the monumental frontage of Commonwealth Pier, with dozens of flags and with shuttle boats arriving during warm seasons. In between is the Moakley Federal Courthouse, connections with the Boston Harborwalk, the open space of Fan Pier's Public Green with views of Boston Harbor and the open space of Seaport Square on the other side of the street. It is convenient to a cluster of hotels and the ICA is one block from the corridor.

Northern Avenue is planned to have two traffic lanes - one in each direction - with parking on both sides of the street. (See Fig. 2.3-27) Sidewalk widths are planned to be 20' wide on one side and 16' wide on the other.

- The proponents of the Fan Pier project envision Northern Avenue as a major east-west promenade through their development from Old Sleeper Street to East Service Road; will this be reflected in Seaport Square development? WB.11
- How will Seaport Square's plan for Northern Avenue relate to the Pier 4 proposals? WB.12
- The old Northern Avenue Bridge, now a pedestrian facility, has been mentioned as a vehicular route for emergency evacuations. WalkBoston is very much against having a pedestrian facility assume vehicular demands, and we hope that the question of opening the bridge to vehicles can be laid to rest during the consideration of this project. WB.13

Pedestrian Corridors: Harbor Street
Harbor Street is the principal north-south street to be constructed by the proponent. It will become a Hill-to-Harbor Walk, extending from Summer Street to Seaport Boulevard. Our analysis examined three distinct sections of Harbor Street:

1. A route from Summer Street through the Seaport Hill area with its park and residential uses down the hill to Autumn Street.
   - Will Harbor Street (which connects to both East Service Road and Boston Wharf Road) attract traffic because it provides a new two-way connection between Summer Street and the Boulevard? Is it possible it will become an alternative to D Street, the only other area street that serves this movement? What kind of traffic volumes are projected for this movement between Summer and Seaport? WB.14
   - Will traffic signals or special protections be implemented at locations where the pedestrian path through the Square and down the hill crosses Harbor Street's vehicular lanes? WB.15

- What provision has been made to assure pedestrian protection at the new Harbor Street/Summer Street intersection? WB.16
- Can this section of Harbor Street be designed in a way similar to Seaport Boulevard or Autumn Way between East Service Road and Boston Wharf Road - where one side of the street has a wider sidewalk than the other - to ensure a concentration of pedestrian traffic on a relatively safe alignment? WB.17

2. A pedestrian way serving the proposed Entertainment District between Autumn Street and Seaport Boulevard. A sample cross-section of a pedestrian way is shown in Figure 2.3-33, indicating a typical width of 70', with trees and street furniture in the center of the street. This seems adequate and ample for the intended uses.
3. Across Seaport Boulevard, the street serves 1 block of office structures up to the harbor and the ICA. It is proposed to have two 12' sidewalks containing street furniture, lighting and trees.
   - Will sidewalk widths be sufficient to serve pedestrians along this part of the route? Is it possible that the clear and continuous sidewalk width will be 6' or less? WB.18

Pedestrian Corridors: Boston Wharf Road, East Service Road and B Street
Bracketing Harbor Street and parallel to it, Boston Wharf Road, East Service Road and B Street provide major connections to the nearby interstate highways.

Boston Wharf Road connects between Seaport Boulevard and the expressways, providing eastbound access to the Williams Tunnel. The street is two-way for its entire length through this area, with two lanes of moving traffic and one for parking. Sidewalks are proposed to be 12' wide, and include space for trees, signage and lighting. The street may ultimately need to be one-way southbound, depending on traffic volumes.

East Service Road is a two-lane road with parking with direct ramps from the eastbound highways. It will operate one-way northbound. The east sidewalk is seven feet wide, and that on the west side is 11 feet wide. Short pedestrian connections are proposed to connect Seaport Hill Park and Harbor Street to both E. Service Road and Boston Wharf Road.

B Street, also two-way, serves major access to and from the highways westbound. B Street has two lanes in each direction, left-turn lanes and a median, and 12' wide sidewalks containing signage, lights and trees.

- Does projected vehicular traffic differ significantly on Boston Wharf Road, East Service Road and B Street? WB.19
- What do differences in anticipated traffic volume mean for pedestrians using abutting sidewalks? Are they affected differently on the three roads? WB.20

- Is Boston Wharf Road (as compared with East Service Road) anticipated to be a low-volume route, despite its connection to the expressways? At what point would it be likely to become a one-way street? WB.21
- Why is there no direct connection via Boston Wharf Road between Seaport Boulevard and Northern Avenue to serve Fan Pier and Courthouse traffic? Will that traffic be diverted to Sleeper, Fan Pier Boulevard, Pier Street and East Service Road? Will traffic diverted to these streets require traffic signals at each intersection? WB.22
- Will proposed sidewalk widths be sufficient to serve pedestrians with a clear and continuous sidewalk width of 6' or less along Boston Wharf Road, East Service Road, and B Street? WB.23

Pedestrian Corridors: Autumn Lane
Autumn Lane between Boston Wharf Road and East Service Road marks a division between the vehicular portion of Harbor Street and the pedestrian way through the entertainment district. As an east-west road, Autumn Lane is planned to have sidewalks of 20' width on the north side and 12' on the south side. Both sidewalks include street furniture, and only the north side has trees.

In contrast with this section, a wide linear pedestrian area is planned for a continuation of Autumn Lane in the block between East Service Road and B Street.

- Is this pedestrian way a continuation of the Entertainment Zone? Is it intended to direct foot traffic through the Congress Street/B Street intersection? WB.24
- Will there be a convergence of foot traffic routes in this block? Where will the foot traffic be coming from - the Silver Line World Trade Center Station? The Congress Street hotel on the opposite side of Congress Street? WB.25
- Are there specific pedestrian connections (bridges, other walking routes) that are possible to connect this project with the Congress Street Hotel, either through Autumn Lane or Harbor Street? (A faint bridge, with shadow, between this hotel and Seaport Hill shows on one of the projected development illustrations early in the document.) WB.26

Pedestrian Corridors: Farnsworth Street
A pedestrian way is planned for Farnsworth Street in the block between Seaport Boulevard and Northern Avenue. The passageway should be a useful pedestrian connection between the Silver Line transit station and the Courthouse. It should also be an attractive location for retail uses that complement adjacent office uses.

- Is this pedestrian way similar in cross-section to the Harbor Street Entertainment District walk? Will it contain similar retail facilities? WB.27
- How will the Farnsworth pedestrian way design be coordinated with its extension, Courthouse Way, through the Fan Pier WB.28

project? Is it intended to be an access way to the harborfront park? WB.28 cont'd

- Will the headhouse for the MBTA Silver Line service be retained in this location? WB.29

Pedestrian Corridors to Public Facilities
The proponent deserves praise for including a library, schools and a performing arts center in the project. Their locations and access points will directly affect pedestrian activity, including that of school children.

Boston Public Library. It is useful to think of the library as a resource for the entire residential area of the Fort Point Channel District, Fan Pier and Seaport Square. Only one public library can realistically be constructed here, and it ought to be centrally located. In addition, the library should probably be close to the proposed schools. The presently proposed Northern Avenue location requires a walk between schools, residences and the library through the Seaport Square entertainment district. From a pedestrian point of view, the library might be better located nearer the heart of the residential areas.

- Can an alternative site for the library be analyzed - perhaps near the intersection of Boston Wharf Road and Autumn Street? WB.30
- What are the criteria used to examine easy walking distances from all residential areas in the S. Boston waterfront to the library? WB.31
- Can the library be designed for easy access by students in proposed schools in Seaport Square at Summer Street? WB.32

Seaport Hill Playground. The proposed playground at Seaport Hill is a very worthwhile addition to the residential areas. It is close to the proposed schools near Summer Street and thus useful for associated outdoor recreation. It is within a close walking distance of the residential areas south of Seaport Boulevard.

- As the playground is expected to become a public facility, what pedestrian routes will residents from outside Seaport Square use for access? These street crossings should safely accommodate school children. WB.33

Schools and Performing Arts Center. The proposed schools and the performing arts center are located at the Summer Street end of Harbor Street.

- Are there specific pedestrian improvements that are necessary to serve the schools and the arts center? In particular, street crossings should safely accommodate school children. WB.34
- How are these facilities related to open space and the public library? WB.35

New Seaport Square. Most of the project's principal streets - Seaport Boulevard, Harbor Street, Northern Avenue and Boston Wharf Road - connect directly to the new open space adjacent to the harbor provided by this project and by the Fan Pier project. The green areas are also the focus of the entertainment district

and several hotels planned for this project as well as adjacent projects.

- How will pedestrian safety be assured at street crossings connecting to the park? WB.36
- Why is the square surrounded by streets? Is there a possibility for buildings and sidewalks to directly abut the square without intervening streets? WB.37

Boston Convention & Exhibition Center (BCEC). The new convention center is nearby, and will be served by many of the facilities, particularly hotels and related tourist attractions that may be planned within the project.

- A major new pedestrian crossing on Summer Street at the end of the proposed Harbor Street should be considered. WB.38
- Will the new cultural facilities and schools at this location affect the design of a street crossing? WB.39

Potential vehicular/pedestrian conflict areas
Notable efforts have been made to group the large underground parking/loading facilities required to serve the project. This will have the effect of reducing the number of access points into the parking garages and truck loading spaces, while increasing the volume of traffic at those access points. Very careful design of the areas where access ramps are located will be needed to insure pedestrian safety and convenience.

On Seaport Boulevard there are several potential conflict areas. The intersections with B Street and East Service Road seem likely to carry significant traffic volumes, making these intersections potential issues for pedestrian crossings.

- Will this traffic in effect drive the intensity of land uses at these intersections by creating a high value market (100% corners?), causing additional pedestrian crossing demand at the intersections? WB.40

The intersections where Boston Wharf Road and Harbor Street meet Seaport Boulevard appear destined to be somewhat less complex, with simplified intersections.

- Will this intersection also become a prized location within the entertainment zone? Will it have less vehicular traffic and be somewhat easier for pedestrians to use? WB.41

Pedestrian/Subway Connections
The proponent calls for retaining the existing subway access at the corner of Thompson Place on the south side of Seaport Boulevard. (See Fig. 2.3-17) However, the same illustration shows a new subway station on the north side of Seaport Boulevard at the corner of Boston Wharf Road in a corner of the proposed green space of Seaport Square.

- Will the existing headhouse of the Silver Line on the north side of the boulevard near Farnsworth Street be retained? WB.42

Request for a Phase I Waiver

The proponent has requested a Phase I Waiver to allow plans for Blocks A, H and J to proceed.

Plans for Blocks H and J. The plans for Blocks H and J seem sensible and proceeding with them with new structures and a relocation of Our Lady of Good Voyage Chapel appears to be a good idea. The sidewalks in front of both of these structures should be of sufficient width to encourage walking between the MBTA Courthouse Station and the Children's Museum and promote uses that capitalize on the nearby museum. Signage for pedestrians using this access route from transit to the museum would be appropriate on street level and in the transit station.

Plans for Block A. The building design for Block A is predicated on the retention of the Barking Crab restaurant occupying a parcel that the developer does not own at the water's edge. Building A is located on a site separated from the restaurant by Old Sleeper Street, which is now used for parking and restaurant-related uses. Assuming the parcel's Chapter 91 obligatins are addressed and met and the concerns noted below are addressed, we believe a Phase I Waiver is reasonable. There are several issues for Block A:

- Harborwalk – the route for the Harborwalk at Block A will fill a missing link between the existing portions of the Harborwalk in front of the Children's Museum Park and the Moakley Courthouse. The Harborwalk is to be directed into two right angle turns after it passes under the Moakley Bridge and up a ramp or stairs to the plaza to be constructed in the bed of Old Sleeper Street. It will then pass between the Barking Crab and Building A to Northern Avenue which it will cross at grade. This should not be an insurmountable design issue, but current plans do not show the stairs/ramp configuration in sufficient detail for careful analysis. (See ramp elevations from Harborwalk up Old Sleeper Street in Figs. 2.7-3, 2.7-4 and 2.7-5 which appear to be in conflict). This steep grade is a challenge for a wheelchair-friendly ramp. WB.43
- Old Sleeper Street plaza – the plan for the plaza includes a wide walkway with space for outdoor tables at Building A facing the Barking Crab. It also will serve as the route for manual garbage removal from the Barking Crab to a storage/pick-up facility within Building A on its New Sleeper Street frontage. Dragging garbage across the Harborwalk will not be an attractive feature for walkers. Care should be taken to plan for moving garbage that leaves no traces or odors on the plaza/Harborwalk itself. Garbage storage should be well removed from the plaza/Harborwalk side of Building A. WB.44
- Relationship to the Barking Crab - the existence of the Barking Crab restaurant poses major challenges for the development. Building A is planned to be a luxury apartment/retail facility facing the Old Sleeper Street plaza and it is probable that this charming but decrepit building may lead to marketing difficulties for Building A. Moreover, retaining the Barking Crab results in a redirection of the Harborwalk. For the full length of the Fort Point Channel, the Harborwalk is directly adjacent to the harbor. This will be the first and only segment of the entire channelfront where the Harborwalk will not be directly adjacent to the water. WB.45
- Servicing the Barking Crab – vehicular deliveries and service access for the Barking Crab should not be allowed on the pedestrian-only Old Sleeper Street plaza. All vehicles servicing the restaurant should be required to remain on Northern Avenue WB.46

and away from the pedestrian crossings associated with the Harborwalk. Removable bollards have been suggested to allow for emergency vehicles, but these should not be used by service vehicles.

- Northern Avenue crossing – the Harborwalk crosses Northern Avenue in a location that may, curiously, result in being somewhat dangerous. The City has proposed opening one of the lanes of the Northern Avenue Bridge to vehicular traffic. This traffic will cross the Harborwalk at an awkward location and potentially on an awkward alignment caused by property lines abutting the street. If this use of the Northern Avenue Bridge is to be accommodated, it should be for emergency use only. To do otherwise would compromise public safety and put pedestrians in particular at great risk. One method of accommodating both emergency vehicles and pedestrians at this location might be the construction of a raised intersection – a solution that has been successful in many cities around the country. WB.47
- Northern Avenue frontage - the Northern Avenue side of the building is designed to accommodate motor vehicles with a consolidated entrance and exit ramp to the underground parking. In addition, it will have a turnaround loop for loading and unloading at the door to the residential facilities. This loop impinges on the plaza in Old Sleeper Street, because it requires vehicles using the turnaround loop to pass through what should be a pedestrian-only area. The building has an overhanging upper floor for weather protection and, overall, extends very close to Northern Avenue WB.48

Thank you for the opportunity to comment on this proposal. Please feel free to contact us if there are questions.

Sincerely,

Wendy Landman
Executive Director

Robert Sloane
Senior Planner

9.5.6 WalkBoston

WB.1 Sidewalk guidelines.

Please see Figures 1-33 through 1-37. Present plans are to design sidewalks by the standards suggested, including clear and continuous proper sidewalk widths, and smooth, easily snow-shoveled paving.

WB.2 Pedestrian environment before full build-out.

Please see Section 1.9, Project Phasing, and Figures 1-40 to 1-42, Circulation Diagrams by phase.

As described in Section 2.10 of the PNF/ENF submitted June 2, 2008, the Proponent originally contemplated beginning construction of Phase 1, followed by the construction of the remainder of the Project in one continuous sequence.

Since last year, and before creating a Project phasing schedule beyond Phase 1, the Proponent collaborated with the BRA to design a new plan for the program and development schedule of individual Blocks to ensure not only a cohesive build-out for each phase, and an appropriate delivery of public benefits, but also a mixed-use program that is consistent with the goal of a vibrant urban neighborhood where the first of the two significant open spaces and residential buildings will be built first. This phase 2 includes Blocks B, C, D, F and G and revises the original plan from dominant office (three blocks) with street-level retail, hotel and open space to dominant residential use (two blocks) retaining the street-level retail, hotel, and open space. This should alleviate the concerns about the pedestrian environment before full build-out.

WB.3 Intersection of B Street and Congress Street.

The pedestrian connection between Blocks M1 and M2 is intended to allow a pedestrian connection between Autumn Lane and the intersection of B Street and Congress Street. Previous options continued Autumn Lane straight to meet the existing building on B Street which resulted in a random ending to Autumn Lane in front of the parking entrance to the B Street building. The current option of curving the pedestrian passage towards Congress and B streets works better for pedestrian flow across the larger pedestrian network, by collecting and distributing sidewalk movement along Congress Street eastwards. It also offers to break up the corner of the M Block as it meets Congress Street and B Street, and substitutes what could have been a back side of a large building with an open space for pedestrian movement and visual relief.

WB.4 **Sidewalk width along north side of Seaport Boulevard.**

The north side sidewalk of Seaport Boulevard at its most narrow point is a 12-foot wide clear sidewalk, which is adequate for expected pedestrian volumes. Most of the sidewalk will have a width that extends to 22 feet.

WB.5 **Recommends a wider sidewalk on the south side of Seaport Boulevard.**

The sidewalk on the southern side of Seaport Boulevard is designed to have a minimum clearance of 10 feet, which the Proponent believes is adequate.

WB.6 **Will the sidewalk width reflect the "Children's District" concept?**

The districts are a conceptual idea and specifics on the districts themselves, as well as adjacent sidewalks, have not been determined. The specific design of the sidewalks will be determined as the design progresses.

WB.7 **Walking environment of Congress Street.**

Congress Street is part of the Crossroads Initiative, described in Section 3.3.1.7 above. Every effort will be made to make the Congress Street passage under the new Harbor Street safe and inviting for pedestrians.

WB.8 **B Street/Congress Street intersection.**

The Proponent will coordinate with the City on pedestrian improvements at this location.

WB.9 **Connection between Congress Street and Harbor Street.**

There will be a public open stairway between Congress Street (within Block L5) and Seaport Hill which connects to Harbor Street. Please see Figures 1-26 and 1-27.

WB.10 **Is there a pedestrian link between the off-site Congress Street Hotel and the Harbor Street elevation at Summer Street?**

Previous presentations by others indicated a possible pedestrian connection through the Congress Street Hotel site to Summer Street. There is no proposed connection as part of Seaport Square's master plan. The Project, however, will not preclude any future connections.

WB.11 Northern Avenue as a promenade.

The Seaport Square Project will reinforce what Fan Pier has envisioned for Northern Avenue and will provide the variety of uses and activity that will link Seaport Square Green and Fan Pier Park. Please see Section 5.3.2.1, East-West City Connector, and Figures 1-8, 1-9, 1-13 and 1-14.

WB.12 Northern Avenue plan's relationship to Pier 4 proposal.

Please see the above response. On its eastern edge, Northern Avenue meets the waterfront at Pier 4, becoming a pedestrian connection to the extension of the Harborwalk which runs along the water, back towards Seaport Boulevard.

WB.13 Old Northern Avenue Bridge as a vehicular route for emergency evacuations.

The Proponent has been informed by City officials that future plans for the Northern Avenue Bridge may include vehicle traffic. This decision will be made by the City.

WB.14 Harbor Street.

As stated in Response to Comment BTD.14, above, the design of Harbor Street, which ends and branches into two at Autumn Lane, is intended to discourage through traffic and to slow traffic speeds. Traffic volumes are shown in Sections 3.3.2 and 3.3.4.

WB.15 Traffic signals or special protections at locations with where the pedestrian path through the square and down the hill crosses Harbor Street's vehicular lanes.

The design for crossings, pavement treatment, etc. will be developed in conjunction with Phase 5-6 development. It is not anticipated that signal warrants will be met on the internal Harbor Street/Autumn Lane intersection.

WB.16 Pedestrian protection at the new Harbor Street/Summer Street intersection.

The design of this intersection will be developed to City standards in conjunction with Phase 5-6 development.

WB.17 Sidewalk design of Harbor Street.

The comment is noted. The design of this intersection will be developed to City standards in conjunction with Phase 5-6 development.

WB.18 Sidewalk widths on Harbor Street north of Seaport Boulevard.

The Harbor Street sidewalk between Seaport Boulevard and Northern Avenue will be a minimum of 8 feet clear on the Block G side, and 12 feet clear on the Seaport Square Green side.

WB.19 Does projected vehicular traffic differ significantly on Boston Wharf Road, East Service Road and B Street.

From existing to No-Build Conditions, volumes will increase by a substantial amount due to a large number of No-Build development projects. Seaport Square will add relatively lower volumes, as the Project will be removing a large quantity of existing volume associated with the surface lots, and replacing it with new trips that are distributed differently. Existing, Mid-term No-Build, Seaport Square Build, and South Boston Waterfront Long-term volumes are illustrated in the figures in Chapter 3.

WB.20 Impact of traffic volumes on pedestrians on Boston Wharf Road, East Service Road and B Street.

Seaport Square Build pedestrian LOS analysis along these streets indicates that pedestrian LOS both for space and delay are maintained at good levels.

WB.21 Anticipated volume of Boston Wharf Road.

Boston Wharf Road will continue to serve as an important connection through the South Boston roadway network. Traffic volumes for Existing, Mid-term No-Build, Seaport Square Build, and South Boston Waterfront Long-term volumes are illustrated in the figures in Chapter 3. For purposes of this analysis, it was assumed that Boston Wharf Road would become one-way southbound during the Mid-term No-Build Conditions. The exact timeline for this circulation change is currently undefined.

WB.22 Traffic connection from Seaport Boulevard and Northern Avenue to Fan Pier and the Courthouse.

Thomson Place will be re-opened to through traffic at the intersection with Seaport Boulevard. The new street would be called "Thomson Street," and be aligned with Fan Pier Boulevard to serve as a more localized connection. It is assumed that a traffic signal would be installed at the intersection during the Mid-term No-Build Conditions. The projected traffic volumes for the Long-term Conditions and assumptions used for the analysis are outlined in Section 3.3.

WB.23 **Proposed sidewalk widths along Boston Wharf Road, East Service Road and B Street.**

Please refer to Section 5.3.2.2. The sidewalks on both Boston Wharf Road and East Service Road are currently 6 feet or greater in width. These widths will not be altered under the proposed design. The proposed master plan incorporates sidewalks at least 6 feet in width on B Street.

WB.24 **Is Autumn Way a continuation of the Entertainment Zone? Is it intended to direct foot traffic through the Congress Street/B Street intersection?**

Autumn Lane is a small neighborhood street allowing a pedestrian connection between the Congress and B streets intersection (through M Way) and the Fort Point Channel District. See Figures 1-5 and 1-32.

WB.25 **Will there be a convergence of foot traffic on Autumn Way?**

Pedestrians will come from the BCEC and the Silver Line station, as well as the other Seaport Square Blocks.

WB.26 **Are there specific pedestrian connections that are possible to connect the project to the Congress Street Hotel?**

Please see Response to Comments WB.9 and WB.10.

WB.27 **Is the Farnsworth Street pedestrian way similar in cross-section to the Harbor Street Entertainment District walk? Will it contain similar retail facilities?**

Farnsworth Street pedestrian way, which is called Courthouse Square (which includes the pedestrian passage from Seaport Boulevard to Northern Avenue and the widened open space at the Northern Avenue side) is designed as a 24/7 open publicly accessible pedestrian plaza, similar to the Harbor Way pedestrian area in cross section and retail facilities. Please see Section 1.5 under Courthouse Square.

WB.28 **Coordination of design of Farnsworth pedestrian way with its extension, Courthouse Way.**

Please see Response to Comment WB.27.

WB.29 **MBTA headhouse.**

By adding a new MBTA headhouse / station entrance in Seaport Square Green, the Proponent is providing a landmark destination and convenient location along the waterfront that does not currently exist for easy public transit access. When the Silver Line Phase II infrastructure was built and opened in 2004, it was the hope of

the public and the MBTA that the future development would embrace the new BRT public transportation. Easy access to the Silver Line, Red Line at South Station, and also Logan International Airport from the neighborhoods of Dudley Square, and Downtown Boston to the South Boston waterfront was always the future vision. This prominent Silver Line headhouse at the corner of Seaport Square Green is a natural nexus for activity and people. By anchoring the new MBTA station entry here, there will be safe and lively activity in the open space, and also easy public access to Seaport Square Green.

WB.30 Alternative site for library.

The Proponent is open to looking at alternative locations for the public library and will work with the City to determine the most appropriate location.

WB.31 Criteria to examine easy walking distances.

Typically, a ¼ mile to ½ mile radius is used as a determinant of easy walking distance. The library is included in Block D in Phase 2. The radii shown on the off-street and on-street parking maps shown in Figures 3-9 and 3-10 in Section 3.2.6 approximate a ¼ mile radius. The established South Boston branch of the Boston Public Library at 646 East Broadway is probably more central to most of the South Boston residential area outside the Seaport District.

WB.32 Library design and students in proposed schools.

An easily accessible library will be designed as part of the education facility on Block N, which is situated both on Summer Street and Congress Street.

WB.33 Pedestrian routes from outside of the project to the proposed Seaport Hill playground.

The easiest routes to the playground for the rest of South Boston will likely be via L or D Street to Summer Street to Harbor Street, or from A Street to Congress Street to Boston Wharf Road to Autumn Lane.

WB.34 Necessary pedestrian improvements to serve the schools and arts center.

It is too early in the design process to outline specific pedestrian improvements. When these Blocks are developed in Phase 7, specific pedestrian accommodations will be proposed and reviewed.

WB.35 **Relationship between schools, arts center, open space and public library.**

Relationships and connections between these and other cultural/public programs will happen through the Cultural Corridor. Please see Section 5.3.4 and Figure 1-15.

WB.36 **Pedestrian safety at street crossings to Seaport Square open space.**

The Proponent will work with BTD on crosswalk treatments that serve the open space.

WB.37 **Seaport Square abutting uses.**

Seaport Square Green is surrounded on its eastern and western sides by slow traffic, one way, pedestrian-friendly streets which contribute to the accessibility and use of the central green space and its surrounding programs.

WB.38 **A major new pedestrian crossing on Summer Street at the end of the proposed Harbor Street should be considered.**

The Proponent agrees and will discuss a pedestrian crossing at this location with BTD to see if one is feasible.

WB.39 **Will the new cultural facilities and schools affect the design of a street crossing?**

The crossing design will take the needs of the educational facility and performing arts center into account.

WB.40 **Will the traffic on Seaport Boulevard in effect drive the intensity of land uses at these intersections by creating a high value market, causing additional pedestrian crossing demand at the intersections?**

The intent is to increase 24-hour pedestrian activity in this part of the City as new development occurs. The Proponent will work with BTD to assure ample pedestrian crossing designed in a friendly manner.

WB.41 **Will the intersection of Seaport Boulevard and Harbor Street become a prized location within the entertainment zone? Will it have less vehicular traffic and be somewhat easier for pedestrians to use?**

Harbor Street will not be open to vehicular traffic in the block between Seaport Boulevard and Autumn Lane. It is currently referred to in the Draft PIR/EIR as Harbor Way.

WB.42 Will the existing headhouse of the Silver Line be retained?

The existing structure of the Silver Line headhouse along Seaport Boulevard will be incorporated into a new building, providing the same degree of connectivity and accessibility to the Silver Line as that which is existing, while also freeing up more sidewalk space on Seaport Boulevard for pedestrians and trees.

WB.43 Harborwalk ADA Accessibility.

In the few places where Seaport Square intersects with Harborwalk, the Proponent will make sure all ADA accessibility requirements are met.

WB.44 Garbage removal for the Barking Crab.

The Proponent has incorporated a storage area on the ground floor level of the Block A building to accommodate storage of garbage associated with the operation of the Barking Crab restaurant.

WB.45 Harborwalk relationship to Barking Crab.

Currently there is no Harborwalk along the waterside of the Barking Crab. This Project will provide a public access link to existing Harborwalk segments along Old Sleeper Street to further promote public access in this location.

WB.46 Servicing the Barking Crab.

It is anticipated that off hours servicing and deliveries will be required to access the Old Sleeper Street plaza. Access will be closely managed by the security and property management team overseeing operations. Removable bollards will serve as an access control point.

WB.47 Northern Avenue crossing.

Northern Avenue, as it meets Harborwalk, is designed for pedestrian use with the possibility of allowing for the passage of vehicles. This area is designed for the benefit and safety of pedestrians.

WB.48 Northern Avenue frontage.

The parking entrance for Block A is an entrance to a small parking garage for the use of the residents of Block A. The loop and traffic movement required for loading and uploading will be examined.

THE
BARKING CRAB
RESTAURANT

617.426.CRAB
NORTHERN AVENUE BRIDGE
88 SLEEPER STREET
BOSTON, MA 02210

July 30, 2008

Boston Redevelopment Authority
Director, John F. Palmieri
Attention: Jay Rourke
One City Hall Square
Boston, MA 02201-1007

Ian A.Bowles,Secretary
Executive Office of Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02144

Re: Seaport Square, South Boston Project/Environmental Notification Form and Phase I Waiver Request (EEA No. 14255)

Dear Boston Redevelopment Authority and Secretary Bowles:

This letter comments on the specific aspects of the above-referenced Seaport Square project (the "Project") on behalf of Poseidon Enterprises, Inc. dba The Barking Crab Restaurant; 2) Neptune Marine Services LLC, which provides marine services and marina management and 3) Neptune Seafood and Lobster, which lands and retails fish and lobster as physical access and market conditions allow. We respectfully address our comments to both the City and the State, because a combined discussion of waterfront public amenities and requirements will be most efficient in resolving the heart of our concerns so development can progress efficiently.

We wish the developers well in their ambitious plans, and hope they will speak with us and the City of Boston's several agencies to work out mutually acceptable operational and development details, and if necessary mitigation for unavoidable noise, pollution and construction impacts to our ongoing businesses on site. However, we also write to request

explicit governmental conditions requiring that the Seaport Square project not impair basic public infrastructure functionality for our ongoing operations, particularly the water-dependent aspects of our businesses, and that the public amenities planned for the area, particularly Harborwalk, respect the existing planning documents long approved and in place. PEI.1

For 20 years, our businesses or their predecessors (e.g. Venus Seafood in the Rough and docks for the annual in-water boat show) have operated at this site on the Fort Point Channel just inside the Old Northern Avenue Bridge and immediately adjacent to Old Sleeper Street. Our site has also been planned and approved as a separate development site in 2000 by the board of the Boston Redevelopment Authority and the Secretary of Environmental Affairs, as detailed in the South Boston Municipal Harbor Plan (most relevant pages attached). These entities worked hard to treat the site fairly, especially in relation to the abutting site on the other side of shared Old Sleeper Street. Hence, the Barking Crab site was approved for the same height as the building on the abutting site, although the Crab site would bear responsibility for a Harborwalk *along the water*. See attached excerpt of extant South Boston Municipal Harbor Plan

When the BRA and then-EOEA were planning the "South Boston Seaport District", one major property owner (Frank McCourt) was seeking to develop millions of square feet on one side of the Old Northern Avenue Bridge. At the same time plans were being developed for the Fan Pier and Pier Four properties on the other, harbor side of Old Northern Avenue. The "Barking Crab" site was then and today continues to be a small but vibrant parcel creatively hosting a variety of enlivening and public activities; including family-friendly waterfront seating indoors and outdoors, fishermen landing their catch, mariners coming directly from the docks to the restaurant, seafood sales and a water taxi facility open to the general public. Seafood landings and vessel operations vary with the tides and the availability of the Old Northern Avenue Bridge. We understand improvements are to be made to the bridge through the proposed Seaport Square project. Over the years, we are proud to have contributed to the vibrancy of the Fort Point Channel and the viability of a new neighborhood for Boston, as evidenced by the general popularity of our location for local residents and visitors alike.

The Barking Crab owners have also invested significant funds associated with the infrastructure improvements to the new neighborhood long in the making. Specifically, Poseidon Enterprises had to pay for the installation of over 300 linear feet of new sewer line extending from the property under Old Sleeper Street and along Northern Avenue in front of the Moakley Courthouse towards what is now the Institute of Contemporary Art after someone was discovered to have cut the longstanding sewer service line for our site and imbedded it in concrete in the footings for the new Northern Avenue Bridge. This expense was incurred by us partly based on the approval of the site for future development, to assure its continued viability and environmental integrity. In further meetings, we would be happy to discuss the history and documentation of the problems we were faced with and overcame in that time period, in order to remain a public attraction on the Fort Point Channel.

Regarding Old Sleeper Street, and its use for pedestrian access, the ongoing functionality of this public infrastructure should be very much manageable with government and developer cooperative communication. One can look throughout the city for other successful models. All that is required for Old Sleeper Street is respect for the ongoing businesses and water-dependent needs, as well as those of the usual delivery access required for a restaurant. Today, we make extensive use of the street for deliveries, for access to our docks, for patron parking and for access to the Harborwalk by all of the citizens and visitors to Boston. We have attached a letter from Kairos Shen of the BRA, indicating how this functionality was to be maintained in the past. We believe the function of Old Sleeper Street can be updated to reflect new development needs on both sides of Old Sleeper Street.

We also note that the Public Trust Rights statute of Chapter 91 generally protects pre-existing water dependent uses from non-water dependent development impairment and the accompanying Chapter 91 regulations specifically prohibit non-water dependent developments in need of Chapter 91 licenses, such as Seaport Square, from impairing water dependent activities. See 310 CMR 9.36, 9.52, 9.53 Our water dependent businesses of Neptune Marine Services LLC and Neptune Seafood and Lobster require some basic vehicular access to exist, and these needs have not been respected or even acknowledged in the Seaport Square ENF/PNF and associated waiver demand. We respectfully request that agreement regarding sustained functionality of this unique public infrastructure and the public amenities we already provide (e.g. public bathrooms, water taxi access and water dependent businesses as well as a facility of public accommodation) be a requirement for the project. We also note that the new statutory requirements of a "public benefits analysis" for this type of project on tidelands requires attention to negative impacts to these existing public benefits. PEI.2

With respect to a true Harborwalk it is not clear to us why the Seaport Square project cites to itself as providing a "new civic contribution of the long-missing Harborwalk link" when this link has been in place on the bed of Old Sleeper Street on an unpolished but fully operational basis for eight years. It has been our pleasure and our contribution to keep the area open and available to the public for easy passage. However,it should be noted that our current development plans include our respect for the existing city and state planning documents which expect a permanent Harborwalk along the entire waterside of the Fort Point Channel property line of our site. The Public Improvements Commission of the City of Boston and the Boston Water and Sewer Commission and the Boston Environment Department and the Boston Redevelopment Authority and the Boston Parks Department all worked hard to put together a viable temporary plan for Old Sleeper Street while development was stalled. Now that it has renewed focus, we can work together to maximize public benefit in the area. Many non-profit groups also participated in this extensive planning.

To publicly facilitate a sensible resolution of what might otherwise be use and design conflicts, we are submitting an ENF/PNF proposal for our modest development site. Our Notice of Intent for our site development goes first to the BRA, followed by an ENF/PNF for public comment. We will offer Harborwalk on the water, the restaurant on the same

ground floor level with public bathrooms and water activation and access, and private tenancy added above the restaurant to pay for the additional improvements. We expect to be in conformance with the existing approved City and State plans for the area.

We hope the Seaport Square development proponents can work with us to achieve optimal public and economic benefit and aesthetic improvements in this location. However, we feel strongly that the requested Waiver is at odds with all parties best interests for the Old Sleeper Street site. The Waiver would create future conflicts by forcing discussions into Chapter 91 and other licensing processes, usually conducted as hearings rather than working sessions. There will surely be conflicting regulatory processing requiring just the sort of coordination which MEPA was designed to handle.

Rather than allowing a segmentation of the Old Sleeper Street aspect of the Seaport Square project, we could all be addressing it cooperatively and simultaneously with a waterfront Harborwalk.

We also believe that the Seaport Square project's potential impacts on traffic and existing water dependent uses should be further evaluated in a Project Impact Report/Environmental Impact Report. We see, however, that a Phase I waiver has been requested under the MEPA regulations specifically for the area of concern to our businesses (Parcel A and Old Sleeper Street). A request for a Phase I Waiver is usually not to be granted unless the environmental impacts of the activity are insignificant, ample infrastructure exists to support it, the project is severable from other project phases and relevant agency action will ensure due compliance with MEPA for subsequent phases. See 301 CMR 11.11. And, even if all four parts of these tests are met, the Proponent must demonstrate that requiring the usual full MEPA review process would constitute an undue hardship. PEI.3

These required MEPA waiver tests have not been met regarding Parcel A where there is no plan provided at all in the ENF/PNF for maintaining the ongoing businesses at our site while turning Old Sleeper Street into a pedestrian walkway and the document does not recognize all of the previously approved planning documents of the South Boston Municipal Harbor Plan and the subsequent Fort Point Channel Activation Plan for a Harborwalk along the waterside of this site. Nor has "hardship", as required under 301 CMR 11.11, been established. Unfortunately, Poseidon Enterprises has been left out of much of the planning process by the project proponent until this point, other than reading in the newspaper that the proponent intended to take our operating restaurant and move it to the second story of their own project (no mention of what would happen to our other water-dependent businesses). We were not informed by the project proponent regarding the filing of the PNF and to date the proponent has specifically refused our request to meet in order to facilitate an open dialog about their plans.

Thank you for your consideration of our concerns. We look forward to meeting, if desired, and participating as needed in the ongoing public processes. Please contact Scott Garvey at 617-593-3723 or spgmd@earthlink.net to arrange a meeting or discussion.

Sincerely,

Poseidon Enterprises by its Officers and Directors:
Scott Garvey, President
Lee Kennedy
Stuart Vidockler

Cc: Kristin Kara, BRA Project Manager
Briiony Angus, MEPA
Kairos Shen, BRA Director of Planning
Richard McGuinness, BRA Waterfront Planner
Bryan Glascock, Boston Environment Department
Public Improvements Commission, City of Boston
Boston Water and Sewer
Boston Parks Department
Brad Washburn, CZM Boston Harbor Coordinator
Andrea Langahouser, DEP Chapter 91 Senior Planner
Gale International, Proponent
Epsilon, Attention Corinne Snowdon
Susan St. Pierre, Vine Associates Bruce Berman/Patty Foley, SHSB
Vivien Li, TBHA
Friends of the Fort Point Channel
Children's Museum (Louis Casagrande, PhD., President; JoAnne Baxter, Dir. Public Relations)

Boston Redevelopment Authority

Boston's Planning & Economic Development Office

Thomas M. Menino, Mayor
Clarence J. Jones, Chairman
Mark Maloney, Director

One City Hall Square
Boston, MA 02201-1007
Tel 617-722-4300
Fax 617-248-1937

15 August, 2000

Douglas Lemle
President
The Barking Crab Restaurant
88 Sleeper Street
Boston, MA 02210

Dear Mr. Lemle,

I am responding to your letter dated 3 August, 2000 expressing your concerns regarding the BRA's draft layout of the temporary Harborwalk for Sleeper Street.

1. The proposed temporary Harborwalk layout will have no impact on vehicular circulation on Sleeper Street.
2. The proposed temporary Harborwalk work will not require the relocation of any existing utilities.
3. The design and construction of the temporary Harborwalk will be the responsibility of the BRA.
4. Sleeper Street will remain a public right of way and roadway maintenance will be the responsibility of the City.
5. The proposed temporary Harborwalk will not affect the City's ownership and control of Sleeper Street.
6. The proposed temporary Harborwalk will not affect the ownership and control of either Northern Avenue or the Old Northern Avenue Bridge.
7. The proposed temporary Harborwalk layout will widen the sidewalk in front of the Barking Crab Restaurant while maintaining the size of the vehicular travel way of Sleeper Street. The enlarged area of sidewalk will give additional dimension for both pedestrians and service activities.
8. The BRA expects the operation of Sleeper Street to remain substantially unchanged and continue to service the parking lot, the restaurant as well as the water dependent businesses.
9. The proposed temporary Harborwalk layout will reduce the number of City controlled public parking spaces along Sleeper Street. The City has no obligation to replace any of these spaces.
10. Vehicular access to and from businesses along Sleeper Street will not be impacted by the implementation of the temporary Harborwalk.
11. The proposed layout of temporary Harborwalk is being prepared for the review of Boston's Public Improvement Commission (PIC).

The BRA is in the process of refining the layout of temporary Harborwalk on Sleeper Street and scheduling PIC review by August 30, 2000. If you have additional questions and concerns please do not hesitate to contact me.

Sincerely,

Kairos Shen

cc. Thomas Tinlin, Boston Transportation Department
Para Jayasinghe, Boston Public Works Department

9.6 Abutting Owner Comments on the PNF/ENF

9.6.1 Poseidon Enterprises, Inc.

PEI.1 Request that the project not impair basic public functionality of ongoing operations.

The Proponent will work with neighboring businesses to insure that proposed improvements do not impede ongoing operations, including the future provision of a link on Old Sleeper Street between existing segments of the Harborwalk.

PEI.2 Request an agreement for sustained functionality of public infrastructure and public amenities.

The Proponent anticipates an agreement between the City and all abutters regarding the future use, maintenance and operation of both Old Sleeper Street and other related public infrastructure.

PEI.3 Impacts on traffic and existing water-dependent uses.

Section 3.3 of the Draft PIR/EIR investigates traffic impacts in the vicinity of the commenter's establishment as part of a wider study for 33 intersections specified by the BRA and BTD. Figure 3-20 provides designated truck routes through the site which access water-dependent uses within the nearby South Boston Designated Port Area.

BA

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Goodwin Procter LLP
Counselors at Law
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July 10, 2008

RECEIVED
JUL 11 2008
MEPA

BY HAND DELIVERY

Ian A. Bowles, Secretary
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02144
Attn: MEPA Office, Briony Angus

Re: Seaport Square, South Boston Project/Environmental Notification Form and Phase I Waiver Request (EEA No. 14255)

Dear Secretary Bowles:

I am writing regarding the Seaport Square project (the "Project") on behalf of our client Brickman Real Estate Fund II, L.P. ("Brickman"), which is the owner of several buildings adjacent to or in the immediate vicinity of the Project area. Brickman is a real estate private investment firm that owns and operates several properties in the City of Boston as well as nationally.

As a substantial investor in the community, Brickman looks forward to the redevelopment and vitalization of the so-called Seaport Square area. Out of concern for the area generally, and as a potentially affected neighbor, Brickman seeks to ensure that the Project undergoes sufficient review so as to adequately measure and mitigate Project impacts and to integrate it with existing infrastructure and buildings. In particular, our client is concerned that the Phase I Waiver request is inappropriately broad. Our client therefore respectfully suggests that you grant in part, and deny in part, the requested Phase I Waiver.

As described in the Project/Environmental Notification Form and Phase I Waiver Request (collectively, the "Filing"), the Project Proponents request a waiver from otherwise required MEPA review for Blocks A, H and J of the Project. According to the Filing, the "timely development" of these blocks will "facilitate development of the remainder of the project" and is:

> [C]ritical to the development of Seaport Square. . . . although generally the Project will be developed in one continuous building process, early construction of Phase I will allow the Proponent to relocate the Our Lady of Good Voyage Chapel, create a gateway to the Fort Point Channel and South Boston waterfront, provide early public benefits and open space, and facilitate construction of the remainder of the site. Additionally, Old Sleeper

Street will become a new waterfront way to connect the long-missing Harborwalk link between the Children's Museum and the Federal Courthouse.

See e.g., Filing, pg. 2-2, 2-62 & 2-63. These objectives and projected benefits of Phase I of the Project, which are reiterated throughout the Filing, can be achieved with a waiver of narrower scope than is requested.

Specifically, a waiver allowing development of Blocks A and J before full MEPA review would meet the Proponent's stated objectives, while requiring development on Block H to be considered in the context of the remainder of the Project, with which it is inextricably intertwined. This is particularly appropriate given that the development of Block H does not meet the regulatory standards for a Phase I Waiver. Thus, Brickman respectfully requests that the scope of the Phase I waiver granted for the Project, if any, be limited to Blocks A and J. The remainder of this letter briefly outlines the rationale for this request, which Brickman and I are available to discuss further with you or your staff if it will assist in your review.

In brief, a request for a Phase I Waiver is not to be granted unless the portion of a project subject to the request can satisfy the following regulatory standards: (i) if taken alone, its environmental impacts are insignificant; (ii) ample infrastructure exists to support it; (iii) it is severable from other project phases; and (iv) relevant agency action will ensure due compliance with MEPA for subsequent phases. *See* 301 CMR 11.11. Even if this four part test is met, the Proponent must demonstrate that undergoing full MEPA review will constitute an undue hardship. *Id.*

A brief description of the development proposed for Blocks J and A illustrates the difference in applying these standards to the work at these blocks in contrast to the proposed redevelopment of Block H.

The requested waiver for Block J would permit the relocation of the Our Lady of Good Voyage Chapel, which allows for the future removal of the existing Chapel on Block D, which itself is proposed as the site of underground parking and an above-grade structure. Avoiding significant interruption of the church's function is a compelling objective, and relocating an existing, low-impact use a short distance is the type of activity that falls squarely within MEPA's standard for a Phase I Waiver. Notably, religious institutions are commonly subject to different, less onerous review standards than commercial or residential developments. *See .e.g.*, Religious Land Use and Institutionalized Persons Act of 2000, 42 U.S.C. § 2000ccc(a)(1) (land use regulations substantially burdening religious exercise, assembly or institution must further a compelling governmental interest by the least restrictive means).

While it is less clear that the development proposed for Block A meets the MEPA criteria for a Phase I Waiver, the negative impacts of early development of Block A are mitigated by the location of Block A, its physical relationship to existing buildings and the building design. Block A abuts only two existing buildings, the Barking Crab and the Moakley Federal Courthouse; the latter of which will be separated from Block A by at least the full width of Northern Avenue and the existing yard for each structure. Moreover, the building proposed for Block A is characterized as a low-rise building containing parking for the building's occupants. See Filing, Figure 2.3-13. According to the Filing, it appears that zoning relief will not be required with respect to either the height or mass of the building proposed for Block A, implicitly suggesting that its scale and design are unlikely to lead to significant impacts. Finally, with respect to Block A, while the creation of a "gateway" to an area may not be traditional grounds for a MEPA Phase I Waiver, there is at least some support for the argument that Block A can be the welcoming entrance to the Project area given that it is the first parcel within the Seaport Square area encountered upon crossing either the Northern Avenue Bridge or Evelyn Moakley Bridge. This gateway characteristic could plausibly support an argument that a hardship would result from precluding a jump start on the Project's front door.

The proposed development at Block H is different in kind and impact from that on Blocks A and J in several ways. Several examples of these differences that warrant withholding a Phase I Waiver from the proposed work at Block H include the following:

- The building proposed for Block H will be built nearly out to the lot lines and will abut two existing buildings that will be separated only by the yards of those existing buildings. Unlike Block A, Block H extends the existing fabric of an already established area. See Filing, Figure 2.3-2. Consequently, shadow, wind, daylight and solar glare impacts associated with Block H, which will not be fully evaluated until the draft environmental impact report is prepared, will have impacts of a different magnitude than those arising from the development of Block A. These types of impacts generally cannot be reduced or mitigated after construction, so full review is necessary before development begins.

- Block H does not alone create an edge along the southern side of Seaport Boulevard, but instead will do so in combination with several other proposed blocks, whose impacts on the surrounding neighborhood are not severable and thus should be considered in conjunction.

- According to the Filing, the building proposed for Block H is a medium-rise building that will have a height between 85-116 feet, which exceeds the height permitted by the applicable zoning (which is the same as that to which Block A is subject). Also

according to the Filing, the building proposed for Block H will have a gross floor area of 92,100 square feet (on a parcel containing 13,826 square feet), so the FAR for the Block H building will be approximately 6.7, i.e., above the 5.0 permitted at the site. Block H will thus require zoning relief from the Boston Zoning Code for height and FAR, which suggests that the impacts will exceed those that the urban planning underlying the zoning has anticipated.

- Even if being a "gateway" to an area were grounds for a waiver from MEPA review, Block H's location makes it difficult to argue that it is part of any important entry to the Seaport Square area, as it is only one part of a long line (Blocks C, D, F, G, K, L1 and L2) that also face on Seaport Boulevard and will be developed in the second phase of the Project.

Excluding Block H from any Phase I Waiver also accords with the permitting and review schedule for the overall project. For instance:

The Project Proponents are proposing to develop the majority of the Project (i.e., all but the areas subject to a MEPA Phase I Waiver) as a Planned Development Area under the Boston Zoning Code. In that context, the height, massing and other configuration-related factors of all of the proposed development will be considered jointly, assuring that the area is developed with consistency, both within the Seaport Square and as relates to the surrounding area. While there is some basis for seeking to evaluate Block J separately, and less so for Block A, given the proximity of Block H to, and its needed integration with, both proposed and existing structures, review of Block H should be considered in the context of the remaining development along Seaport Boulevard.

- Blocks H, J, K and Q, but not A, are all within the proposed Seaport Boulevard/Boston Wharf Road Protection Area, the goals of which include protecting view corridors into and out of the proposed Fort Point Channel Landmark District. As such, the development of these blocks will be subject to review by the Boston Landmarks Commission, which should coordinate its review to assure that the Project appropriately bounds the Fort Point Channel area. Full MEPA review will facilitate this coordination.

- While Blocks A and H both require Chapter 91 licenses, a separate Chapter 91 license will be sought for each block, so there is no benefit of coordinated review derived by moving forward with Blocks A and H simultaneously.

Excluding Block H from the Phase I Waiver will not significantly deter the Project Proponent's ability to move forward, nor materially limit the early development of benefits for the City and its residents. But, so limiting the scope of any waiver issued for the Project will accord with MEPA standards for waivers and will assure an opportunity for sufficient review to comply with the MEPA regulations.

Brickman appreciates both this opportunity to provide comments on the Project and being added to the distribution list for the Project. Our client and I are available if you or your staff have any questions. Thank you for your attention to this matter.

Very truly yours,

R. Jeffrey Lyman

cc: Mr. Michael J. Bernstein

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July 31, 2008

BY HAND AND VIA E-MAIL

Jay Rourke
Kristin Kara
Boston Redevelopment Authority
One City Hall Square
9th Floor
Boston, MA 02201-1007

Re: Seaport Square, South Boston Project/Environmental Notification Form and Phase I Waiver Request

Dear Mr. Rourke and Ms. Kara:

I am writing regarding the Seaport Square project (the "Project") on behalf of our client Brickman Real Estate Fund II, L.P. ("Brickman"), which is the owner of several buildings adjacent to or in the immediate vicinity of the Project area. Brickman is a real estate private investment firm that owns and operates several properties in the City of Boston as well as nationally.

As a substantial investor in the community, Brickman looks forward to the redevelopment and vitalization of the so-called Seaport Square area. Out of concern for the area generally, and as a potentially affected neighbor, Brickman seeks to ensure that the Project undergoes sufficient review so as to adequately measure and mitigate Project impacts and to integrate it with existing infrastructure and buildings. In particular, our client is concerned that the requested waiver for the so-called Phase I of the Project is inappropriately broad. Our client therefore respectfully suggests that you grant in part, and deny in part, the requested Phase I Waiver.

As described in the Project/Environmental Notification Form and Phase I Waiver Request (collectively, the "Filing"), the Project Proponents are seeking a Scoping Determination from the Boston Redevelopment Authority (the "Authority") waiving further review for Blocks A, H and J of the Project. According to the Filing, the "timely development" of these blocks will "facilitate development of the remainder of the project," in part by allowing the Proponent to relocate the Our Lady of Good Voyage Chapel, creating a "gateway" to the Fort Point Channel and South Boston waterfront, providing early public benefits and open space and facilitating

construction of the remainder of the site. *See e.g.,* Filing, pg. 2-2 & 2-62. However, these objectives and projected benefits of Phase I of the Project can be achieved with a waiver of narrower scope than is requested.

Specifically, a waiver allowing development of Blocks A and J before full review pursuant to Article 80 of the Boston Zoning Code, including the preparation and consideration of at least a Draft Project Impact Report ("DPIR"), would meet the Proponent's stated objectives, while ensuring that the Authority's consideration of development on Block H appropriately takes into account the potentially irreversible impacts of such development on surrounding properties, as contemplated by the requirements of Article 80. Thus, Brickman respectfully requests that the extent of the scoping determination waiving further review for the Project, if any, be limited to Blocks A and J. The remainder of this letter briefly outlines the rationale for this request, which Brickman and I are available to discuss further with you if it will assist in your review.

In brief, a request for a scoping determination waiving further review under Large Project Review is not to be granted unless the Project Notification Form for a project, together with any additional materials and comments received by the Authority prior to the issuance of the Scoping Determination, adequately describes the impacts of the proposed project. *See* Boston Zoning Code, § 80B-5.3(d). Such impacts include, but are not limited to, those relating to transportation, environmental protection, urban design, historic resources, infrastructure systems, site plans and tidelands. *See* id. at § 80B-3.[1]

A brief description of the development proposed for Blocks J and A illustrates the difference in applying this waiver standard to the work at these blocks in contrast to the proposed redevelopment of Block H.

The requested waiver for Block J would permit the relocation of Our Lady of Good Voyage Chapel, which allows for the future removal of the existing Chapel on Block D, which itself is proposed as a site of underground parking and an above-grade structure. Avoiding significant interruption of the church's function is a compelling objective, and relocating an existing, low-impact use, for which information already exists regarding its impacts on the neighborhood, a

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[1] The Project is not eligible for a waiver from further review pursuant to either Section 80B-2.4, as the proposed Project does not include industrial development, or Section 80B-2.5, which is applicable only to proposed projects that will rehabilitate or construct Affordable Housing units *and* will be subject to the Authority's review as part of a Planned Development Area, Urban Renewal Area or pursuant to M.G.L. ch. 121A. According to the Filing, if the Phase I waiver is granted, the Project Proponents intend to pursue development at Blocks J, A and H *outside* the bounds of a Planned Development Area, instead seeking any required zoning relief from the Boston Board of Appeal on a site-specific basis.

short distance is the type of activity that falls within the Article 80 standard for waiving further review. Notably, religious institutions are commonly subject to different, less onerous review standards than commercial or residential developments. *See e.g.,* Religious Land Use and Institutionalized Persons Act of 2000, 42 U.S.C. § 2000(ccc)(a)(1) (land use regulations substantially burdening religious exercise, assembly or institution must further a compelling government interest by the least restrictive means).

While it is less clear that the Filing includes sufficient information to support a waiver from further review for Block A, the negative impacts of early development of Block A are mitigated by the location of Block A, its physical relationship to existing buildings and the building design. Block A abuts only two existing buildings, the Barking Crab and the Moakley Federal Courthouse; the latter of which will be separated from Block A by at least the full width of Northern Avenue and the yards for each structure. Moreover, the building proposed for Block A is characterized as a low-rise building containing parking for the building's occupants. *See* Filing, Figure 2.3-13. According to the Filing, it appears that zoning relief will not be required with respect to either the height or mass of the building proposed for Block A, implicitly suggesting that its scale and design are unlikely to lead to significant impacts.

The proposed development at Block H is different in kind and impact from that on Blocks A and J in several ways. Several examples of these differences that warrant withholding a waiver from further review from the proposed work at Block H include the following:

- The building proposed for Block H will abut two existing buildings that will be separated only by the yards of those existing buildings. We understand that the Project Proponents are considering at least some minimal setbacks at the rear of the buildings, as opposed to building nearly out to the lot lines as shown in the Filing, however, it is not clear that such a change will alleviate the negative impacts of the development on Block H on neighboring properties. Unlike Block A, Block H extends the existing fabric of an already established area. *See* Filing, Figure 2-3.2. Consequently, environmental impacts associated with Block H, including shadow, wind, daylight and solar glare, which will not be fully evaluated until the DPIR is prepared, will have impacts of a different magnitude than those arising from the development of Block A. These types of impacts generally cannot be reduced or mitigated after construction, so full review, which require the availability and consideration of adequate information, is necessary before development begins.

- According to the Filing, the building proposed for Block H is a medium-rise building that will have a height between 85-116 feet, which exceeds the height permitted by the applicable zoning (which is the same as that to which Block A is subject). Also

according to the Filing, the building proposed for Block H will have a gross floor area of 92,100 square feet (on a parcel apparently containing 13,826 square feet), so the floor area ratio ("FAR") for the Block H building will be approximately 6.7, i.e., above the 5.0 permitted at the site. Block H will thus require zoning relief from the Boston Zoning Code for height and FAR, which suggests that the urban design impacts of development at Block H, which have not been sufficiently delineated in the Filing, will exceed those that the urban planning underlying the zoning has anticipated.

Excluding Block H from any scoping determination waiving further review also accords with the permitting and review schedule pursuant to the Boston Zoning Code for the overall project. For instance, the Project Proponents are proposing to develop the majority of the Project (i.e., all but the areas subject to the waiver from further review) as a Planned Development Area. In that context, the height, massing and other configuration-related factors of all of the proposed development will be considered jointly, assuring that the area is developed with consistency, both within the Seaport Square and as relates to the surrounding area. While there is some basis for seeking to evaluate Block J separately, and less so for Block A, given the proximity of Block H to, and its needed integration with, both proposed and existing structures, review of Block H should be considered in the context of the remaining development along Seaport Boulevard.

Excluding Block H from the requested waiver from further review will not significantly deter the Project Proponent's ability to move forward, nor materially limit the early development of benefits for the City and its residents. But, so limiting the scope of any waiver issued for the Project will accord with the Article 80 standards for waivers from further review and will assure an opportunity for sufficient review to comply with the Boston Zoning Code.

Brickman appreciates both this opportunity to provide comments on the Project and being added to the distribution list for the Project. Our client and I are available if you have any questions. Thank you for your attention to this matter.

Very truly yours,

R. Jeffrey Lyman (cdj)

R. Jeffrey Lyman

cc: Mr. Michael J. Bernstein

LIBB/1595559.1

9.6.2 Goodwin Proctor LLP, on behalf of Brickman Real Estate Fund II, L.P. (two letters)

A Phase 1 Waiver was granted in a Final Record of Decision issued on September 17, 2008. On November 13, 2008, the BRA Board approved a waiver of further review for Block A.

Berkeley Investments, Inc.

DELIVERY BY HAND

July 11, 2008

Mr. Kairos Shen
Director of Planning
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Mr. Jay Rourke
Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

RE: Seaport Square, PNF/ENF Phase 1 Waiver Request dated June 2, 2008

Dear Kairos and Jay:

We are writing on behalf of CFS Seaport LLC (CFS), a limited liability company of which Berkeley Investments, Inc. (Berkeley) is the managing partner. As you know, CFS owns property abutting the proposed Seaport Square development. The CFS properties closest to Seaport Square include 381 Congress Street, 368 Congress Street, 348-354 Congress Street, and 22 Boston Wharf Road.

The purpose of this letter is to comment on the PNF/ENF Phase 1 Waiver Request for Seaport Square dated June 2, 2008 (the PNF). While we want to commend Gale International, Morgan Stanley and WS Development for all of their work to date necessary to formally launch this extensive, complicated project, we also believe that this proposal critically misses the mark with respect to the Congress Street portion of the Seaport Square project. Specifically, CFS and Berkeley object to the uses assigned to Seaport Square Parcel N and Parcel P for the reasons outlined in this letter.

Over the past four years of CFS ownership of various properties in the Fort Point Channel Wharf District, Berkeley has diligently and cooperatively worked with the City of Boston and the Fort Point Channel community to envision, adopt and implement a strategy for the transformation of Congress Street in Fort Point Channel, recognizing that Congress Street is a key connector with Boston's downtown Financial District and a principal gateway to South Boston. This transformation strategy is founded on the essential urban principal that this neighborhood be a walkable, engaging, diverse mixed-use "24/7" neighborhood.

To date, CFS has implemented their strategy by redeveloping and upgrading existing buildings to enhance the experience of the occupants and visitors and draw new tenants to

the area, adding exciting new retail and restaurant uses at grade to promote a more diverse and engaging pedestrian experience, and increasing existing housing opportunities, including artists live-work studios, at the FP3 condominium redevelopment and infill project to attract more residents to the neighborhood. We will shortly also complete the first segment of the Crossroads Initiative in the City of Boston, which will be installed in front of the FP3 Condominiums at 348-354 Congress Street and also in front of 368 Congress Street which is currently under construction.

Berkeley and CFS strongly believe that the current use designations for Parcels N and P at Seaport Square do not meet the stated urban design goals of even the Seaport Square PNF, and are in complete conflict with the urban benefits already created on Congress Street and intended for the Fort Point Channel neighborhood and environs. CFS.1

Section 2.3 of the PNF describes the **Urban Design Goals, Principles and Strategies** for Seaport Square as follows:

"The primary urban design goals of Seaport Square are:

- to forge the desired connections between all the communities at its edges, and
- to fill the center with a program of synergistic uses and open spaces that can thrive beside the existing and proposed developments."

PNF Section 2.3 goes on to set forth the design principles and strategies for Seaport Square, including:

"Masterplan Principles:

1. Extend Existing Fabrics: the new Block Pattern
2. Make Connections: Street & Pedestrian Ways"

Regrettably, these essential principles are ignored in the PNF vis-à-vis Congress Street. **PNF Section 2.3.1, Extend Existing Fabric**, states:

> "Each area bordering the [Seaport Square] Project site has a unique character defined by scale, material, street width, and use, which are related to the dimensions of its blocks as well as the era of its construction. The Fort Point Wharf District, for example, located to the south of the [Seaport Square] Project site, has a cohesive and recognizable identity due to its small block pattern. This area is characterized by buildings of similar height and rhythm, of window openings, constructed of masonry material. The Fort Point District has a clear directional grain of buildings with minor variations in height, primarily organized along narrow streets and alley." CFS.2

> "The Seaport Square plan is generated by extending traditional existing block patterns from the surrounding urban fabric into the site, as illustrated in Figure 2.3-2. This strategy accomplishes two very important objectives: first, it links the Seaport Square development to the scale and grain of its neighbors at all the edges where they meet, and second, it produces a mixture of traditional block sizes within itself, which in turn supports a diversity of programs and massing options."

Regrettably, we see no attempt made to "link the Seaport Square development to the scale and grain" of the neighborhood along Congress Street; the typically 50,000 – 100,000 square feet buildings of the Fort Point District would be entirely dwarfed by the proposed international school at 315,000 square feet. In addition, the street widths and uses change dramatically upon entering the Seaport Square project area. No retail uses of any kind are anticipated in the school building, as clearly stated in **PNF Section 2.3.4, 24/7 Mix of Uses,** Retail section, and **PNF Section 2.4 Distribution of Land Uses**, Ground Floor section.

Similarly, in **PNF Section 2.3.2, Make Connections,** the existing established Congress Street and Summer Street east/west connections are virtually ignored. Instead, the Proponent states:

> "The newly proposed Autumn Lane, partly vehicular and partly pedestrian, will be lined with retail uses connecting the Fort Point District with Congress Street, the World Trade Center, and Waterside Place."

CFS.2
cont'd

This proposed path would divert foot traffic from the intersection of Congress Street and Boston Wharf Road, north along Boston Wharf Road to Autumn Lane, which is nearly to Seaport Boulevard, rather than reinforcing the naturally curving Congress Street to the World Trade Center buildings and beyond. It is difficult to imagine how the circuitous path proposed in the PNF is intended to integrate the most established part of the Fort Point District with the new Seaport Square district and beyond. **Figure 2.3-2** clearly demonstrates that there is no intended "link" at the Congress Street and Summer Street edges. The links shown on Figure 2.3-2 instead cover virtually ***every other*** edge of the Seaport Square development.

The Congress Street plan being implemented by the CFS team in cooperation with the City is in part intended to draw users and visitors from Boston's Financial District into Fort Point Channel, thus integrating and invigorating these two very different, yet complementary, portions of the City. By siting a school on Parcel N, the pedestrian experience, for a pedestrian moving southeasterly along Congress Street, would end abruptly at Boston Wharf Road. The pedestrian would enjoy Channel vistas while crossing the Congress Street Bridge, would move past the Children's Museum and Fire Museum, past housing, restaurants and retail uses, and then all urban interest would abruptly end when they cross Boston Wharf Road.

At this point, the pedestrian would lose any incentive to continue to walk eastward, as the double-loaded retail and restaurant uses would end (or be artificially diverted to the north), the street experience would change to a larger, busier boulevard with a median akin to Seaport Boulevard, and the pedestrian would have to compete with drop-off lanes for school buses and cars. Thus, under the proposed Seaport Square plan, the desired connection between the Seaport Square community and the existing Fort Point District neighborhood is completely cut off at Boston Wharf Road.

Conversely, if the Hotel shown on Parcel P was moved to Parcel N, Congress Street pedestrians would be drawn along Congress Street across the intersection at Boston Wharf Road and into the Seaport Square district, making the key link to Seaport Hill. In turn, Hotel customers could spill out onto Congress Street or into Seaport Hill to visit restaurants, cafes and stores, rather than being isolated in the more remote "big block" location nearer the vent building. CFS.2 cont'd

Correlatively, moving the school to Parcel P, closer to the vent building, would significantly reduce bus and other drop-off/pick-up traffic conflicts with pedestrians and visitors, while offering more privacy and creating an area of greater calm for the students and their families.

As stated above, CFS and Berkeley object to the current use designations for Parcel N and Parcel P. Based on the points outlined in this letter, we propose that the school be sited on Parcel P and the Hotel on Parcel N.

We appreciate the opportunity to make our objections known. Please contact me with any questions or comments.

Regards,

Young K. Park
President

9.6.3 Berkeley Investments, Inc. (for CFS Seaport LLC)

CFS.1 Proposed uses for Blocks N and P.

Please see section 1.3 for information.

CFS.2 Extend existing fabric and make connections vis a vis Congress Street

The area of Congress Street east of Boston Wharf Road is located outside of the Fort Point Channel Landmark District. Congress Street continues, as it reaches East Service Road and further east past B Street as a street with a different scale and types of buildings along it. The area of Congress Street between Boston Wharf Road and East Service Road that is part of the Seaport Square site and master plan, is thus treated as a meeting of the two scales and characters of Congress Street. This is the guiding principle by which the buildings will be developed as the design progresses. The larger structure referred to on Block N is a strategically located site -from an urban point of view –as it marks the curving of Congress Street and bridges between elevated Summer Street, Boston Wharf Road and Congress Street. Examining Congress Street through its entire length, as it meanders through Downtown Boston, shows several such examples of a condition where a certain building is accentuated in height, program or presence to address and respond to its strategic urban location. The design of Block N will take into consideration the scale and character of Congress Street.

BRICKMAN
OWNER. OPERATOR. INVESTOR.

July 23, 2008

Mr. Kairos Shen
Chief Planner, City of Boston
c/o Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201

Re: Seaport Square Project Comments

Dear Kairos:

Brickman is the owner 313 Congress Street, 330 Congress Street, 300 A Street and 51 Sleeper in the Fort Point Channel area. Because of our investments, we are closely following the progress of the proposed Seaport Square project. We have attended the public hearings and have met directly with Morgan Stanley to voice our specific concerns about the portion of the project referred to as Parcel H located along Seaport Boulevard.

Brickman is generally in support of Seaport Square and believes the project will become a vibrant destination within the City of Boston. Specifically, we are very excited about the retail component of the project as it will increase pedestrian traffic to the area. However, we are concerned that Parcel H will greatly contrast with the current character and historic nature of the Fort Point Channel neighborhood.

The majority of the existing buildings in the Fort Point Channel area are brick and beam in nature. Tenants clearly value the historic, low-rise nature of the neighborhood as confirmed by strong absorption figures and low vacancy rates. Much of the attraction to the area is due to the light and air characteristics as well as the waterfront views achieved from many of the structures. Brickman believes that the proposed design and massing of Parcel H will significantly alter the character of the Fort Point Channel area, which is very unique. We are also concerned about the effect of Parcel H on wind and shadow characteristics of adjacent buildings such as 51 Sleeper. We are confident our neighbors at 44 Farnsworth share the same concerns. BR.1

Brickman encourages the BRA to consider reducing the height of Parcel H and increasing density in a portion of the project that is not directly adjacent to the historic Fort Point Channel area. We are supportive of a low-rise retail structure at the intersection of Seaport Boulevard and Sleeper Street. In addition, we believe that the alleyways and pedestrian pathways behind Parcel H should be integrated with the Harbor Walk. BR.2

Brickman is a real estate owner, operator and developer and strongly believes that Seaport Square will greatly benefit the City of Boston. Our concerns are primarily with

712 Fifth Avenue New York, NY 10019 T. 212.541.5500 F. 212.956.5961 www.brickmanre.com

the current design of Parcel H and its impact on abutting properties and the overall Fort Point Channel area. We are hopeful that our comments herein, as well as the comments of our neighbors, will result in the reconfiguration of Parcel H.

Michael Bernstein in my office is responsible for our Boston Portfolio. Please do not hesitate to contact him with any further questions.

Sincerely,

Bruce Brickman

Cc: Kristin Kara, BRA
Michael Bernstein, Brickman

712 Fifth Avenue New York, NY 10019 T. 212.541.5500 F. 212.956.5961 www.brickmanre.com

9.6.4 Brickman

BR.1 Design and massing of Block H.

At the request of the BRA, the Proponent has relocated the proposed new location of the Chapel of Our Lady of Good Voyage from Block J to Block H. This new site will provide the Chapel a high visibility gateway location at the foot of the Moakley Bridge along Seaport Boulevard. The new Chapel, while not fully designed, is anticipated to be considerably lower in height than the previously proposed development on Block H, and more consistent with the massing of the neighboring buildings. Please refer to Figure 1-19.

BR.2 Height of Block H.

Please see response above.

From: Lukas, Linda [mailto:llukas@smma.com]
Sent: Thursday, July 31, 2008 5:15 PM
To: Kara, Kristin; Rourke, Jay
Subject: Seaport Square -- comments

Hi Kristin and Jay:

I am grateful to Mayor Menino for the opportunity to serve on the Impact Advisory Group for the Seaport Square project in South Boston.

In accordance with your Memo of June 2, today is the deadline date for Public Comment.

Relative to the overall project, but particularly to parcels A, H and J, my major concern is in regard to parking.

I understand that Gale International is interested in further discussing with the BRA designating the parcels H & J buildings as 100% affordable housing. These buildings will not provide below-grade parking.

Fortunately, parking is provided for the Parcel A condo building.

As a resident of 15 Sleeper Street for nearly 12 years, on-street, South Boston resident-sticker parking is at a premium.

The availability of resident sticker parking is challenging at best.

With 88 units/approx. 175 residents residing at 15 and 33 Sleeper Street...new owners of FP3 condominiums on Congress Street starting to move into their units...the increasing number of programs and activities at the Children's Museum...illegal parking in the resident sticker parking designated areas....metered parking/no overnight parking on Congress Street, Seaport Blvd. and other streets in the neighborhood...and no parking on private streets such as Farnsworth...residents have access to fewer and fewer resident sticker parking spaces.

Even though John Hynes plans thousands of below-grade parking spaces how many (especially affordable housing residents) will be able to afford to pay $250/$300++ per month to park one's car in a garage? Plus, I don't believe that we can count on people not driving their cars and using the T and public transportation. LL.1

I think it's fair to say that the City of Boston Transportation Department does the best they can to give as many parking tickets to as many cars as possible. However, I suspect that the BTD assigns as many BTD ticketing professionals to the Seaport District as to any other area of the city, which on any given day is not enough. I'm supportive of Mayor Menino's suggestion to increase the parking fines as a deterrent to park illegally in any neighborhood of Boston. But that in itself is not enough either.

Lack of parking for existing residents is at present a critical situation. Imagine the impact on the area when the Parcels H & J buildings and other Seaport Square buildings are completed.

Relative to the Parcels H & J, I agree with the Boston Civic Design Commission to request that architects ADD, Inc. re-think the use of multi-colored glass and eliminate the connector between the two buildings. I agree that the architecture of these 2 buildings need to more contextual and reflect and respect the warehouse district architecture. I hope that the BRA will also ensure that the architecture of these 2 buildings adequately complement the warehouse district architecture.

I happen to be a big fan of the David Hacin team's Parcel A design! Congratulations on a wonderful "gem" of a building.

Thank you for this opportunity!

Linda

9.7 Public Comments on the PNF/ENF

9.7.1 Linda Lukas

LL.1 Parking spaces (especially for affordable housing residents).

Please see Section 3.3.2.10.

Lamb, Ashley

From: Dan Shea [dwshea@gmail.com]
Sent: Sunday, May 11, 2008 9:33 PM
To: Seaport Square
Subject: Thank you, Gale!

Dear Gale International,

Thank you for what looks to be a fantastic development. I've been following Seaport Square for some time and have closely looked at the four public presentations. Your understanding of transport links and the need to build a diverse neighborhood that accommodates living, working, schooling, eating, drinking, sleeping and shopping is impressive. I am especially happy about the proportions of park/open space: Too much Boston development today is dictated by politicians' and community groups' demands that a large percentage of a development be open park space. In a city like Boston, where it's cold or muddy most of the year, that park space is used for a few months at most, and is an underutilized eyesore for the rest of the year. Seaport Square finds a great balance of dense development and park space. Bravo!

Looking at the presentations, there are a few areas where I wanted to give feedback:

1. The success of this area will be determined in large part by its accessibility. Your embrace of (underground, which is fantastic) parking, bike distribution centers, and ZipCars is great, and I'm happy to see an emphasis on public transportation, which looks poised to become an even bigger part of Bostonians' lives unless oil prices somehow plunge. However, it seems relying solely on the Silver Line for public transportation could be problematic. The Silver Line has limited capacity, and even native Bostonians like myself are always a bit hesitant to get on any bus, given their time inefficiency, lack of comfort and often-confusing routes. Subways, on the other hand, are infinitely more straightforward for tourists and residents alike. Using existing tunnels to bring in light rail could do much to ease transportation and accessibility concerns down the road.

2. I can't tell if the buildings shown in the renderings represent the final design, or if they are primarily placeholders, but as a general rule a development like Seaport Square can stand out and prosper by introducing a few different design elements or using high-quality, non-precast materials. If all the buildings are sheer glass, the development may be overpoweringly monolithic. It looks like Gale has a number of architectural firms lined up, so hopefully the buildings will have a diversity that reflects them. DS.1

3. Finally, regarding retail, Seaport Square will attract many more tourists and Bostonians over time if it rents at least a portion of its retail space to unique, local boutiques and restaurants rather than signing over a few contracts with TGI Friday's or PF Chang's. Given the presence of a number of other new developments, many of which have made their preference clear for national chain restaurants and stores, Seaport Square can stand out and carve its own niche by encouraging higher-value, local entrepreneurs -- a move that strengthens the surrounding community as well, thereby creating a class of more affluent potential residents/shoppers with a strong stake in the community. DS.2

That is how Boston's previous neighborhoods came about -- local entrepreneurs built their businesses, gained a stake in the community, and invested back in it -- and that model seems more successful than a Tampa-style big-box crush, where the economic benefit for locals (potential customers and residents) is marginal. I have no doubt in Mr. Hynes' commitment to the area and the people of Boston, but the City of Boston's apparent attempt to muscle out the Barking Crab was quite worrisome. The fact is, a somewhat-dingy, old-timey Boston landmark like the Barking Crab will be a draw over time; tourists as a rule flock not to the new developments but the old places that give a neighborhood its character. Allowing a fun, throwback restaurant like the Barking Crab to operate will draw people, especially tourists, to the waterfront and Seaport Square in general -- and the consumer power of foreign tourists seems to have proven its value to the American economy in recent months!

Once again, thank you to Gale for creating and following through on a great vision, recognizing the need for schools,

9.7.2 Dan Shea

DS.1 Design of buildings.

The design of individual buildings within Seaport Square will continue as individual buildings begin to move forward.

DS.2 Rent to local restaurants and retail establishments, instead of chain stores.

Seaport Square's retail component has been conceived as an integrated urban retail environment. Retail is proposed at the street level for all buildings with the exception of the Chapel and educational facility. The shops will be a blend of local and regional stores and boutiques mixed with larger national retailers.

From: Michael Panagako [mailto:mpanagako@yahoo.com]
Sent: Friday, July 18, 2008 5:04 PM
To: Kara, Kristin
Subject: Seaport Square Public Commentary Period

Dear Kristin,

I am writing to voice my strong support for the planned Seaport Square project.

I'd like to see more height and density in this area to help make it a truly world-class development. MPP.1

My hope is that the development will help mitigate the "superblock" problem that the whole area has, and a neighborhood feel will emerge. I think the Gale team has done an excellent job with imaging the area as a "neighborhood" and not just a collection of mega-blocks.

I am a resident of Dorchester, near the South Boston line. I will be impacted by the increased traffic in South Boston that this project (and others) may bring, however I do feel that we should be planning cities for the future and not making decisions based on automobile traffic. The central location and Silver Line stops make the site ideal for dense, urban development.

Thanks,
Mike Panagako
17 Morrill Street,
Boston MA

9.7.3 Michael Panagako

MPP.1 Would like to see more height and density.

Comment noted.

Letters on the PNF/ENF Supporting the Project

Lamb, Ashley

From: Wamester, David
Sent: Tuesday, July 29, 2008 5:01 PM
To: Lamb, Ashley
Subject: Fw: Seaport Square Development

----- Original Message -----
From: Kara, Kristin <Kristin.Kara.bra@cityofboston.gov>
To: Boylan, Barbara; Wamester, David
Cc: Rourke, Jay <Jay.Rourke.bra@cityofboston.gov>; McGuinness, Richard <Richard.McGuinness.bra@cityofboston.gov>; Gingrich, Valerie <Valerie.Gingrich.bra@cityofboston.gov>; Carlson, David <David.Carlson.bra@cityofboston.gov>
Sent: Tue Jul 29 15:24:57 2008
Subject: FW: Seaport Square Development

FYI

From: Allen, Anne C. [mailto:Anne.Allen@ropesgray.com]
Sent: Tuesday, July 29, 2008 3:19 PM
To: Kara, Kristin
Subject: Seaport Square Development

Good Afternoon,
I am a lifelong resident of South Boston I want to voice my opinion of how excited I am that finally something is going to be done to the South Boston Waterfront area of South Boston. This development will benefit the community in all aspects, jobs, housing, retail, schools etc, I just hope this gets underway sooner than later so we can all enjoy the benefits of such a beautiful sight.
Thank you,
Anne Allen

Anne C. Allen
Legal Secretary
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From: AAALLENS@aol.com [mailto:AAALLENS@aol.com]
Sent: Tuesday, July 29, 2008 7:19 PM
To: Kara, Kristin
Subject: Seaport Square Development Project

I am writing to you in support of the Seaport Square Development Project in South Boston. I have lived in South Boston my entire life as have my parents and grandparents. I love South Boston and it is exciting to see all the changes, especially in and around the seaport area. With the proposed Seaport Square Development on the table, during these tough economic times, it gives our families and this city a brighter future.

Both my father and I work construction -- I am a Local 7 Iron Worker and my father is a Local 537 Pipefitter. Our livelihood depends on projects such as these and so does the livelihood of all the apprentice programs in all union trades across the city. Please consider investing in the future of this great City of (South) Boston.

Thank you,
Tom Allen
712 E. 6th Street
South Boston, MA 02127
617-269-9821

From: Anne-Marie Joyce [mailto:annemarie.joyce@jud.state.ma.us]
Sent: Thursday, July 24, 2008 1:07 PM
To: Kara, Kristin
Cc: Maryellen.Malcolm
Subject: seaport square developement

Kristin, I just wanted to write and let you know how excited I am about the proposed Seaport Square Developement. I live in South Boston and I am happy that something is finally being done to spruce up the waterfront area. The additional taxes from this developement will also be a boost to our economy. I am also encouraged by the fact that so many new construction jobs will be created especially in these financially trying times.

Lamb, Ashley

From: williamahern18@comcast.net
Sent: Wednesday, May 21, 2008 7:50 AM
To: Seaport Square
Subject: Re : Seaport Square Project

As a resident of South Boston for the past 39 years I am so happy to finally see a plan to develop an area that has been an eye sore for so many years . It has been a pleasure to raise a family in a community like South Boston that has great family values and I look forward to seeing a new community emerge that can share the same values and traditions .

I also look forward in seeing much needed jobs come from this project . In these trying times it will be a nice boost to our community whether it be in the construction industry or from the new businesses when it is complete .

As you can see I support this project and look forward to seeing it completed .

Sincerely ,
Bill Ahern

From: denise nagle [mailto:denise_nagle2003@yahoo.com]
Sent: Thursday, July 24, 2008 11:21 AM
To: Kara, Kristin
Subject: seaport square development project

Just a little note to let you know that I hope the above project can get started soon. The idea of building the waterfront up and the prospect of future jobs during construction as well as when the job is complete is very reassuring.

The idea that we will have a beautiful modern waterfront is a long time in the making. Let's get the project started.

Denise Nagle

South Boston resident

Lamb, Ashley

From: Wamester, David
Sent: Thursday, July 24, 2008 9:50 AM
To: Lamb, Ashley
Subject: FW: Seaport Square

David D. Wamester
Executive Vice President
Gale International
One Post Office Square
Suite 3150
Boston, MA 02109
Direct (617) 717-7975
Fax (617) 350-7571
dwamester@galeintl.com

From: Kara, Kristin [mailto:Kristin.Kara.bra@cityofboston.gov]
Sent: Wednesday, July 23, 2008 1:55 PM
To: Boylan, Barbara; Wamester, David
Cc: Rourke, Jay; Gingrich, Valerie; McGuinness, Richard; Carlson, David
Subject: FW: Seaport Square

FYI

From: Donna Casper [mailto:dmc1015@hotmail.com]
Sent: Wednesday, July 23, 2008 1:49 PM
To: Kara, Kristin
Subject: Seaport Square

A week ago Monday I attended my second meeting in regards to the Seaport Square development. I think Seaport Square will be a great asset to Boston. I have lived in South Boston my entire life and have seen numerous projects be developed. What I like about this project is there is something for everyone. People will be able to walk to work, families will have the ability to walk to local stores, attend church and also be able to go to a movie, have dinner or relax at a park. Seaport Square will be another great neighborhood in South Boston. My husband and I chose to remain in the city and raise our three children because of all the greast things the City of Boston has to offer and Seaport Square will be another one of those great assets.

Donna M. Casper

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From: Donna Crosby [mailto:donna_crosby2002@yahoo.com]
Sent: Thursday, July 24, 2008 12:17 PM
To: Kara, Kristin
Subject: Seaport Square Development

To: Seaport Square

Subject: Seaport Square Development

The development that is being proposed is something that is needed and wanted in the waterfront area. Living in south Boston my entire life I have seen many changes and the waterfront is one of them. This proposed development is exciting and I am hoping that is gets done quickly so that my children and future generations will be able to enjoy the benefits of such a great development.

Sincerely,

Donna Crosby
141 L Street
South Boston, MA 02127
Tel. #(617)523-8771

July 30, 2008

To Whom It May Concern:

I represent all of our South Boston residents.

The proposed development looks amazing. Obviously a lot of work has gone into keeping it in line with what already works in the City while adding a new and exciting feel. The fact that the developer is willing and able to complete this development all at once is very reassuring. Now there will definitely be something developed on the South Boston Waterfront, after 20 years in waiting. **This project alone will create thousands of construction and permanent jobs.** With the uncertainty in the financial markets worldwide, this project should get approved asap and get the work started.

Ed Marenburg
Organizer
Sheet Metal Workers Local 17
1157 Adams Street
Boston, MA 02124

From: Elizabeth Murphy [mailto:emurphy@smw17boston.org]
Sent: Wednesday, July 30, 2008 10:04 AM
To: Kara, Kristin
Subject: Seaport Square Development

The proposed development looks amazing. Obviously a lot of work has gone in to keeping it in line with what already works in the City while adding a new and exciting feel. The fact that the developer is willing and able to complete this development all at once is very reassuring. Now there will definitely be something developed on the South Boston Waterfront, after 20 years in waiting. **This project alone will create thousands of construction and permanent jobs.** With the uncertainty in the financial markets worldwide, this project should get approved ASAP and get the work started.

Elizabeth J. Murphy, 6 Brewster Street, South Boston, Ma. 02127

Lamb, Ashley

From: Wamester, David
Sent: Tuesday, July 29, 2008 4:04 PM
To: Lamb, Ashley
Subject: Fw: Seaport Square

----- Original Message -----
From: Kara, Kristin <Kristin.Kara.bra@cityofboston.gov>
To: Boylan, Barbara; Wamester, David
Cc: Rourke, Jay <Jay.Rourke.bra@cityofboston.gov>; Gingrich, Valerie <Valerie.Gingrich.bra@cityofboston.gov>; McGuinness, Richard <Richard.McGuinness.bra@cityofboston.gov>; Carlson, David <David.Carlson.bra@cityofboston.gov>
Sent: Tue Jul 29 15:57:28 2008
Subject: FW: Seaport Square

FYI

From: Ellen Cunniff [mailto:emcunniff@yahoo.com]
Sent: Tuesday, July 29, 2008 3:50 PM
To: Kara, Kristin
Subject: Seaport Square

Dear Ms. Kara,

I am sending this message in support of the Seaport Square Development. Ths development offers great benefits to both the South Boston community and the City of Boston with the creation of construction and permanent jobs, housing, retail space and schools.

It's wonderful to see something finally being developed in this area after so many years of waiting.

As a South Boston resident, I respectfully urge the BRA to green light this project.

Sincerely,

Ellen Cunniff

The substance of this message, including any attachments, may be confidential, legally privileged and/or exempt from disclosure pursuant to Massachusetts law. It is intended solely for the addressee. If you received this in error, please contact the sender and delete the material from any computer.

Help make the earth a greener place. If at all possible resist printing this email and join us in saving paper.

From: Flabbok7@aol.com [mailto:Flabbok7@aol.com]
Sent: Thursday, July 31, 2008 3:15 PM
To: Kara, Kristin
Subject: (no subject)

Hi, I went to the Community meeting on the Seaport Square and I came away thinking that the project was great and I cannot wait for the project to get going, very exciting. Thank You very Much.

July 30, 2008

To Whom It May Concern:

I represent all of our South Boston residents.

The proposed development looks amazing. Obviously a lot of work has gone into keeping it in line with what already works in the City while adding a new and exciting feel. The fact that the developer is willing and able to complete this development all at once is very reassuring. Now there will definitely be something developed on the South Boston Waterfront, after 20 years in waiting. **This project alone will create thousands of construction and permanent jobs.** With the uncertainty in the financial markets worldwide, this project should get approved asap and get the work started.

James Wool
Business Manager
Sheet Metal Workers Local 17
1157 Adams Street
Boston, MA 02124

From: Carter, Jean [mailto:jmcarter@lehman.com]
Sent: Wednesday, July 23, 2008 4:00 PM
To: Kara, Kristin
Subject: Seaport Square.....

To Whom It May Concern:

Boston is becoming more and more of an amazing city each day.

The proposed development of Seaport Square is exciting and will only add to the beauty of this city. As a South Boston resident, all of my life, it is wonderful to see the growth and construction all around...the neighborhood looks more beautiful, each day, as well.

Let's keep this going and create more jobs.....times are tough right now.....let's be part of getting things rolling and letting people get ahead once again.

Sincerely,

Jean M. Carter

From: Jody Cullinan [mailto:jodycullinan@gmail.com]
Sent: Wednesday, July 23, 2008 9:41 AM
To: Kara, Kristin
Subject: Seaport Square

Hello,

I am writing in support of the Seaport Square Development on the South Boston waterfront and wondering when construction will start. It sounds like the developers will do right in creating a vibrant, new neighborhood on under-utilized, prime waterfront space. There is also the bonus of new jobs created in the construction phase and on going with all of the new shops and restaurants planned.

Thank you,
Jody Cullinan

From: John Hurley <mrjohnhurley@yahoo.com>
Subject: Seaport Square
To: krisitn.kara.bra@cityofboston.gov
Date: Tuesday, July 29, 2008, 7:22 PM
Kristin:

I just wanted to write a quick note to you to express my support of the proposed Seaport Square project. As the son of a union ironworker, I am excited to know that his members, as well as members from the other building trades will have ample amount of work for the forseeable future, especially in light of our current economic situation.

From a long term perspective, I am glad that many permanent jobs will come as a result. Additionally, as the South Boston neighborhood is expanded, it will become an even better transition area into the financial district and fanueil hall.

As a fourth generation South Bostonian, I am confident that this project will create a positive atmosphere in our neighborhood, and will make the City of Boston an overall better place as well.

Thank you for your time, Kristin.

Take care,
John Hurley

Lamb, Ashley

From: Jon Cronin [croninjon@hotmail.com]
Sent: Thursday, May 15, 2008 8:40 AM
To: Seaport Square
Subject: Seaport Square Development

The proposed development looks amazing. Obviously a lot of work has gone in to keeping it in line with what already works in the City while adding a new and exciting feel. The fact that the developer is willing and able to complete this development all at once is very reassuring. Now there will definitely be something developed on the South Boston Waterfront, after 20 years in waiting. This project alone will create thousands of construction and permanent jobs. With the uncertainty in the financial markets worldwide, this project should get approved asap and get the work started.

Lamb, Ashley

From: Kathy Lafferty [KLafferty@sbnh.org]
Sent: Tuesday, May 20, 2008 9:15 AM
To: Seaport Square
Subject: SeaPort Square Project

As a lifelong resident of South Boston I was thrilled to have the opportunity to attend the community meeting at the Condon School on April 3rd and hear more about Gale's SeaPort Square project.

I have lived in SB for 37 years and I am now raising two children here. I plan to stay in South Boston and am so happy to see a project like this coming to our neighborhood.

The plan includes so many components that will add to the quality of life for our residents...business, residence, education, open space...all in an area of our community that has been without any development for so long.

I support this project and look forward to it's development.
Thank You.

Kathy Lafferty

Associate Director
South Boston Neighborhood House
617-268-1619x28
www.SBNH.org

From: Kelly Collins [mailto:Kelly.Collins@newbalance.com]
Sent: Wednesday, July 23, 2008 3:00 PM
To: Kara, Kristin
Subject: Seaport Square

I attended a meet in regards to the Seaport Square development. I think this project will definitely be a great asset to Boston. I'm a resident of South Boston and have lived here my entire life, I'm also a new mother of a six month old. And see this project as something great for my child's future. This project has something for everyone which is great. Seaport Square will be another great for South Boston. Lets look at what is there now and compare to what we could have. Young professionals will be able to walk to work and have access to local stores, movies or great dinning.
Families have the same benefits plus they will be able to go and relax at a great park. All in all I see this as huge win for South Boston residents.

Thank you,
Kelly Collins

From: Kim McDermott [mailto:kimcdermott@verizon.net]
Sent: Thursday, July 31, 2008 1:22 AM
To: Kara, Kristin
Subject: Gale International Project-Fan Pier

Hello- As a resident of South Boston I attended the meeting held at the Condon Community School and I would like to say I am in full support of this project. Sincerely, Kim McDermott

Lamb, Ashley

From: Lorraine Ahern [lorraine.ahern@yahoo.com]
Sent: Wednesday, May 21, 2008 9:31 AM
To: Seaport Square
Subject: seaportsquare project

As a lifelong South Boston resident I am thrilled to have an underused eyesore finally be developed into an exiting multi purpose area. I look forward to seeing the completion.

Thank You

Lorraine Ahern

From: Laborers223@verizon.net [mailto:Laborers223@verizon.net]
Sent: Wednesday, July 30, 2008 1:06 PM
To: Kara, Kristin
Subject: Hynes Project-Seaport Square Development

Currently work in the Boston area is pretty decent, but with the addition of the Hynes Project on the Waterfront it would help our members who are residents and taxpayers of the City of Boston with continued employment in the forseeable future. I myself have been to the community meetings with the BRA and the Gale Company. They have put on a tremendous program and outline of this project. Currently they spend 2 million a year on taxes to the City of Boston. When this project is complete it would bring in 50 million dollars of taxes for the City of Boston. This would not include the trickle down effect it would have onto other businesses within the community, not only during construction but also after completion.

This project must go forward now. We need this project for jobs and the economic benefits to the City of Boston. With the Hynes Project and the Fallon project going on at the same time, it would move Boston further up on the Convention scene to help put Boston on target as one of the major cities to bring people to for both Business and Pleasure.

Kristin Thank you for listening to me and please help us on this project for both our members and the City of Boston and its taxpayers.

Sincerely,

Martin F. Walsh
Business Manager
Laborers' Local 223

Lamb, Ashley

From: Wamester, David
Sent: Tuesday, July 29, 2008 10:06 AM
To: Lamb, Ashley
Subject: FW: Seaport Square Development

David D. Wamester
Executive Vice President
Gale International
One Post Office Square
Suite 3150
Boston, MA 02109
Direct (617) 717-7975
Fax (617) 350-7571
dwamester@galeintl.com

From: Kara, Kristin [mailto:Kristin.Kara.bra@cityofboston.gov]
Sent: Tuesday, July 29, 2008 9:48 AM
To: Boylan, Barbara; Wamester, David
Cc: Rourke, Jay; Gingrich, Valerie; McGuinness, Richard; Carlson, David
Subject: FW: Seaport Square Development

FYI

From: Maryquigley9@aol.com [mailto:Maryquigley9@aol.com]
Sent: Sunday, July 27, 2008 7:09 AM
To: Kara, Kristin
Subject: Fwd: Seaport Square Development

From: Maryquigley9
To: Kristin.Kara@bra@cityofboston.gov
Sent: 7/24/2008 1:34:02 P.M. Eastern Daylight Time
Subj: Seaport Square Development

The Seaport Square Development would be a great addition to the City. The addition of residential units, restaurants and businesses will bring the sense of community that the area is currently lacking. It is a fantastic new project that would be enjoyed by not only residents of Boston, but the many visitors to the BCEC and the City of Boston. The Seaport area will soon be the new Downtown. It will bring employment and tourism in a time when the economy can use a boost like this. I see it as a win-win situation.
Mary E. Quigley
South Boston

Get fantasy football with free live scoring. Sign up for FanHouse Fantasy Football today.

Get fantasy football with free live scoring. Sign up for FanHouse Fantasy Football today.

From: Malcolm, Maryellen
Sent: Wednesday, July 23, 2008 3:01 PM
To: 'Kristen.Karabra@cityofboston.gov'
Subject: Seaport Square Development

Hi
My name is Maryellen Malcolm and I am a lifelong resident of South Boston, I have been at quite a few of the community meeting in which the topic was Seaport Square Development. I just wanted to voice my opinion of how excited I am that finally something is going to be done in that district of South Boston which will benefit the community in all aspects, jobs, housing, retail, schools etc, I just hope this gets underway sooner than later so we could all enjoy the benefits of such a beautiful sight.
Let's get this started
Thanks
Maryellen

July 30, 2008

To Whom It May Concern:

I represent all of our South Boston residents.

The proposed development looks amazing. Obviously a lot of work has gone into keeping it in line with what already works in the City while adding a new and exciting feel. The fact that the developer is willing and able to complete this development all at once is very reassuring. Now there will definitely be something developed on the South Boston Waterfront, after 20 years in waiting. **This project alone will create thousands of construction and permanent jobs.** With the uncertainty in the financial markets worldwide, this project should get approved asap and get the work started.

Neal Kelleher
Sheet Metal Workers Local 17
1157 Adams Street
Boston, MA 02124

From: Nd831@aol.com [mailto:Nd831@aol.com]
Sent: Tuesday, July 22, 2008 3:54 PM
To: Kara, Kristin
Subject: Seaport Square

July 22, 2008

Dear BRA Board members:

My name is Nicole DiMaggio and I am a lifelong South Boston resident. I have been following the progress of the Seaport Square project for the past year. I am quite impressed with the changes and progression. I attended a presentation along with many others at the Condon School. I must say that 99 percent of the attendees were in support following the presentation.

I like many others ,was a bit skeptical of all the new developments down the waterfront. I must say I am singing a different tune after seeing the excitement of the businesses and restaurants. I know many people who work at the law firms, businesses, Convention Center, and the restaurants.
As a Boston Public School teacher I am thrilled that there will be educational and scholarship opportunities for the children of Boston. I truly believe that the only impact will be positive.

Sincerely,

Nicole DiMaggio
527 East Sixth Street
South Boston, MA

Lamb, Ashley

From: Wamester, David
Sent: Tuesday, July 29, 2008 5:01 PM
To: Lamb, Ashley
Subject: Fw:

----- Original Message -----
From: Kara, Kristin <Kristin.Kara.bra@cityofboston.gov>
To: Wamester, David; Boylan, Barbara
Cc: Rourke, Jay <Jay.Rourke.bra@cityofboston.gov>; McGuinness, Richard <Richard.McGuinness.bra@cityofboston.gov>; Gingrich, Valerie <Valerie.Gingrich.bra@cityofboston.gov>; Carlson, David <David.Carlson.bra@cityofboston.gov>
Sent: Tue Jul 29 16:03:08 2008
Subject: FW:

FYI

From: Patty Hurley [mailto:phurley@gis.net]
Sent: Tuesday, July 29, 2008 4:03 PM
To: Kara, Kristin
Subject:

I write in strong support of the proposed Seaport Development in South Boston. I have attended several community meetings regarding this project. As a third-generation South Bostonian, I am excited at the prospect of this wonderful addition to our community. As someone whose husband and son derive their livelihood from the construction industry, I know I speak for a lot of families who are similarly situated. But it is the aesthetic upgrade that it will bring to this area that most motivates me to write. I strongly urge that we get underway with this now. Given the awful economic conditions that prevail, we need this as an engine to propel us out of the mess we are in and into a brighter future. Thank you for your consideration.

Respectfully,

/s/ Patty Hurley

3 Hart Place

South Boston, MA 02127

617-269-3858

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Help make the earth a greener place. If at all possible resist printing this email and join us in saving paper.

From: JEANETTE GREELEY [mailto:paulgreeley@verizon.net]
Sent: Thursday, July 31, 2008 1:35 AM
To: Kara, Kristin
Subject: Gale International Fan Pier Project

This is to inform you as a resident of South Boston that I attended the meeting at the Condon School and I am in full support of this project.

Sincerely, Paul Greeley

From: Paula Ferris [mailto:Paula_Ferris@aubonpain.com]
Sent: Thursday, July 24, 2008 10:59 AM
To: Kara, Kristin
Subject: Seaport Square Development Project

My name is Paula Ferris and I am a lifelong resident of South Boston. I have been to the community meetings and have seen the development plans for Seaport Square. I think that this project will be a great asset to South Boston and am glad to finally see something done with the area. Not only will this project provide much needed jobs during the construction, it will also provide housing, schools and jobs once the project is complete. I hope that this project approved.

Lamb, Ashley

From: Paula Wool [Paula.Wool@caritaschristi.org]
Sent: Monday, May 12, 2008 11:43 AM
To: Seaport Square

Can't wait for this. It is exciting and a great win for South Boston!

Paula Wool

From: renee bothwell [mailto:rbothwell2@yahoo.com]
Sent: Wednesday, July 23, 2008 1:42 PM
To: Kara, Kristin
Subject:

To: Seaport Square
Subject: Seaport Square Development

I have been to a few meetings and have heard great things re this project. I am in favor of the project and feel it should be approved asap.

renee bothwell

July 30, 2008

To Whom It May Concern:

I represent all of our South Boston residents.

The proposed development looks amazing. Obviously a lot of work has gone into keeping it in line with what already works in the City while adding a new and exciting feel. The fact that the developer is willing and able to complete this development all at once is very reassuring. Now there will definitely be something developed on the South Boston Waterfront, after 20 years in waiting. **This project alone will create thousands of construction and permanent jobs.** With the uncertainty in the financial markets worldwide, this project should get approved asap and get the work started.

Richard Keogh
Business Agent
Sheet Metal Workers Local 17
1157 Adams Street
Boston, MA 02124

From: Richie Neville [mailto:rneville@local33.org]
Sent: Wednesday, July 30, 2008 10:54 AM
To: Kara, Kristin
Subject: The Seaport Square Project in South Boston

July 30, 2008

Kristen Kara
BRA

Dear Kristen:

I have attended all the meetings for the Seaport Square Project and truly believe that this project will be in the best interest for the area and the community of South Boston. This project will provide employment for many residence of the area during construction and as well as full time employees upon completion.

If I can be of any assistance please feel free to contact me a (617) 350-0014

Sincerely,

Richard Neville
Business Agent
Carpenter Union Local 33

From: Gill, Rita (DET) [mailto:RGill@detma.org]
Sent: Tuesday, July 22, 2008 11:49 AM
To: Kara, Kristin
Subject: Seaport Square Development

Dear Kristin:
Please accept this letter on my behalf for the proposed waterfront development, it looks like it will be amazing. Obviously a lot of work has gone in to keeping it in line with what already works in the City while adding a new and exciting feel. The fact that the developer is willing and able to complete this development all at once is very reassuring. Now there will definitely be something developed on the South Boston Waterfront, after 20 years in waiting. This project alone will create thousands of construction and permanent jobs. With the uncertainty in the financial markets worldwide, this project should get approved ASAP and get the work started. It will keep people working as well as improving the city.

Thank you,

Rita McCarthy
26 Owencroft Road
Dorchester, MA 02124

Kara, Kristin

From: Gill, Rita (DET) [RGill@detma.org]
Sent: Tuesday, July 22, 2008 11:49 AM
To: Kara, Kristin
Subject: Seaport Square Development

Dear Kristin:
Please accept this letter on my behalf for the proposed waterfront development, it looks like it will be amazing. Obviously a lot of work has gone in to keeping it in line with what already works in the City while adding a new and exciting feel. The fact that the developer is willing and able to complete this development all at once is very reassuring. Now there will definitely be something developed on the South Boston Waterfront, after 20 years in waiting. This project alone will create thousands of construction and permanent jobs. With the uncertainty in the financial markets worldwide, this project should get approved ASAP and get the work started. It will keep people working as well as improving the city.

Thank you,

Rita McCarthy
26 Owencroft Road
Dorchester, MA 02124

July 30, 2008

To Whom It May Concern:

I represent all of our South Boston residents.

The proposed development looks amazing. Obviously a lot of work has gone into keeping it in line with what already works in the City while adding a new and exciting feel. The fact that the developer is willing and able to complete this development all at once is very reassuring. Now there will definitely be something developed on the South Boston Waterfront, after 20 years in waiting. **This project alone will create thousands of construction and permanent jobs.** With the uncertainty in the financial markets worldwide, this project should get approved asap and get the work started.

Robert Butler
Business Agent
Sheet Metal Workers Local 17
1157 Adams Street
Boston, MA 02124

July 30, 2008

To Whom It May Concern:

I represent all of our South Boston residents.

The proposed development looks amazing. Obviously a lot of work has gone into keeping it in line with what already works in the City while adding a new and exciting feel. The fact that the developer is willing and able to complete this development all at once is very reassuring. Now there will definitely be something developed on the South Boston Waterfront, after 20 years in waiting. **This project alone will create thousands of construction and permanent jobs.** With the uncertainty in the financial markets worldwide, this project should get approved asap and get the work started.

Russell Bartash
Business Agent
Sheet Metal Workers Local 17
1157 Adams Street
Boston, MA 02124

From: Stephen Buckley [mailto:sbuckley4@gmail.com]
Sent: Wednesday, July 30, 2008 6:16 AM
To: Kara, Kristin
Subject: Seaport Development

Hi Kristin,

I just wanted to take a minute and let you know how important the Seaport development is to the neighbors of South Boston. In a depressed real estate market and an uncertain economy, I think that the development of the Seaport area will provide countless jobs for construction industries as well as add to the property values to many homes in South Boston. Being within a mile of the development, I expect to use the pending construction as a salespoint if I ever decide to move. Though I've only lived in South Boston for two years, I strongly feel that the development will be a positive for the entire Southie community.

Thank you,

Steve Buckley
25 Dorchester St.

Lamb, Ashley

From: Wamester, David
Sent: Thursday, July 24, 2008 9:51 AM
To: Lamb, Ashley
Subject: FW: Sea Port Square

David D. Wamester
Executive Vice President
Gale International
One Post Office Square
Suite 3150
Boston, MA 02109
Direct (617) 717-7975
Fax (617) 350-7571
dwamester@galeintl.com

From: Kara, Kristin [mailto:Kristin.Kara.bra@cityofboston.gov]
Sent: Tuesday, July 22, 2008 5:23 PM
To: Wamester, David; Boylan, Barbara
Cc: Rourke, Jay; Gingrich, Valerie; McGuinness, Richard; Campisano, Heather; Carlson, David
Subject: FW: Sea Port Square

FYI

From: tdsbbsr@aol.com [mailto:tdsbbsr@aol.com]
Sent: Tuesday, July 22, 2008 5:09 PM
To: Kara, Kristin
Subject: Sea Port Square

Dear BRA Board Members,

I am writing to offer my support of the Seaport Square development in South Boston. Out of curiosity I attended the meeting held last week at the Condon School. WOW, I was impressed with the presentation. I am the father of four children and have resided in South Boston for over 46 years. I see great opportunity for employment for our children. I can't wait to have a book store that we can walk to. Please put the development on the fast track so that we all can enjoy the benefits in our lifetime. Mr. Hynes came across as an honorable man, the last owner wasted the community's time.
Two thumbs up for Seaport Square.

Sincerely,

Thomas Downs

4 East Seventh Street
South Boston, MA
02127

7/24/2008

9.7.4 Comments in Support of the Project

Comments noted.

Letters Received on the NPC

The Commonwealth of Massachusetts

William Francis Galvin, Secretary of the Commonwealth
Massachusetts Historical Commission

RECEIVED

APR 29 2009

MEPA

April 24, 2009

Secretary Ian A. Bowles
Executive Office of Energy and Environmental Affairs
100 Cambridge St.
Boston MA 02114

ATTN: Briony Angus, MEPA Unit

RE: Seaport Square, Boston, MA; EOEA# 14255; MHC# 44481

Dear Secretary Bowles:

The Massachusetts Historical Commission has reviewed the Notice of Project Change submitted for the above referenced project. After a review of the information submitted and MHC files, MHC has the following comments.

The project change does not change our previous finding of "adverse effect" (950 CMR 71.05(a)) because of the proposed demolition of the Chapel of Our Lady of Good Voyage. The Chapel of Our Lady of Good Voyage is included in MHC's Inventory of Historic and Archaeological Assts of the Commonwealth and is eligible for listing in the National Register of Historic Places. MHC would like to remind the proponent that consultation with the MHC and any interested parties is needed to resolve the adverse effect of the proposed demolition. MHC.1

MHC also reminds the proponent that this office will require additional information concerning the proposed improvements to the Old Northern Avenue Bridge, which is listed in the National and State Registers of Historic Places, in order to determine their effects to this historic property. MHC.2

MHC looks forward to receipt and review of the Draft Environmental Impact Report (DEIR) and the Final Environmental Impact Report (FEIR).

These comments are offered to assist in compliance with Massachusetts General Laws, Chapter 9, Section 26-27C, as amended by Chapter 254 of the Acts of 1988 (950 CMR 71.00) and MEPA. Please do not hesitate to contact Ann Lattinville of my staff, should you have any questions.

Sincerely,

Brona Simon

Brona Simon
State Historic Preservation Officer
Executive Director
Massachusetts Historical Commission

xc: Phil Weinberg, DEP
John Hynes, III, Gale International
Taya Dixon, Epsilon Associates
Ellen Lipsey, Boston Landmarks Commission
Sarah Kelley, Boston Preservation Alliance
Richard McGuiness, BRA
Demaris Santiago, FHWA

220 Morrissey Boulevard, Boston, Massachusetts 02125
(617) 727-8470 • Fax: (617) 727-5128
www.state.ma.us/sec/mhc

9.8 Comments Received on the Notice of Project Change

9.8.1 Massachusetts Historical Commission

MHC.1 Consultation regarding adverse effect of the demolition of the Chapel of Our Lady of Good Voyage.

The Proponent has requested to meet and consult with MHC to resolve the adverse effect of the proposed demolition.

MHC.2 Improvements to Old Northern Avenue Bridge.

The Proponent has shifted its funding commitment due to a request by the City of Boston to focus the improvements to Northern Avenue itself, including landscaping and other improvements.

Poseidon Enterprises, Inc.

DBA Neptune Marine Services LLC

DBA The Barking Crab
DBA Neptune Seafood and Lobster

319 A Street (Rear)
Boston, MA 02210
(617)542-0558
(617)542-0554

April 28, 2009

Ian A. Bowles, Secretary
Executive Office of Energy & Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02144

Re: Seaport Square, Boston: EOEEA Project No. 14255, Notice of Project Change

Dear Secretary Bowles:

This letter comments on the Notice of Project Change recently filed in the above-referenced "Seaport Square" project, requesting a continued "Phase I Waiver" for the proposed project changes. Thank you for the opportunity to comment.

Poseidon Enterprises' related entities remain direct, water-dependent abutters to some of the most significant jurisdictional portions of the Proponents' site area, particularly "Block A" tidelands and the immediately surrounding infrastructure. In addition, our unique and popular restaurant (The Barking Crab, recently selected in the May, 2009 Coastal Living magazine as one of the nation's best coastal dining destinations for "fun, friendly outdoor dining") shares responsibilities for Old Sleeper Street with the proposed Seaport Square Block A development, as approved in the South Boston Municipal Harbor Plan (SBMHP). In addition, the SBMHP includes highly intricate substitute Chapter 91 provisions for our site, intimately intertwined with those of the adjacent Block A.

The details of our substantial site access and business functionality concerns were provided in our prior comments of September 4, 2008 and July 30, 2008. These comments were addressed by your Final Record of Decision (ROD) of September 17, 2008 granting the requested waiver on the condition that:

...the Proponents provide MassDEP with written evidence of the support of the BRA, the City of Boston's Municipal Harbor Planning body, for the use of Old Sleeper Street in a manner that does not adversely affect access to and the operations of the various businesses located on Old Sleeper Street, which include water-dependent uses, both during the construction period and post-construction. The Proponents must ensure that existing service functions for these businesses are maintained and/or improved through the proposed improvements to Old Sleeper

Street. The Proponents must also ensure that proposed improvements to Old Sleeper Street do not impede any future uses at the Barking Crab Restaurant and/or Neptune Marine Services, including the future provision of a section of the Harborwalk, as envisioned in the Secretary's Decision on the SBMHP.

Similar conditions were included in the Public Benefits Determination issued by your office approximately 30 days later.

While we continue to wish the Proponents every success with this worthwhile and contributive venture, we must note the absence of any subsequent discussion or infrastructure planning involving our businesses since the issuance of the ROD. Where construction of Phase I is projected to be delayed until 2010, there is still time for us to be optimistic that these discussions will be successful when they do occur. At this time, however, we respectfully request that in granting a continued Phase I waiver for the changed project, that the specific conditions cited above be specifically reaffirmed.

Thank you again for the opportunity to comment.

Sincerely,

Stuart Vidockler

Stuart Vidockler for Scott Garvey, on behalf of Poseidon Enterprises

Cc: Richard Bourre, MEPA
Kristin Kara, BRA Project Manager
Kairos Shen, BRA Director of Planning
Richard McGuinness, BRA Waterfront Planner
Bryan Glascock, Boston Environment Department
Public Improvements Commission, City of Boston
Boston Water and Sewer
Boston Parks Department
Brad Washburn, CZM Boston Harbor Coordinator
Andrea Langhouser, DEP Chapter 91 Senior Planner
Gale International, Proponent
Epsilon, Attention Corinne Snowdon
Susan St. Pierre, Vine Associates (Poseidon)
Bruce Berman/Patty Foley, SHSB
Vivien Li, TBHA
Friends of the Fort Point Channel
Children's Museum (Louis Casagrande, PhD., President; JoAnne Baxter, Dir. Public Relations)
Dockside Place Condominium Association

9.8.2 Poseidon Enterprises, Inc.

Comments noted.

The Boston Harbor Association

for a clean, alive and accessible Boston Harbor

29 April 2009

RB

Secretary Ian A. Bowles
Executive Office of Energy & Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114
ATT: MEPA Office

RECEIVED
APR 30 2009
MEPA

RE: EOEEA #14255- Notice of Project Change
Seaport Square Project, South Boston

Dear Secretary Bowles:

The Boston Harbor Association, a non-profit public interest organization founded in 1973 by the League of Women Voters and the Boston Shipping Association to promote a clean, alive, and accessible Boston Harbor, is in receipt of the Notice of Project Change for the Seaport Square Project, South Boston.

Gale International proposes a number of changes to its overall 6.5 million square feet development in South Boston. The changes include the "swapping" of uses between different blocks; adapting building massing and orientation to better fit the urban scale; and a change in the construction sequencing of the project.

Blocks H and J, part of the Phase I Waiver request subsequently approved by your office, are proposed to exchange uses: Block H will be the site of the

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relocated Our Lady of Good Voyage Chapel, while Block J will be for residential use with retail/entertainment on the ground and lower floors. Blocks C and D will switch from office/ research space uses to residential and retail uses (Block C will also include entertainment space). Blocks L1 and L2 will become office/research space.

The project proponent anticipates that the project will be built in phases, rather than in one continuous process as originally planned.

The Boston Harbor Association has reviewed the Notice of Project Change and notes that a number of improvements have been made to the project since the filing of the Expanded Environmental Notification Form and Phase I Waiver request. We commend the project proponent for being responsive to public suggestions and comments. At the same time, because of the lack of details, there remain a number of questions related to the proposed changes. Our comments on the Notice of Project Change follow:

Massing along Northern Avenue: The proposed changes in the Notice of Project Change make a good effort at addressing massing issues along Northern Avenue which were identified by The Boston Harbor Association during the comment period on the Expanded Environmental Notification Form. Specifically, the original massing and heights of new buildings along Northern Avenue, together with the buildings across the street, would have created

a canyon-like effect for pedestrians and park users.

In the Notice of Project Change, it appears that building height on Blocks B, C, and D now step back from Northern Avenue, with greater height away from Northern Avenue. This appears to reduce the canyon-like feel found in the original proposal. We strongly support this change, and commend the project proponent for working closely with the City of Boston and the Boston Redevelopment Authority in addressing this issue.

No detail is provided in the Notice of Project Change regarding the dimensions of the buildings on Blocks B, C, and D, nor any information on the set-back from Northern Avenue. We expect that these details will be provided in the Draft Environmental Impact Report, and as part of the modeling and details of the wind and shadow impacts of the proposed buildings upon the pedestrian experience on Northern Avenue and adjacent side streets. As stated in a previous TBHA comment letter, the Draft Environmental Impact Report should indicate the wind and shadow impacts of the buildings on Blocks B, C, and D on park users utilizing the project's "Seaport Square" Park and the adjacent Fan Pier "Public Green." TBHA.1

Change in Uses of Buildings: Uses on Blocks H and J which had been approved in the Phase I Waiver request are now proposed to be "swapped". Block H, the first building on the south side of Seaport Boulevard, will now house the relocated Our Lady of

Good Voyage Chapel with worship space and a residence for the clergy, while Block J will be for residential uses with retail/entertainment on the ground and lower floors.

The Expanded Environmental Notification Form filed last year stated that the chapel and residence will be approximately 25,000 sq. ft. Relocation of the chapel to Block H will result in a much smaller building than the original 92,000 sq. ft. building proposed for the site. Because the chapel building is so much smaller than the original residential building, we believe that there is an opportunity for more open space or park on this parcel, and urge the project proponent and the Catholic Archdiocese to work together with the City of Boston to further enhance the Old Sleeper Street public way and to provide additional open space while not adversely impacting abutters and existing water-dependent uses. TBHA.2

At the same time, it is not clear from the Notice of Project Change whether the density of residential and retail uses originally proposed on Block H (about 92,000 sq. ft., of which 19,400 sq. ft. will be retail on the first two floors, and 72,200 sq. ft. of residential uses up above) is now proposed as part of the "swap" on Block J. This is particular relevant since Block J appears to be a much smaller site than Block H, and is not within Chapter 91 jurisdiction.

The Notice of Project Change does not indicate whether a much taller building is proposed for

Block J (the residential/retail uses originally planned on Block H called for a building of 85 ft. in the portion within Chapter 91 jurisdiction, and up to 116 feet outside of Chapter 91 jurisdiction), and what, if any, additional wind and shadow impacts may affect users of the existing and new open space parks. Although we have informally heard that the building on Block J may be 80-85 feet, information on the massing of the building needs to be included in the Draft Environmental Impact Report. TBHA.3

Blocks C and D, which face the Fan Pier development along Northern Avenue, are now slated for residences, with retail/ entertainment uses on the ground and lower floors. These uses complement those on the nearby Fan Pier site, and will help to create a 24/7 vibrancy in the neighborhood. With Blocks C and D now proposed for residential uses, the open space on Block F known as "Seaport Square" Park should be designed and programmed as open space/ park area usable for the new residents and local families, rather than merely an open space plaza for office tenants. TBHA.4

Blocks L1 and L2, originally proposed for residential/retail uses, will now be office/research space. This is consistent with the existing uses in the immediate area, and we support this change.

Phasing of Project: The 2008 Expanded Environmental Notification Form stated that the project would be constructed in one continuous

process. Because of economic conditions, however, the project proponent is now proposing seven phases over a nine year period, with construction starting in 2010.

Given the current economic climate, phased construction is much more realistic. It is not clear, however, given the remaining state and city permits still needed that construction can begin in 2010 or that the seven phases can be completed in nine years.

Of much greater concern to The Boston Harbor Association is the timing of the public benefits, particularly with the proposed phasing of the project.

Consistent with the Secretary's 2000 Decision on the South Boston Municipal Harbor Plan Amendment, the project proponent is required to provide 9,742 sq. ft. of public open space as part of the Phase I Waiver request approved by the Secretary last year. The project proponent indicated in the Expanded Environmental Notification Form that he would exceed the open space requirement by providing the following: Parcel E, next to the Boston Children's Museum, consisting of 8,075 sq. ft. of open space that had been banked; and at least 50% of the pedestrian, landscaping and art improvements to Old Sleeper Street which must be publicly accessible.

The Secretary's 17 September 2008 Final Record of Decision on the Phase I Waiver reads in part (page 8): "As part of the Chapter 91 Licensing process,

the Proponents must ensure that Block E meets the open space standard for Commonwealth Tidelands and that it is compatible with the adjacent Children's Wharf Park, which is currently undergoing a planning and landscape design process to develop a signature waterfront park."

TBHA.5

On a site visit to Block E earlier this week, The Boston Harbor Association was surprised and disappointed to see that Parcel E, located in close proximity to the Fort Point Channel and immediately adjacent to Children's Wharf Park, is now being used as surface parking. Given the fact that Parcel E has been "banked" since 2000 and given the fact that the parcel is now being used for parking rather than as part of Children's Wharf Park, The Boston Harbor Association will request during the Chapter 91 Waterways licensing process for the Phase I Waiver portion of the project that a six-month completion date from the time the License is recorded in the Suffolk County Registry of Deeds be included for adherence to the Secretary's open space standard cited above.

As part of the proposed schedule in the Notice of Project Change, the proponent states that Phase 2 of the project includes completion of Blocks B, C, D, E/F, and G. It is not clear when "Seaport Square" Park on Block F, one of two key open space areas to be built as part of the project, will be constructed. During the Chapter 91 Waterways Licensing process for Blocks B, G, H, and M, The Boston Harbor Association will request that the project proponent be required to complete and

maintain "Seaport Square" Park concurrent with the issuance of the certificate of occupancy for the first residential building on Blocks B, C, D, or G. We strongly support and encourage the project proponent to continue to coordinate planning of "Seaport Square" Park with the development of the Fan Pier's "Public Green" directly across the street. TBHA.6

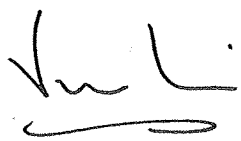
Other Issues: Page 7 of the Notice of Project Change states: "New Pedestrian Connection: As envisioned in the Fort Point Channel Watersheet Activation Plan, a new waterfront way will be created to connect the long-missing Harborwalk link between the Children's Museum and the Federal Courthouse."

As written, the above statement would seem to indicate that the project proponent intends to create a waterfront HarborWalk segment connecting the existing HarborWalk segments between the Boston Children's Museum and the Federal Courthouse. Since the project proponent does not currently own waterfront property between the Boston Children's Museum and the John Joseph Moakley Federal Courthouse, it would appear from page 7 of the filing that the proponent may be considering a joint effort and/or entering into an agreement with the Barking Crab Restaurant. This should be clarified during the Chapter 91 Waterways licensing process for the Phase I Waiver portion of the project. TBHA.7

On another matter, Attachment 2 of the Notice of Project Change includes only two plans: "Previously Proposed Plan" and "Currently Proposed Plan." However, the two plans are drawn to different scales, making it very difficult to compare the plans and to understand the changes. We ask that in all future filings that the plans be drawn to the same scale to facilitate understanding of the project and any changes. TBHA.8

Thank you for your consideration.

Sincerely,



Vivien Li
Executive Director
The Boston Harbor Association

9.8.3 The Boston Harbor Association

TBHA.1 Wind and shadow impacts of Blocks B, C and D.

Please see Sections 4.1 and 4.2 for wind and shadow impacts.

TBHA.2 Open space on Block H.

The Project currently proposes an open space in front of the proposed Chapel on Block H. The creation of a public space in front of the Chapel follows urban planning precedents of having an open space in front of public buildings (a commonly used design concept for both churches and chapels), both to create an open space for the public and an urban pause, a recess from the continuous fabric. The public square also functions for pedestrian traffic purposes, allowing more pedestrian space around the crossing of Seaport Boulevard, and creates an open view, articulating the 'gateway' condition of the Boulevard.

TBHA.3 Massing on Block J.

The massing of Block J is designed to fit in height and orientation to the surrounding Fort Point Channel District urban fabric. Please see Figures 1-3 and 1-4. Block J will remain essentially the same as what was proposed for Block H in the PNF/ENF. The program for Block J includes approximately 22,000 sf of retail space and approximately 64,000 sf of residential space.

TBHA.4 Seaport Square usable space.

The Proponent has demonstrated a strong commitment to support the City's bike riding initiatives. For the past three summers the Proponent has sponsored a Park and Bike Program at the Northern Avenue parking lot. The program is intended to bring a new level of convenience to commuters and promote a cleaner, fun and healthier mode of transportation for the City. The Proponent is committed to the program and will work with the BRA and transportation officials to identify appropriate new locations within the proposed development for bike related activities and services as plans progress into the design development stage.

TBHA.5 Block E.

The Proponent will work with the Children's Museum regarding open space commitments at Parcel E at the Children's Wharf Park. Further details of this open space will be finalized during Chapter 91 licensing.

TBHA.6 Coordination of development of Seaport Square Green with Fan Pier Public Green.

Relationships and connections between these and other cultural/public programs will happen through the Cultural Corridor. Please see Section 5.3.4 and Figure 1-15.

TBHA.7 Harborwalk.

The Proponent plans to provide a new waterfront pedestrian way along the City-owned Old Sleeper Street to link existing sections of the Harborwalk from the Children's Museum to the Federal Courthouse.

TBHA.8 Scale of plans.

The Proponent has made an effort to provide as many plans as practicable at the same scale.

The Commonwealth of Massachusetts
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114

Deval L. Patrick
GOVERNOR

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August 8, 2008

CERTIFICATE OF THE SECRETARY OF ENERGY AND ENVIRONMENTAL AFFAIRS
ON THE
EXPANDED ENVIRONMENTAL NOTIFICATION FORM

PROJECT NAME:	Seaport Square
PROJECT MUNICIPALITY:	Boston
PROJECT WATERSHED:	Boston Harbor
EEA NUMBER:	14255
PROJECT PROPONENT:	Gale International, Morgan Stanley and W/S Development Associates, LLC
DATE NOTICED IN MONITOR:	June 11, 2008

Pursuant to the Massachusetts Environmental Policy Act (G. L. c. 30, ss. 61-62H) and Section 11.06 of the MEPA regulations (301 CMR 11.00), I hereby determine that this project **requires** the preparation of an Environmental Impact Report (EIR). In a separate decision issued today I have proposed to grant a Phase 1 Waiver to allow the first phase of the project to proceed before the completion of MEPA review for the entire development.

The Proponents propose to make the Seaport Square project one of the largest sustainable neighborhoods in the country, and has targeted meeting Leadership in Energy and Environmental Design – Neighborhood Development (LEED-ND) at the Silver level for the entire twenty-block project area. Many of the LEED-ND Silver requirements are consistent with achieving significant energy reductions and subsequent reductions in greenhouse gases. The Proponents' commitment is timely, in light of the recent passage of comprehensive energy reform and economy-wide greenhouse gas regulatory mandates by the Legislature. Given the scale of the project and its current early stage in design, the development presents an opportunity to adopt innovative approaches to sustainability and energy use that go well beyond compliance with environmental regulations. I strongly encourage the Proponents to make a significant commitment related to clean energy and greenhouse gas emissions in the DEIR, so that this exciting project can be an integral part of the Commonwealth's effort to be a leader in clean energy and climate change solutions.

Project Description

As outlined in the Expanded Environmental Notification Form (EENF), the Seaport Square project will establish 20 new urban blocks in South Boston's waterfront district. The Proponents propose to construct of 19 new buildings on approximately 23 acres of land. The project site is generally defined by Northern Avenue, Seaport Boulevard, Congress Street and Summer Street. The building program includes approximately 6.5 million square feet (sf), consisting of 2.75 million sf of residential space, 1.25 million sf of retail space, 1.4 million sf of office and research space, a 500,000-sf hotel, and 600,000 sf of educational, civic and cultural uses. The project is proposed as a partnership between Gale International, Morgan Stanley and W/S Development Associates, LLC (the Proponents). The project is intended to be constructed continuously over seven to ten years.

The Proponents have designated a first phase of the project, and have requested a Phase 1 Waiver in the EENF. In Phase 1, the Proponents propose to develop three blocks of the project area, Blocks A, H and J. Block A will include 54,400 sf of residential space and 27,200 sf of retail/restaurant space for a total of 81,600 sf. Block H will include 72,700 sf of residential space and 19,400 sf of retail/restaurant space, for a total of 92,100 sf. Block J is the proposed new site of the Catholic Archdiocese of Boston's Our Lady of Good Voyage Chapel, which is currently located at 65 Northern Avenue. The relocated Chapel will be approximately 25,000 sf. The total gross floor area for the three blocks is 198,700 sf, or approximately 3 percent of the total project.

The project is envisioned as a transit-oriented development which will provide significant improvements to the public realm, including new public open spaces, new streets, extensive streetscaping and bicycle- and pedestrian-friendly areas. The proposed uses will be organized around two open spaces, Seaport Square and Seaport Hill, while Seaport Boulevard itself will become an extensively landscaped urban space. The Proponents have committed to working toward LEED-ND Silver for the overall project. In addition, the Proponents are targeting a LEED – New Construction (NC) Silver standard on Blocks A and H. Because construction on Block J will be directed by the Archdiocese, the final design parameters of the building have not been finalized.

The project site currently consists of public for-fee parking lots, which hold City of Boston's Air Pollution Control Commission permits for 3,647 commercial spaces. The Proponents propose to provide commercial parking spaces for 4,500 vehicles and 2,000 residential parking spaces in five new underground parking garages. The balance of the project after Phase 1 will be built on a series of large "bathtubs" with floor plates containing efficient below-grade parking and loading. Each of these bathtubs will provide platforms upon which multiple buildings will then be constructed. According to the Proponents, considerable construction efficiencies will be realized by constructing these bathtubs in a continuous sequence.

The project will create a number of new streets, continuing the grid layout of the Wharf District. New streets proposed in the EENF include extensions north of Farnsworth Street (as a pedestrian way), Thomson Place/Fan Pier Boulevard, and Pier Street. The Proponents will also construct a new street, Harbor Street that will connect the elevated Summer Street with Seaport Boulevard. Harbor Street will form a new T intersection with another new street, Autumn Lane,

which will provide access to Boston Wharf Road to the west and East Service Road to the east. Harbor Street will be continued as a pedestrian connection from Autumn Lane to Seaport Boulevard.

The EENF has been submitted as a joint EENF/Project Notification Form (PNF) to the Boston Redevelopment Authority (BRA). In response to this Certificate and the BRA Scoping Determination, the Proponents will prepare a combined Draft Project Impact Report (DPIR)/DEIR. While the EENF and DEIR will function as the PNF and DPIR for the BRA respectively, there is no formal linkage between the MEPA and BRA review of the project. The BRA will focus on the review of the project under the requirements of Article 80 of the City of Boston's zoning code, which generally includes more detailed review of building design. MEPA review will focus on the compliance of the project with the performance standards of required state permits, and with the intent of MEPA to ensure that the Proponents will avoid, minimize and mitigate Damage to the Environment.

Jurisdiction

The project is subject to environmental review and the preparation of a mandatory EIR pursuant to the following sections of the MEPA regulations: 301 CMR 11.03(5)(b)(4)(a), because it involves the new discharge of more than 100,000 gallons per day (gpd) of wastewater to a sewer system; 301 CMR 11.03(3)(a)(5), because it involves a new non-water dependent use on greater than one acre of tidelands; 301 CMR 11.03(6)(a)(6), because it will generate more than 3,000 new average daily trips (adt); 301 CMR 11.03(6)(a)(7), because it proposes the construction of more than 1,000 new parking spaces; and 301 CMR 11.03(10)(b)(1), because it will result in the demolition of a historic structure listed in the State Register of Historic Places.

The project requires the following permits and/or approvals from federal and state agencies: a National Pollutant Discharge Elimination System (NPDES) General Permit from the U.S. Environmental Protection Agency (EPA); a Height Restriction Notice and Section 19 Determination from the Federal Aviation Administration (FAA); a Chapter 91 License, a Sewer Connection/Extension Permit, and possible Air Plan Approval from the Department of Environmental Protection (MassDEP); a Sewer Use Discharge Permit and a Construction Dewatering Permit from the Massachusetts Water Resources Authority (MWRA); a Height Restriction Notice from the Massachusetts Aeronautics Commission (MAC); review by the Massachusetts Historical Commission (MHC); a possible Vehicular Access Permit from the Massachusetts Highway Department (MassHighway); approvals related to the Silver Line from the Massachusetts Bay Transportation Authority (MBTA); and compliance with MGL c. 40, Section 54A from the Executive Office of Transportation (EOT). Because the entire project site is within landlocked tidelands, the project will require a Public Benefits Determination from the Secretary of Energy and Environmental Affairs (Secretary), to be issued at the conclusion of the MEPA review process.

The project also requires numerous permits and approval from the City of Boston, including but not limited to: Article 80B Large Project Review and Article 80C Planned Development Area Review from the BRA; review and approval from the Boston Civic Design Commission; review from the Boston Landmarks Commission; Parking Freeze Permits from the Boston Air Pollution Control Commission; a Transportation Access Plan Agreement (TAPA) from the Boston Transportation Department (BTD); an Order of Conditions (OOC) from the

Boston Conservation Commission; and various permits from the Boston Water and Sewer Commission (BWSC).

The Proponents have indicated that they may seek financial assistance from the Commonwealth and that the project may involve land transfers from the Boston Redevelopment Authority and/or MassHighway. Given the possibility of financial assistance and/or a land transfer from the Commonwealth and the comprehensive subject matter of the required state permits, there is full-scope jurisdiction under MEPA for this project

Phase 1 Waiver Request and Criteria

The Proponents have requested a Waiver to allow Phase 1 of the project to proceed prior to the completion of the EIR for the entire project. Section 11.11 of the MEPA Regulations provides that the Secretary may waive any provision or requirement of 301 CMR 11.00 not specifically required by MEPA, and may impose appropriate and relevant conditions or restrictions, provided that the Secretary finds that strict compliance with the provision or requirement would: a) result in undue hardship to the Proponent, unless based on delay in compliance by the Proponent; and b) not serve to minimize or avoid damage to the environment.

In the case of a partial waiver of a mandatory EIR review threshold that would allow the Proponent to proceed to Phase 1 of the project prior to preparing an EIR, this finding shall be based on one or more of the following circumstances: 1) the potential environmental impacts of Phase 1 are insignificant; 2) ample and unconstrained infrastructure and services exist to support Phase 1; 3) the project is severable, such that Phase 1 does not require the implementation of any other future phases; and 4) the agency action on Phase 1 will contain conditions that ensure due compliance with MEPA.

Based on a review of the EENF and comment letters submitted to MEPA, and after consultation with state agencies, I propose to grant a Phase 1 Waiver for this project. This decision is detailed in the Draft Record of Decision (DROD), also issued today, which will be published in the next issue of the *Environmental Monitor* for a fourteen-day comment period, after which I shall reconsider, modify, or confirm the waiver.

SCOPE

General

As modified by this Certificate, the Proponents should prepare the DEIR in accordance with the general guidelines for outline and content found in Section 11.07 of the MEPA regulations. The DEIR should include a copy of this Certificate and of each comment letter submitted in response to the EENF. In order to ensure that the issues raised by commenters are addressed, the DEIR should include responses to comments. This directive is not intended to and shall not be construed to enlarge the scope of the DEIR beyond what has been expressly identified in this Certificate.

The Proponents should circulate the DEIR in accordance with Section 11.16 of the MEPA regulations; to those who commented on the EENF; to municipal officials in the City of Boston; and to any state and federal agencies from which the Proponents will potentially seek permits or approvals.

Project Description

The DEIR should include a thorough description of the entire project and all project elements and construction phases, including Phase 1. The DEIR should outline any changes to the project since the review of the EENF. It should describe the context of this proposal within the long-term redevelopment of the South Boston waterfront and address any redevelopment plans for abutting uses. The DEIR should provide a baseline of information about the project area and an initial analysis of the different types and levels of development that may be suitable for the Seaport Square area. The Proponents should use the DEIR as a tool to ensure appropriate planning for the full build-out of the site, analyze cumulative impacts, and provide an understanding of background conditions and resources present on the site.

The DEIR should include an existing conditions plan illustrating resources and abutting land uses for the entire project area and a proposed conditions plan (or plans) illustrating proposed elevations, structures, access roads, stormwater management systems, and utility connections associated with each phase of the project. The DEIR should include an analysis of wind and shadow impacts of the proposed buildings on pedestrians, open space and historic resources. The DEIR should also include a site circulation plan illustrating how motor vehicles, pedestrians and cyclists will be accommodated on the site for each phase of the project. The site circulation plan should delineate paths and connections to and along the waterfront. Plans must be provided for the entire site at a reasonable scale (e.g. 40 or 60 scale).

The Proponents should discuss how it developed the schedule for development in the project area and what factors influenced decisions about the order of building projects. The DEIR should provide information on what uses and buildings will occur in the project area in the interim period. The DEIR should provide an overview of other projects planned in the project area by other Proponents and should discuss how these planned projects will affect Seaport Square development plans, existing infrastructure, and potential cumulative impacts.

Permitting and Consistency

The DEIR should include a brief description of each state permit or agency action required or potentially required, and should demonstrate that the project will meet applicable performance standards. The DEIR should contain sufficient information to allow the permitting agencies to understand the environmental consequences of their official actions related to the project. The Proponents should clarify whether the project requires a Vehicular Access Permit from MassHighway.

The EENF provided a discussion of the project's consistency with the BRA's *South Boston Waterfront Public Realm Plan* (also known as the *Seaport Public Realm Plan*); the *South Boston Municipal Harbor Plan (SBMHP)*; and the BRA's 2002 *Fort Point Channel Watersheet Activation Plan*. In the DEIR, the Proponents should expand this discussion to include the Metropolitan Area Planning Council's (MAPC) *MetroFuture* report. I note comments from the

Boston Parks and Recreation Department regarding the requirement for an Open Space Impact Assessment. The Proponents should consult with the Boston Parks and Recreation Department on open space requirements and should provide a discussion of the amount and types of open space that will be provided as part of the project. The DEIR should outline the project's consistency with the City of Boston's *Open Space Plan 2008-2012.*

Alternatives

The Proponents state in the EENF that it considered earlier alternatives that included a greater amount of hotel and commercial uses, did not include a new road connecting Summer and Harbor Street, and did not fully realize the potential for open space at Seaport Square and Seaport Hill. The DEIR should contain a discussion of previously-considered site planning alternatives, and in particular, outline how site planning has been influenced by existing infrastructure, most notably roads and access to transit facilities, public access to the waterfront, and impacts to historic resources. The purpose of this discussion should be to evaluate how various frameworks that have informed the planning process have shaped the project and neighborhood and to demonstrate how the preferred alternative avoids, minimizes and mitigates environmental impacts to the maximum extent feasible. The Proponents should also evaluate the No Build alternative as required by MEPA regulation. In response to concerns regarding wind and shadow impacts along Northern Avenue, the Proponents should evaluate an alternative project layout that redistributes the proposed Northern Avenue buildings and heights.

Stormwater

The majority of the site currently consists of bituminous concrete used for surface parking. After construction, the site will consist of buildings, streets, sidewalks and landscaping. The Proponents assert that stormwater flows from the project area are anticipated to decrease as a result of the project due to a reduction in impervious area and more pervious areas consisting of open space and green roofs. New stormwater flows in the project area will consist primarily of rooftop drainage and runoff from paved surfaces.

The DEIR should provide a description, evaluation and mapping of existing drainage conditions and treatment systems in the project area. The DEIR should clarify whether the stormwater management system for the entire project area will be required to comply with MassDEP's Stormwater Regulations, or just that portion of the project located within the buffer zone to coastal wetland resource areas. The DEIR should provide drainage calculations, pre- and post-construction run-off rates and a detailed description of proposed stormwater best management practices (BMPs). The Proponents should provide sufficient information to demonstrate that the proposed stormwater management plan provides adequate protection for wetland resources, improves water quality and ecosystem function, manages surface and groundwater flows and integrates the environment fully into the urban infrastructure.

The project provides an excellent opportunity to incorporate Low Impact Development (LID) techniques in site design and storm water management plans. LID techniques incorporate stormwater BMPs and can reduce impacts to land and water resources by conserving natural systems and hydrologic functions. The primary tools of LID are landscaping features and naturally vegetated areas, which encourage detention, infiltration and filtration of stormwater on-site. Other tools include water conservation and use of pervious surfaces. The DEIR should

include a discussion of LID measures that the Proponents will incorporate into project design. I note that the Boston Water and Sewer Commission (BWSC) has stated that the Proponents must fully evaluate methods for retaining stormwater on-site before the Commission will consider a request to discharge to the BWSC system.

Wetlands

The Proponents note in the EENF that an Order of Conditions is required from the Boston Conservation Commission for activities proposed within the buffer zone to jurisdictional resource areas for development on Block A in the Phase 1 portion of the project. There are no additional wetland resource areas in the broader project area.

Chapter 91

Portions of the project site are within Chapter 91 licensing jurisdiction including all of Block A, the western end of Block B, the western end of Block H, the northeastern corner of Block G, and the northeastern portion of Block M. These areas total approximately 1.64 acres, or approximately 8 percent of the total project area. Phase 1 of the project includes 0.44 acres subject to Chapter 91. The entire project area is within landlocked tidelands and subject to a public benefits review and determination pursuant to Chapter 168 of the Acts of 2007. The Proponents have provided a review of the public benefits associated with Phase 1 as part of the EENF; a public benefits review for the remainder of the project should be presented in the DEIR.

The project site is located within the area of the existing South Boston Municipal Harbor Plan (SBMHP), which was approved in 2000. The Proponents assert that the proposed project will fulfill the goals of the SBMHP by activating the South Boston Waterfront and promoting public use of the Fort Point Channel and Boston Harbor. The Expanded ENF includes a general description of uses and structures and their consistency with Chapter 91. The DEIR should expand this discussion for parcels outside of the Phase 1 project area that are subject to Chapter 91, and should describe and illustrate how the project will achieve consistency with the Chapter 91 regulations, as amended by the SBMHP. The Proponents note in the EENF that it may seek one or more amendments to the SBMHP to allow additional height on a portion of Parcel B in exchange for additional open space or other offsets. The Proponents should provide additional detail on the potential need for and process related to a MHP amendment.

Coastal Zone Management

The project site is located within the Coastal Zone. The Proponents should outline in the DEIR how the project will meet the consistency policies of the Office of Coastal Zone Management.

Water Resources

A study of surface and groundwater that includes inventory, mapping, water quality, and quantity assessment should be conducted for all surface and groundwater resources in the project area. The Proponents should identify potential impacts to groundwater from activities such as underground parking and remediation activities, and demonstrate the construction will not adversely impact groundwater. The Proponents state in the EENF that project-wide design

criteria will be developed to protect and maintain existing groundwater levels; the DEIR should provide further information on this effort. The Proponents should discuss compliance with the requirements of the City of Boston's Groundwater Conservation Overlay District for parcels within the District. The Proponents should outline a plan for monitoring groundwater levels before, during and after construction.

Wastewater

According to the EENF, the proposed development will generate approximately 988,000 gallons per day (gpd) of wastewater flows. Phase 1 of the project will generate approximately 27,000 gpd of wastewater. The DEIR should discuss how anticipated wastewater flows were calculated and indicate the percentage of sanitary and industrial wastewater in the projected flows.

The project will require a Sewer Connection Permit from MassDEP. The project area is served by the Boston Water and Sewer Commission's (BWSC) South Boston Interceptor – North Branch, at the Commission's Trilling Way Pumping Station. Flows to South Boston in Interceptor enter the MWRA's wastewater collection system at or near the Columbus Parks Headworks facility, prior to entering MWRA's Main Drainage Tunnel for transport to Deer Island. The Proponents propose in the EENF to route approximately 86 percent of the project's wastewater flows to the South Boston Interceptor – North Branch via A Street, avoiding Trilling Way. In response to comments from the BWSC, the Proponents should investigate other routes for sanitary flows that avoid pumping at Trilling Way. The Proponents should ensure that it has taken other planned developments into account in its analysis of the wastewater system's existing and future capacity.

While the BWSC and MWRA systems have the capacity to handle project flows during dry weather, these systems surcharge and overflow during large storms. The MWRA and BWSC are currently implementing a long-term control plan to bring combined sewer overflow (CSO) discharges into compliance with federal Clean Water Act and state Water Quality Standards. The MWRA has undertaken a hydraulic modeling effort as part of the CSO control planning. The Proponents should demonstrate in the DEIR that project flows fall within the model assumptions and will not compromise the required levels of CSO control. If project flows exceed the MWRA planning assumptions, the Proponents should include measures to reduce infiltration/inflow (I/I) to offset the flows. The Proponents must confirm in the DEIR that the project will be served by separate sanitary and storm drain systems.

The DEIR should provide a discussion of current infiltration and inflow (I/I) in the project area and identify any current City of Boston or state efforts to reduce I/I. Comments from MassDEP, the MWRA and the BWSC state that the Proponents will be responsible for removing I/I at a minimum ration of 4:1, which equates to a volume of 3,952,000 gpd of I/I that must be removed from the system. The Proponents should outline in the DEIR how it will meet I/I removal requirements for the project.

The Proponents should clarify in the DEIR whether any dewatering will be required during construction, and whether these flows can be discharged into existing storm drains, or if groundwater will be discharged into the sanitary sewer system. The Proponents should note comments from the MWRA regarding permitting requirements for construction site dewatering.

The Proponents should clarify the potential need for additional MWRA permits for the discharge of laundry effluent and/or process/laboratory wastewater.

Water

The project is anticipated to require approximately 1,087,000 gpd of water. Phase 1 will require 30,000 gpd. The Master Plan should describe, map and evaluate the existing water supply system. The Proponents should discuss whether the system is adequate for existing and proposed uses, fire protection and emergency connections. The Proponents should also estimate the volume of potable water that will be required for irrigation. The Proponents should provide more information on water conservation measures that will be implemented in the different uses proposed in the overall project.

Transportation

The Proponents presented a preliminary analysis of the project's traffic impacts in the EENF. Trip generation rates for the project were developed using the following Institute of Traffic Engineers (ITE) Land Use Codes (LUC): LUC 220 – Apartment, LUC 230 – Residential Condominium/Townhouse, LUC 310 – Hotel, LUC 520 – Elementary School, LUC 560-Church, LUC 710 – General Office Building, and LUC 820 – Shopping Center. Trip generation rates for the Performing Arts Center were estimated using data collected at the Boston Opera House and the Boston Transportation Department's (BTD) Transportation Access Plan Guidelines. As outlined in the EENF, to more accurately reflect the project's urban location, the Proponents applied adjusted trip generation rates using factors provided by the BTD and ITE pass-by and internal trip rates. The development of the entire project is anticipated to generate 91,822 new daily vehicle trips (unadjusted), or 7,366 adjusted trips. Phase 1 of the project is anticipated to generate 2,658 new unadjusted trips, or 478 adjusted trips.

A full Traffic Impact and Access Study (TIAS) should be prepared for the DEIR in accordance with EEA/EOT Guidelines for Traffic Impact Assessments. The TIAS should analyze the impacts of the project related to vehicle trips; pedestrian, bicycle and transit trips; parking; and truck routes and loading activities. The project will be reviewed by the BTD as part of the Article 80 Large Project Review process. The TIAS presented in the DEIR may conform to the BRA/BTD Scope for the project to the extent possible; however I note that the build-out of the project area will also result in impacts to state-owned roadways. The Proponents must coordinate with the BTD, EOT, MassHighway, the Massachusetts Port Authority (Massport), the Massachusetts Turnpike Authority (MTA), and the Massachusetts Bay Transportation Authority (MBTA) and other abutting property owners in the area regarding long-term transportation planning for the area. The DEIR should discuss the consistency of the project with local, regional and state transportation plans.

The DEIR should describe and evaluate the adequacy of the existing City of Boston and state roadway network in the project area, with regard to the following: roadway design, construction and geometrics, roadway lighting, traffic signals and controls, current use and capacity, bridges, sidewalks, and any inactive roads. The DEIR should provide a plan of connections to other local, state and interstate roads and highways. The Proponents should evaluate traffic capacity of the existing roadway systems and identify any capacity or safety

problems on local roads or routes leading to the state and interstate network that would limit development.

The projected mode split for the project was developed based on the Proponents' review of the City of Boston's *South Boston Transportation Study* (1999), the State's *South Boston Transportation Summit* (2000), the BRA's *Seaport Public Realm Plan* (1999), and the City of Boston's *Fort Point District 100 Acres Master Plan* (2006). In addition, the Proponent's reviewed mode share assumptions that were used in the traffic analyses for the Commonwealth Flats Development Area (CFDA) projects, Fan Pier, Pier 4, and the Boston Exhibition and Convention Center. These developments incorporate mode shares that reflect the expansion of the Silver Line and changing travel characteristics in the project area. The DEIR should provide additional information related to trip generation, internal trips, pass-by trips, and mode split assumptions used in the TIAS. The DEIR should outline the Proponents' mode split goals for the project area. The Proponent's should discuss a plan for monitoring mode-split in the project area and should outline contingency measures that will be implemented if mode share goals are not met.

The Proponent's should address concerns regarding proposed improvements to Seaport Boulevard. While Seaport Boulevard is envisioned as an extensively landscaped boulevard for pedestrians and vehicles alike, it is and will remain an important truck route for the Port of Boston and the South Boston waterfront. The DEIR should also address specific comments from Massport regarding vehicular circulation in the project area.

The DEIR should identify appropriate mitigation measures for areas where the project will have an impact on traffic operations. The Proponents should provide a clear commitment to implement and fund mitigation measures and should describe the timing of their implementation based on the phases of the project.

Transportation Demand Management

The DEIR should present a comprehensive Transportation Demand Management (TDM) program that investigates all feasible measures to reduce site trip generation. The TDM program should identify measures and incentives to encourage the use of alternative modes such as transit, walking, and bicycling. The TDM plan should identify the existing modes in the project area including transit, walking and bicycling, analyze their existing and future conditions based on the project's impacts, and provide improvements to attract mode usage. The Proponents should also discuss how plans for individual buildings and the development of the project area as a whole will encourage sustainable transportation choices. The Proponents should provide clear implementation commitments including funding for TDM measures deemed feasible and necessary to sustain and/or increase mode usage over time to ensure a balanced and functional transportation system in the Seaport Square area.

Transit

The Proponents should provide a description and analysis of existing public transportation in the project area. Phase 1 of the project is anticipated to add 1,188 net new transit trips per day. The overall project is expected to generate 42,251 daily transit trips. The Proponents should discuss its goals for working with the MBTA to optimize transit service to the

project area. The DEIR should demonstrate that sufficient transit system capacity is available to meet the projected ridership increase. The Proponents should provide additional information on a proposed new headhouse connection between the Seaport Square open space parcel and the MBTA Silver Line waterfront route.

The Proponents state in the EENF that it may create a hub for a car-sharing vehicle service by providing 100 or more car sharing spaces in one or more proposed parking garages. The DEIR should provide additional information on this proposal.

The DEIR should assess existing water transportation in the project area and outline how the Proponents will either expand water transportation service and/or promote water transit usage.

Pedestrian and Bicycle Facilities

The development of the Seaport Square neighborhood offers significant opportunities to improve pedestrian and bicycle access to and within the site. The DEIR should evaluate project-generated pedestrian and bicycle trips and distribution, identify intersections and other areas where mitigation may be required to ensure safe access, and commit to appropriate mitigation measures. It should identify how the project will improve and support connectivity to and within the site. The DEIR should outline a pedestrian and bicyclist activity monitoring plan that evaluates usage, level-of-service at pedestrian/bike path intersections, and signal timing, to ensure that proposed facilities are adequate and that crossing times are maximized and safe. Plans submitted with the DEIR should provide details on proposed pedestrian and bicycle infrastructure including design standards for plantings, street furniture, signage, sidewalk/crosswalk widths, paving, bike lanes, bike racks and employer shower facilities. The Proponents should respond to specific comments from WalkBoston about pedestrian connections in the project area and potential conflicts between vehicles and pedestrians.

Parking

The project will provide approximately 6,500 underground parking spaces when complete; approximately 4,500 will be commercial public for-fee spaces and 2,000 will be residential. The project site has South Boston Parking Freeze permits from the City's Air Pollution Control Commission for 3,647 commercial parking spaces. The Proponents expect to seek new permits for approximately 850 additional commercial spaces from the Parking Freeze Bank. The Proponents should explain how the number of parking spaces was determined and discuss parking demand management for the project area. The EENF provided an overview of the project's consistency with BTD parking ratios. While proposed parking is less than the BTD parking ratio for residential, hotel and civic uses, the Proponents are proposing parking spaces at a greater ratio for office/research uses and for retail and other non-residential uses. The Proponents propose a ratio of 1 space per 1,000 sf of office/research, as compared to the BTD guideline of 0.7 spaces per 1,000 sf, and a ratio of 2 spaces per 1,000 sf for retail and other non-residential as compared to the BTD guideline of 0.7 spaces per 1,000 sf.

The DEIR should include a parking needs assessment and demonstrate that the parking supply is appropriate for a mixed-use development planned in conjunction with high-quality transit access. It should explain the nature of the on-site parking (i.e. commercial/visitor,

underground/surface, long-term/short-term), identify turnover rates for employees and others, and include an analysis of parking supply, demand and pricing in the project area. The DEIR should evaluate, and I strongly urge the Proponents to commit to, a project scenario in which the commercial parking supply is reduced, in light of the extensive public transit, bicycle and pedestrian opportunities in the project area.

Site Access/Loading

The DEIR should describe how the project intends to accommodate service and loading functions and the requirements of the project for service/loading infrastructure (e.g., projected demand, circulation, required turning radii, etc.). The Proponents should analyze the impacts of service and loading functions on the area traffic network.

Transportation Air Quality Impacts

The significant number of projected new daily vehicle trips has the potential to result in increased regional air pollutants. In response to comments from MassDEP, the Proponents should conduct an air quality mesoscale analysis comparing the Build and No Build conditions. The Proponents should consult with MassDEP regarding modeling protocol prior to conducting this analysis. The purpose of the mesoscale analysis is to determine whether, and to what extent, the proposed project will increase the amount of volatile organic compounds (VOCs) and nitrogen oxides (NOx) in the project area. The mesoscale analysis also will be used to determine if the project will be consistent with the Massachusetts State Implementation Plan (SIP).

If the mesoscale analysis of the Build condition, compared with the No-Build condition, indicates that the proposed project will result in an increase in VOC and NOx emissions, (which is expected given the large number of additional trips), the Proponents must develop, implement, or fund adequate mitigation measures to offset these increases to the maximum extent possible. The Proponents should note suggested Transportation Demand Management (TDM) measures recommended by MassDEP in its comments on the EENF.

Greenhouse Gas Emissions

The proposed project is subject to EEA's Greenhouse Gas Emissions (GHG) Policy that requires Proponents to quantify project-related GHG emissions and propose and quantify the impact of mitigation measures to reduce GHG emissions. The DEIR must include a GHG analysis that calculates emissions for both mobile and stationary sources and a corresponding mitigation program to reduce overall GHG emissions associated with the project. The GHG analysis should be conducted for each proposed building and use, and data inputs and modeling results should be provided for each building and cumulatively for the entire project. When evaluating emissions associated with indirect energy consumption, the Proponents should consider energy use associated with treating wastewater and transporting drinking water to the project area. I encourage the Proponents to quantify the GHG impacts of materials management for the project development and projected future operation.

The Proponents should demonstrate in the DEIR that it has evaluated and committed to GHG-reduction measures consistent with the GHG Policy. The Proponents should evaluate additional GHG mitigation alternatives as suggested by MassDEP and the Department of Energy

Resources (DOER) in their comments submitted on the EENF. The GHG analysis should clearly present modeling data inputs, the results of calculations used to establish the existing/baseline condition(s), the build condition(s), and the impact of proposed emissions-reduction mitigation. The Proponents should clarify which specific measures will be implemented, provide supporting modeling data that reflects the implementation of these measures, and clearly depict how these measures reduce GHG emissions in future build-with-mitigation scenarios.

The Proponents have committed to examining the feasibility of siting and sizing a central energy plant with cogeneration capabilities. As outlined in the EENF, the Proponents will compare emissions generated by this potential facility with a scenario in which existing utility services are used for each proposed building in the Seaport Square project area. As stated above, this project presents a unique and exciting opportunity to make a significant commitment related to clean energy and GHG emissions, in addition to the Proponents' goal of targeting LEED-ND Silver for the project. In light of the Proponents' stated sustainability goals and ongoing evaluation of measures including a cogeneration plant that have the potential to significantly reduce GHG emissions, I will entertain a request to engage the opt-out provision of the GHG policy, based on additional information provided by the Proponents. I encourage the Proponents to consult with the MEPA Office, MassDEP and DOER prior to submission of the DEIR regarding possible GHG mitigation measures or project-wide goals related to reducing GHG emissions.

Recycling/Solid Waste

The Proponents state in the EENF that it will present a recycling program for the project in the DEIR. This discussion should include a response to MassDEP's comments on materials management for the project.

Hazardous Waste

According to the EENF, one Release Tracking Number (RTN 3-13624) is associated with Block M1/M2. The EIR should map and identify known contamination sites in the project area and discuss the potential for additional sites to be encountered during construction. The Proponents should provide an overview of planned remediation efforts.

Historic Resources

The Chapel of Our Lady of Good Voyage located at 65 Northern Avenue is included in MHC's Inventory of Historic and Archaeological Assets of the Commonwealth. The project will result in the removal and relocation of the Chapel. MHC has determined that the project will have an adverse effect pursuant to 950 CMR 71.05(a) due to the demolition of an inventoried property. The Proponents should consult with MHC to resolve issues related to the adverse effect determination, and report on this consultation in the DEIR.

The EENF lists several other properties or sites within the project vicinity that are listed on the State and National Registers of Historic Places, including the Fort Point Channel Historic District. The Proponents assert that shadow impacts to the Fort Point Channel Historic District are anticipated to be minimal because the development blocks are generally north of the district. The DEIR should include a shadow study that will detail any impacts to historic resources in the

project area. Also within the project area is a proposed Landmark District currently under study by a committee of the Boston Landmarks Commission. One of two proposed "Protection Areas" associated with the proposed Fort Point Channel Landmark District - the Seaport Boulevard/Boston Wharf Road Protection Area - would encompass Blocks H, J, K and Q of the project. The goals of the Protection Areas are to protect view corridors into and out of the proposed landmark district and to ensure that the massing, land coverage, and height of new construction on adjacent lots is compatible with that of the proposed landmark district. Development in the Protection Area is subject to review by the Boston Landmarks Commission.

The Northern Avenue Bridge is listed on the National Register as a contributing resource within the Fort Point Channel Historic District and in the State Register of Historic Places. The Proponents should provide additional information to MHC regarding proposed improvements to the Bridge so that MHC can assess any potential adverse effects.

Construction Period Impacts

The DEIR should include a discussion of construction phasing, evaluate potential impacts associated with construction activities and propose feasible measures to avoid or eliminate these impacts. It should address impacts from erosion and sedimentation and address how dewatering will be managed. It should address the impacts of truck traffic on project area roadways and land uses. The Proponents must comply with MassDEP's Solid Waste and Air Quality Control regulations. The Proponents should implement measures to alleviate dust, noise, and odor nuisance conditions, which may occur during the construction activities.

I expect the Proponents will participate in MassDEP's Diesel Retrofit Program to minimize the air quality impacts of construction vehicles. The DEIR should include a commitment to participate in this program and describe the specific measures that will be employed including retrofitting of construction equipment with EPA-certified emission control devices and use of on-road Low Sulfur Diesel Fuel (LSD).

Mitigation

The DEIR should include a separate chapter on mitigation measures. It should include Draft Section 61 Findings for all state permits that include a clear commitment to mitigation, an estimate of the individual costs of the proposed mitigation, and the identification of the parties responsible for implementing the mitigation. A schedule for the implementation of mitigation, based on the construction phases of the project, should also be included.

Responses to Comments

The DEIR should include a copy of each comment letter submitted to MEPA as listed at the end of this Certificate. In order to ensure that the issues raised by commenters are addressed, the DEIR should include a response to comments. This directive is not intended to, and shall not be construed to, enlarge the scope of the DEIR beyond what has been expressly identified in this Certificate.

Circulation

The Proponents should circulate the DEIR in compliance with Section 11.16 of the MEPA regulations. Copies should be sent to those parties that submitted comments on the EENF, and to each federal, state and local agency from which the Proponents will seek permits or approvals.

August 8, 2008
Date

Ian A. Bowles

Comments received:

6/20/2008	Boston Groundwater Trust
7/2/2008	Epsilon Associates Inc., for the Proponent
7/9/2008	David D. Wamester, Gale International
7/10/2008	R. Jeffrey Lyman, Goodwin Procter
7/28/2008	Boston Preservation Alliance
7/30/2008	Massachusetts Water Resources Authority
7/30/2008	Poseidon Enterprises, Inc.
7/31/2008	Office of Coastal Zone Management
7/31/2008	Massachusetts Historical Commission
7/31/2008	City of Boston, Parks and Recreation Department
7/31/2008	WalkBoston
8/1/2008	Boston Water and Sewer Commission
8/1/2008	Massachusetts Port Authority
8/1/2008	Department of Environmental Protection, Northeast Regional Office
8/4/2008	The Boston Harbor Association
8/6/2008	City of Boston, Environment Department

IAB/BA/ba

Boston Redevelopment Authority

Boston's Planning & Economic Development Office

Thomas M. Menino, *Mayor*
Clarence J. Jones, *Chairman*
John F. Palmieri, *Director*

One City Hall Square
Boston, MA 02201-1007
Tel 617-722-4300
Fax 617-248-1937

November 19, 2009

John B. Hynes III, President & CEO
Gale International
One Post Office Square
Suite 3150
Boston, MA 02109

Dear Mr. Hynes:

Re: **Seaport Square, Boston, Massachusetts**
Project Notification Form and Environmental Notification Form Phase I Waiver Request for the Proposed Seaport Square in South Boston Project Consisting of Twenty-Three (23) Acres of New Development on the South Boston Waterfront – Revised Scoping Determination

Please find enclosed the Revised Scoping Determination for the Seaport Square project with corrections made to comments on Urban Design. The proposal consists of twenty-three (23) acres of new development on the South Boston Waterfront which include 6.5 million square feet of new development, six (6) acres of open space and below grade parking for sixty-five hundred (6500) vehicles. The Scoping Determination describes information required by the Boston Redevelopment Authority in response to the Project Notification Form and Environmental Notification Form, which was submitted under Article 80 of the Boston Zoning Code on June 2, 2008 and noticed in the *Boston Herald* on the same day. Additional information may be required during the course of review of the proposal.

If you have any questions regarding the Scoping Determination or the review process, please contact me at (617) 918.4317

Sincerely,

Jay Rourke
Senior Project Manager

Cc. James M. Tierney
Brenda McKenzie
Heather Campisano

BOSTON REDEVELOPMENT AUTHORITY
SCOPING DETERMINATION

FOR

SEAPORT SQUARE, SOUTH BOSTON, PROJECT NOTIFICATION FORM, ENVIRONMENTAL NOTIFICATION FORM, PHASE I WAIVER REQUEST

PREAMBLE

Gale International, Morgan Stanley, W/S Development Associates, LLC, collectively MS Boston Seaport, LLC (the "Developer", "Proponent" or "Development Team") submitted to The Boston Redevelopment Authority ("BRA") a Project Notification Form / Environmental Notification Form / Phase I Waiver Request (collectively, the "PNF") under Article 80 of the Boston Zoning Code (the "Code") on June 2, 2008 and noticed in the *Boston Herald* on the same day, to construct twenty (20) new city blocks with approximately six (6) acres of open space, nineteen (19) buildings which will contain approximately 2.75 million square feet of residential use (approximately 2500 housing units), 1.4 million square feet of office and research space, 1.25 million square feet of retail space, 600,000 square feet of educational, civic and cultural uses, 500,000 square feet of hotel space (approximately 700 keys) as well as below-grade parking for approximately 6,500 vehicles (the "Proposed Project" or "Seaport Square"). These uses will be organized around two (2) major open spaces, Seaport Square and Seaport Hill, while Seaport Boulevard itself will become and extensively landscaped urban apace. All buildings with the exception of the proposed chapel and educational institutions will have ground-floor retail and restaurant uses to provide a safe, inviting, and animated pedestrian experience. Written comments constitute an integral part of the Scoping Determination and should be responded to in the Draft Project Impact Report (the "DPIR").

Specific concerns below are highlighted for additional emphasis and consideration:

- Careful planning and consideration must be the nucleus of the DPIR. When a project of this scale and size is proposed, sensitivity to the surrounding area is essential to the success of the planning and approval process. The Development Team has extended itself throughout this initial phase of review, meeting with local residents, abutters, and city agencies. These conversations need to continue ensuring that what is presented in the DPIR is

not only a benefit to Seaport Square but to local resident, abutting interests and the City of Boston as a whole.

- It is clear in reading through the comment letters that the Proposed Project has created excitement and also some concern. Many of the letters show a desire to see the Proposed Project implemented immediately while others request that more study be given to certain aspects or parcels slated for development. The BRA encourages the Development Team to work with those parties who have expressed concern so that any and all foreseen impacts can be resolved or mitigated when the DPIR is filed.

- A greater understanding of design and programming must be a part of the DPIR filing. How will the transition from the Boston Wharf District blend with the Proposed Project? When one crosses over the Evelyn Moakley Bridge what will you see? How does old meet new? How does the programming of the Proposed Project mesh with the existing neighborhood? What will it feel like standing on Seaport Hill or walking down Autumn Lane? How will view corridors to the sea, convention center and financial district be enhanced by the architecture of the Proposed Project? These are just a few of the questions to be answered and this thought process should be evident in the DIPR.

- The Proposed Project intends to provide approximately sixty-five hundred (6500) parking spaces. How will these be allocated? In today's world, less dependency on automobiles is not only better for the environment but also better for one's health in general. Alternative modes of transportation should be encouraged. Biking and walking are not only great forms of exercise but they also alleviate traffic while creating a healthier neighborhood and city. The Developer should work to encourage these modes of transit to new occupants and visitors to the site.

- "Where are the kids going to play?" This is a question that is asked whenever a residential proposal is presented. Understanding that this is an urban setting and should have an urban feel the uses stated in the PNF suggest the number of children associated with this site will be high. Add to that future retail customers and abutters and you have an area that requires response to the question in the first sentence. Please do so in the DPIR.

- A strong city is one that includes residents who have a balanced mix of income levels in its neighborhoods. The Mayor's Executive Order clearly outlines the parameters of development and how a proposal can provide affordable housing to those whose income levels might not allow them the opportunity. The Development Team should be applauded for its

commitment to not only achieve the goals of providing fifteen percent (15%) of the total units as affordable but also how it intends to provide another fifteen percent (15%) of the total units as "work-force housing". The BRA requests that the DPIR show a detailed plan of how the Development Team plans to implement the fifteen percent (15%) affordable units and a definition and implementation of the fifteen percent (15%) "work-force housing" units.

- Construction Impacts. If approvals are to be granted the Development Team should take a pro-active approach to how the Proposed Project will be constructed. As with any urban development there needs to be a balance of construction related inconveniences and the day to day living, working, commuting and sightseeing that encompass the site. A detailed approach to the construction management needs to be included in the DPIR.

- The Proponent needs to show how it intend to provide a high level of Leadership in Energy and Environmental Design ("LEED") standards. Integrating green building components into the planning and design of new projects improves energy efficiency and promotes responsible and sustainable building practices.

- Please pay special attention to the comment letters. They represent the active residents, business leaders and elected officials of the community in which you intend to develop.

SUBMISSION REQUIREMENTS

FOR

SEAPORT SQUARE, SOUTH BOSTON, PROPOSAL FOR TWENTY-THREE (23) ACRES OF NEW DEVELOPMENT ON THE SOUTH BOSTON WATERFONT - DRAFT PROJECT IMPACT REPORT

The Boston Redevelopment Authority ("BRA") is issuing this Scoping Determination ("Scope") pursuant to Section 80B-5 of the Boston Zoning Code (the "Code"), in response to a Project Notification Form / Environmental Notification Form / Phase I Waiver Request (collectively, the "PNF") which Gale International, Morgan Stanley, W/S Development Associates, LLC, collectively MS Boston Seaport, LLC (the "Developer", "Proponent" or "Development Team") submitted on June 2, 2008 to construct to construct twenty (20) new city

blocks with approximately six (6) acres of open space, nineteen (19) buildings which will contain approximately 2.75 million square feet of residential uses (approximately 2500 housing units), 1.4 million square feet of office and research space, 1.25 million square feet of retail space, 600,000 square feet of educational, civic and cultural uses, 500,000 square feet of hotel space (approximately 700 keys) as well as below-grade parking for approximately 6,500 vehicles (the "Proposed Project" or "Seaport Square"). Notice of the receipt by the BRA of the PNF was published in the *Boston Herald* on June 2, 2008 initiating the public comment period that ended on July 31, 2008. Pursuant to Section 80A-2 of the Code, the Notice and the PNF were sent to all public agencies of the City and other interested individuals and parties. Written comments in response to the Notice and the PNF that were received by the BRA prior to the end of the public comment period are included in the Appendices of this Scope. The Scope requests information that the BRA requires for its review of the Proposed Project in connection with the following:

(a) Certification of Compliance of the Proposed Project pursuant to Article 80, Section 80B-6 of the Code; and

(b) Preliminary Adequacy Determination pursuant to Article 80, Section 80B-5.4(c) of the Code; and

The BRA is reviewing the Proposed Project pursuant to Article 80, Section 80B, Large Project Review, which sets out comprehensive procedures for project review and requires the BRA to examine the urban design, transportation, environmental, and other impacts of proposed projects. The Developer is required to prepare and submit to the BRA a Draft Project Impact Report ("DPIR") that meets the requirements of the Scope by detailing the Proposed Project's expected impacts and proposing measures to mitigate, limit, or minimize such impacts. The DPIR shall contain the information necessary to meet the specifications of Section 80B-3 (Scope of Review; Content of Reports) and Section 80B-4 (Standards for Large Project Review Approval) as required by the Scope.

Subsequent to the end of the seventy-five (75) day public comment period for the DPIR, the BRA will issue a Preliminary Adequacy Determination ("PAD") that indicates the additional steps necessary for the Proponent to complete in order to satisfy the requirements of the Scope and all applicable sections of Article 80 of the Code. If the BRA finds that the PNF/DPIR adequately describe the Proposed Project's impacts and, if appropriate, proposes satisfactory measures to mitigate, limit or minimize such impacts, the PAD will announce such a determination and that the requirements for the filing and review of a Final Project Impact Report are waived pursuant to Section 80B-5.4(c)(iv) of the Code. Before

reaching said findings, the BRA shall hold a public hearing pursuant to Article 80 of the Code. Section 80B-6 requires the Director of the BRA to issue a Certification of Compliance before the Commissioner of Inspectional Services can issue any building permit for the Proposed Project.

I. PROPOSED PROJECT DESCRIPTON

The proposed Seaport Square project is located on an approximately twenty-three (23) acre parcel of land that is generally bound by Northern Avenue the Old Northern Avenue Bridge and the Moakley Federal Courthouse to the north, Northern Avenue and the Fan Pier Development to the east, Summer Street and the Boston Convention and Exposition Center to the south and existing buildings associated with the Fort Point District to the west (the "Project Site").

The project is a mixed-use development over twenty (20) new city blocks with approximately six (6) acres of open space, nineteen (19) buildings which will contain approximately 2.75 million square feet of residential use (approximately 2500 housing units), 1.4 million square feet of office and research space, 1.25 million square feet of retail space, 600,000 square feet of educational, civic and cultural uses, 500,000 square feet of hotel space (approximately 700 keys) as well as below-grade parking for approximately 6,500 vehicles (the "Proposed Project" or "Seaport Square"). These uses will be organized around two (2) major open spaces, Seaport Square and Seaport Hill, while Seaport Boulevard itself will become and extensively landscaped urban apace. All buildings with the exception of the proposed chapel and educational institutions will have ground-floor retail and restaurant uses to provide a safe, inviting, and animated pedestrian experience.

II. DEVELOPMENT REVIEW REQUIREMENTS - ARTICLE 80

SUBMISSION REQUIREMENTS

In addition to full-size scale drawings, sixty-five (65) copies of a bound report and one (1) digital PDF copy containing all submission materials reduced to size 8-1/2" x 11", except where otherwise specified, are required. The report should be printed on both sides of the page. In addition, an adequate number of copies must be available for community review. A copy of this Scope should be included in the report submitted for review.

A. GENERAL INFORMATION

1. Applicant Information
   a. Development Team
      (1) Names
         (a) Developer (including description of development entity and type of corporation)
         (b) Attorney
         (c) Project consultants and architect
      (2) Business address and telephone number for each
      (3) Designated contact for each

   b. Legal Information
      (1) Legal judgments or actions pending concerning the Proposed Project
      (2) History of tax arrears on property owned in Boston by the Applicant
      (3) Evidence of site control over the project area, including current ownership and purchase options of all parcels in the Proposed Project, all restrictive covenants and contractual restrictions affecting the proponent's right or ability to accomplish the Proposed Project, and the nature of the agreements for securing parcels not owned by the Applicant.
      (4) Nature and extent of any and all public easements into, through, or surrounding the site.

2. Design Development Information (See **Appendix 5** for required design development and contract document submissions).

3. Project Area

   a. An area map identifying the location of the Proposed Project
   b. Description of metes and bounds of project area or certified survey of project area

4. Public Benefits

   a. Anticipated employment levels including the following:
      (1) Estimated number of construction jobs
      (2) Estimated number of permanent jobs

      The Proponent is expected to provide a workforce development plan and needs assessment for the Proposed

Project. The Proponent should describe the efforts it will undertake to ensure that an appropriate share of new jobs and construction jobs will be filled by Boston residents.

b. Current activities and programs which benefit adjacent neighborhoods of Boston and the city at large, such as: child care programs, scholarships, internships, elderly services, education and job training programs, etc.

c. Other public benefits, if any, to be provided.

5. Regulatory Controls and Permits

a. Existing zoning requirements, zoning computation forms, and any anticipated requests for zoning relief should be explained.

b. Anticipated permits required from other local, state, and federal entities with a proposed application schedule should be noted.

c. A statement on the applicability of the Massachusetts Environmental Policy Act (MEPA) should be provided. If the Proposed Project is subject to MEPA, all required documentation should be provided to the BRA, including, but not limited to, copies of the Environmental Notification Form, decisions of the Secretary of Environmental Affairs, and the proposed schedule for coordination with BRA procedure.

6. Community Groups

a. Names and addresses of project area owners, abutters, and any community or business groups which, in the opinion of the applicant, may be substantially interested in or affected by the Proposed Project.

b. A list of meetings held and proposed with interested parties, including public agencies, abutters, and community and business groups.

B. PROJECT DESCRIPTION AND ALTERNATIVES

1. Project Description

The DPIR shall contain a full description of the Proposed Project and its components, including its size, physical characteristics, development schedule, costs, and proposed uses. This section of the DPIR also shall present analysis of the development context of the Proposed Project. Appropriate site and building plans to illustrate clearly the Proposed Project shall be required.

2. Project Alternatives

A description of alternatives to the Proposed Project that were considered shall be presented and the primary differences among the alternatives, particularly as they may affect environmental conditions, shall be discussed. In addition, any alternative development studies requested by the Boston Landmarks Commission should be discussed.

C. TRANSPORTATION COMPONENT

Please refer the comments and information requested by the Boston Transportation Department ("BTD") included in **Appendix 1**.

D. ENVIRONMENTAL PROTECTION COMPONENT

Please refer to the comments and information requested by the Boston Environment Department ("BED") included in **Appendix 1**. In addition, the Proponent is requested to provide information on the following:

- The Proponent should consider and document how it would use the Leadership in Energy and Environmental Design (LEED) standards. Integrating green building components into the planning and design of new projects improves energy efficiency and promotes responsible and sustainable building practices.

E. URBAN DESIGN COMPONENT

The Proposed Project consists of some 6.5 million SF and covers 27 acres of essentially empty land in the South Boston Waterfront District. The Seaport Square Project, while within the wide bounds of the Public Realm Plan for the area, connects and quite literally fills in the blocks between areas of the District that have had their own more specific planning: Fan Pier and the Courthouse, Pier 4, the World Trade Center and Commonwealth Flats, the Convention Center, the 100-Acre Plan PDA, and the now-official Fort Point Channel Landmark District. It is critical, therefore, that the Seaport Square Project and PDA complete with detail the planning for this interstitial zone that will spring into existence, possibly in the phased blink of an eye. The Seaport Square Project at its core is an urban renewal project. The key goals of such are to reinvent and renew the socio-economic and physical fabric of the City for its ultimate betterment...and to conform to the overall Plan for the District.

Gale International purchased the land in the South Boston Waterfront ('Seaport') District assembled by the McCourt company and has initiated, working in pre-Article 80 meetings required by the BRA, an Article 80 public process which seeks approval of up to 6.5 million SF of mixed-use development spread throughout the 27 acres (and about 17 parcels, depending on how they are counted). Only Parcel A, proposed as part of the first phase, is fully and directly subject to Chapter 91. A PNF was submitted June 2, 2008 and the Proponent is maintaining a website with meeting and Project information.

Similarly to the Fan Pier Project, the BRA will require that the Seaport Square Project Proponent apply for a Master Plan PDA designation, and Seaport Square will face many of the same immense infrastructure issues and questions as did Fan Pier - as well as the difficulties inherent in doing so. Gale International, per the PNF, nevertheless intends to start Phase 1 (less than 200,000 SF) in 2009, and may start Phase 2 as early as 2010, with continuous build-out until completion in 2015. Gale is basing this strategy on the success of Songdo City in Korea, and preliminary marketing is reported to have indicated some interest in building out a *full context* that a major tenant can be part of. Although possible, we feel it prudent nevertheless to proceed with a PDA Master Plan, which can accommodate either short or long time spans and variable phasings.

The Project as envisioned comprises a mixed-use project totaling approximately 6.5 million square feet of space, including about 1.5 MSF Office space, 2.65 MSF Residential (~2500 units), 500,000 SF Hotel (~700 keys), 650,000 SF cultural/education, and 1.25 MSF Retail/restaurant. The use distribution and square footage may change somewhat as the Project is realized, but the initial

Phase proposed, consisting primarily of the smaller parcels fronting on Sleeper Street and Seaport Boulevard, includes retail and residential. Parking for the Project will primarily be placed underground, in large interconnected garages, with surface parking along newly created streets. The Proposed Project will ultimately define the heart of the South Boston Waterfront District, joining the Fan Pier with the Boston Wharf Company buildings and Downtown, the World Trade Center and Commonwealth Flats, and the BCEC. KPF and a host of other consultants are working on the Master Plan and its aspects, including local firms ADD Inc. and Reed Hildebrand on the overall Plan. A large park is planned to augment the open space of Fan Pier's Public Green; a new street will lead from elevated Summer Street down through a new residential neighborhood, spanning Congress Street in so doing.

DAYLIGHT COMPONENT

A daylight analysis for both build and no-build conditions shall be conducted by measuring the percentage of skydome that is obstructed by the Proposed Project building(s) and evaluating the net change in obstruction. If alternative massing studies are requested or result as part of the Article 80 development review process, daylight analysis of such alternatives shall also be conducted for comparison. The study should treat three elements as controls for data comparisons: existing conditions, the 'as-of-right' (the applicable general area zoning), and context examples. The areas of interest include all new streets, and the Project facades along Summer and Congress streets, Seaport Boulevard, Old Northern Avenue, Boston Wharf Road, B Street, and East Service Road. Daylight analyses should be taken for each major building facade fronting these public ways. The midpoint of each public accessway or roadway should be taken as the study point. The BRADA program must be used for this analysis.

If a Proponent wishes to substitute a more contemporary computer program for the 1985 BRADA program, its equivalency must first be demonstrated to the satisfaction of BRA staff before it is utilized for inclusion in the DPIR, and it must be commonly available to Boston development team users.

URBAN DESIGN

The BCDC voted to review the Proposed Project on June 3, 2008 and saw a preliminary presentation. The Commissioners present were supportive of the Project; the Project was referred to Design Committee. On August 5, 2008, the BCDC voted to recommend approval of Parcel A alone; the larger Project remains in Design Committee status. When sufficient progress in preparation of a Preferred Alternative in the DPIR in response to the Scoping Document has

been made on the design pursuant to preliminary BCDC, IAG, and BRA staff comments, BCDC Design Committee meetings should be scheduled by contacting David Carlson, Executive Director of the BCDC. Minutes from the June 3, 2008 BCDC meeting are attached.

It should be noted that we will expect the evolution of design strategies, as well as the compilation of your planning studies and conceptual diagrams conceived as part of a logical procession arriving at an urban truth, or comprehensible vision, for this significant area of Boston's evolving new South Boston Waterfront District; this will allow more in-depth comment at the DPIR stage. We reserve the right to comment at that stage toward the submission of an FPIR. In general, we will ask for studies related to all requested alternatives, with certain modifications, as well as comparisons to both existing conditions and an 'as-of-right' alternative. In a PDA Master Plan, we are expecting flexibility in massing and details, yet with strong, expressed planning principles and urban design guidelines which will determine the direction of future implementation – equivalent to form-based zoning.

The following urban design objectives should be addressed in the DPIR submission for all variations on your proposed scenarios.

1) Identify all federal, state, and local regulations that apply to the Project both existing and as proposed.

2) The Project shall take into account as strict (absolute) height limits the FAA limits as defined by the FAA and Massport, since the bounds impact this Project site.

3) Include mitigations. Standard alternatives for study include no-build, and an 'as-of-right' build-out...in this case FAR 3, with a height of 155', although the case may be made for FAR of 4.25 and heights of 250' within the PDA Height Zone. It should be recognized that a portion of the Project lies within the Protection Area bounds of the Fort Point . We will expect that the Proposed Project as represented in the DPIR *will have taken into account any necessary mitigating factors,* for scenarios with densities and heights beyond those alternatives, discovered as a result of environmental and other studies by the Proponent.

4) Performance Standard concept. The Proposed Project should meet the 'performance standard' of *generally* having the same or a lesser degree of environmental impacts than either the full 'as-of-right' build-out or existing conditions, whichever are most impactful. I.E., criteria such as daylight,

shadows, and wind should be *at least* neutral or improved *on average*, recognizing that some elements or points may be worse, but proving that the whole is better as a Project. We will expect in fact that mitigations or positive urban benefits will result from this Project and in balance far outweigh *any* negative impact. Heights, tower locations and setbacks should be adjusted to minimize environmental and visual impacts on the park areas in the vicinity (including the Harbor) as well as park areas created by the Project itself. Another way of stating this is that the Project should set its open spaces to advantage in terms of strategic natural lighting and programming on a daily basis.

5) Sustainability. The DPIR design should bring a high degree of innovation and conceptually be able to achieve LEED ND Gold. This Project should set the bar very high for waterfront area projects in Boston, and incorporate bold energy, recycling, daylight/quality of environment, green roofs and plantings, innovative connections to the water, and transportation initiatives. The nearby Artists for Humanity building is Boston's first LEED platinum-rated building; this site presents an opportunity to be bold as well.

6) Area Planning. DPIR submissions shall incorporate or consider the planning principles included in the South Boston Waterfront Public Realm Plan, the Commonwealth Flats Plan, and the Pier 4, Fan Pier and 100 Acre PDA plan areas, as well as the Fort Point Channel Landmark District. The planning studies and diagrams developed as part of the genesis of the Seaport Square Project should be brought into the DPIR document as a rationally ordered background planning exercise whose conclusions lead to the Proposed Project. Guidelines should be developed equivalent to form-based zoning to set the stage for the parameters in terms of building mass, treatment, uses, and open space strategies, such that they in turn may begin to form the basis of a PDA Master Plan with a presumed multi-phased, multi-designer strategy toward execution.

7) The highest building elements generally should be *set back* from the primary adjacent streets to the extent possible, particularly in areas of high pedestrian use or sensitivity. They should be *separated* from each other, within the constraints of the site's infrastructure and dimensions. They should be as *differentiated in height* as possible, to break up the perceived skyline. The nature of the current proposal deliberately tends to aggregate use-related massings, making the perceived mass larger (i.e. along Old Northern Avenue); this notion should be reconsidered. Where desirable to create an emphasis or entry, certain high elements could come straight down to the ground...but only if wind conditions permit such.

8) Enhance active ground floor program elements (local retail, hotels, cultural uses, galleries, restaurants) as a positive element of the Project, with

entries *possibly* on all sides. Invite entry into and through the sites and through the buildings, in both directions if possible. A hierarchy of such uses should be clarified and considered further than demonstrated in the PNF, with most uses augmenting strong pedestrian corridors, but some uses encouraging the use of new transportation connections (bicycle, boat, Silver Line) as well. We do not necessarily believe in the *even* spreading of retail uses *everywhere*; this has not been the experience of success in most areas. Build upon the intended and beginning transformation of adjacent areas (such as Fan Pier Boulevard) in this regard. Transparency and views into the uses must be maximized on each frontage. Incorporate bicycle stations into the Project...both public and private (*see also* BTD scoping likely regarding this).

9) Multiple upper story uses in different areas are accordingly encouraged to be retained in the Proposed Project going forward to enliven the streets with a diversity of activity throughout the day. Work to minimize the impacts of necessary service and parking functions on adjacent sensitive interfaces, particularly at strong public circulation nodes. Necessary service and access functions should *not* occur *directly* on the arterial streets.

10) Parking and Garage elements. The parking in general must be minimized. Submit information which justifies the scale and amount of parking proposed by analyzing both current levels of use and projected future levels with an expectation of expanded alternative modes of transit (also see the BTD scope). Parking here currently serves both the local and area workers, Fort Point residents and visitors to the area's attractions. The BRA asks that the infrastructure constraints (i.e. Silver Line, major conduits, etc.) be studied to clarify any limitations for the proposed phasing, given that a certain amount of the parking functions should continue unabated through all phases to serve the current and future demands of the area. The BRA expects that all service, parking, and transportation elements will be designed in harmony with the architectural treatments and integrated into the design. Above-grade garage floors should be avoided. MBTA entries should be incorporated into buildings or specially treated as airy pavilions; the easterly entries to the Courthouse station should be fully opened.

11) Public Space(s). The Proposed Project contains public park elements which both augment existing open spaces (Parcel E/Children's Park, Sleeper Street treatment/Harborwalk, Seaport Square/Public Green) and create new ones (Courthouse Square area, Seaport Hill). Such elements should continue in the DPIR design; they must be viable proposals in terms of both execution, maintenance, and programming elements. Such elements should enhance both perceived and actual qualities of year-round usability, light and airiness, plantings and greenery, and open invitation and sense of welcome to the public

as an essentially public space, and not act merely a forecourt for the building lobbies. The Courthouse Square space should be better defined...it is only hinted at in the PNF design. Connecting spaces must function as a public sidewalk 24 hours a day. More information on the public spaces and their function is requested in the DPIR; they should be demonstrated to be part of a system which connects to other parts of the neighborhood and the City. Higher public spaces - including the notion of a public observatory at some height - could be explored.

12) Street edges and new sidewalks created as a result of any version of the Proposed Project must conform to all applicable standards, including the use of wire-cut brick or other dimensionally stable concrete or stone pavers set and maintained to South Boston Waterfront and ADA standards, and be appropriately sized to bear pedestrian traffic peaks. Street trees and plantings should be included in site plans. Pedestrian paths in general should be reinforced, augmenting the multiple pathways around the site, and through the Project itself where possible.

13) The architectural expression of the tower elements should begin to be clarified. They should be sufficiently differentiated, and shaped as part of the skyline, but not read as a single 'complex'. They should respond to each other, and to any shaping view lines from nearby streets. Consider the view studies requested in the list of materials later to achieve a massing and orientation which begins to break the scale of the towers and podium elements down to that of the appropriate scale-giving datum elements in the immediate area. This effect will be most noticeable from the intermediate range of direct views, including views from nearby neighborhoods and from the Harbor.

14) The architectural expression of the podium elements in general should partake of the tower elements to connect the two vertically. Differentiation by programming elements (office, residence, hotel, etc.) lends itself to this effort, while possibly breaking up the podium wall. Again, it is anticipated that the Seaport Square Project will develop guidelines but also defined rough massing and use diagrams in these areas, for phased execution via the PDA.

15) Public Art. Special attention should be paid to public art, both indoor and outdoor. The Proposed Project presents an opportunity to connect multiple interior and exterior spaces in many different ways, and it would be helpful if the Proponent consulted with local artists during the design period to allow for an integrated aesthetic effect. The Mayor's Office of Arts, Tourism and Special Events might also be consulted.

16) Adhere to the spirit of the guidelines of the Fort Point Channel Landmark District.

17) The nature of Harbor Street must be considered along its length. The BRA has consistently advocated for the street network in the Seaport area, whether public or private, both as an extension of the local grid and as a key new connector from elevated Summer Street down to Seaport Boulevard. Reinforce the idea of adding rich urban complexity to connections, especially at Summer Street and Autumn Lane. Consider the nature of the bridge over Congress Street in the light of other such street bridges in the District – and celebrate the moment appropriately, rather than just building an overpass.

18) Pedestrian strategies. The Seaport Square plan as presented in the PNF is reasonably cohesive, with sectional studies to show the different walking environments, and this should be refined further in terms of hierarchy, shifts between open space and sidewalks and other alternative passages (i.e. through-building), and building strong connections to neighborhood and City walkways, paths and destinations. The pedestrian network should provide a sense of orientation and connection. This is also important from a vehicular point of view, but even more so for pedestrians traveling to and from (and within) the Seaport Square area. It is key that the Seaport Square project be subsumed seamlessly into the greater character of the larger District to which it is key. Pedestrian connection improvements should also be carefully considered in the light of phasing the overall Plan.

19) Connections to the neighborhood. Develop diagrams and concepts, translatable into reinforcing action, that are clearly intended to animate and connect the edges of the Seaport
Square project with the surrounding institutions and neighborhoods, and to continue or enhance through-block pedestrian path connections such as the connection continuing into Stillings Street opposite Autumn Lane. Connections to MBTA services (Silver line, shuttles and ferries) should be clear, and space must be provided for bicycles.

20) A PDA Master Plan implies area-wide thinking, regardless of the size of the overall project which is triggering the application. This should extend to ideas of transportation as well as water recharging and management, energy and communication/data systems. The percentage of employees, residents and visitors who bicycle may be limited by the amount of bicycle racks and reasonable storage facilities provided; this idea should be expanded as a strategy, and possibly extended into ideas of bicycle rental if applicable.

21) Area networks. Develop diagrams and plans that show connections inside and outside of buildings. Develop a plan for the open space networks which might connect through blocks, along edges and along the major pathways,

and will play a significant role in defining the nature of the overall Seaport neighborhood. Show how open spaces, including the spaces which are active, hidden, or which may serve as *ad hoc* places of relaxation and refuge, may be defined further in the future, even if not currently a part of the intended PDA entitlement.

Among others, the refined Seaport Square Master Plan design included in the DPIR must satisfactorily address all the above parameters. An accurate sense of scale of the Proposed Project in its context must be achieved. Focus on key distanced views, as well as key intermediate/user viewpoints, to guide the design composition of the revised Proposed Project. Reinforce all pedestrian pathways; develop a plan which shows the potential building programs and how they support such activity within the future pedestrian/public access network. Active programming that will engage the public and ideally spill seasonally (at a minimum) into the public realm at the ground floor should remain (and should be maximized). Take note of the fundamental contextual strengths of the site, including its connections to Harborwalk and ferry and shuttle connections and the MBTA, Fort Point Channel, the Boston Wharf Company area, and the Convention Center, and incorporate that sense into the overall design approach...tempered by the proposed uses. To the maximum extent possible, provide publicly accessible interior or rooftop spaces.

We reserve the right to add additional concerns during the course of the process of combined BRA staff, IAG, and BCDC review which may affect the responses detailed in the DPIR. The following urban design materials for the Proposed Project's schematic design must be submitted for the DPIR. It is recognized that some of the below items may be too specific for a PDA Masterplan, but such will eventually be required as the overall Project moves forward.

1. Written description of program elements and space allocation (in square feet) for each element, as well as Project totals.

2. Neighborhood plan, elevations and sections at an appropriate scale (1"=100' or larger as determined by the BRA) showing relationships of the proposed project to the neighborhood context:
    a. massing
    b. building height
    c. scaling elements
    d. open space
    e major topographic features
    f. pedestrian and vehicular circulation
    g. land use
3. Color, or black and white 8"x10" photographs of the site and neighborhood.
4. Sketches and diagrams to clarify design issues and massing options.
5. Eye-level perspective (reproducible line or other approved drawings) showing the proposal (including main entries and public areas) in the context of the surrounding area. Views should display a particular emphasis on important viewing areas such as key intersections, pathways, or public parks/attractions. A few of these viewpoints have already been used in presentations to the public; others should include views along major streets and open spaces, possibly sequenced to give a sense of experiential space, views from nearby residential neighborhoods (South Boston, Fort Point, East Boston), from BCEC, from the Harbor, et al. Long-ranged (distanced) views of the proposed project must also be studied to assess the impact on the skyline or other view. At least one bird's-eye perspective should also be included. All perspectives should show (in separate comparative sketches) at least both the build and no-build conditions; any alternatives proposed should be compared as well. The BRA should approve the view locations before analysis is begun. View studies should be cognizant of light and shadow, massing and bulk.
6. Additional aerial or skyline views of the project, if and as requested.
7. Site sections at 1"=20' or larger (or other scale approved by the BRA) showing relationships to adjacent buildings and spaces.
8. Site plan(s) at an appropriate scale (1"=20' or larger, or as approved by the BRA) showing:
    a. general relationships of proposed and existing adjacent buildings and open spaces
    b. open spaces defined by buildings on adjacent parcels and across streets
    c. general location of pedestrian ways, driveways, parking, service areas, streets, and major landscape features
    d. pedestrian, handicapped, vehicular and service access and flow through the parcel and to adjacent areas
    e. survey information, such as existing elevations, benchmarks, and utilities
    f. phasing possibilities
    g. construction limits
9. Massing model (ultimately in basswood) at 1":40'0" for use in the Authority's Downtown Model
10. Study model at 1" = 16' or 1" = 20' showing preliminary concepts of setbacks, cornice lines, fenestration, facade composition, etc.

11. Drawings at an appropriate scale (e.g., 1":16'0", or as determined by BRA) describing architectural massing, facade design and proposed materials including:
    a. building and site improvement plans
    b. neighborhood elevations, sections, and/or plans showing the development in the context of the surrounding area
    c. sections showing organization of functions and spaces, and relationships to adjacent spaces and structures
    d. preliminary building plans showing ground floor and typical upper floor(s).
    e. phasing, if any, of the Proposed Project
12. A written and/or graphic description of the building materials and its texture, color, and general fenestration patterns is required for the proposed development.
13. Electronic files describing the site and Proposed Project at Representation Levels one and two ("Streetscape" and "Massing") as described in the document *Boston "Smart Model": CAD & 3D Model Standard Guidelines*.
14. Full responses, which may be in the formats listed above, to any urban design-related issues raised in preliminary reviews or specifically included in the BRA scoping determination, preliminary adequacy determination, or other document requesting additional information leading up to BRA Board action, inclusive of material required for Boston Civic Design Commission review.
15. Proposed schedule for submission of all design or development-related materials.
16. Diagrammatic sections through the neighborhood (to the extent not covered in item #2 above) cutting north-south and east-west at the scale and distance indicated above.
17. True-scale three-dimensional graphic representations of the area indicated above either as aerial perspective or isometric views showing all buildings, streets, parks, and natural features.

SHADOW AND WIND COMMENTS

In addition to the comments and scoping by others, the Proponent is directed to consider the use of color as an alternative to dark tonality to indicate new shadows; these should be clearly shown to their full plan extent, whether on street, park, or rooftop. The Proponent is additionally requested to provide continuous dawn-to-dusk digital shadow animations. Do NOT duplicate studies for months in which the information is identical (i.e., a single animation for November/January, or May/July).

Regarding wind, all wind tunnel test points shall be approved by BRA staff before conduction of testing. Wind analysis may be requested at points within several blocks of the properties in question; where contiguous to open space, analysis may extend to likely bounds of no impact. Analysis of results and effective mitigation may need to be presented in the DPIR using diagram methodology so that the delta or changes

manifested by the project relative to existing or as-of-right conditions...again, whichever provides the higher base impacts...are clearly understood.

INFRASTRUCTURE SYSTEMS COMPONENT

An infrastructure impact analysis must be performed.

The discussion of Proposed Project impacts on infrastructure systems should be organized system-by-system as suggested below. The applicant's submission must include an evaluation of the Proposed Project's impact on the capacity and adequacy of existing water, sewerage, energy (including gas and steam), and electrical communications (including telephone, fire alarm, computer, cable, etc.) utility systems, and the need reasonably attributable to the Proposed Project for additional systems facilities. Clarify sewage tributary flows and constraints as well as possible energy choices. The location of transformer and other vaults required for electrical distribution or ventilation must be chosen to minimize disruption to pedestrian paths and public improvements both when operating normally and when being serviced, and must be described. Storm drain and sewage systems should be separated or separations provided for in the design of connections.

Any system upgrading or connection requiring a significant public or utility investment, creating a significant disruption in vehicular or pedestrian circulation, or affecting any public or neighborhood park or streetscape improvements, comprises an impact which must be mitigated. The DPIR must describe anticipated impacts in this regard, including specific mitigation measures, and must include nearby Proposed Project (i.e. Fan Pier, Russia Wharf, 316-322 Summer, 49-55-63 Melcher, Waterside Place, Pier 4, Congress Street Hotel, 100 Acre Plan, Jimmy's, et al.) build-out figures in the analysis. The standard scope for infrastructure analysis is given below:

1. Utility Systems and Water Quality

   a. Estimated water consumption and sewage generation from the Proposed Project and the basis for each estimate. Include separate calculations for air conditioning system make-up water

   b. Description of the capacity and adequacy of water and sewer systems and an evaluation of the impacts of the Proposed Project on those systems; sewer and storm drain systems should include a tributary flow analysis as part of this description

   c. Identification of measures to conserve resources, including any provisions for recycling or 'green' strategies, including green roofs

   d. Description of the Proposed Project's impacts on the water quality of Boston Harbor or other water bodies that could be affected by the Project, if applicable

e. Description of mitigation measures to reduce or eliminate impacts on water quality

f. Description of impact of on-site storm drainage on water quality

g. Information on how the Proposed Project will conform to requirements of the Ground Water Trust under Article 32, if applicable, by providing additional recharge opportunities or by describing any special provisions in a landfill area with presumed tidal groundwater levels

h. Detail methods of protection proposed for infrastructure conduits and other artifacts, including the Turnpike tunnels and structures, and BSWC sewer lines and water mains, during construction

i. Detail the energy source of the interior space heating; how obtained, and, if applicable, plans for reuse of condensate.

Thorough consultation with the planners and engineers of the utilities will be required, and should be referenced in the Infrastructure Component section.

2. Energy Systems

a. Description of energy requirements of the project and evaluation of project impacts on resources and supply

b. Description of measures to conserve energy usage and consideration of the feasibility of including solar energy provisions or other on-site energy provisions, including wind, geothermal, and cogeneration.

Additional constraints or information required are described below. Any other system (emergency systems, gas, steam, optic fiber, cable, etc.) impacted by this development should also be described in brief.

The location of transformer and other vaults required for electrical distribution or ventilation must be chosen to minimize disruption to pedestrian paths and public improvements both when operating normally and when being serviced, and must be described. Storm drain and sewage systems should be separated or separations provided for in the design of connections.

This proposal calls for the radical transformation of a District. The Proponent should investigate energy source strategies that take advantage of this scale of construction, including those that incorporate green roof strategies as well as solar orientation and materials/systems that maximize efficiencies, daylighting, wind, tidal, and geothermal systems, and cogeneration.

Excerpted from the minutes of the BCDC of June 3, 2008:

The next item was a presentation of the **Seaport Square Project** in the South Boston Waterfront District. John Hynes (JH) handed out postcards and introduced his team, including Jamie Von Klemperer (JVK) of Kohn Pedersen Fox, the lead for Songdo City, with 50 buildings under construction at a cost of six billion dollars - who led us to new ideas about how to approach the development of a site. This has the makings of a decent location, but it's not there yet; there are synergies created by the *volume* of our construction. We are going from 3600 to 6500 parking spaces, all below grade. All the loading is below grade. JH continues: Our intent is to do buildings up front: Phase 1, to build connections to the City, and then do the entirety of the rest. There is a school, an International School, pre-K through 12, and also a Pilot School. And a cultural center with an auditorium that doubles duty for the school, and works as a performing arts center other times. Morgan Stanley is our financial partner in Songdo, at One Lincoln - and here. JH noted other members of their design team.

AL: What is the concept for the entire area? JH: We view it as a neighborhood (points out all the elements). We see it with larger units, families, a workforce housing mix, and a mix of rentals and condos - 2500 total. DS: What is the role of the BCDC? Reviewing the overall Plan, Phase 1, more? JH: The Article 80 process overall, and individual buildings. DC: The BCDC review will parallel those approvals asked of the BRA. DS: Massing, setbacks, parcels, etc.? JH: We are hoping that what you see will BE the plan. DC: Tonight is intended as an introduction; we will go into more depth in Committee.

JVK presented the Plan. The conceptual framework is that there is an existing array of abutting plans and zones; our intent is to mesh with those as fabric. It's an amalgam of pieces; they all relate. (Goes through Powerpoint show, showing diagrams of connecting streets, open spaces, framing views, and more.) JVK: There is an FAA datum line, and lower datum lines have been set to retail and the context. Street improvements and the public realm include Seaport Boulevard, with already established guidelines. The connection from Summer Street creates a new District topography; we are being mindful of how this is experienced both internally and from the outside. (Points out grid-to-grid alignments.) In the residential area, we are looking at comparable residential squares, including those in the South End and Beacon Hill (Worcester and Louisberg squares). It's not Gramercy Park, but a more public experience. We will have an Arts program. It will be a District, not a neighborhood; it brings together a number of elements. Seaport Square itself will be the most public. The spaces in the buildings around it are also thought of as public; how we think about the space is helped by comparisons (shows). There are larger district connections, to the City, to the Waterfront District overall. All the buildings, as in Songdo, will be LEED certifiable. If all green areas are counted, they become considerable.

Gary Hildebrand (GH2): The (public) realm may outlast the buildings we are creating. And it's ALL 'made' land. We're building a slope, and everything has to allow for exposure, built to last. We are building in a palette that progresses, and are mindful of the infrastructure below. JVK: Bryant Park is a good example, a civic space surrounded by private uses - about the same size. It's passive much of the year, but there are also events. JVK then thanked the other team members (notes BK, Tamara, and Larry of ADD Inc.)....And the international, wider-flung members - the team fits the aspiration of the District that it's not only local, Boston, but also international in its interest. JH: The idea is to attract corporate users not here now, to a location that's unique - to reverse the trend seen, and not just to take from Cambridge or Route 128. We will be doing international marketing; as in Korea, with government support.

LW: Are the parcels lettered in order of construction? JH: No, first are A, H, and J, the smallest and easiest. They are an introduction to the district (points out on model, and notes the land swap with the Chapel property). The masses are not yet designed; they will not connect to the existing buildings. LW: I agree with Gary on the scope of the undertaking. I saw the ground plane plan; I want to know more about the sense of the District, being there. JH (pointing to the commercial blocks): It should feel like a financial district, was the thought.

AL: There was a lot said about the green space, which is appreciated. What is the strategy about the massing? I get it to here (the 'L' blocks). JVK: Thought was given to standard approaches, at one scale or another. But we considered instead a transition in scales, with different architects, not a superblock. JH: At one time, we thought of this as another South End, but changed that scheme, and we now have Libeskind and HO+K on two blocks. AL: What are the *rules* which govern the massing, is my question. JVK: We haven't written the guidelines, but have started. We acknowledge the sun, to allow sunlight into spaces. We hope the buildings support the overall diagram, and that there is *some* similarity in heights. AL: I am thinking SE Washington, with an Urban Renewal mix of low and high rises, which was pretty successful. But your intentions should be stated specifically. JH: That was the intent of the team and the BRA. But also marketing...about 90% of the units have 'good' views. AL: One of the things that's being suggested is a massing system, which is emerging, but has inconsistencies. JVK: Maybe that's where we go next. We acknowledge the concern. (JH brings out the Daniel Libeskind model, with three curved, sculptural forms.) JH: This is just to give you an idea. The composition starts to work differently.

DS: The street grid is a question (in the residential neighborhood). Also, how do the parks work together? (Notes Monument Square and Winthrop Training Ground.) MD: This is the biggest project we're likely ever to see. Really, it's not how there's a there there, but how this fits into a new 21st century City, what it does for Boston. Its energy, the moves made. JH: It's a huge thing; we are competing in the international arena. (He then goes through the comprehensive thinking.) There's a need, say, for 500K SF of

office space. But, where do the execs live? We'll give you 200 residential units as part of the deal. But, where do the kids go to school? We'll give 200 seats. Like that. Interconnections. Synergy. There is 32 million SF under construction in Korea; a model for our thinking, and happening elsewhere. AL: Consider decking over Congress Street at the school. Also, I question the adjacency of the parks, and next to a boulevard. Each is justified, but together? GH2: We have worked hard to get an asymmetrical boulevard, and the nature of Seaport Square is different than the Public Green (on Fan Pier). We have tilted the lawn to a skating rink, with a level traversal. JVK: And pavilions. AL: I was wondering if...it's defined on three sides, but larger than above, and wide open on one side. Then the Harbor....Is it a park? A park with a road? JVK: It needs definition and engagement. (JH shifts the building around on the model.) Two conversations began around the model, with AL and JVK talking about the residential neighborhood and JH talking with DS and MD about open space and programming.

DC suggested the time was appropriate, and with that, the Seaport Square Project was duly sent to Design Committee by the Commissioners.

[*Note: Parcel A alone was recommended for approval on August 5, 2008, without otherwise modifying the above action. The BRA Board acted on Parcel A in November, 2008.*]

F. PLANNING COMPONENT

The proposed Seaport Square project (Project) involves the construction of a vibrant, mixed use neighborhood on what is now 23 acres of surface parking lots on the South Boston Waterfront. The project is generally located between Northern Avenue, Seaport Boulevard, Congress Street and Summer Street, and includes a mix of residential, office and research, retail, hotel, educational, civic and cultural uses.

The Project lies within the Fort Point Waterfront Harborpark Zoning District (Article 42E), except for Parcel Q, which is located in the M4 District. The entire project lies within the South Boston Interim Planning Overlay District (Article 27P) and the Restricted Parking District. Portions of the project are located in the Groundwater Conservation Overlay District and the Fort Point Channel Landmark District Protection Area. Planned Development Areas (PDAs) are permitted in the Project area.

Planning Context

The Seaport Public Realm Plan (1999)

The Seaport Public Realm Plan provides a planning framework for the development of the South Boston Waterfront. The Seaport Square project fits into the planning

framework provided by the Seaport Public Realm Plan by meeting basic objectives outlined in the Plan.

- To connect the Seaport with Boston Harbor and to encourage people to experience the water as well as the land.

The construction of new streets and the activation of existing streets, such as Seaport Boulevard and Northern Avenue will provide active pedestrian experiences and connections from the neighborhood to the water. The open space and vehicular connection from Summer Street to Seaport Square Park and Fan Pier Green will provide a necessary visual and physical connection to the water's edge.

- To create a vibrant, mixed-use neighborhood in the Seaport, with substantial residential and civic uses that will attract people to the area even after the end of the workday.

The Project provides a mix of uses which includes more than 1/3 residential, greater than the 1/4 that the Public Realm Plan required. The Seaport Public Realm Plan is exemplarily in its introduction of civic and cultural destinations as future uses in projects. The Proponent should be commended for providing ample civic and cultural uses in the Project program. While the PNF suggests that much of this space will be located along Summer Street, we believe these uses should be strategically located to activate the gateways to the South Boston waterfront including Seaport Boulevard and Northern Avenue, and the Project's open space system particularly Seaport Square. Additionally, the proponent should assist the City with coordinating the existing cultural anchors of the neighborhood including the Boston Children's Museum, the Fort Point Arts community and the ICA, and the civic and cultural spaces proposed in the Fan Pier and Pier Four developments.

- To develop the Seaport within the economic context of the rest of Boston, adding to our City's commercial, office, hotel, retail, and tourist industries and enhancing our position as the economic engine of the region.

The Project provides a mix of uses including commercial, office, hotel and retail. Currently the mix includes only 8% hotel use. The proponent may want to consider increasing the amount of hotel space because of the project area's proximity to downtown Boston, nearby civic and cultural destinations and the BCEC.

The Project will provide additional units of affordable housing and provide both construction and permanent jobs in South Boston.

The Public Realm Plan directs appreciable density and height to areas around Silver Line stations and the area between Summer Street and Northern Avenue, making the Seaport Square project area appropriate for density.

The Public Realm Plan aims to design a compact, walkable environment with small-scaled streets, blocks, and neighborhood parks all with localized connections to the waterfront. The Plan provides a street grid for improved access to and around the waterfront area, which was adopted by the Project.

The Project has the opportunity to activate the three main East to West Streets recognized in the Public Realm Plan: Seaport Boulevard, Summer Street, and Congress Street. Likewise, the Project can potentially activate West Service Road, an important North to South connection to the waterfront. The Project's proposed grade change from Summer Street to the waterfront by providing a new street and a series of open spaces leading to the water is commendable. The proponent should provide more detail regarding pedestrian connections and the activation of the proposed street and open space.

South Boston Waterfront District Municipal Harbor Plan (2000)

The South Boston Waterfront District Municipal Harbor Plan (MHP) builds on the Seaport Public Realm Plan by providing additional guidance for the development of the South Boston Waterfront. In order to create a lively, urban waterfront, the MHP calls for a balanced mix of uses including at least 1/3 residential and no more than 1/3 office. These parameters help to ensure that there will be a critical mass of housing and a critical mass of neighborhood uses such as retail, civic/cultural, restaurants, and hotel.

The Seaport Square project provides a mix of uses which meets the specific parameters of the South Boston MHP, providing over 1/3 residential use and less than 1/3 office use. Other uses such as hotel, retail, civic/cultural, and open space are provided in the Project.

In order to create a vibrant, urban waterfront, the MHP provides relief from the Waterways Regulations (Chapter 91) to allow for increased height and lot coverage in certain locations within Chapter 91 jurisdiction.

Open Space and Lot Coverage

In order to create a neighborhood that reflects the urban form of Boston's other neighborhoods, the MHP provides relief from the Waterway's restriction of 50% lot coverage. The MHP allows for additional lot coverage as long as the required open space is provided elsewhere. The Secretary's Decision on the MHP provided very specific guidance regarding the amount and location of open space provided as an offset to additional lot coverage:

- McCourt/Broderick Parcel "E" (8,100+ SF), located immediately adjacent to the MBTA Mitigation Park (approximately three-quarters of an acre) off Sleeper Street, should be designated as public open space.

- The off-site open space area requirements for McCourt/Broderick Parcels "A", "B", "C", "D", and "F" shall be aggregated off-site on Parcel "E" within the Fort Point Historic North District, at a ratio of 1:1, until such time as the total area of Parcel "E" has been developed as public open space.

- Remaining open space requirements for McCourt/Broderick Parcels "A", "B", "C", "D", and "F" shall be aggregated off-site on the McCourt Fan Pier Gateway Project property (as it is referred to in the MEPA ENF filing) at the ratio of 1.25:1. (In other words, when open space is aggregated out of jurisdiction, the resulting area shall be 25% greater than that required under the Waterways Regulations.)

- All open space aggregated outside the harbor planning area shall be located adjacent to lands subject to Chapter 91 jurisdiction and establish a visual connection to the waterfront. I would encourage strongly that the open space provided outside the harbor planning area be located adjacent to the Fan Pier Public Green, or at the Courthouse Square location. Should Parcel C be developed after the completion of the McCourt Gateway project, open space may be aggregated outside of jurisdiction on Parcel C, subject to the same conditions set forth above.

- All open space provided must meet the standards for open space on Commonwealth Tidelands.

- All open space must be provided concurrent with the impacts associated with individual projects.

The Seaport Square project is proposing 25% of the total project to be open space. The Proponent should provide detailed calculations of open space required by the MHP and where those requirements will be met. Additionally, the Proponent should supply a calculation of the amount of open space provided that is not associated with Chapter 91 requirements.

As directed by the Secretary's Decision on the MHP, the Project provides a significant amount of open space adjacent to Fan Pier Green. The Project also provides open space across Northern Avenue from the Moakley Courthouse. This open space should provide ample public open space as it is across from a civic use, and a pedestrian connection from Seaport Boulevard to the Moakley Courthouse.

The Secretary's Decision required that open space be provided concurrently with new construction. The Proponent should provide a detailed phasing plan for public benefits.

The transformation of Sleeper Street adjacent to the Project's parcel A to a public promenade and Harborwalk link is a good early-on project benefit and we support its consideration as an open space offset.

Near-term public realm enhancements are critical to the existing neighborhood and the evolution of new development in the South Boston Waterfront District. The Proponent is considering a walkway/open space corridor connecting Seaport Boulevard and Northern Avenue in alignment with the Fan Pier development's Pier Street. We strongly encourage the Proponent to continue the design and implementation of this element.

The dedication of Parcel E to the Boston Children's Museum ("BCM") also provides an opportunity for the Project to offer open space enhancements ahead of new development. Parcel E is intended to be consolidated with the MBTA's open space and other publicly owned parcels into Children Wharf Park. The BCM and the City have worked on a conceptual design for this new park. The Proponent should consider supporting the implementation of this new neighborhood park.

The Project will provide over 40% residential use in the project area. The Proponent should consider varied types of open spaces both active and passive to support the growing neighborhood.

Court House Square is identified as a pedestrian way in the PNF. Earlier planning for this site anticipated not only a pedestrian link but also an open space along Northern Avenue. A more generous connection and set back will produce more usable open space and also address some of the concerns of building massing along Northern Avenue.

Height

The MHP provides guidance for height and massing to ensure that the ground-level environment remains pedestrian friendly. Building podiums should be scaled to provide a pleasant pedestrian experience, and tower elements should be designed with the massing of Fan Pier in mind.

The MHP provided height substitutions for several of the Seaport Square parcels, which were approved in the Secretary's Decision. The Secretary's Decision approved a height of 200' for Parcel A (Seaport Square Block B) and a height of 250' for Parcel B (Block G) and Parcel C (Block M1). The Secretary strongly suggests that the lower podium

elements (75') be located in Chapter 91 jurisdiction and the tower elements be set back from Chapter 91 jurisdiction.

Any shadow impacts resulting from the increased height are to be offset with additional open space. The quantity and location of the open space to offset any net new shadow impacts should be provided in a detailed chart that includes all open space (Chapter 91/MHP required, non jurisdictional requirements, offsets) and what it is counting towards.

Seaport Boulevard was designed and completed in anticipation of the density and height proposed in the various planning documents. The Public Realm Plan directs appreciable density and height to areas around Silver Line stations and the area between Summer Street and Northern Avenue. However tower elements along Northern Avenue should be positioned to avoid overpowering its pedestrian scale.

Inner Harbor Water Transportation Plan (2000)
The Boston Inner Harbor Passenger Water Transportation Plan provides a framework for a harbor-wide water transportation network and providing locations for water transportation facilities. The Project area will benefit from future water transportation infrastructure and services. There are water transportation terminals permitted for Russia Wharf and Fan Pier and a major terminal in design for Massport's World Trade Center. Since significant portions of the project area are within a ten minute walk to water transit services, the Proponent should consider support for water transit including subsidies as part of the Project's transportation analysis and also as a requirement for any extended Chapter 91 license terms.

Fort Point Channel Watersheet Activation Plan (2002)
The Fort Point Channel Watersheet Activation Plan (FPCWAP) provides a vision of the Fort Point Channel as a year-round, active, defining public space that connects neighborhoods to the water. Access to and around the Channel, and the activation of the Channel's watersheet are detailed in the plan, with uses such as floating art, public landings, kayaks, water taxis, floating parks, etc.

The implementation of the FPCWAP relies on support and active participation from the surrounding neighborhoods. Projects in the proximity of the Fort Point Channel, such as Seaport Square, can contribute to the implementation of the Plan by providing public benefits that are required of landlocked tidelands. Implementation of watersheet infrastructure and support for on-going programming should be required for any extended Chapter 91 license terms.

Public Infrastructure
The proposed Project will benefit from the significant public infrastructure investments completed in the South Boston Waterfront District, including the Silver Line, Central

Artery Project and I-90 extension, Logan Airport modernization project and the Boston Harbor Clean-up. Additional public infrastructure projects are pending, including the rehabilitation of the old Northern Avenue Bridge, the realignment of Northern Avenue and the completion of Children's Wharf Park.

The Proponent has proposed funding the Northern Avenue Bridge project as a project commitment. This project is currently proceeding with construction design and permitting and has over $9 million in federal earmarks.

The Proponent should continue discussions with the City regarding implementation priorities for nearby infrastructure projects in order to determine appropriate project commitments.

The Proponent should coordinate with the BRA, Public Work Department, Fan Pier and Pier Four development teams and the Executive Office of Transportation on the realignment of Northern Avenue.

The Proponent should also provide more details on their coordination with the MBTA and commitments for elevators and a new Court House Station entrance on the Silver line.

G. HISTORIC RESOURCES COMPONENT

It is clear that the Proposed Project is adjacent to historic properties listed in the National and State Registers of Historic Places. The DPIR shall identify, map, and describe these historic resources and any other historic properties in the vicinity of the Proposed Project's site and shall evaluate the anticipated effects of the Proposed Project on these resources. Particular attention shall be given to the design, scale, height, massing, materials, and other architectural elements of the proposed buildings as these relate to the significant architectural and historic resources in the proposed project's vicinity. The DPIR must also include an assessment of the potential presence of archaeological resources that may be disturbed by the Proposed Project. The Proponents should also respond to the comments of the Boston Environment Department outlined in **Appendix 1**.

H. INFRASTRUCTURE SYSTEMS COMPONENT

The standard scope for infrastructure analysis is given below:

1. Utility Systems and Water Quality

a. Estimated water consumption and sewage generation from the Proposed Project and the basis for each estimate. Include separate calculations for air conditioning system make-up water;

b. Description of the capacity and adequacy of water, storm drain and sewer systems and an evaluation of the impacts of the Proposed Project on those systems;

c. Identification of measures to conserve resources, including any provisions for recycling;

d. Description of the Proposed Project's impacts on the water quality of Boston Harbor and the Fort Point Channel or other water bodies that could be affected by the project, if applicable;

e. Description of mitigation measures to reduce or eliminate impacts on water quality;

f. Description of impact of on-site storm drainage on water quality;

g. Detail methods of protection proposed for infrastructure conduits and other artifacts, including BSWC sewer lines and water mains, during construction; and

h. Detail the energy source of the interior space heating; how obtained, and, if applicable, plans for reuse of condensate.

Thorough consultation with the planners and engineers of the utilities will be required, and should be referenced in the Infrastructure Component section.

2. Energy Systems

a. Description of energy requirements of the Proposed Project and evaluation of the Proposed Project's impacts on resources and supply; and

b. Description of measures to conserve energy usage and consideration of the feasibility of including solar energy provisions or other on-site energy provisions.

Additional constraints or information required are described below. Any other system (emergency systems, gas, steam, optic fiber, cable, etc.) impacted by this development should also be described in brief.

- The location of transformer and other vaults required for electrical distribution or ventilation must be chosen to minimize disruption to pedestrian paths and public improvements both when operating normally and when being serviced, and must be described.

- Sewer systems and storm water systems must be separated if possible; utilization of combined systems should be avoided. Thorough analysis and continuing discussions with BWSC are required.

- Water supply systems adjacent to the Proposed Project and servicing the Proposed Project should be looped so as to minimize public hazard or inconvenience in the event of a main break.

In addition, the Proponent should respond to the comments by the Boston Water and Sewer Commission found in **Appendix 1**.

I. PUBLIC NOTICE

The Proponent will be responsible for preparing and publishing in one or more newspapers of general circulation in the city of Boston a Public Notice of the submission of the Draft Project Impact Report (DPIR) to the BRA as required by Section 80A-2. This Notice shall be published within five (5) days after the receipt of the DPIR by the BRA. Therefore, public comments shall be transmitted to the BRA within seventy-five (75) days of the publication of this Notice.

Sample forms of the Public Notices are attached as **Appendix 4**.

Following publication of the Public Notice, the Proponent shall submit to the BRA a copy of the published Notice together with the date of publication.

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September 17, 2008

FINAL RECORD OF DECISION

PROJECT NAME:	Seaport Square
PROJECT MUNICIPALITY:	Boston
PROJECT WATERSHED:	Boston Harbor
EEA NUMBER:	14255
PROJECT PROPONENT:	Gale International, Morgan Stanley and W/S Development Associates, LLC
DATE NOTICED IN MONITOR:	June 11, 2008

Pursuant to the Massachusetts Environmental Policy Act (MEPA) (G.L.c.30, ss. 61-62H) and Section 11.11 of the MEPA regulations (301 CMR 11.00), I have reviewed the Expanded Environmental Notification Form (EENF) submitted on this project and hereby **grant a Phase 1 Waiver**, allowing the commencement of the first phase of the Seaport Square project (as defined below) prior to completion of the Environmental Impact Report (EIR) for the development of the whole project.

Project Description

As outlined in the Expanded Environmental Notification Form (EENF), the Seaport Square project will establish 20 new urban blocks in South Boston's waterfront district. The Proponents propose to construct 19 new buildings on approximately 23 acres of land. The project site is generally defined by Northern Avenue, Seaport Boulevard, Congress Street and Summer Street. The building program includes approximately 6.5 million square feet (sf), consisting of 2.75 million sf of residential space, 1.25 million sf of retail space, 1.4 million sf of office and research space, 500,000 sf of hotel space, and 600,000 sf of educational, civic and cultural uses. The project is proposed as a partnership between Gale International, Morgan Stanley and W/S Development Associates, LLC (the Proponents). The project is intended to be constructed continuously over seven to ten years.

The Proponents have designated a first phase of the project, as outlined in the Phase 1 Waiver request. In Phase 1, the Proponents propose to develop three blocks of the project area - Blocks A, H and J. Block A will include 54,400 sf of residential space and 27,200 sf of retail/restaurant space for a total of 81,600 sf. Block H will include 72,700 sf of residential space and 19,400 sf of retail/restaurant space, for a total of 92,100 sf. Block J is the proposed new site of the Catholic Archdiocese of Boston's Our Lady of Good Voyage Chapel, which is currently located at 65 Northern Avenue. The relocated Chapel will be approximately 25,000 sf. The total gross floor area for the three blocks is 198,700 sf, or approximately 3 percent of the total project.

The project is envisioned as a transit-oriented development which will provide significant improvements to the public realm, including new public open spaces, new streets, extensive streetscaping and bicycle- and pedestrian-friendly areas. The proposed uses will be organized around two open spaces, Seaport Square and Seaport Hill, while Seaport Boulevard itself will become an extensively landscaped urban space. The Proponents have committed to working toward Leadership in Energy and Environmental Design – Neighborhood Development (LEED-ND) Silver for the overall project. In addition, the Proponents are targeting a LEED – New Construction (NC) Silver standard on Blocks A and H. Because construction on Block J will be directed by the Archdiocese, the final design parameters of the building have not been finalized.

The project site currently consists of public for-fee parking lots, which hold City of Boston Air Pollution Control Commission permits for 3,647 commercial spaces. The Proponents propose to provide commercial parking spaces for 4,500 vehicles and 2,000 residential parking spaces in five new underground parking garages. The balance of the project after Phase 1 will be built on a series of large "bathtubs" with floor plates containing efficient below-grade parking and loading. Each of these bathtubs will provide platforms upon which multiple buildings will then be constructed. According to the Proponents, considerable construction efficiencies will be realized by constructing these bathtubs in a continuous sequence.

Phase 1 Project Description

As outlined in the EENF, Block A is proposed to include an approximately 81,600 sf building that will contain one level of underground parking for residents, two floors of commercial and retail space, and condominium residences on the upper four floors. The building is conceived as a gateway to South Boston, and is situated along Fort Point Channel between the Evelyn Moakley and Northern Avenue bridges. The design of Block A anticipates the reconstruction of Old Sleeper Street, with ground level retail spaces facing Fort Point Channel, and will create an active public plaza between Block A and the existing Barking Crab restaurant.

Block H is the first building site along the south side of Seaport Boulevard. Currently the site contains a parking lot at the elevation of the neighboring Fort Point Wharf area buildings, two to three feet below the new sidewalk of Seaport Boulevard. Building H will

contain approximately 92,100 sf of space, including approximately 19,400 sf of retail in the first two floors and 72,200 sf of residential in the floors above. From the Evelyn Moakley bridge, Blocks A and H form a pair of new buildings that frame the gateway to the Seaport Square development.

The Our Lady of Good Voyage Chapel will be located in a new building on Block J, which will include new worship space and a residence for the Chapel's pastor. Block J is located next to the Silver Line station on the corner of Seaport Boulevard and Farnsworth Street. The proposed building program on Block J is approximately 25,000 sf.

A total of 43 new parking spaces are proposed below-grade at Block A to serve the residential units. This reflects a decrease from the 68 spaces currently located on the site. No parking spaces are proposed for the retail/restaurant use on Block A, or for the proposed uses on Blocks H and J. During the construction of Phase 1, users of Blocks A, H and J will utilize nearby surface parking lots which can be accessed from Sleeper Street or Northern Avenue. Upon completion of the full project, users of the Phase 1 blocks will also be able to park in newly constructed underground parking garages and surrounding on street parking.

Jurisdiction

Phase 1 of the project is subject to MEPA review pursuant to 301 CMR 11.03(3)(b)(5), because it entails a new non-water dependent use of filled former tidelands and 301 CMR 11.03(6)(b)(13) because Phase 1 will generate 2,658 unadjusted new daily vehicle trips. Based on BTD assumptions for the project area, Phase 1 is anticipated to generate 478 new adjusted vehicle trips. Phase 1 of the project requires a Chapter 91 License and a Sewer Connection/Extension Permit from MassDEP, possibly a Construction Dewatering Permit from the Massachusetts Water Resources Authority (MWRA), and an Order of Conditions from the Boston Conservation Commission.

Waiver Request

The Proponents submitted an Expanded Environmental Notification Form (EENF) for the project with a request for a waiver to allow the Phase 1 projects to proceed prior to completion of the EIR for the entire project. The waiver request was discussed at the consultation/scoping session for the project which was held on June 23, 2008. The EENF and the waiver request underwent an extended review period pursuant to 301 CMR 11.05(7).

Criteria for a Phase I Waiver

Section 11.11 of the MEPA Regulations provides that the Secretary may waive any provision or requirement of 301 CMR 11.00 not specifically required by MEPA, and may impose appropriate and relevant conditions or restrictions, provided that the Secretary finds that strict compliance with the provision or requirement would:

(a) Result in undue hardship to the Proponent, unless based on delay in compliance by the Proponent; **and**
(b) Not serve to minimize or avoid damage to the environment.

The MEPA regulations at 301 CMR 11.11(4) state that, in the case of a partial waiver of a mandatory EIR review threshold that will allow the Proponent to proceed with Phase 1 of the project prior to preparing an EIR, I shall base the finding required in accordance with 301 CMR 11.11(1)(b) on a determination that:

(a) the potential environmental impacts of Phase 1, taken alone, are insignificant;
(b) ample and unconstrained infrastructure facilities and services exist to support Phase 1;
(c) the project is severable, such that Phase 1 does not require the implementation of any other future phase of the project or restrict the means by which potential environmental impacts from any other phase of the project may be avoided, minimized or mitigated; **and**
(d) the agency action(s) on Phase 1 will contain terms such as a condition or restriction, so as to ensure due compliance with MEPA and 301 CMR 11.00 prior to commencement of any other phase of the project.

Findings

Based upon the information submitted by the Proponents and after consultation with the relevant state agencies, I find that:

Requiring the preparation of an EIR in advance of undertaking Phase 1 would cause undue hardship:

- Allowing Phase 1 of the project to proceed in advance of the EIR plays an important role in the Proponents' intended construction sequencing for the full project. The remainder of the project after Phase 1 will be built on a series of large parking "bathtubs" with floor plates containing efficient below-grade parking and loading. Each of these parking tubs will provide platforms upon which multiple buildings will then be constructed. Construction of the Chapel in Phase 1 is critical to allow for the demolition of the existing Chapel and subsequent development of the below-grade garages and remainder of the project to proceed. Early construction of the Our Lady of Good Voyage Chapel will allow for uninterrupted service at the Chapel because the existing Chapel will have been removed during development of the remainder of the project.

- According to the Proponents, Phase 1 of the project will provide significant benefits to the City and the public. Currently, Blocks A, H and J are predominantly covered by surface parking lots. Development of the lots will improve the aesthetic appeal of the neighborhood and help to establish a gateway to the South Boston waterfront and Fort Point Channel areas. Phase 1 will create approximately 110 residential units, including

affordable and workforce housing. Allowing the Phase 1 Waiver blocks to proceed in advance of the EIR will avoid a delay in the realization of the above-listed benefits.

The preparation of an EIR would not serve to minimize Damage to the Environment and the potential environmental impacts of Phase 1 are insignificant:

General

- Phase 1 of the project is being developed on underutilized urban property that does not include sensitive environmental receptors.

- The Phase 1 project site does not contain any land regulated under MGL c. 21E or the Massachusetts Contingency Plan.

- Blocks A, H and J are currently used for surface parking, a use that generates oil, grease, pollutants and sediments. The proposed new uses on these parcels will improve water quality runoff from the site.

- There will be no potential adverse impacts to groundwater at Blocks H and J because no below-grade basement space is proposed. The one-level basement at Block A will be excavated at or just below groundwater levels. The design and construction techniques at this parcel will mitigate potential impacts to groundwater levels. The Proponents will ensure compliance with the requirements of the Boston Groundwater Conservation Overlay District and must coordinate with the Massachusetts Water Resources Authority (MWRA) and the Boston Water and Sewer Commission (BWSC) regarding construction dewatering for the Block A site.

- The project, including Phase 1, will comply with the City of Boston's Article 37, which requires that sustainable design elements be incorporated into new projects. The Proponents are targeting LEED-New Construction (NC) Silver on Blocks A and H.

- As outlined in the Certificate on the EENF, the Proponents are required to comply with the EEA Greenhouse Gas Policy, and as part of the DEIR is required to submit an analysis of project-related GHG emissions for the entire project including Phase 1, and will commit to mitigation measures to reduce GHG emissions from the entire project.

- I note concerns submitted in comments regarding the height and impact of the proposed building on Block H. The portion of the Block H building within Chapter 91 jurisdiction is 85 feet tall, pursuant to limits set forth in the South Boston Municipal Harbor Plan (SBMHP). The taller portion of the building outside of Chapter 91 jurisdiction reaches to a maximum height of 116 feet. The proposed building will undergo additional review through the City of Boston's design and review process to ensure that impacts to the ground-level environment are minimized as well as any wind and shadow impacts to adjacent buildings, and I encourage the Proponent to address abutters' concerns during the local review process.

- I note comments submitted on the EENF that suggest that the building program for Block A may have decreased in size since the submittal of the EENF. As outlined in this DROD, I find environmental impacts associated with the project as presented in the EENF are insignificant. Any decrease in the proposed building program will further minimize impacts.

Traffic and Transit

- Phase 1 of the project is anticipated to generate only 478 new average daily vehicle trips based on BTD trip generation assumptions. The Proponents have undertaken a Traffic Impact and Access Study (TIAS) that indicates that the development of the Phase 1 area will not degrade any study area intersections. The TIAS study area for Phase 1 was developed with input from the Boston Redevelopment Authority (BRA), the Boston Transportation Department (BTD) and the community. The Phase 1 traffic study included the intersections of Seaport Boulevard/Sleeper Street, Seaport Boulevard/East Service Road/Northern Avenue, and West Broadway/A Street. Two intersections within the Phase 1 study area will experience a decrease in level-of-service (LOS) under the No-Build condition: the intersection of Seaport Boulevard/East Service Road/Northern Avenue and the intersection of West Broadway/A Street. In the Build condition, the LOS does not worsen at any of the study area intersections. At the intersection of Seaport Boulevard/Sleeper Street, the Seaport Boulevard eastbound left-turn currently operates at LOS F during the morning peak hour due to the lack of a protected left-turn phase. The Proponents propose to install signal equipment, pavement markings and signage for an exclusive left-turn lane and protected signal phase on Seaport Boulevard eastbound to remedy the situation.

- The Proponents will develop and implement a Transportation Demand Management (TDM) program to minimize the use of single-occupancy vehicle trips associated with the project and Phase 1. TDM measures for Phase 1 will include an on-site transportation coordinator, transit pass subsidies for retail employees, secure bicycle parking areas, provision of car sharing spaces in parking garages, and distribution of transit maps and schedules to residents and employees.

- The project site, including Phase 1, is within half a mile of South Station, which provides access to the Massachusetts Bay Transportation Authority (MBTA) Red Line, Silver Line and seven commuter rail branches. The MBTA Silver Line Courthouse and World Trade Center stations in addition to several local MBTA and express bus routes are located near the site as well. The Proponents have estimated that Phase 1 of the project will add 1,188 net new transit trips per day to transit lines, which can be easily accommodated by existing MBTA service.

- Phase 1 will provide an improved street and pedestrian environment. At Block A, the Proponents will work with the City of Boston to provide new paving, trees, planters, benches, lighting and outdoor restaurant seating at Old Sleeper Street and provide a connection between the Children's Museum and the Federal Courthouse. Along Seaport

Boulevard, at Blocks H and J, new sidewalk paving and street trees will be installed. The Proponents will also build a pedestrian ramp at the end of the alley between Sleeper and Farnsworth Streets to connect the lower elevation of the alley with the height of Seaport Boulevard. The Proponents should ensure that any future plans for the Old Northern Avenue Bridge do not adversely impact pedestrian connections to the HarborWalk between the Evelyn Moakley Bridge and the John Joseph Moakley Federal Courthouse.

Historic Resources

- Blocks H and J are located within the Seaport Boulevard/Boston Wharf Road Protection Area of the proposed Fort Point Channel Landmark District. The proposed development on Blocks H and J will be subject to review by the Boston Landmarks Commission. Shadow impacts on historic resources resulting from new construction on Blocks A, H and J will be limited due to the height of existing buildings, the density of the neighborhood and the location of the parcels north of the historic district. The scale of the new construction will provide a transition between the Fort Point Channel Landmark District and the larger new construction proposed for the blocks on the north side of Seaport Boulevard.

Chapter 91/Waterways

- Portions of the Seaport Square project site are within Chapter 91 licensing jurisdiction including all of Block A, the western end of Block B, the western end of Block H, the northeastern corner of Block G, and the northeastern portion of Block M. Phase 1 of the project includes 0.44 acres subject to Chapter 91. Phase 1 is primarily a residential and retail development, and will therefore be reviewed under Chapter 91 as a non-water dependent project. The Proponents provided a discussion in the EENF of the Phase 1 projects' compliance with the Chapter 91 regulations at 310 CMR 9.00, as amended by the SBMHP.

- Pursuant to the Secretary's Decision on the SBMHP, the Proponents are required to provide 9,742 sf of public open space in conjunction with the Phase 1 development. The Proponents have identified the SBMHP Parcel E as a potential location for the required open space. Parcel E consists of approximately 8,075 sf of open space that was "banked" in the SBMHP as open space offsets for future Seaport Square development projects. In addition, the Proponents have proposed improvements to Old Sleeper Street that would include an active open space area with art installations, landscaping and potential restaurant seating, as well as serving as a link between the Harborwalk at the Children's Museum and the Old Northern Avenue Bridge. Of the approximately 8,096 sf of open space on Old Sleeper Street, at least 50 percent is proposed to be publicly accessible. Parcel E, in combination with open space on Old Sleeper Street would provide approximately 16,981 sf of open space, which is greater than what is required for Phase 1 in accordance with the Chapter 91 regulations. MassDEP and the Office of Coastal Zone Management (CZM) have expressed support for the proposal to count Old Sleeper Street towards the open space requirement for Phase 1.

Because Old Sleeper Street is a public way, the use proposed in the EENF requires approval from the City of Boston. This DROD is accordingly conditioned on the Proponents providing MassDEP with written evidence of the support of the BRA, the City of Boston's Municipal Harbor Planning body, for the use of Old Sleeper Street in a manner that does not adversely affect access to and the operations of the various businesses located on Old Sleeper Street, which include water-dependent uses, both during the construction period and post-construction. The Proponents must ensure that existing service functions for theses businesses are maintained and/or improved through the proposed improvements to Old Sleeper Street. The Proponents must also ensure that proposed improvements to Old Sleeper Street do not impede any future uses at the Barking Crab Restaurant and/or Neptune Marine Services, including the future provision of a section of the Harborwalk, as envisioned in the Secretary's Decision on the SBMHP.

- As part of the Chapter 91 Licensing process, the Proponents must ensure that Block E meets the open space standard for Commonwealth Tidelands and that it is compatible with the adjacent Children's Wharf Park, which is currently undergoing a planning and landscape design process to develop a signature waterfront park.

- The Proponents will be required to provide public amenities as part of the Phase 1 project. I direct the Proponents to suggested public amenities outlined in the Boston Harbor Association's comment letter in the EENF.

- The entire project area is located on filled former Commonwealth tidelands. The project is subject to a public benefits review and determination pursuant to Chapter 168 of the Acts of 2007. The Proponents have provided a discussion of the public benefits associated with Phase 1 as part of the EENF, including a review of: purpose and effect of the development, impact on abutters and the surrounding community, enhancement to the property, benefits to the public trust rights in tidelands or other associated rights, community activities on the development site, environmental protection and safety, and public health and safety. According to the Proponents, the public benefits associated with Phase 1, in conjunction with the overall project, meet or exceed those established by Chapter 91 and the SBMHP. I will issue a Public Benefits Determination for Phase 1 consistent with the provisions of *An Act Relative to Licensing Requirements for Certain Tidelands* (2007 Mass. Acts ch. 168, sec.8 within 30 days, which will be conditioned in a similar manner to this Final Record of Decision, and which will reference the Proponents' commitments to public benefits that will be enforced through the Chapter 91 licensing process.

Ample and unconstrained infrastructure facilities and services exist to support Phase 1:

- The development of the Phase 1 project does not require the construction of new infrastructure, aside from new utility connections and the resurfacing or construction of new access points to Block A and/or Old Sleeper Street. No new streets are required for Phase 1 to proceed. Phase 1 will require 30,000 gallons per day (gpd) of water and generate 27,000 gpd of wastewater. The Phase 1 blocks will be served by existing BWSC

infrastructure; there is sufficient capacity in the system to meet the needs of Phase 1. Phase 1 of the project requires a Sewer Connection/Extension Permit from MassDEP. The Proponents should coordinate with MassDEP regarding wastewater permitting and mitigation for Phase 1.

- As outlined above, existing roadway and transit infrastructure can support the new vehicle and transit trips generating from the Phase 1 uses.

The project is severable, such that Phase 1 does not require the implementation of any other future phase of the project or restrict the means by which potential environmental impacts from any other phase of the project may be avoided, minimized or mitigated:

- The Proponents have designed Phase 1 such that it is a severable project, which does not require the completion of any other project phase. Construction of the Phase 1 buildings will not restrict the construction of area-wide infrastructure or the implementation of project-wide mitigation measures.

- Infrastructure improvements proposed as part of Phase 1 do not require the future build-out of any other part of the Seaport Square project. The severability standard restricts Proponents from moving forward with portions of a project that depend entirely on infrastructure improvements or other mitigation that will not be realized until future phases of the larger project. I find that development of Blocks A, H and J and associated infrastructure improvements do not depend on implementation of the remaining portions of the project.

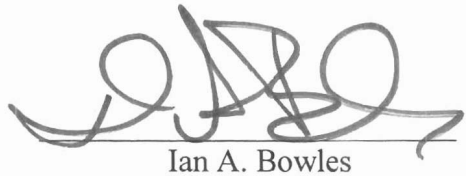
The Agency Action on Phase 1 will contain terms such as a condition or restriction in a Permit, contract or other relevant document approving or allowing the Agency Action, or other evidence satisfactory to the Secretary, so as to ensure due compliance with MEPA and 301 CMR 11.00 prior to Commencement of any other phase of the Project:

- Phase 1 of the project requires a number of state permits, including a Chapter 91 License and a Sewer Connection/Extension Permit from MassDEP and possibly a Construction Dewatering Permit from the MWRA. Permits for Phase 1 project will ensure due compliance with MEPA and 301 CMR 11.00 prior to commencement of any other phase of the Project.

Conclusion

Based on these findings, I determined that this waiver request has merit, and issued a Draft Final Record of Decision (DROD), which was published in the Environmental Monitor on August 27, 2008 in accordance with 301 CMR 11.15(2), which began the public comment period. The public comment period lasted for 14 days and ended on September 10, 2008. Based on written comments received concerning the DROD, I hereby **grant** the waiver requested for this project, which will allow the proponent to proceed with Phase 1 of the

project prior to preparing a mandatory Environmental Impact Report (EIR) for the entire project, subject to the above findings.



September 17, 2008
Date

Ian A. Bowles

Comments received:

9/4/08 Poseidon Enterprises

IAB/RB/rb

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October 17, 2008

PUBLIC BENEFITS DETERMINATION
OF THE SECRETARY OF ENERGY AND ENVIRONMENTAL AFFAIRS

PROJECT NAME:	Seaport Square – Phase 1
PROJECT MUNICIPALITY:	Boston
PROJECT WATERSHED:	Boston Harbor
EEA NUMBER:	14255
PROJECT PROPONENT:	**Gale Internationa**l, Morgan Stanley and W/S Development Associates, LLC
DATE NOTICED IN MONITOR:	June 11, 2008

Consistent with the provisions of *An Act Relative to Licensing Requirements for Certain Tidelands*, I hereby determine that the above-referenced project will have a public benefit.

Project Description

As described in the Expanded Environmental Notification Form (EENF), the Seaport Square project will establish 20 new urban blocks in South Boston's waterfront district. The Proponents propose to construct 19 new buildings on approximately 23 acres of land. The project site is generally defined by Northern Avenue, Seaport Boulevard, Congress Street and Summer Street. The building program includes approximately 6.5 million square feet (sf), consisting of 2.75 million sf of residential space, 1.25 million sf of retail space, 1.4 million sf of office and research space, 500,000 sf of hotel space, and 600,000 sf of educational, civic and cultural uses. The project is proposed as a partnership between Gale International, Morgan Stanley and W/S Development Associates, LLC (the Proponents). The project is intended to be constructed continuously over seven to ten years.

The Proponents have designated a first phase of the project, as outlined in the Phase 1 Waiver request. In Phase 1, the Proponents propose to develop three blocks of the project area - Blocks A, H and J. Block A will include 54,400 sf of residential space and 27,200 sf of retail/restaurant space for a total of 81,600 sf. Block H will include 72,700 sf of residential space

and 19,400 sf of retail/restaurant space, for a total of 92,100 sf. Block J is the proposed new site of the Catholic Archdiocese of Boston's Our Lady of Good Voyage Chapel, which is currently located at 65 Northern Avenue. The relocated Chapel will be approximately 25,000 sf. The total gross floor area for the three blocks is 198,700 sf, or approximately 3 percent of the total project.

The project is envisioned as a transit-oriented development which will provide significant improvements to the public realm, including new public open spaces, new streets, extensive streetscaping and bicycle- and pedestrian-friendly areas. The proposed uses will be organized around two open spaces, Seaport Square and Seaport Hill, while Seaport Boulevard itself will become an extensively landscaped urban space. The Proponents have committed to working toward Leadership in Energy and Environmental Design – Neighborhood Development (LEED-ND) Silver for the overall project. In addition, the Proponents are targeting a LEED – New Construction (NC) Silver standard on Blocks A and H. Because construction on Block J will be directed by the Archdiocese, the final design parameters of the building have not been finalized.

The project site currently consists of public for-fee parking lots, which hold City of Boston Air Pollution Control Commission permits for 3,647 commercial spaces. The Proponents propose to provide commercial parking spaces for 4,500 vehicles and 2,000 residential parking spaces in five new underground parking garages. The balance of the project after Phase 1 will be built on a series of large "bathtubs" with floor plates containing efficient below-grade parking and loading. Each of these bathtubs will provide platforms upon which multiple buildings will then be constructed. According to the Proponents, considerable construction efficiencies will be realized by constructing these bathtubs in a continuous sequence.

Phase 1 Project Description

As outlined in the EENF, Block A is proposed to include an approximately 81,600 sf building that will contain one level of underground parking for residents, two floors of commercial and retail space, and condominium residences on the upper four floors. The building is conceived as a gateway to South Boston, and is situated along Fort Point Channel between the Evelyn Moakley and Northern Avenue bridges. The design of Block A anticipates the reconstruction of Old Sleeper Street, with ground level retail spaces facing Fort Point Channel, and will create an active public plaza between Block A and the existing Barking Crab restaurant.

Block H is the first building site along the south side of Seaport Boulevard. Currently the site contains a parking lot at the elevation of the neighboring Fort Point Wharf area buildings, two to three feet below the new sidewalk of Seaport Boulevard. Building H will contain approximately 92,100 sf of space, including approximately 19,400 sf of retail in the first two floors and 72,200 sf of residential in the floors above. From the Evelyn Moakley bridge, Blocks A and H form a pair of new buildings that frame the gateway to the Seaport Square development.

The Our Lady of Good Voyage Chapel will be located in a new building on Block J, which will include new worship space and a residence for the Chapel's pastor. Block J is located next to the Silver Line station on the corner of Seaport Boulevard and Farnsworth Street. The proposed building program on Block J is approximately 25,000 sf.

A total of 43 new parking spaces are proposed below-grade at Block A to serve the residential units. This reflects a decrease from the 68 spaces currently located on the site. No parking spaces are proposed for the retail/restaurant use on Block A, or for the proposed uses on Blocks H and J. During the construction of Phase 1, users of Blocks A, H and J will utilize nearby surface parking lots which can be accessed from Sleeper Street or Northern Avenue. Upon completion of the full project, users of the Phase 1 blocks will also be able to park in newly constructed underground parking garages and surrounding on street parking.

Landlocked Tidelands

Consistent with the provisions of *An Act Relative to Licensing Requirements for Certain Tidelands* (2007 Massachusetts Acts Chapter 168, Section8) (the Act), which was enacted on November 15, 2007, I *must* conduct a Public Benefits Review for projects in tidelands that are required to file an Environmental Impact Report.

The legislation states the following regarding the Public Benefits Determination:

> "In making said public benefit determination, the secretary shall consider the purpose and effect of the development; the impact on abutters and the surrounding community; enhancement to the property; benefits to the public trust rights in tidelands or other associated rights, including, but not limited to, benefits provided through previously obtained municipal permits; community activities on the development site; environmental protection and preservation; public health and safety; and the general welfare; provided further, that the secretary shall also consider the differences between tidelands, landlocked tidelands and great pond lands when assessing the public benefit and shall consider the practical impact of the public benefit on the development."

To support the Public Benefits Determination, I have reviewed the EENF and comments received on the project. The following addresses each of the considerations identified in the legislation.

1. *purpose and effect of the development*

The purpose and effect of the Phase 1 development will provide year-round activation of Commonwealth tidelands by creating a locus of activity and public amenities and by providing a safe and enjoyable walking route to the South Boston waterfront. The purpose and effect of Phase 1 is consistent with the City of Boston's Seaport Public Realm Plan and the South Boston Municipal Harbor Plan (SBMHP).

Pursuant to the SBMHP, the Proponents are required to provide 9,742 sf of public open space in conjunction with the Phase 1 development. The Proponents have identified the SBMHP Parcel E as a potential location for the required open space. Parcel E consists of approximately 8,075 sf of open space that was "banked" in the SBMHP as open space offsets for future Seaport Square development projects. In addition, the Proponents have proposed improvements to Old Sleeper Street that would include an active open space area with art

installations, landscaping and potential restaurant seating, as well as serving as a link between the Harborwalk at the Children's Museum and the Old Northern Avenue Bridge. Of the approximately 8,096 sf of open space on Old Sleeper Street, at least 50 percent is proposed to be publicly accessible. Parcel E, in combination with open space on Old Sleeper Street would provide approximately 16,981 sf of open space, which is greater than what is required for Phase 1 in accordance with the Chapter 91 regulations. MassDEP and the Office of Coastal Zone Management (CZM) have expressed support for the proposal to count Old Sleeper Street towards the open space requirement for Phase 1. Additionally, improvements to Old Sleeper Street will require approvals from the City of Boston's Public Works Department and Public Improvements Commission.

2. *impact on abutters and the surrounding community*

I note concerns submitted in comments regarding the height and impact of the proposed building on Block H. The portion of the Block H building within Chapter 91 jurisdiction is 85 feet tall, pursuant to limits set forth in the SBMHP. The taller portion of the building outside of Chapter 91 jurisdiction reaches to a maximum height of 116 feet. The proposed building will undergo additional review through the City of Boston's design and review process to ensure that impacts to the ground-level environment are minimized as well as any wind and shadow impacts to adjacent buildings, and I encourage the Proponent to address abutters' concerns during the local review process.

Because Old Sleeper Street is a public way, the use proposed in the EENF requires approval from the City of Boston. This Determination is accordingly conditioned on the Proponents providing MassDEP with written evidence of the support of the BRA, the City of Boston's Municipal Harbor Planning body, for the use of Old Sleeper Street in a manner that does not adversely affect access to and the operations of the various businesses located on Old Sleeper Street, which include water-dependent uses, both during the construction period and post-construction. The Proponents must ensure that existing service functions for these businesses are maintained and/or improved through the proposed improvements to Old Sleeper Street. The Proponents must also ensure that proposed improvements to Old Sleeper Street do not impede any future uses at the Barking Crab Restaurant and/or Neptune Marine Services, including the future provision of a section of the Harborwalk, as envisioned in the Secretary's Decision on the SBMHP.

3. *enhancement to the property*

Currently, project site is comprised of impervious surface parking lots. Phase 1 of the project will provide civic uses and create a sense of place where none exists now by providing buildings, sidewalks and landscaped areas.

4. *benefits to the public trust rights in tidelands or other associated rights*

Blocks A, H and J will create a gateway to the South Boston Waterfront from Boston's central business district and will substantially increase public access, use and enjoyment of flowed and filled tidelands protected under Chapter 91 through the following measures:

- creation of a new public open space on the Fort Point Channel waterfront;
- creation of a new pedestrian connection for the Harborwalk;
- provision of open space on Parcel E in accordance with the 2000 South Boston Municipal Harbor Plan;
  provision of an open space improvements fund if offsets are not fulfilled on Parcel E and/or Old Sleeper Street;
- provision of seasonal programming for community events;
- provision of new Facilities of Public Accommodation on the ground floors of buildings to be constructed on Blocks A and H in accordance with Chapter 91; and
- protection of adjacent open spaces through restrictions on building heights in accordance with the 2000 SBMHP (75 feet for Block A and 85 feet for that portion of Block H under Chapter 91 jurisdiction).

5. community activities on the development site

Phase 1 of the project will provide approximately 110 residential units and ground-level retail, commercial and restaurant uses, thereby providing year-round activation. The restaurant will provide outdoor seating. Old Sleeper Street will be improved to provide a missing link of the Harborwalk, connecting the Children's Museum to the Old Northern Avenue Bridge, which can provide the setting for a range of community activities and events.

6. environmental protection and preservation

Blocks A, H and J are currently used for surface parking, a use that generates oil, grease, pollutants and sediments. The proposed new uses on these parcels will improve water quality runoff from the site through the provision of an improved stormwater management system. Additionally, the proposed open spaces will likely result in a significant increase in permeable ground.

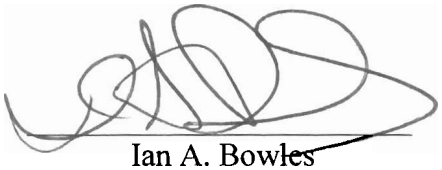
Blocks H and J are located in the City of Boston's Groundwater Conservation Overlay District. There will be no potential adverse impacts to groundwater at Blocks H and J because no below-grade basement space is proposed. The one-level basement at Block A will be excavated at or just below groundwater levels. The design and construction techniques at this parcel will mitigate potential impacts to groundwater levels. The Proponents will ensure compliance with the requirements of the Boston Groundwater Conservation Overlay District and must coordinate with the Massachusetts Water Resources Authority (MWRA) and the Boston Water and Sewer Commission (BWSC) regarding construction dewatering for the Block A site. Pursuant to Article 32, Section 6 of the Boston Zoning Code, the proponent will certify that the project will not negatively impact groundwater levels on the site or on adjacent lots.

7. *public health and safety*

The replacement of parking lots with active residential, retail, commercial and civic uses will promote public safety. Additionally, proposed streetscape improvements, including lighting, landscaping and curbing will encourage walking.

Conclusion

The proposed public benefits of Phase 1 of the Seaport Square project appear to be appropriate for the project's impacts on landlocked tidelands. Based on the foregoing, I hereby determine that the project will have a positive public benefit. To meet the public publication requirements of the Act, this Determination will be published in the next edition of the Environmental Monitor on October 22, 2008.



October 17, 2008
Date

Ian A. Bowles

IAB/RB/rb

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May 8, 2009

CERTIFICATE OF THE SECRETARY OF ENERGY AND ENVIRONMENTAL AFFAIRS
ON THE
NOTICE OF PROJECT CHANGE

PROJECT NAME	: Seaport Square
PROJECT MUNICIPALITY	: Boston
PROJECT WATERSHED	: Boston Harbor
EEA NUMBER	: 14255
PROJECT PROPONENT	: Gale International, Morgan Stanley and W/S Development Associates, LLC
DATE NOTICED IN MONITOR	: April 8, 2009

Pursuant to the Massachusetts Environmental Policy Act (G. L. c. 30, ss. 61-62I) and Section 11.06 of the MEPA regulations (301 CMR 11.00), I hereby determine that this project continues to require an Environmental Impact Report (EIR). I also propose to re-affirm and amend the Phase 1 Waiver that I previously granted for this project on September 17, 2008.

Original Project Description

As described in the Expanded Environmental Notification Form (Expanded ENF), which was reviewed under MEPA in 2008, the Seaport Square project will establish 20 new urban blocks on approximately 23 acres of land in South Boston's waterfront district. The project site is generally defined by Northern Avenue, Seaport Boulevard, Congress Street and Summer Street. The building program includes approximately 6.5 million square feet (sf), consisting of 2.75 million sf of residential space (approximately 2,500 units), 1.25 million sf of retail space, 1.4 million sf of office and research space, a 500,000-sf hotel, and 600,000 sf of educational, civic and cultural uses. The project is proposed as a partnership between Gale International, Morgan

Stanley and W/S Development Associates, LLC (the Proponents). As originally proposed, the proponents intended to construct the project continuously over a seven- to ten-year period.

As part of the Expanded ENF, the Proponents designated a first phase of the project, and requested a Phase 1 Waiver. As originally proposed Phase 1 entailed the development of three blocks of the project area, Blocks A, H and J. Block A was proposed to include 54,400 sf of residential space and 27,200 sf of retail/restaurant space for a total of 81,600 sf. Block H was to include 72,700 sf of residential space and 19,400 sf of retail/restaurant space, for a total of 92,100 sf. Block J was the proposed new site of the Catholic Archdiocese of Boston's Our Lady of Good Voyage Chapel, which is currently located at 65 Northern Avenue. The relocated Chapel will be approximately 25,000 sf. The total gross floor area for the three blocks was 198,700 sf, or approximately three percent of the total floor area of the project.

Project Change Description

The project change described in the NPC involves the swapping of uses between blocks that were the subject of the Phase 1 Waiver. Block A will remain the same, while the proposed uses for Blocks H and J will be swapped. Block H will now be used for the proposed chapel, and Block J will now be used for the 92,100-sf building that will contain a mix of residential, retail and restaurant space.

Additionally, the proposed uses for Blocks C and D have been swapped with those of Blocks L1 and L2. Block C will no longer include office/research space, but will now contain retail and entertainment space and residential apartments. Block D will no longer include office/research space, but will now contain retail space and residential apartments. Conversely, Blocks L1 and L2 will no longer include residential, retail and entertainment space, but will house office and research space. According to the NPC, these changes are intended to address concerns that the previously proposed massing would have resulted in a tunnel-like effect along Northern Avenue; that entertainment uses should be located on Block C rather than Blocks l1 and L2; and that the visibility of Blocks l1 and L2 along Seaport Boulevard be maximized relative to the Central Artery/Tunnel connections.

Finally, the NPC states that the project, which was originally anticipated to be constructed in one continuous process, will now be constructed in six additional phases based on economic conditions.

Review of the NPC

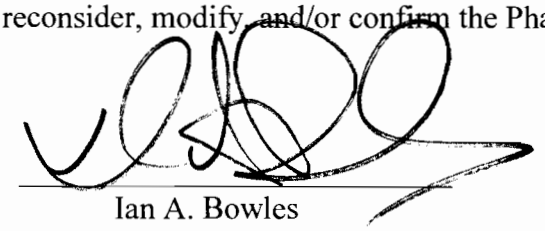
In its comments on the NPC, the Massachusetts Historical Commission (MHC) states that the project change does not affect its previous finding of "adverse effect" for the proposed demolition of the Chapel of Our Lady of Good Voyage, which is listed in the Inventory of Historic and Archeological Assets of the Commonwealth and is eligible for listing in the

National Register of Historic Places. I will re-affirm that, as a condition of the Phase 1 Waiver, the Proponents should consult with MHC to resolve the "adverse effect" of the proposed demolition.

The Proponents should note the comments submitted by the Boston Harbor Association regarding the provision of open space and public access. I expect that concerns regarding open space and public accessibility to be provided in conjunction with Phase 1 of the project will be thoroughly addressed during the Chapter 91 Licensing process. Additionally, the Proponents should respond to comments regarding future phases of the project in the Draft EIR, to the extent that they are within MEPA jurisdiction.

Conclusion

Based on a review of the NPC and comment letters submitted in response, I hereby re-affirm the Scope for the EIR contained in the Certificate on the Expanded ENF issued on August 8, 2008. Additionally, I propose to re-affirm and amend the Phase 1 Waiver for this project. This decision is detailed in the Draft Record of Decision (DROD), also issued today, which will be published in the May 20, 2009 issue of the *Environmental Monitor* for a fourteen-day comment period, after which I shall reconsider, modify, and/or confirm the Phase 1 Waiver.



May 8, 2009
Date

Ian A. Bowles

Comments received:

4/28/09	Poseidon Enterprises, Inc.
4/29/09	Massachusetts Historical Commission
4/30/09	The Boston Harbor Association

IAB/RB/rb

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June 5, 2008

FINAL AMENDED RECORD OF DECISION

PROJECT NAME:	Seaport Square
PROJECT MUNICIPALITY:	Boston
PROJECT WATERSHED:	Boston Harbor
EEA NUMBER:	14255
PROJECT PROPONENT:	Gale International, Morgan Stanley and W/S Development Associates, LLC
DATE NOTICED IN MONITOR:	May 20, 2009

Pursuant to the Massachusetts Environmental Policy Act (MEPA) (G.L.c.30, ss. 61-62I) and Section 11.11 of the MEPA regulations (301 CMR 11.00), I have reviewed the Notice of Project Change (NPC) submitted on this project and hereby **amend a Phase 1 Waiver** (previously granted on September 17, 2008), allowing the commencement of the first phase of the Seaport Square project (as defined below) prior to completion of the Environmental Impact Report (EIR) for the development of the whole project.

Project Description

As outlined in the Expanded Environmental Notification Form (Expanded ENF) and the Notice of Project Change (NPC), the Seaport Square project will establish 20 new urban blocks in South Boston's waterfront district. The Proponents propose to construct 19 new buildings on approximately 23 acres of land. The project site is generally defined by Northern Avenue, Seaport Boulevard, Congress Street and Summer Street. The building program includes approximately 6.5 million square feet (sf), consisting of 2.75 million sf of residential space, 1.25 million sf of retail space, 1.4 million sf of office and research space, 500,000 sf of hotel space, and 600,000 sf of educational, civic and cultural uses. The project is proposed as a partnership between Gale International, Morgan Stanley and W/S Development Associates, LLC (the Proponents).

The Proponents have designated a first phase of the project. In Phase 1, the Proponents propose to develop three blocks of the project area - Blocks A, H and J. The project change described in the NPC involves the swapping of uses between blocks that were the subject of the Phase 1 Waiver granted in the Final Record of Decision (FROD) issued on September 17, 2008. Block A will remain the same and will include 54,400 sf of residential space and 27,200 sf of retail/restaurant space for a total of 81,600 sf. The proposed uses for Blocks H and J will be swapped. Block H will now be the new site of the Catholic Archdiocese of Boston's Our Lady of Good Voyage Chapel, which is currently located at 65 Northern Avenue and is proposed to be demolished. The new Chapel will be approximately 25,000 sf. Block J will now be used for the 92,100-sf building that will contain 72,700 sf of residential space and 19,400 sf of retail/restaurant space. The total gross floor area for the three blocks is 198,700 sf, or approximately three percent of the total project.

The project is envisioned as a transit-oriented development which will provide significant improvements to the public realm, including new public open spaces, new streets, extensive streetscaping and bicycle- and pedestrian-friendly areas. The proposed uses will be organized around two open spaces, Seaport Square and Seaport Hill, while Seaport Boulevard itself will become an extensively landscaped urban space. The Proponents have committed to working toward Leadership in Energy and Environmental Design – Neighborhood Development (LEED-ND) Silver for the overall project. In addition, the Proponents are targeting a LEED – New Construction (NC) Silver standard on Blocks A and J. Because construction on Block H will be directed by the Archdiocese, the final design parameters of the building have not been finalized.

The project site currently consists of public for-fee parking lots, which hold City of Boston Air Pollution Control Commission permits for 3,647 commercial spaces. The Proponents propose to provide commercial parking spaces for 4,500 vehicles and 2,000 residential parking spaces in five new underground parking garages. The balance of the project after Phase 1 will be built on a series of large "bathtubs" with floor plates containing efficient below-grade parking and loading. Each of these bathtubs will provide platforms upon which multiple buildings will then be constructed.

Phase 1 Project Description

As outlined in the NPC, Block A is proposed to include an approximately 81,600 sf building that will contain one level of underground parking for residents, two floors of commercial and retail space, and condominium residences on the upper four floors. The building is conceived as a gateway to South Boston, and will be sited along Fort Point Channel between the Evelyn Moakley and Northern Avenue bridges. The design of Block A anticipates the reconstruction of Old Sleeper Street, with ground level retail spaces facing Fort Point Channel, and will create an active public plaza between Block A and the existing Barking Crab restaurant.

Block H is the first building site along the south side of Seaport Boulevard. The Our Lady of Good Voyage Chapel will be located in a new building on Block H, which will

include new worship space and a residence for the Chapel's pastor. The proposed building program on Block H is approximately 25,000 sf.

Block J is located next to the Silver Line station on the corner of Seaport Boulevard and Farnsworth Street. Currently the site contains a parking lot at the elevation of the neighboring Fort Point Wharf area buildings, two to three feet below the new sidewalk of Seaport Boulevard. Building J will contain approximately 92,100 sf of space, including approximately 19,400 sf of retail in the first two floors and 72,200 sf of residential in the floors above.

A total of 43 new parking spaces are proposed below-grade at Block A to serve the residential units. This reflects a decrease from the 68 spaces currently located on the site. No parking spaces are proposed for the retail/restaurant use on Block A, or for the proposed uses on Blocks H and J. During the construction of Phase 1, users of Blocks A, H and J will utilize nearby surface parking lots which can be accessed from Sleeper Street or Northern Avenue. Upon completion of the full project, users of the Phase 1 blocks will also be able to park in newly constructed underground parking garages and surrounding on-street parking.

Jurisdiction

Phase 1 of the project is subject to MEPA review pursuant to 301 CMR 11.03(3)(b)(5), because it entails a new non-water dependent use of filled former tidelands and 301 CMR 11.03(6)(b)(13) because Phase 1 will generate 2,658 unadjusted new daily vehicle trips. Based on BTD assumptions for the project area, Phase 1 is anticipated to generate 478 new adjusted vehicle trips. Phase 1 of the project requires a Chapter 91 License and a Sewer Connection/Extension Permit from MassDEP, possibly a Construction Dewatering Permit from the Massachusetts Water Resources Authority (MWRA), and an Order of Conditions from the Boston Conservation Commission.

Waiver Request

The Proponents submitted an Expanded ENF for the project with a request for a waiver to allow the Phase 1 projects to proceed prior to completion of the EIR for the entire project. I issued a Final Record of Decision granting the Phase 1 Waiver on September 17, 2008. The NPC requested that I amend the Phase 1 Waiver to reflect the proposed swap in uses between Blocks H and J.

Criteria for a Phase I Waiver

Section 11.11 of the MEPA Regulations provides that the Secretary may waive any provision or requirement of 301 CMR 11.00 not specifically required by MEPA, and may impose appropriate and relevant conditions or restrictions, provided that the Secretary finds that strict compliance with the provision or requirement would:

(a) Result in undue hardship to the Proponent, unless based on delay in compliance by the Proponent; **and**
(b) Not serve to minimize or avoid damage to the environment.

The MEPA regulations at 301 CMR 11.11(4) state that, in the case of a partial waiver of a mandatory EIR review threshold that will allow the Proponent to proceed with Phase 1 of the project prior to preparing an EIR, I shall base the finding required in accordance with 301 CMR 11.11(1)(b) on a determination that:

(a) the potential environmental impacts of Phase 1, taken alone, are insignificant;
(b) ample and unconstrained infrastructure facilities and services exist to support Phase 1;
(c) the project is severable, such that Phase 1 does not require the implementation of any other future phase of the project or restrict the means by which potential environmental impacts from any other phase of the project may be avoided, minimized or mitigated; **and**
(d) the agency action(s) on Phase 1 will contain terms such as a condition or restriction, so as to ensure due compliance with MEPA and 301 CMR 11.00 prior to commencement of any other phase of the project.

Findings

Based upon the information submitted by the Proponents and after consultation with the relevant state agencies, I find that:

Requiring the preparation of an EIR in advance of undertaking Phase 1 would cause undue hardship:

- Allowing Phase 1 of the project to proceed in advance of the EIR plays an important role in the Proponents' intended construction sequencing for the full project. The remainder of the project after Phase 1 will be built on a series of large parking "bathtubs" with floor plates containing efficient below-grade parking and loading. Each of these parking tubs will provide platforms upon which multiple buildings will then be constructed. Construction of the Chapel in Phase 1 is critical to allow for the demolition of the existing Chapel and subsequent development of the below-grade garages and remainder of the project to proceed. Early construction of the Our Lady of Good Voyage Chapel will allow for uninterrupted service at the Chapel because the existing Chapel will have been removed during development of the remainder of the project.
- According to the Proponents, Phase 1 of the project will provide significant benefits to the City and the public. Currently, Blocks A, H and J are predominantly covered by surface parking lots. Development of the lots will improve the aesthetic appeal of the neighborhood and help to establish a gateway to the South Boston waterfront and Fort Point Channel areas. Phase 1 will create approximately 110 residential units, including affordable and workforce housing. Allowing the Phase 1 Waiver blocks to proceed in advance of the EIR will avoid a delay in the realization of the above-listed benefits.

The preparation of an EIR would not serve to minimize Damage to the Environment and the potential environmental impacts of Phase 1 are insignificant:

General

- Phase 1 of the project is being developed on underutilized urban property that does not include sensitive environmental receptors.

- The Phase 1 project site does not contain any land regulated under MGL c. 21E or the Massachusetts Contingency Plan.

- Blocks A, H and J are currently used for surface parking, a use that generates oil, grease, pollutants and sediments. The proposed new uses on these parcels will improve water quality runoff from the site.

- There will be no potential adverse impacts to groundwater at Blocks H and J because no below-grade basement space is proposed. The one-level basement at Block A will be excavated at or just below groundwater levels. The design and construction techniques at this parcel will mitigate potential impacts to groundwater levels. The Proponents will ensure compliance with the requirements of the Boston Groundwater Conservation Overlay District and must coordinate with the Massachusetts Water Resources Authority (MWRA) and the Boston Water and Sewer Commission (BWSC) regarding construction dewatering for the Block A site.

- The project, including Phase 1, will comply with the City of Boston's Article 37, which requires that sustainable design elements be incorporated into new projects. The Proponents are targeting LEED-New Construction (NC) Silver on Blocks A and J.

- As outlined in the Certificate on the Expanded ENF, the Proponents are required to comply with the EEA Greenhouse Gas Policy, and as part of the DEIR is required to submit an analysis of project-related GHG emissions for the entire project including Phase 1, and will commit to mitigation measures to reduce GHG emissions from the entire project.

Transportation

- Phase 1 of the project is anticipated to generate only 478 new average daily vehicle trips based on BTD trip generation assumptions. The Proponents have undertaken a Traffic Impact and Access Study (TIAS) that indicates that the development of the Phase 1 area will not degrade any study area intersections. The TIAS study area for Phase 1 was developed with input from the Boston Redevelopment Authority (BRA), the Boston Transportation Department (BTD) and the community. The Phase 1 traffic study included the intersections of Seaport Boulevard/Sleeper Street, Seaport Boulevard/East Service Road/Northern Avenue, and West Broadway/A Street. Two intersections within the Phase

1 study area will experience a decrease in level-of-service (LOS) under the No-Build condition: the intersection of Seaport Boulevard/East Service Road/Northern Avenue and the intersection of West Broadway/A Street. In the Build condition, the LOS does not worsen at any of the study area intersections. At the intersection of Seaport Boulevard/Sleeper Street, the Seaport Boulevard eastbound left-turn currently operates at LOS F during the morning peak hour due to the lack of a protected left-turn phase. The Proponents propose to install signal equipment, pavement markings and signage for an exclusive left-turn lane and protected signal phase on Seaport Boulevard eastbound to remedy the situation.

- The Proponents will develop and implement a Transportation Demand Management (TDM) program to minimize the use of single-occupancy vehicle trips associated with the project and Phase 1. TDM measures for Phase 1 will include an on-site transportation coordinator, transit pass subsidies for retail employees, secure bicycle parking areas, provision of car sharing spaces in parking garages, and distribution of transit maps and schedules to residents and employees.

- The project site, including Phase 1, is within half a mile of South Station, which provides access to the Massachusetts Bay Transportation Authority (MBTA) Red Line, Silver Line and seven commuter rail branches. The MBTA Silver Line Courthouse and World Trade Center stations in addition to several local MBTA and express bus routes are located near the site as well. The Proponents have estimated that Phase 1 of the project will add 1,188 net new transit trips per day to transit lines, which can be easily accommodated by existing MBTA service.

- Phase 1 will provide an improved street and pedestrian environment. At Block A, the Proponents will work with the City of Boston to provide new paving, trees, planters, benches, lighting and outdoor restaurant seating at Old Sleeper Street and provide a connection between the Children's Museum and the Federal Courthouse. Along Seaport Boulevard, at Blocks H and J, new sidewalk paving and street trees will be installed. The Proponents will also build a pedestrian ramp at the end of the alley between Sleeper and Farnsworth Streets to connect the lower elevation of the alley with the height of Seaport Boulevard. The Proponents should ensure that any future plans for the Old Northern Avenue Bridge do not adversely impact pedestrian connections to the HarborWalk between the Evelyn Moakley Bridge and the John Joseph Moakley Federal Courthouse.

Historic Resources

- Blocks H and J are located within the Seaport Boulevard/Boston Wharf Road Protection Area of the proposed Fort Point Channel Landmark District. The proposed development on Blocks H and J will be subject to review by the Boston Landmarks Commission. Shadow impacts on historic resources resulting from new construction on Blocks A, H and J will be limited due to the height of existing buildings, the density of the neighborhood and the location of the parcels north of the historic district. The scale of the new construction will provide a transition between the Fort Point Channel Landmark

District and the larger new construction proposed for the blocks on the north side of Seaport Boulevard.

Chapter 91/Waterways

- Portions of the Seaport Square project site are within Chapter 91 licensing jurisdiction including all of Block A, the western end of Block B, the western end of Block H, the northeastern corner of Block G, and the northeastern portion of Block M. Phase 1 of the project includes 0.44 acres subject to Chapter 91. Phase 1 is primarily a residential and retail development, and will therefore be reviewed under Chapter 91 as a non-water dependent project. The Proponents provided a discussion in the Expanded ENF of the Phase 1 projects' compliance with the Chapter 91 regulations at 310 CMR 9.00, as amended by the SBMHP.

- Pursuant to the Secretary's Decision on the SBMHP, the Proponents are required to provide 9,742 sf of public open space in conjunction with the Phase 1 development. The Proponents have identified the SBMHP Parcel E as a potential location for the required open space. Parcel E consists of approximately 8,075 sf of open space that was "banked" in the SBMHP as open space offsets for future Seaport Square development projects. In addition, the Proponents have proposed improvements to Old Sleeper Street that would include an active open space area with art installations, landscaping and potential restaurant seating, as well as serving as a link between the Harborwalk at the Children's Museum and the Old Northern Avenue Bridge. Of the approximately 8,096 sf of open space on Old Sleeper Street, at least 50 percent is proposed to be publicly accessible. Parcel E, in combination with open space on Old Sleeper Street would provide approximately 16,981 sf of open space, which is greater than what is required for Phase 1 in accordance with the Chapter 91 regulations. MassDEP and the Office of Coastal Zone Management (CZM) have expressed support for the proposal to count Old Sleeper Street towards the open space requirement for Phase 1.

  Because Old Sleeper Street is a public way, the use proposed in the Expanded ENF requires approval from the City of Boston. This Draft Amended Record of Decision (ROD) is accordingly conditioned on the Proponents providing MassDEP with written evidence of the support of the BRA, the City of Boston's Municipal Harbor Planning body, for the use of Old Sleeper Street in a manner that does not adversely affect access to and the operations of the various businesses located on Old Sleeper Street, which include water-dependent uses, both during the construction period and post-construction. The Proponents must ensure that existing service functions for theses businesses are maintained and/or improved through the proposed improvements to Old Sleeper Street. The Proponents must also ensure that proposed improvements to Old Sleeper Street do not impede any future uses at the Barking Crab Restaurant and/or Neptune Marine Services, including the future provision of a section of the Harborwalk, as envisioned in the Secretary's Decision on the SBMHP.

- As part of the Chapter 91 Licensing process, the Proponents must ensure that Block E meets the open space standard for Commonwealth Tidelands and that it is compatible with the adjacent Children's Wharf Park, which is currently undergoing a planning and landscape design process to develop a signature waterfront park.

- The Proponents will be required to provide public amenities as part of the Phase 1 project. I direct the Proponents to suggested public amenities outlined in the Boston Harbor Association's comment letters on the Expanded ENF and NPC.

- The entire project area is located on filled former Commonwealth tidelands. The project is subject to a public benefits review and determination pursuant to Chapter 168 of the Acts of 2007. In the Expanded ENF, the Proponents provided a discussion of the public benefits associated with Phase 1, including a review of: purpose and effect of the development, impact on abutters and the surrounding community, enhancement to the property, benefits to the public trust rights in tidelands or other associated rights, community activities on the development site, environmental protection and safety, and public health and safety. According to the Proponents, the public benefits associated with Phase 1, in conjunction with the overall project, meet or exceed those established by Chapter 91 and the SBMHP. On October 17, 2008, I issued a Public Benefits Determination for Phase 1 consistent with the provisions of *An Act Relative to Licensing Requirements for Certain Tidelands* (2007 Mass. Acts ch. 168, sec.8), which referenced the Proponents' commitments to public benefits that will be enforced through the Chapter 91 licensing process.

Ample and unconstrained infrastructure facilities and services exist to support Phase 1:

- The development of the Phase 1 project does not require the construction of new infrastructure, aside from new utility connections and the resurfacing or construction of new access points to Block A and/or Old Sleeper Street. No new streets are required for Phase 1 to proceed. Phase 1 will require 30,000 gallons per day (gpd) of water and generate 27,000 gpd of wastewater. The Phase 1 blocks will be served by existing BWSC infrastructure; there is sufficient capacity in the system to meet the needs of Phase 1. Phase 1 of the project requires a Sewer Connection/Extension Permit from MassDEP. The Proponents should coordinate with MassDEP regarding wastewater permitting and mitigation for Phase 1.

- As outlined above, existing roadway and transit infrastructure can support the new vehicle and transit trips generating from the Phase 1 uses.

The project is severable, such that Phase 1 does not require the implementation of any other future phase of the project or restrict the means by which potential environmental impacts from any other phase of the project may be avoided, minimized or mitigated:

- The Proponents have designed Phase 1 such that it is a severable project, which does not require the completion of any other project phase. Construction of the Phase 1

buildings will not restrict the construction of area-wide infrastructure or the implementation of project-wide mitigation measures.

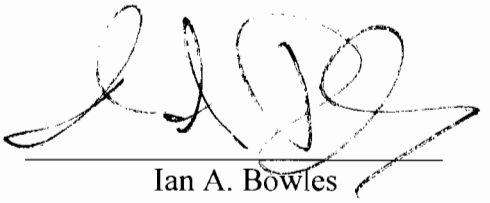
- Infrastructure improvements proposed as part of Phase 1 do not require the future build-out of any other part of the Seaport Square project. The severability standard restricts Proponents from moving forward with portions of a project that depend entirely on infrastructure improvements or other mitigation that will not be realized until future phases of the larger project. I find that development of Blocks A, H and J and associated infrastructure improvements do not depend on implementation of the remaining portions of the project.

The Agency Action on Phase 1 will contain terms such as a condition or restriction in a Permit, contract or other relevant document approving or allowing the Agency Action, or other evidence satisfactory to the Secretary, so as to ensure due compliance with MEPA and 301 CMR 11.00 prior to Commencement of any other phase of the Project:

- Phase 1 of the project requires a number of state permits, including a Chapter 91 License and a Sewer Connection/Extension Permit from MassDEP and possibly a Construction Dewatering Permit from the MWRA. Permits for Phase 1 project will ensure due compliance with MEPA and 301 CMR 11.00 prior to commencement of any other phase of the Project.

Conclusion

I have determined that this waiver request has merit, and am issuing this Final Amended Record of Decision (ROD). I hereby **amend** the Phase 1 Waiver for this project, which will allow the Proponents to proceed with Phase 1 of the project prior to preparing a mandatory EIR for the entire project, subject to the above findings and conditions.



June 5, 2009
Date

Ian A. Bowles

Comments received on the DROD:

6/2/09 Poseidon Enterprises, Inc.

IAB/RB/rb

Appendix H

Census Data

P1. TOTAL POPULATION [1] - Universe: Total population
Data Set: Census 2000 Summary File 1 (SF 1) 100-Percent Data

NOTE: For information on confidentiality protection, nonsampling error, definitions, and count corrections see http://factfinder.census.gov/home/en/datanotes/expsf1u.htm.

	Block Group 1, Census Tract 606, Suffolk County, Massachusetts	**Block Group 1, Census Tract 701, Suffolk County, Massachusetts**
Total	1,401	980

U.S. Census Bureau Census 2000

Census count corrections for American Indian and Alaska Native Areas (AIANAs), states, counties, places, county subdivisions, census tracts, and blocks may have been released as a result of an external challenge through the Count Question Resolution Program.

P3. RACE [71] - Universe: Total population
Data Set: Census 2000 Summary File 1 (SF 1) 100-Percent Data

NOTE: For information on confidentiality protection, nonsampling error, definitions, and count corrections see http://factfinder.census.gov/home/en/datanotes/expsf1u.htm.

	Block Group 1, Census Tract 606, Suffolk County, Massachusetts	Block Group 1, Census Tract 701, Suffolk County, Massachusetts
Total:	1,401	980
Population of one race:	1,367	974
White alone	1,250	416
Black or African American alone	29	64
American Indian and Alaska Native alone	5	2
Asian alone	74	471
Native Hawaiian and Other Pacific Islander alone	1	0
Some other race alone	8	21
Population of two or more races:	34	6
Population of two races:	30	5
White; Black or African American	2	0
White; American Indian and Alaska Native	1	2
White; Asian	6	0
White; Native Hawaiian and Other Pacific Islander	0	0
White; Some other race	14	1
Black or African American; American Indian and Alaska Native	0	0
Black or African American; Asian	0	0
Black or African American; Native Hawaiian and Other Pacific Islander	0	0
Black or African American; Some other race	2	0
American Indian and Alaska Native; Asian	0	2
Native Hawaiian and Other Pacific Islander	0	0
American Indian and Alaska Native; Some other race	0	0
Asian; Native Hawaiian and Other Pacific Islander	4	0
Asian; Some other race	1	0
Native Hawaiian and Other Pacific Islander; Some other race	0	0
Population of three races:	4	1
White; Black or African American; American Indian and Alaska Native	0	0
White; Black or African American; Asian	0	0
Native Hawaiian and Other Pacific Islander	0	0
White; Black or African American; Some other race	3	0
White; American Indian and Alaska Native; Asian	0	0
Native Hawaiian and Other Pacific Islander	0	0
White; American Indian and Alaska Native; Some other race	0	0
White; Asian; Native Hawaiian and Other Pacific Islander	0	0
White; Asian; Some other race	1	0
White; Native Hawaiian and Other Pacific Islander; Some other race	0	0
Black or African American; American Indian and Alaska Native; Asian	0	0
Native Hawaiian and Other Pacific Islander	0	0
Some other race	0	0
Native Hawaiian and Other Pacific Islander	0	0
Black or African American; Asian; Some other race	0	0
Native Hawaiian and Other Pacific Islander; Some other race	0	0
Native Hawaiian and Other Pacific Islander	0	0
American Indian and Alaska Native; Asian; Some other race	0	0
Native Hawaiian and Other Pacific Islander; Some other race	0	1
Asian; Native Hawaiian and Other Pacific Islander; Some other race	0	0
Population of four races:	0	0
Asian	0	0
Native Hawaiian and Other Pacific Islander	0	0
Some other race	0	0
Native Hawaiian and Other Pacific Islander	0	0
Some other race	0	0
Native Hawaiian and Other Pacific Islander; Some other race	0	0
Native Hawaiian and Other Pacific Islander	0	0
Some other race	0	0
Native Hawaiian and Other Pacific Islander; Some other race	0	0
Some other race	0	0
Native Hawaiian and Other Pacific Islander	0	0
Asian; Some other race	0	0
Native Hawaiian and Other Pacific Islander; Some other race	0	0
Native Hawaiian and Other Pacific Islander; Some other race	0	0
Native Hawaiian and Other Pacific Islander; Some other race	0	0
Population of five races:	0	0
Asian; Native Hawaiian and Other Pacific Islander	0	0
Asian; Some other race	0	0
Native Hawaiian and Other Pacific Islander; Some other race	0	0
Native Hawaiian and Other Pacific Islander; Some other race	0	0
Native Hawaiian and Other Pacific Islander; Some other race	0	0
Asian; Native Hawaiian and Other Pacific Islander; Some other race	0	0
Population of six races:	0	0
Asian; Native Hawaiian and Other Pacific Islander; Some other race	0	0

P12. SEX BY AGE [49] - Universe: Total population
Data Set: Census 2000 Summary File 1 (SF 1) 100-Percent Data

NOTE: For information on confidentiality protection, nonsampling error, definitions, and count corrections see http://factfinder.census.gov/home/en/datanotes/expsf1u.htm.

	Block Group 1, Census Tract 606, Suffolk County, Massachusetts	**Block Group 1, Census Tract 701, Suffolk County, Massachusetts**
Total:	1,401	980
Male:	749	628
Under 5 years	27	12
5 to 9 years	14	18
10 to 14 years	21	22
15 to 17 years	13	12
18 and 19 years	22	11
20 years	26	3
21 years	16	14
22 to 24 years	50	26
25 to 29 years	112	72
30 to 34 years	90	100
35 to 39 years	71	66
40 to 44 years	80	63
45 to 49 years	63	60
50 to 54 years	36	41
55 to 59 years	30	27
60 and 61 years	15	5
62 to 64 years	7	14
65 and 66 years	13	13
67 to 69 years	9	19
70 to 74 years	22	16
75 to 79 years	7	8
80 to 84 years	3	6
85 years and over	2	0
Female:	652	352
Under 5 years	23	12
5 to 9 years	18	18
10 to 14 years	21	10
15 to 17 years	8	13
18 and 19 years	17	9
20 years	3	10
21 years	12	5
22 to 24 years	33	19
25 to 29 years	103	42
30 to 34 years	79	62
35 to 39 years	68	37
40 to 44 years	54	18
45 to 49 years	42	29
50 to 54 years	44	23
55 to 59 years	24	12
60 and 61 years	5	2
62 to 64 years	15	4
65 and 66 years	18	3
67 to 69 years	15	9
70 to 74 years	23	8
75 to 79 years	10	4
80 to 84 years	10	2
85 years and over	7	1

U.S. Census Bureau Census 2000

P15. HOUSEHOLDS [1] - Universe: Households
Data Set: Census 2000 Summary File 1 (SF 1) 100-Percent Data

NOTE: For information on confidentiality protection, nonsampling error, definitions, and count corrections see http://factfinder.census.gov/home/en/datanotes/expsf1u.htm.

	Block Group 1, Census Tract 606, Suffolk County, Massachusetts	**Block Group 1, Census Tract 701, Suffolk County, Massachusetts**
Total	707	343

U.S. Census Bureau Census 2000

P17. AVERAGE HOUSEHOLD SIZE [1] - Universe: Households
Data Set: Census 2000 Summary File 1 (SF 1) 100-Percent Data

NOTE: For information on confidentiality protection, nonsampling error, definitions, and count corrections see http://factfinder.census.gov/home/en/datanotes/expsf1u.htm.

	Block Group 1, Census Tract 606, Suffolk County, Massachusetts	**Block Group 1, Census Tract 701, Suffolk County, Massachusetts**
Average household size	1.83	2.26

U.S. Census Bureau Census 2000

H1. HOUSING UNITS [1] - Universe: Housing units
Data Set: Census 2000 Summary File 1 (SF 1) 100-Percent Data

NOTE: For information on confidentiality protection, nonsampling error, definitions, and count corrections see http://factfinder.census.gov/home/en/datanotes/expsf1u.htm.

	Block Group 1, Census Tract 606, Suffolk County, Massachusetts	**Block Group 1, Census Tract 701, Suffolk County, Massachusetts**
Total	765	377

U.S. Census Bureau Census 2000

Census count corrections for American Indian and Alaska Native Areas (AIANAs), states, counties, places, county subdivisions, census tracts, and blocks may have been released as a result of an external challenge through the Count Question Resolution Program.

P53. MEDIAN HOUSEHOLD INCOME IN 1999 (DOLLARS) [1] - Universe: Households
Data Set: Census 2000 Summary File 3 (SF 3) - Sample Data

NOTE: Data based on a sample except in P3, P4, H3, and H4. For information on confidentiality protection, sampling error, nonsampling error, definitions, and count corrections see http://factfinder.census.gov/home/en/datanotes/expsf3.htm.

	Block Group 1, Census Tract 606, Suffolk County, Massachusetts	**Block Group 1, Census Tract 701, Suffolk County, Massachusetts**
Median household income in 1999	57,292	52,917

U.S. Census Bureau

P87. POVERTY STATUS IN 1999 BY AGE [17] - Universe: Population for whom poverty status is determined
Data Set: Census 2000 Summary File 3 (SF 3) - Sample Dat

NOTE: Data based on a sample except in P3, P4, H3, and H4. For information on confidentiality protection, sampling error, nonsampling error, definitions, and count corrections see http://factfinder.census.gov/home/en/datanotes/expsf3.htm.

	Block Group 1, Census Tract 606, Suffolk County, Massachusetts	**Block Group 1, Census Tract 701, Suffolk County, Massachusetts**
Total:	1,184	991
Income in 1999 below poverty level:	82	366
Under 5 years	0	6
5 years	0	0
6 to 11 years	0	21
12 to 17 years	0	17
18 to 64 years	50	282
65 to 74 years	28	18
75 years and over	4	22
Income in 1999 at or above poverty level:	1,102	625
Under 5 years	33	13
5 years	5	0
6 to 11 years	46	18
12 to 17 years	43	33
18 to 64 years	875	532
65 to 74 years	49	18
75 years and over	51	11

U.S. Census Bureau

H16. HOUSEHOLD SIZE [8] - Universe: Occupied housing units
Data Set: Census 2000 Summary File 3 (SF 3) - Sample Data

NOTE: Data based on a sample except in P3, P4, H3, and H4. For information on confidentiality protectio sampling error, nonsampling error, definitions, and count corrections see http://factfinder.census.gov/home/en/datanotes/expsf3.htm.

	Block Group 1, Census Tract 606, Suffolk County, Massachusetts	**Block Group 1, Census Tract 701, Suffolk County, Massachusetts**
Total:	692	354
1-person household	344	117
2-person household	229	138
3-person household	53	29
4-person household	45	24
5-person household	21	16
6-person household	0	23
7-or-more-person household	0	7

U.S. Census Bureau

H30. UNITS IN STRUCTURE [11] - Universe: Housing units
Data Set: Census 2000 Summary File 3 (SF 3) - Sample Data

NOTE: Data based on a sample except in P3, P4, H3, and H4. For information on confidentiality protection, sampling error, nonsampling error, definitions, and count corrections see http://factfinder.census.gov/home/en/datanotes/expsf3.htm.

	Block Group 1, Census Tract 606, Suffolk County, Massachusetts	**Block Group 1, Census Tract 701, Suffolk County, Massachusetts**
Total:	749	383
1, detached	49	15
1, attached	76	0
2	75	8
3 or 4	194	71
5 to 9	45	56
10 to 19	12	77
20 to 49	152	142
50 or more	146	14
Mobile home	0	0
Boat, RV, van, etc.	0	0

U.S. Census Bureau

LEED for Neighborhood Development
(1st Public Comment Period Rating System) Proposed Project Scorecard

Strongly Pursuing	Undetermined at this time	Not Pursuing	
			Project Name: Seaport Square
			Project Address: South Boston, MA

SP	U	NP			
18	4	5	SMART LOCATION & LINKAGE	27	Points
Y			Prereq 1	Smart Location	Required
Y			Prereq 2	Proximity to Water and Wastewater Infrastructure	Required
Y			Prereq 3	Imperiled Species and Ecological Communities	Required
Y			Prereq 4	Wetland and Water Body Conservation	Required
Y			Prereq 5	Farmland Conservation	Required
Y			Prereq 6	Floodplain Avoidance	Required
8	2		Credit 1	Preferred Locations	10
		2	Credit 2	Brownfield Redevelopment	2
7			Credit 3	Reduced Automobile Dependence	7
	1		Credit 4	Bicycle Network and Storage	1
2	1		Credit 5	Housing and Jobs Proximity	3
1			Credit 6	Steep Slope Protection	1
		1	Credit 7	Site Design for Habitat or Wetlands Conservation	1
		1	Credit 8	Restoration of Habitat or Wetlands	1
		1	Credit 9	Conservation Management of Habitat or Wetlands	1
21	20	3	NEIGHBORHOOD PATTERN & DESIGN	44	Points
Y			Prereq 1	Walkable Streets	Required
Y			Prereq 2	Compact Development	Required
Y			Prereq 3	Connected and Open Community	Required
4	8		Credit 1	Walkable Streets	12
6			Credit 2	Compact Development	6
3	1		Credit 3	Diversity of Uses	4
3	3	1	Credit 4	Mixed-Income Diverse Communities	7
	1		Credit 5	Reduced Parking Footprint	1
2			Credit 6	Street Network	2
1			Credit 7	Transit Facilities	1
	2		Credit 8	Transportation Demand Management	2
1			Credit 9	Access to Public Spaces	1
	1		Credit 10	Access to Active Public Spaces	1
	1		Credit 11	Universal Accessibility	1
1		1	Credit 12	Community Outreach and Involvement	2
		1	Credit 13	Local Food Production	1
	2		Credit 14	Tree-Lined and Shaded Streets	2
	1		Credit 15	Neighborhood Schools	1

SP	U	NP				
8	12	9	GREEN INFRASTRUCTURE & BUILDINGS		29	Points
Y			Prereq 1	Certified Green Building	Required	
Y			Prereq 2	Minimum Building Energy Efficiency	Required	
Y			Prereq 3	Minimum Building Water Efficiency	Required	
Y			Prereq 4	Construction Activity Pollution Prevention	Required	
5			Credit 1	Certified Green Buildings	5	
		2	Credit 2	Building Energy Efficiency	2	
1			Credit 3	Water Efficient Landscaping	1	
		1	Credit 4	Existing Building Reuse	1	
		1	Credit 5	Historic Preservation and Adaptive Use	1	
	1		Credit 6	Minimize Site Disturbance in Design and Construction	1	
	4		Credit 7	Stormwater Management	4	
1			Credit 8	Heat Island Reduction	1	
		1	Credit 9	Solar Orientation	1	
	1	2	Credit 10	On-Site Renewable Energy Sources	3	
	2		Credit 11	District Heating and Cooling	2	
	1		Credit 12	Infrastructure Energy Efficiency	1	
	1	2	Credit 13	Wastewater Management	3	
	1		Credit 14	Recycled Content in Infrastructure	1	
1			Credit 15	Waste Management Infrastructure	1	
	1		Credit 16	Light Pollution Reduction	1	

SP	U	NP				
3	3	0	INNOVATION & DESIGN PROCESS		6	Points
1			Credit 1.1	Innovation in Design: LEED Certified Buildings	1	
1			Credit 1.2	Innovation in Design: 100% Covered Parking (NPDc5)	1	
	1		Credit 1.3	Innovation in Design: TBD	1	
	1		Credit 1.4	Innovation in Design: TBD	1	
	1		Credit 1.5	Innovation in Design: TBD	1	
1			Credit 2	LEED© Accredited Professional	1	

SP	U	NP				
2	2	0	REGIONAL PRIORITY CREDITS		4	Points
1			Credit 1.1	Regional Priority Credit: Region Defined - TBD	1	
1			Credit 1.2	Regional Priority Credit: Region Defined - TBD	1	
	1		Credit 1.3	Regional Priority Credit: Region Defined - TBD	1	
	1		Credit 1.4	Regional Priority Credit: Region Defined - TBD	1	

52	41	17	PROJECT TOTALS (Certification Estimates)		110	Points

Seaport Square - Parcel A LEED Checklist

LEED-NC v2.2 Residential Mixed-Use Project

Project mix:
Residential: 53,600 sq.ft. (67%)
Retail: 26,800 sq.ft. (33%)
Total: 80,400 sq.ft.

Strongly Pursuing	Under Consideration	Not likely for pursuit	Not Possible or Not Feasible			
6	4	3	1		**Sustainable Sites**	**14** Points
Y				Prereq 1	**Construction Activity Pollution Prevention**	Required
1				Credit 1	**Site Selection**	1
1				Credit 2	**Development Density & Community Connectivity**	1
			1	Credit 3	**Brownfield Redevelopment**	1
1				Credit 4.1	**Alternative Transportation**, Public Transportation Access	1
1				Credit 4.2	**Alternative Transportation**, Bicycle Storage & Changing Rooms	1
	1			Credit 4.3	**Alternative Transportation**, Low-Emitting & Fuel-Efficient Vehicles	1
	1			Credit 4.4	**Alternative Transportation**, Parking Capacity	1
		1		Credit 5.1	**Site Development,** Protect or Restore Habitat	1
		1		Credit 5.2	**Site Development,** Maximize Open Space	1
	1			Credit 6.1	**Stormwater Design,** Quantity Control	1
	1			Credit 6.2	**Stormwater Design,** Quality Control	1
1				Credit 7.1	**Heat Island Effect,** Non-Roof - 50% Underground parking	1
1				Credit 7.2	**Heat Island Effect,** Roof	1
		1		Credit 8	**Light Pollution Reduction**	1
2	1	2	0		**Water Efficiency**	**5** Points
1				Credit 1.1	**Water Efficient Landscaping**, Reduce by 50%	1
	1			Credit 1.2	**Water Efficient Landscaping**, No Potable Use or No Irrigation	1
		1		Credit 2	**Innovative Wastewater Technologies**	1
1				Credit 3.1	**Water Use Reduction**, 20% Reduction	1
		1		Credit 3.2	**Water Use Reduction**, 30% Reduction	1
3	3	11	0		**Energy & Atmosphere**	**17** Points
Y				Prereq 1	**Fundamental Commissioning of the Building Energy Systems**	Required
Y				Prereq 2	**Minimum Energy Performance**	Required
Y				Prereq 3	**Fundamental Refrigerant Management**	Required
2	2	6		Credit 1	**Optimize Energy Performance**	1 to 10
					10.5% New Buildings or 3.5% Existing Building Renovations	1
					14% New Buildings or 7% Existing Building Renovations	2
					17.5% New Buildings or 10.5% Existing Building Renovations	3
					21% New Buildings or 14% Existing Building Renovations	4
					24.5% New Buildings or 17.5% Existing Building Renovations	5
					28% New Buildings or 21% Existing Building Renovations	6
					31.5% New Buildings or 24.5% Existing Building Renovations	7
					35% New Buildings or 28% Existing Building Renovations	8
					38.5% New Buildings or 31.5% Existing Building Renovations	9
					42% New Buildings or 35% Existing Building Renovations	10
	1	2		Credit 2	**On-Site Renewable Energy**	1 to 3
					2.5% Renewable Energy	1
					7.5% Renewable Energy	2
					12.5% Renewable Energy	3
		1		Credit 3	**Enhanced Commissioning**	1
1				Credit 4	**Enhanced Refrigerant Management**	1
		1		Credit 5	**Measurement & Verification**	1
		1		Credit 6	**Green Power**	1

continued...

continued…

4	1	2	5		**Materials & Resources**	**13** Points
Y				Prereq 1	**Storage & Collection of Recyclables**	Required
			1	Credit 1.1	**Building Reuse**, Maintain 75% of Existing Walls, Floors & Roof	1
			1	Credit 1.2	**Building Reuse**, Maintain 95% of Existing Walls, Floors & Roof	1
			1	Credit 1.3	**Building Reuse**, Maintain 50% of Interior Non-Structural Elements	1
1				Credit 2.1	**Construction Waste Management**, Divert 50% from Disposal	1
1				Credit 2.2	**Construction Waste Management**, Divert 75% from Disposal	1
			1	Credit 3.1	**Materials Reuse**, 5%	1
			1	Credit 3.2	**Materials Reuse**, 10%	1
1				Credit 4.1	**Recycled Content**, 10% (post-consumer + ½ pre-consumer)	1
		1		Credit 4.2	**Recycled Content**, 20% (post-consumer + ½ pre-consumer)	1
1				Credit 5.1	**Regional Materials**, 10% Extracted, Processed & Manufactured Regionally	1
		1		Credit 5.2	**Regional Materials**, 20% Extracted, Processed & Manufactured Regionally	1
	1			Credit 6	**Rapidly Renewable Materials**	1
	1			Credit 7	**Certified Wood**	
7	6	2	0		**Indoor Environmental Quality**	**15** Points
Y				Prereq 1	**Minimum IAQ Performance**	Required
Y				Prereq 2	**Environmental Tobacco Smoke** (ETS) **Control**	Required
	1			Credit 1	**Outdoor Air Delivery Monitoring**	1
		1		Credit 2	**Increased Ventilation**	1
1				Credit 3.1	**Construction IAQ Management Plan**, During Construction	1
1				Credit 3.2	**Construction IAQ Management Plan**, Before Occupancy	1
1				Credit 4.1	**Low-Emitting Materials**, Adhesives & Sealants	1
1				Credit 4.2	**Low-Emitting Materials**, Paints & Coatings	1
1				Credit 4.3	**Low-Emitting Materials**, Carpet Systems	1
	1			Credit 4.4	**Low-Emitting Materials**, Composite Wood & Agrifiber Products	1
	1			Credit 5	**Indoor Chemical & Pollutant Source Control**	1
	1			Credit 6.1	**Controllability of Systems**, Lighting	1
	1			Credit 6.2	**Controllability of Systems**, Thermal Comfort	1
1				Credit 7.1	**Thermal Comfort**, Design	1
		1		Credit 7.2	**Thermal Comfort,** Verification	1
	1			Credit 8.1	**Daylight & Views**, Daylight 75% of Spaces	1
1				Credit 8.2	**Daylight & Views**, Views for 90% of Spaces	1
4	1	0	0		**Innovation & Design Process**	**5** Points
1				Credit 1.1	**Innovation in Design**: SSc7.1 Exemplary Performance - 100% Underground parking	1
1				Credit 1.2	**Innovation in Design**: Green Housekeeping Program	1
1				Credit 1.3	**Innovation in Design**: Coordinate with LEED Facilitator	1
	1			Credit 1.4	**Innovation in Design**: Coordinate with LEED Facilitator	1
1				Credit 2	**LEED® Accredited Professional**	1
0	2	1	1		**Boston Article 37 "LEED Certifiable" additional Credits**	4 Points
	1			Credit 1	**Modern Grid**- project must provide on-site distributed generation/CHP for 10% of bldg energy use	
			1	Credit 2	**Historic Preservation**- preservation of a historically significant building	
	1			Credit 3	**Groundwater Recharge**- capture rainwater on site and allow for infiltration	
		1		Credit 4	**Modern Mobility**- commit to transportation demand management requirements prior to PNF	
26	**16**	**20**	**6**		**Project Totals (estimated)**	**69** Points

Certified: 26-32 points, **Silver:** 33-38 points, **Gold:** 39-51 points, **Platinum:** 52-69 points

LEED 2009 for New Construction and Major Renovation
Project Scorecard

Strongly Pursuing	Undetermined at this time	Not Pursuing		
			Project Name:	Seaport Square Residential Mixed Use and Hotel Mixed Use Projects (Parcels C, D, G, J, K, L3, L4, L5, L6, M1, M2, P)
			Project Address:	South Boston, MA

17	7	2	**SUSTAINABLE SITES**		**26 Points**
Y			Prereq 1	Construction Activity Pollution Prevention	Required
1			Credit 1	Site Selection	1
5			Credit 2	Development Density and Community Connectivity	5
		1	Credit 3	Brownfield Redevelopment	1
6			Credit 4.1	Alternative Transportation - Public Transportation Access	6
	1		Credit 4.2	Alternative Transportation - Bicycle Storage and Changing Rooms	1
3			Credit 4.3	Alternative Transportation - Low-Emitting and Fuel-Efficient Vehicles	3
	2		Credit 4.4	Alternative Transportation - Parking Capacity	2
		1	Credit 5.1	Site Development - Protect or Restore Habitat	1
	1		Credit 5.2	Site Development - Maximize Open Space	1
	1		Credit 6.1	Stormwater Design - Quantity Control	1
	1		Credit 6.2	Stormwater Design - Quality Control	1
1			Credit 7.1	Heat Island Effect - Nonroof	1
1			Credit 7.2	Heat Island Effect - Roof	1
	1		Credit 8	Light Pollution Reduction	1

SP	U	N			
2	5	2	**WATER EFFICIENCY**		**10 Points**
					4
Y			Prereq 1	Water Use Reduction	Required
2	2		Credit 1	Water Efficient Landscaping	2 to 4
			2	Reduce by 50%	2
				No Potable Water Use or Irrigation	4
		2	Credit 2	Innovative Wastewater Technologies	2
	3		Credit 3	Water Use Reduction	2 to 4
				Reduce by 30%	2
				Reduce by 35%	3
				Reduce by 40%	4

2	15	18	**ENERGY & ATMOSPHERE**		**35 Points**
Y			Prereq 1	Fundamental Commissioning of Building Energy Systems	Required
Y			Prereq 2	Minimum Energy Performance	Required
Y			Prereq 3	Fundamental Refrigerant Management	Required
	5	14	Credit 1	Optimize Energy Performance	1 to 19
				Improve by 12% for New Buildings or 8% for Existing Building Renovations	1
				Improve by 14% for New Buildings or 10% for Existing Building Renovations	2
				Improve by 16% for New Buildings or 12% for Existing Building Renovations	3
				Improve by 18% for New Buildings or 14% for Existing Building Renovations	4
				Improve by 20% for New Buildings or 16% for Existing Building Renovations	5
				Improve by 22% for New Buildings or 18% for Existing Building Renovations	6
				Improve by 24% for New Buildings or 20% for Existing Building Renovations	7
				Improve by 26% for New Buildings or 22% for Existing Building Renovations	8
				Improve by 28% for New Buildings or 24% for Existing Building Renovations	9
				Improve by 30% for New Buildings or 26% for Existing Building Renovations	10
				Improve by 32% for New Buildings or 28% for Existing Building Renovations	11
				Improve by 34% for New Buildings or 30% for Existing Building Renovations	12
				Improve by 36% for New Buildings or 32% for Existing Building Renovations	13
				Improve by 38% for New Buildings or 34% for Existing Building Renovations	14
				Improve by 40% for New Buildings or 36% for Existing Building Renovations	15
				Improve by 42% for New Buildings or 38% for Existing Building Renovations	16
				Improve by 44% for New Buildings or 40% for Existing Building Renovations	17
				Improve by 46% for New Buildings or 42% for Existing Building Renovations	18
				Improve by 48%+ for New Buildings or 44%+ for Existing Building Renovations	19
	3	4	Credit 2	On-Site Renewable Energy	1 to 7
				1% Renewable Energy	1
				3% Renewable Energy	2
				5% Renewable Energy	3
				7% Renewable Energy	4

				9% Renewable Energy	5
				11% Renewable Energy	6
				13% Renewable Energy	7
	2		Credit 3	Enhanced Commissioning	2
2			Credit 4	Enhanced Refrigerant Management	2
	3		Credit 5	Measurement and Verification	3
	2		Credit 6	Green Power	2

SP	U	N		
3	5	6	MATERIALS & RESOURCES	14 Points

Y			Prereq 1	Storage and Collection of Recyclables	Required
		3	Credit 1.1	Building Reuse - Maintain Existing Walls, Floors and Roof	1 to 3
				Reuse 55%	1
				Reuse 75%	2
				Reuse 95%	3
		1	Credit 1.2	Building Reuse - Maintain Interior Nonstructural Elements	1
1	1		Credit 2	Construction Waste Management	1 to 2
				50% Recycled or Salvaged	1
				75% Recycled or Salvaged	2
		2	Credit 3	Materials Reuse	1 to 2
				Reuse 5%	1
				Reuse 10%	2
1	1		Credit 4	Recycled Content	1 to 2
				10% of Content	1
				20% of Content	2
1	1		Credit 5	Regional Materials	1 to 2
				10% of Materials	1
				20% of Materials	2
	1		Credit 6	Rapidly Renewable Materials	1
	1		Credit 7	Certified Wood	1

SP	U	N		
10	3	2	INDOOR ENVIRONMENTAL QUALITY	15 Points

Y			Prereq 1	Minimum Indoor Air Quality Performance	Required
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control	Required
1			Credit 1	Outdoor Air Delivery Monitoring	1
		1	Credit 2	Increased Ventilation	1
1			Credit 3.1	Construction Indoor Air Quality Management Plan - During Construction	1
1			Credit 3.2	Construction Indoor Air Quality Management Plan - Before Occupancy	1
1			Credit 4.1	Low-Emitting Materials - Adhesives and Sealants	1
1			Credit 4.2	Low-Emitting Materials - Paints and Coatings	1
1			Credit 4.3	Low-Emitting Materials - Flooring Systems	1
	1		Credit 4.4	Low-Emitting Materials - Composite Wood and Agrifiber Products	1
	1		Credit 5	Indoor Chemical and Pollutant Source Control	1
1			Credit 6.1	Controllability of Systems - Lighting	1
1			Credit 6.2	Controllability of Systems - Thermal Comfort	1
1			Credit 7.1	Thermal Comfort - Design	1
		1	Credit 7.2	Thermal Comfort - Verification	1
	1		Credit 8.1	Daylight and Views - Daylight	1
1			Credit 8.2	Daylight and Views - Views	1

SP	U	N		
4	0	0	INNOVATION IN DESIGN	6 Points

3			Credit 1	Innovation in Design	1 to 5
			1	SSc7.1 Exemplary Performance - 100% Underground Parking	1
			1	Innovation or Exemplary Performance - TBD	1
			1	Innovation or Exemplary Performance - TBD	1
			0	Innovation - TBD	1
			0	Innovation - TBD	1
1			Credit 2	LEED® Accredited Professional	1

SP	U	N		
2	0	0	REGIONAL PRIORITY	4 Points

2			Credit 1	Regional Priority	1 to 4
				SSc6.1	1
			1	SSc7.1	1
			1	SSc7.2	1
				EAc2 (1%)	1

SP	U	N		
40	35	30	PROJECT TOTALS (Certification Estimates)	110 Points

Certified: 40-49 points Silver: 50-59 points Gold: 60-79 points Platinum: 80+ points

LEED 2009 for New Construction and Major Renovation
Project Scorecard

Strongly Pursuing	Undetermined at this time	Not Pursuing		
			Project Name:	Seaport Square Parcel N
			Project Address:	South Boston, MA

14	6	2	SUSTAINABLE SITES		24 Points
Y			Prereq 1	Construction Activity Pollution Prevention	Required
1			Credit 1	Site Selection	1
4			Credit 2	Development Density and Community Connectivity	4
		1	Credit 3	Brownfield Redevelopment	1
4			Credit 4.1	Alternative Transportation - Public Transportation Access	4
1			Credit 4.2	Alternative Transportation - Bicycle Storage and Changing Rooms	1
2			Credit 4.3	Alternative Transportation - Low-Emitting and Fuel-Efficient Vehicles	2
	2		Credit 4.4	Alternative Transportation - Parking Capacity	2
		1	Credit 5.1	Site Development - Protect or Restore Habitat	1
	1		Credit 5.2	Site Development - Maximize Open Space	1
	1		Credit 6.1	Stormwater Design - Quantity Control	1
	1		Credit 6.2	Stormwater Design - Quality Control	1
1			Credit 7.1	Heat Island Effect - Nonroof	1
1			Credit 7.2	Heat Island Effect - Roof	1
	1		Credit 8	Light Pollution Reduction	1
	1		Credit 9	Site Master Plan	1
	1		Credit 10	Joint Use of Facilities	1

SP	U	N			
4	4	2	WATER EFFICIENCY		11 Points
					4
Y			Prereq 1	Water Use Reduction	Required
2	2		Credit 1	Water Efficient Landscaping	2 to 4
			2	Reduce by 50%	2
				No Potable Water Use or Irrigation	4
		2	Credit 2	Innovative Wastewater Technologies	2
2	2		Credit 3	Water Use Reduction	2 to 4
				Reduce by 30%	2
				Reduce by 35%	3
				Reduce by 40%	4
0	1		Credit 4	Process Water Use Reduction	1

3	12	18	ENERGY & ATMOSPHERE		33 Points
Y			Prereq 1	Fundamental Commissioning of Building Energy Systems	Required
Y			Prereq 2	Minimum Energy Performance	Required
Y			Prereq 3	Fundamental Refrigerant Management	Required
	5	14	Credit 1	Optimize Energy Performance	1 to 19
				Improve by 12% for New Buildings or 8% for Existing Building Renovations	1
				Improve by 14% for New Buildings or 10% for Existing Building Renovations	2
				Improve by 16% for New Buildings or 12% for Existing Building Renovations	3
				Improve by 18% for New Buildings or 14% for Existing Building Renovations	4
				Improve by 20% for New Buildings or 16% for Existing Building Renovations	5
				Improve by 22% for New Buildings or 18% for Existing Building Renovations	6
				Improve by 24% for New Buildings or 20% for Existing Building Renovations	7
				Improve by 26% for New Buildings or 22% for Existing Building Renovations	8
				Improve by 28% for New Buildings or 24% for Existing Building Renovations	9
				Improve by 30% for New Buildings or 26% for Existing Building Renovations	10
				Improve by 32% for New Buildings or 28% for Existing Building Renovations	11
				Improve by 34% for New Buildings or 30% for Existing Building Renovations	12
				Improve by 36% for New Buildings or 32% for Existing Building Renovations	13
				Improve by 38% for New Buildings or 34% for Existing Building Renovations	14
				Improve by 40% for New Buildings or 36% for Existing Building Renovations	15
				Improve by 42% for New Buildings or 38% for Existing Building Renovations	16
				Improve by 44% for New Buildings or 40% for Existing Building Renovations	17
				Improve by 46% for New Buildings or 42% for Existing Building Renovations	18
				Improve by 48%+ for New Buildings or 44%+ for Existing Building Renovations	19
	3	4	Credit 2	On-Site Renewable Energy	1 to 7
				1% Renewable Energy	1
				3% Renewable Energy	2
				5% Renewable Energy	3
				7% Renewable Energy	4
				9% Renewable Energy	5
				11% Renewable Energy	6
				13% Renewable Energy	7

2			Credit 3	Enhanced Commissioning	2
1			Credit 4	Enhanced Refrigerant Management	1
	2		Credit 5	Measurement and Verification	2
	2		Credit 6	Green Power	2

SP	U	N		
3	5	6	MATERIALS & RESOURCES	13 Points

Y			Prereq 1	Storage and Collection of Recyclables	Required
		3	Credit 1.1	Building Reuse - Maintain Existing Walls, Floors and Roof	1 to 2
				Reuse 75%	1
				Reuse 95%	2
		1	Credit 1.2	Building Reuse - Maintain Interior Nonstructural Elements	1
1	1		Credit 2	Construction Waste Management	1 to 2
				50% Recycled or Salvaged	1
				75% Recycled or Salvaged	2
		2	Credit 3	Materials Reuse	1 to 2
				Reuse 5%	1
				Reuse 10%	2
1	1		Credit 4	Recycled Content	1 to 2
				10% of Content	1
				20% of Content	2
1	1		Credit 5	Regional Materials	1 to 2
				10% of Materials	1
				20% of Materials	2
	1		Credit 6	Rapidly Renewable Materials	1
	1		Credit 7	Certified Wood	1

SP	U	N		
10	8	1	INDOOR ENVIRONMENTAL QUALITY	19 Points

Y			Prereq 1	Minimum Indoor Air Quality Performance	Required
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control	Required
Y			Prereq 3	Minimum Acoustical Performance	Required
1			Credit 1	Outdoor Air Delivery Monitoring	1
		1	Credit 2	Increased Ventilation	1
1			Credit 3.1	Construction Indoor Air Quality Management Plan - During Construction	1
1			Credit 3.2	Construction Indoor Air Quality Management Plan - Before Occupancy	1
4			Credit 4	Low-Emitting Materials	Up to 4
				4.1 - Adhesives & Sealants	1
				4.2 - Paints & Coatings	1
				4.3 - Flooring Systems	1
				4.4 - Composite Wood & Agrifiber Products	1
				4.5 - Furniture & Furnishings	1
				4.6 - Ceiling & Wall Systems	1
1			Credit 5	Indoor Chemical and Pollutant Source Control	1
	1		Credit 6.1	Controllability of Systems - Lighting	1
	1		Credit 6.2	Controllability of Systems - Thermal Comfort	1
1			Credit 7.1	Thermal Comfort - Design	1
1			Credit 7.2	Thermal Comfort - Verification	1
	3		Credit 8.1	Daylight and Views	1 to 3
		0		75% of classrooms	1
				90% of classrooms	2
				75% of other spaces	2 to 3
	1		Credit 8.2	Daylight and Views - Views	1
	1		Credit 9	Enhanced Acoustical Performance	1
	1		Credit 10	Mold Prevention	1

SP	U	N		
4	0	0	INNOVATION IN DESIGN	6 Points

3			Credit 1	Innovation in Design	1 to 5
		1		SSc7.1 Exemplary Performance - 100% Underground Parking	1
		1		Innovation or Exemplary Performance - TBD	1
		1		Innovation or Exemplary Performance - TBD	1
		0		Innovation - TBD	1
1			Credit 2	LEED® Accredited Professional	1
	1		Credit 3	School as a Teaching Tool	1

SP	U	N		
2	0	0	REGIONAL PRIORITY	4 Points

2			Credit 1	Regional Priority	1 to 4
				SSc6.1	1
		1		SSc7.1	1
		1		SSc7.2	1
				EAc2 (1%)	1

SP	U	N		
40	35	29	PROJECT TOTALS (Certification Estimates)	110 Points

Certified: 40-49 points Silver: 50-59 points Gold: 60-79 points Platinum: 80+ points

LEED 2009 for Core and Shell Development
Project Scorecard

Strongly Pursuing	Undetermined at this time	Not Pursuing	
			Project Name: Seaport Square Office Mixed Use Parcels B, L1, L2 ,Q
			Project Address: South Boston, MA

20	6	2	SUSTAINABLE SITES	28	Points

Y					
			Prereq 1	Construction Activity Pollution Prevention	Required
1			Credit 1	Site Selection	1
5			Credit 2	Development Density and Community Connectivity	5
		1	Credit 3	Brownfield Redevelopment	1
6			Credit 4.1	Alternative Transportation - Public Transportation Access	6
2			Credit 4.2	Alternative Transportation - Bicycle Storage and Changing Rooms	2
3			Credit 4.3	Alternative Transportation - Low-Emitting and Fuel-Efficient Vehicles	3
	2		Credit 4.4	Alternative Transportation - Parking Capacity	2
		1	Credit 5.1	Site Development - Protect or Restore Habitat	1
	1		Credit 5.2	Site Development - Maximize Open Space	1
	1		Credit 6.1	Stormwater Design - Quantity Control	1
	1		Credit 6.2	Stormwater Design - Quality Control	1
1			Credit 7.1	Heat Island Effect - Nonroof	1
1			Credit 7.2	Heat Island Effect - Roof	1
	1		Credit 8	Light Pollution Reduction	1
1			Credit 9	Tenant Design and Construction Guidelines	1

SP	U	N			
	6	0	WATER EFFICIENCY	10	Points

Y					
			Prereq 1	Water Use Reduction	Required
2	2	0	Credit 1	Water Efficient Landscaping	2 to 4
			2	Reduce by 50%	2
				No Potable Water Use or Irrigation	4
	2	0	Credit 2	Innovative Wastewater Technologies	2
2	2		Credit 3	Water Use Reduction	2 to 4
			0	Reduce by 30%	2
			0	Reduce by 35%	3
				Reduce by 40%	4

SP	U	N			
4	16	14	ENERGY & ATMOSPHERE	37	Points

Y					
Y			Prereq 1	Fundamental Commissioning of Building Energy Systems	Required
Y			Prereq 2	Minimum Energy Performance	Required
Y			Prereq 3	Fundamental Refrigerant Management	Required
	7	14	Credit 1	Optimize Energy Performance	3 to 21
				Improve by 12% for New Buildings or 8% for Existing Building Renovations	3
				Improve by 14% for New Buildings or 10% for Existing Building Renovations	4
				Improve by 16% for New Buildings or 12% for Existing Building Renovations	5
				Improve by 18% for New Buildings or 14% for Existing Building Renovations	6
				Improve by 20% for New Buildings or 16% for Existing Building Renovations	7
				Improve by 22% for New Buildings or 18% for Existing Building Renovations	8
				Improve by 24% for New Buildings or 20% for Existing Building Renovations	9
				Improve by 26% for New Buildings or 22% for Existing Building Renovations	10
				Improve by 28% for New Buildings or 24% for Existing Building Renovations	11
				Improve by 30% for New Buildings or 26% for Existing Building Renovations	12
				Improve by 32% for New Buildings or 28% for Existing Building Renovations	13
				Improve by 34% for New Buildings or 30% for Existing Building Renovations	14
				Improve by 36% for New Buildings or 32% for Existing Building Renovations	15
				Improve by 38% for New Buildings or 34% for Existing Building Renovations	16
				Improve by 40% for New Buildings or 36% for Existing Building Renovations	17
				Improve by 42% for New Buildings or 38% for Existing Building Renovations	18
				Improve by 44% for New Buildings or 40% for Existing Building Renovations	19

				Improve by 46% for New Buildings or 42% for Existing Building Renovations	20
				Improve by 48%+ for New Buildings or 44%+ for Existing Building Renovations	21
	4	0	Credit 2	On-Site Renewable Energy	4
2			Credit 3	Enhanced Commissioning	2
2			Credit 4	Enhanced Refrigerant Management	2
	3		Credit 5.1	Measurement and Verification - Base Building	3
	3		Credit 5.2	Measurement and Verification - Tenant Submetering	3
	2		Credit 6	Green Power	2

SP	U	N		
3	4	6	MATERIALS & RESOURCES	13 Points

Y			Prereq 1	Storage and Collection of Recyclables	Required
		5	Credit 1	Building Reuse - Maintain Existing Walls, Floors & Roof	1 to 5
				Reuse 25%	1
				Reuse 33%	2
				Reuse 42%	3
				Reuse 50%	4
				Reuse 75%	5
1	1		Credit 2	Construction Waste Management	1 to 2
				50% Recycled or Salvaged	1
				75% Recycled or Salvaged	2
		1	Credit 3	Materials Reuse	1
1	1		Credit 4	Recycled Content	1 to 2
				10% of Content	1
				20% of Content	2
1	1		Credit 5	Regional Materials	1 to 2
				10% of Materials	1
				20% of Materials	2
	1		Credit 6	Certified Wood	1

SP	U	N		
5	5	2	INDOOR ENVIRONMENTAL QUALITY	12 Points

Y			Prereq 1	Minimum Indoor Air Quality Performance	Required
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control	Required
1			Credit 1	Outdoor Air Delivery Monitoring	1
		1	Credit 2	Increased Ventilation	1
1			Credit 3	Construction Indoor Air Quality Management Plan - During Construction	1
1			Credit 4.1	Low-Emitting Materials - Adhesives and Sealants	1
1			Credit 4.2	Low-Emitting Materials - Paints and Coatings	1
	1		Credit 4.3	Low-Emitting Materials - Flooring Systems	1
	1		Credit 4.4	Low-Emitting Materials - Composite Wood and Agrifiber Products	1
	1		Credit 5	Indoor Chemical and Pollutant Source Control	1
	1		Credit 6	Controllability of Systems - Thermal Comfort	1
1			Credit 7	Thermal Comfort - Design	1
		1	Credit 8.1	Daylight & Views - Daylight	1
	1		Credit 8.2	Daylight & Views - Views	1

SP	U	N		
2	2	0	INNOVATION IN DESIGN	6 Points

1	2		Credit 1	Innovation in Design	1 to 5
				1 SSc7.1 Exemplary Performance - 100% Underground Parking	1
				Innovation or Exemplary Performance - TBD	1
				Innovation or Exemplary Performance - TBD	1
				Innovation - TBD	1
				Innovation - TBD	1
1			Credit 2	LEED® Accredited Professional	1

SP	U	N		
2	2	0	REGIONAL PRIORITY	4 Points

2	2		Credit 1	Regional Priority	1 to 4
				SSc6.1	1
				1 SSc7.1	1
				1 SSc7.2	1
				EAc2	1

SP	U	N		
40	41	24	PROJECT TOTALS (Certification Estimates)	110 Points

Certified: 40-49 points Silver: 50-59 points Gold: 60-79 points Platinum: 80+ points

LEED 2009 for New Construction and Major Renovation
Project Scorecard

Project Name: Seaport Square Parcel H (church)

Project Address: South Boston, MA

Possible	Undecided	Not Pursued			
17	7	2	SUSTAINABLE SITES		26 Points
Y			Prereq 1	Construction Activity Pollution Prevention	Required
1			Credit 1	Site Selection	1
5			Credit 2	Development Density and Community Connectivity	5
		1	Credit 3	Brownfield Redevelopment	1
6			Credit 4.1	Alternative Transportation - Public Transportation Access	6
	1		Credit 4.2	Alternative Transportation - Bicycle Storage and Changing Rooms	1
3			Credit 4.3	Alternative Transportation - Low-Emitting and Fuel-Efficient Vehicles	3
	2		Credit 4.4	Alternative Transportation - Parking Capacity	2
		1	Credit 5.1	Site Development - Protect or Restore Habitat	1
	1		Credit 5.2	Site Development - Maximize Open Space	1
	1		Credit 6.1	Stormwater Design - Quantity Control	1
	1		Credit 6.2	Stormwater Design - Quality Control	1
1			Credit 7.1	Heat Island Effect - Nonroof	1
1			Credit 7.2	Heat Island Effect - Roof	1
	1		Credit 8	Light Pollution Reduction	1

P	U	N			
4	4	2	WATER EFFICIENCY		10 Points
					4
Y			Prereq 1	Water Use Reduction	Required
2	2		Credit 1	Water Efficient Landscaping	2 to 4
			2	Reduce by 50%	2
				No Potable Water Use or Irrigation	4
		2	Credit 2	Innovative Wastewater Technologies	2
2	2		Credit 3	Water Use Reduction	2 to 4
			0	Reduce by 30%	2
			0	Reduce by 35%	3
				Reduce by 40%	4

4	13	18	ENERGY & ATMOSPHERE		35 Points
Y			Prereq 1	Fundamental Commissioning of Building Energy Systems	Required
Y			Prereq 2	Minimum Energy Performance	Required
Y			Prereq 3	Fundamental Refrigerant Management	Required
	5	14	Credit 1	Optimize Energy Performance	1 to 19
				Improve by 12% for New Buildings or 8% for Existing Building Renovations	1
				Improve by 14% for New Buildings or 10% for Existing Building Renovations	2
				Improve by 16% for New Buildings or 12% for Existing Building Renovations	3
				Improve by 18% for New Buildings or 14% for Existing Building Renovations	4
				Improve by 20% for New Buildings or 16% for Existing Building Renovations	5
				Improve by 22% for New Buildings or 18% for Existing Building Renovations	6
				Improve by 24% for New Buildings or 20% for Existing Building Renovations	7
				Improve by 26% for New Buildings or 22% for Existing Building Renovations	8
				Improve by 28% for New Buildings or 24% for Existing Building Renovations	9
				Improve by 30% for New Buildings or 26% for Existing Building Renovations	10
				Improve by 32% for New Buildings or 28% for Existing Building Renovations	11
				Improve by 34% for New Buildings or 30% for Existing Building Renovations	12
				Improve by 36% for New Buildings or 32% for Existing Building Renovations	13
				Improve by 38% for New Buildings or 34% for Existing Building Renovations	14
				Improve by 40% for New Buildings or 36% for Existing Building Renovations	15
				Improve by 42% for New Buildings or 38% for Existing Building Renovations	16
				Improve by 44% for New Buildings or 40% for Existing Building Renovations	17
				Improve by 46% for New Buildings or 42% for Existing Building Renovations	18
				Improve by 48%+ for New Buildings or 44%+ for Existing Building Renovations	19
	3	4	Credit 2	On-Site Renewable Energy	1 to 7
				1% Renewable Energy	1
				3% Renewable Energy	2
				5% Renewable Energy	3
				7% Renewable Energy	4
				9% Renewable Energy	5
				11% Renewable Energy	6

				13% Renewable Energy	7
2			Credit 3	Enhanced Commissioning	2
2			Credit 4	Enhanced Refrigerant Management	2
	3		Credit 5	Measurement and Verification	3
	2		Credit 6	Green Power	2

P	U	N		
3	5	6	MATERIALS & RESOURCES	14 Points

Y			Prereq 1	Storage and Collection of Recyclables	Required
		3	Credit 1.1	Building Reuse - Maintain Existing Walls, Floors and Roof	1 to 3
				Reuse 55%	1
				Reuse 75%	2
				Reuse 95%	3
		1	Credit 1.2	Building Reuse - Maintain Interior Nonstructural Elements	1
1	1		Credit 2	Construction Waste Management	1 to 2
				50% Recycled or Salvaged	1
				75% Recycled or Salvaged	2
		2	Credit 3	Materials Reuse	1 to 2
				Reuse 5%	1
				Reuse 10%	2
1	1		Credit 4	Recycled Content	1 to 2
				10% of Content	1
				20% of Content	2
1	1		Credit 5	Regional Materials	1 to 2
				10% of Materials	1
				20% of Materials	2
	1		Credit 6	Rapidly Renewable Materials	1
	1		Credit 7	Certified Wood	1

P	U	N		
8	6	1	INDOOR ENVIRONMENTAL QUALITY	15 Points

Y			Prereq 1	Minimum Indoor Air Quality Performance	Required
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control	Required
	1		Credit 1	Outdoor Air Delivery Monitoring	1
		1	Credit 2	Increased Ventilation	1
1			Credit 3.1	Construction Indoor Air Quality Management Plan - During Construction	1
1			Credit 3.2	Construction Indoor Air Quality Management Plan - Before Occupancy	1
1			Credit 4.1	Low-Emitting Materials - Adhesives and Sealants	1
1			Credit 4.2	Low-Emitting Materials - Paints and Coatings	1
1			Credit 4.3	Low-Emitting Materials - Flooring Systems	1
	1		Credit 4.4	Low-Emitting Materials - Composite Wood and Agrifiber Products	1
	1		Credit 5	Indoor Chemical and Pollutant Source Control	1
1			Credit 6.1	Controllability of Systems - Lighting	1
	1		Credit 6.2	Controllability of Systems - Thermal Comfort	1
1			Credit 7.1	Thermal Comfort - Design	1
1			Credit 7.2	Thermal Comfort - Verification	1
	1		Credit 8.1	Daylight and Views - Daylight	1
	1		Credit 8.2	Daylight and Views - Views	1

P	U	N		
2	0	0	INNOVATION IN DESIGN	6 Points

1			Credit 1	Innovation in Design	1 to 5
				1 SSc7.1 Exemplary Performance - 100% Underground/Covered Parking	1
				Innovation or Exemplary Performance - TBD	1
				Innovation or Exemplary Performance - TBD	1
				Innovation - TBD	1
				Innovation - TBD	1
1			Credit 2	LEED® Accredited Professional	1

P	U	N		
2	0	0	REGIONAL PRIORITY	4 Points

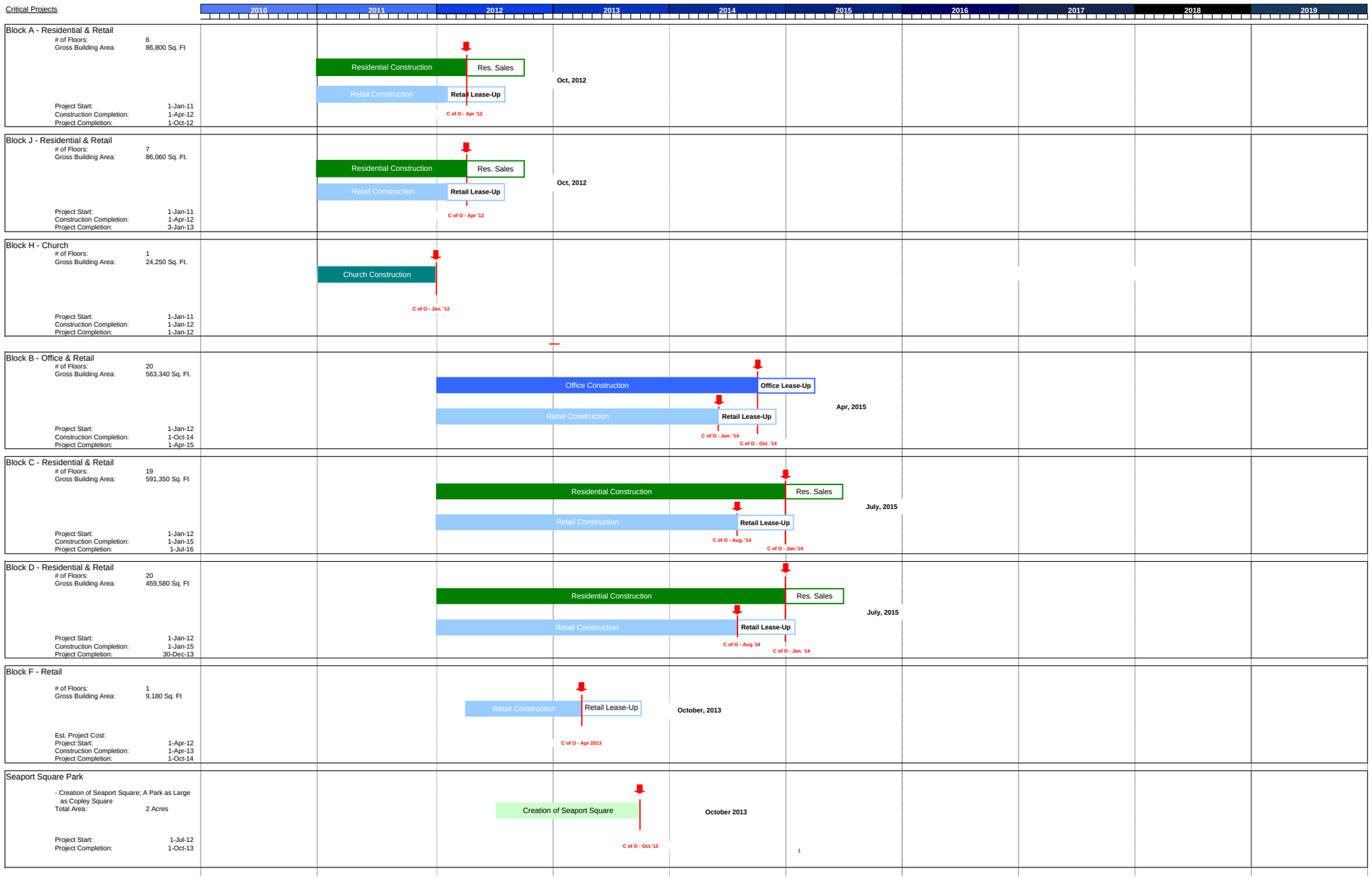
2			Credit 1	Regional Priority	1 to 4
				SSc6.1	1
				1 SSc7.1	1
				1 SSc7.2	1
				EAc2 (1%)	1

P	U	N		
40	35	29	PROJECT TOTALS (Certification Estimates)	110 Points

Certified: 40-49 points Silver: 50-59 points Gold: 60-79 points Platinum: 80+ points

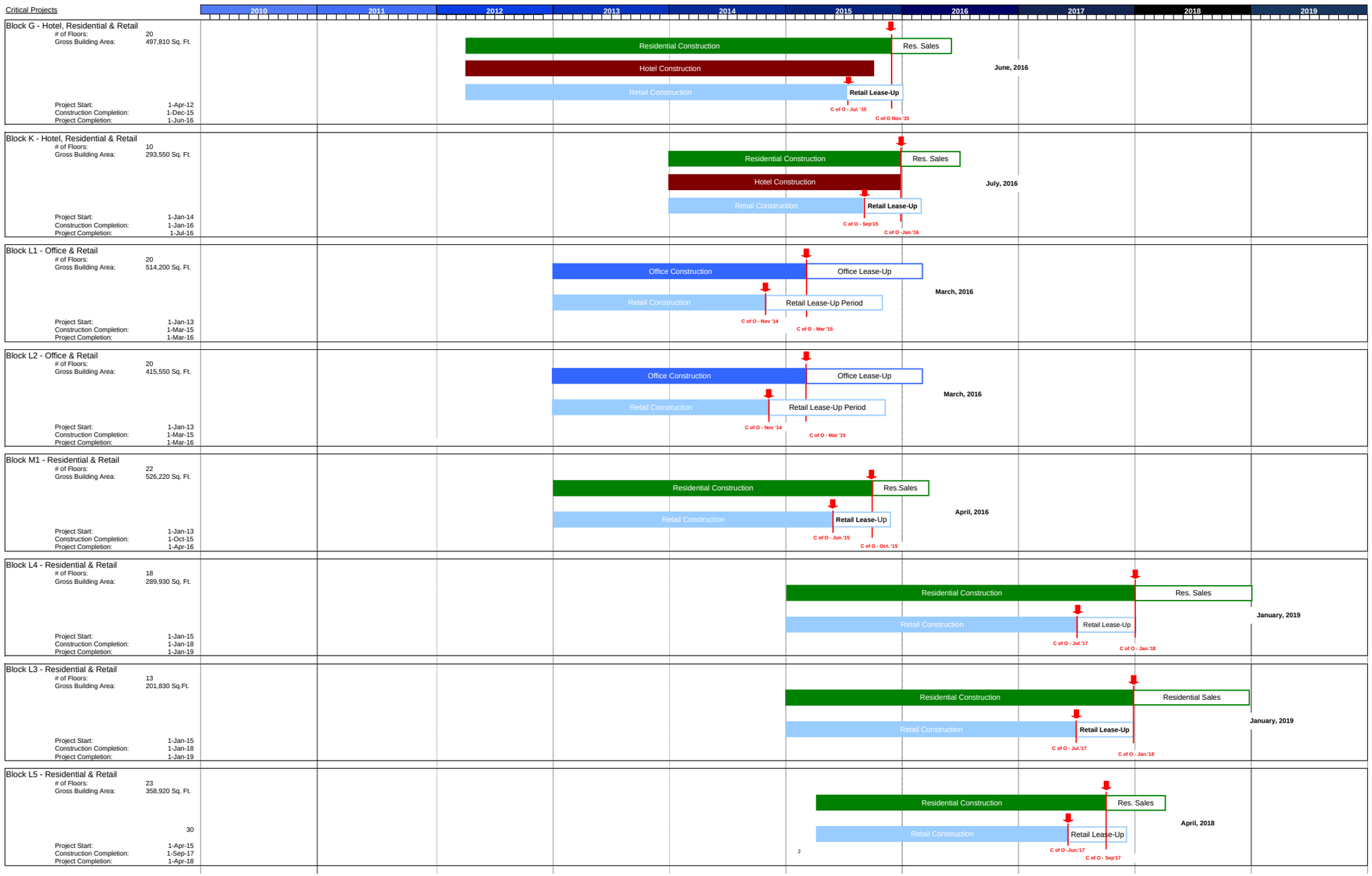
SEAPORT SQUARE MASTER SCHEDULE

6/8/2009



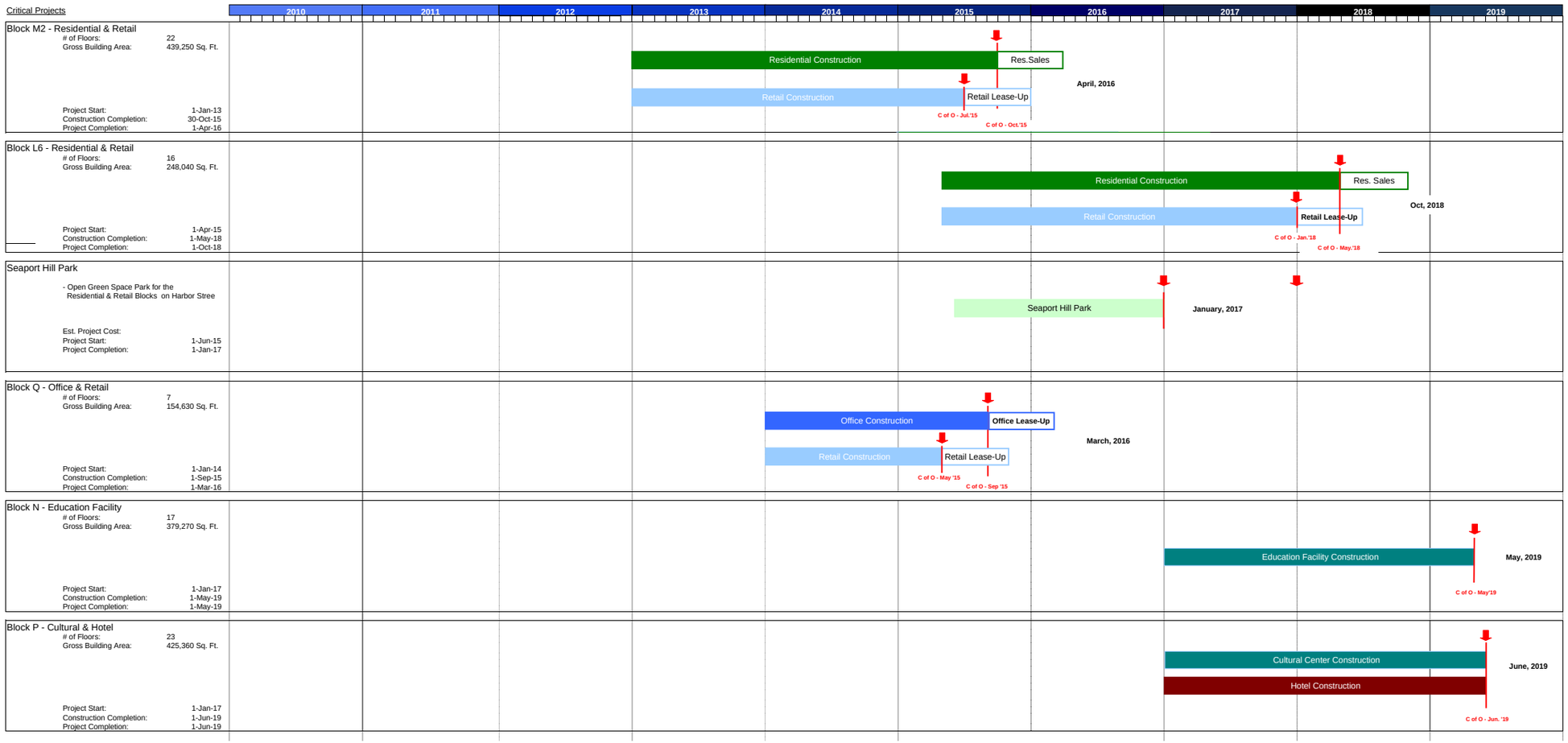
SEAPORT SQUARE MASTER SCHEDULE

6/8/2009



SEAPORT SQUARE MASTER SCHEDULE

6/8/2009



Appendix E

Wind

TABLES

Table 2: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			**Mean Wind Speed**			**Effective Gust Wind Speed**		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
1	A	Spring	16		Walking	25		Acceptable
		Summer	14		Standing	21		Acceptable
		Fall	15		Standing	23		Acceptable
		Winter	16		Walking	26		Acceptable
		Annual	15		Standing	24		Acceptable
	B	Spring	13	-18%	Standing	22	-11%	Acceptable
		Summer	11	-20%	Sitting	18	-13%	Acceptable
		Fall	12	-19%	Sitting	20	-12%	Acceptable
		Winter	14	-12%	Standing	23	-11%	Acceptable
		Annual	13	-12%	Standing	21	-12%	Acceptable
	C	Spring	12	-24%	Sitting	21	-15%	Acceptable
		Summer	10	-28%	Sitting	17	-18%	Acceptable
		Fall	11	-26%	Sitting	19	-16%	Acceptable
		Winter	13	-18%	Standing	21	-18%	Acceptable
		Annual	12	-19%	Sitting	20	-16%	Acceptable
2	A	Spring	31		Dangerous	38		Unacceptable
		Summer	23		Uncomfortable	29		Acceptable
		Fall	28		Dangerous	35		Unacceptable
		Winter	31		Dangerous	39		Unacceptable
		Annual	28		Dangerous	36		Unacceptable
	B	Spring	19	-38%	Walking	28	-25%	Acceptable
		Summer	17	-25%	Walking	23	-20%	Acceptable
		Fall	19	-31%	Walking	27	-22%	Acceptable
		Winter	21	-31%	Uncomfortable	30	-22%	Acceptable
		Annual	19	-31%	Walking	27	-24%	Acceptable
	C	Spring	19	-38%	Walking	27	-28%	Acceptable
		Summer	16	-29%	Walking	23	-20%	Acceptable
		Fall	18	-35%	Walking	26	-25%	Acceptable
		Winter	20	-34%	Uncomfortable	29	-25%	Acceptable
		Annual	18	-35%	Walking	27	-24%	Acceptable
3	A	Spring	25		Uncomfortable	33		Unacceptable
		Summer	18		Walking	23		Acceptable
		Fall	23		Uncomfortable	30		Acceptable
		Winter	25		Uncomfortable	33		Unacceptable
		Annual	23		Uncomfortable	30		Acceptable
	B	Spring	17	-31%	Walking	25	-23%	Acceptable
		Summer	13	-27%	Standing	20	-12%	Acceptable
		Fall	15	-34%	Standing	22	-26%	Acceptable
		Winter	16	-35%	Walking	25	-23%	Acceptable
		Annual	15	-34%	Standing	23	-22%	Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance, and
2) %Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A - No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B - Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C - Build With Mitigation	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 2: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			**Mean Wind Speed**			**Effective Gust Wind Speed**		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
	C	Spring	17	-31%	Walking	25	-23%	Acceptable
		Summer	13	-27%	Standing	21		Acceptable
		Fall	15	-34%	Standing	23	-22%	Acceptable
		Winter	16	-35%	Walking	25	-23%	Acceptable
		Annual	15	-34%	Standing	23	-22%	Acceptable
4	A	Spring	34		Dangerous	41		Unacceptable
		Summer	24		Uncomfortable	30		Acceptable
		Fall	30		Dangerous	38		Unacceptable
		Winter	33		Dangerous	41		Unacceptable
		Annual	31		Dangerous	38		Unacceptable
	B	Spring	18	-46%	Walking	24	-40%	Acceptable
		Summer	13	-45%	Standing	18	-39%	Acceptable
		Fall	16	-46%	Walking	22	-41%	Acceptable
		Winter	18	-44%	Walking	25	-38%	Acceptable
		Annual	17	-44%	Walking	23	-38%	Acceptable
	C	Spring	18	-46%	Walking	24	-40%	Acceptable
		Summer	13	-45%	Standing	18	-39%	Acceptable
		Fall	16	-46%	Walking	22	-41%	Acceptable
		Winter	18	-44%	Walking	24	-40%	Acceptable
		Annual	16	-47%	Walking	22	-41%	Acceptable
5	A	Spring	25		Uncomfortable	34		Unacceptable
		Summer	20		Uncomfortable	27		Acceptable
		Fall	23		Uncomfortable	32		Unacceptable
		Winter	26		Uncomfortable	35		Unacceptable
		Annual	24		Uncomfortable	32		Unacceptable
	B	Spring	18	-27%	Walking	27	-20%	Acceptable
		Summer	15	-24%	Standing	22	-18%	Acceptable
		Fall	17	-25%	Walking	25	-21%	Acceptable
		Winter	19	-26%	Walking	28	-19%	Acceptable
		Annual	17	-28%	Walking	25	-21%	Acceptable
	C	Spring	18	-27%	Walking	27	-20%	Acceptable
		Summer	14	-29%	Standing	21	-21%	Acceptable
		Fall	17	-25%	Walking	25	-21%	Acceptable
		Winter	19	-26%	Walking	27	-22%	Acceptable
		Annual	17	-28%	Walking	25	-21%	Acceptable
6	A	Spring	28		Dangerous	36		Unacceptable
		Summer	21		Uncomfortable	27		Acceptable
		Fall	26		Uncomfortable	34		Unacceptable
		Winter	28		Dangerous	37		Unacceptable
		Annual	26		Uncomfortable	34		Unacceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance, and
2) %Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A - No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B - Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C - Build With Mitigation	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 2: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			**Mean Wind Speed**			**Effective Gust Wind Speed**		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
	B	Spring	17	-38%	Walking	25	-30%	Acceptable
		Summer	12	-42%	Sitting	18	-32%	Acceptable
		Fall	15	-41%	Standing	23	-31%	Acceptable
		Winter	17	-38%	Walking	25	-31%	Acceptable
		Annual	16	-37%	Walking	23	-31%	Acceptable
	C	Spring	17	-38%	Walking	24	-32%	Acceptable
		Summer	12	-42%	Sitting	18	-32%	Acceptable
		Fall	15	-41%	Standing	22	-34%	Acceptable
		Winter	17	-38%	Walking	25	-31%	Acceptable
		Annual	15	-41%	Standing	23	-31%	Acceptable
7	A	Spring	28		Dangerous	36		Unacceptable
		Summer	21		Uncomfortable	27		Acceptable
		Fall	26		Uncomfortable	33		Unacceptable
		Winter	28		Dangerous	37		Unacceptable
		Annual	26		Uncomfortable	34		Unacceptable
	B	Spring	27		Uncomfortable	34		Unacceptable
		Summer	20		Uncomfortable	26		Acceptable
		Fall	24		Uncomfortable	31		Acceptable
		Winter	27		Uncomfortable	35		Unacceptable
		Annual	25		Uncomfortable	32		Unacceptable
	C	Spring	26		Uncomfortable	33		Unacceptable
		Summer	19		Walking	24	-10%	Acceptable
		Fall	23	-11%	Uncomfortable	29	-11%	Acceptable
		Winter	26		Uncomfortable	33	-10%	Unacceptable
		Annual	24		Uncomfortable	30	-11%	Acceptable
8	A	Spring	24		Uncomfortable	32		Unacceptable
		Summer	20		Uncomfortable	26		Acceptable
		Fall	23		Uncomfortable	31		Acceptable
		Winter	26		Uncomfortable	34		Unacceptable
		Annual	23		Uncomfortable	31		Acceptable
	B	Spring	17	-28%	Walking	26	-18%	Acceptable
		Summer	14	-29%	Standing	21	-18%	Acceptable
		Fall	16	-29%	Walking	24	-22%	Acceptable
		Winter	17	-34%	Walking	26	-23%	Acceptable
		Annual	16	-29%	Walking	24	-22%	Acceptable
	C	Spring	18	-24%	Walking	25	-21%	Acceptable
		Summer	14	-29%	Standing	20	-22%	Acceptable
		Fall	17	-25%	Walking	24	-22%	Acceptable
		Winter	18	-30%	Walking	26	-23%	Acceptable
		Annual	17	-25%	Walking	24	-22%	Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance, and
2) %Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A - No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B - Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C - Build With Mitigation	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 2: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			**Mean Wind Speed**			**Effective Gust Wind Speed**		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
9	A	Spring	21		Uncomfortable	28		Acceptable
		Summer	17		Walking	23		Acceptable
		Fall	20		Uncomfortable	26		Acceptable
		Winter	21		Uncomfortable	28		Acceptable
		Annual	20		Uncomfortable	27		Acceptable
	B	Spring	26	+24%	Uncomfortable	32	+14%	Unacceptable
		Summer	18		Walking	23		Acceptable
		Fall	23	+15%	Uncomfortable	29	+12%	Acceptable
		Winter	25	+19%	Uncomfortable	32	+14%	Unacceptable
		Annual	23	+15%	Uncomfortable	30	+11%	Acceptable
	C	Spring	21		Uncomfortable	26		Acceptable
		Summer	15	-11%	Standing	18	-21%	Acceptable
		Fall	18		Walking	23	-11%	Acceptable
		Winter	20		Uncomfortable	26		Acceptable
		Annual	19		Walking	24	-10%	Acceptable
10	A	Spring	23		Uncomfortable	31		Acceptable
		Summer	17		Walking	23		Acceptable
		Fall	22		Uncomfortable	29		Acceptable
		Winter	24		Uncomfortable	33		Unacceptable
		Annual	22		Uncomfortable	30		Acceptable
	B	Spring	18	-21%	Walking	27	-12%	Acceptable
		Summer	14	-17%	Standing	21		Acceptable
		Fall	17	-22%	Walking	25	-13%	Acceptable
		Winter	19	-20%	Walking	28	-14%	Acceptable
		Annual	18	-17%	Walking	26	-12%	Acceptable
	C	Spring	17	-25%	Walking	24	-22%	Acceptable
		Summer	13	-23%	Standing	18	-21%	Acceptable
		Fall	15	-31%	Standing	22	-23%	Acceptable
		Winter	17	-28%	Walking	24	-26%	Acceptable
		Annual	16	-26%	Walking	23	-22%	Acceptable
11	A	Spring	27		Uncomfortable	37		Unacceptable
		Summer	20		Uncomfortable	29		Acceptable
		Fall	25		Uncomfortable	34		Unacceptable
		Winter	27		Uncomfortable	37		Unacceptable
		Annual	25		Uncomfortable	35		Unacceptable
	B	Spring	24	-10%	Uncomfortable	31	-15%	Acceptable
		Summer	18		Walking	24	-16%	Acceptable
		Fall	22	-11%	Uncomfortable	28	-17%	Acceptable
		Winter	24	-10%	Uncomfortable	32	-13%	Unacceptable
		Annual	22	-11%	Uncomfortable	29	-16%	Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance, and
2) %Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A - No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B - Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C - Build With Mitigation	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 2: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			**Mean Wind Speed**			**Effective Gust Wind Speed**		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
	C	Spring	19	-29%	Walking	25	-31%	Acceptable
		Summer	14	-29%	Standing	18	-37%	Acceptable
		Fall	17	-31%	Walking	23	-31%	Acceptable
		Winter	19	-29%	Walking	25	-31%	Acceptable
		Annual	17	-31%	Walking	23	-33%	Acceptable
12	A	Spring	26		Uncomfortable	33		Unacceptable
		Summer	20		Uncomfortable	27		Acceptable
		Fall	24		Uncomfortable	32		Unacceptable
		Winter	27		Uncomfortable	36		Unacceptable
		Annual	25		Uncomfortable	33		Unacceptable
	B	Spring	25		Uncomfortable	31		Acceptable
		Summer	18		Walking	23	-14%	Acceptable
		Fall	22		Uncomfortable	29		Acceptable
		Winter	25		Uncomfortable	32	-10%	Unacceptable
		Annual	23		Uncomfortable	29	-11%	Acceptable
	C	Spring	24		Uncomfortable	29	-11%	Acceptable
		Summer	17	-14%	Walking	22	-18%	Acceptable
		Fall	21	-12%	Uncomfortable	27	-15%	Acceptable
		Winter	23	-14%	Uncomfortable	29	-18%	Acceptable
		Annual	22	-11%	Uncomfortable	27	-17%	Acceptable
13	A	Spring	21		Uncomfortable	28		Acceptable
		Summer	15		Standing	21		Acceptable
		Fall	19		Walking	26		Acceptable
		Winter	21		Uncomfortable	29		Acceptable
		Annual	19		Walking	27		Acceptable
	B	Spring	20		Uncomfortable	28		Acceptable
		Summer	15		Standing	20		Acceptable
		Fall	19		Walking	26		Acceptable
		Winter	21		Uncomfortable	29		Acceptable
		Annual	19		Walking	26		Acceptable
	C	Spring	20		Uncomfortable	27		Acceptable
		Summer	14		Standing	20		Acceptable
		Fall	18		Walking	25		Acceptable
		Winter	21		Uncomfortable	28		Acceptable
		Annual	19		Walking	26		Acceptable
14	A	Spring	21		Uncomfortable	28		Acceptable
		Summer	16		Walking	22		Acceptable
		Fall	19		Walking	26		Acceptable
		Winter	21		Uncomfortable	29		Acceptable
		Annual	20		Uncomfortable	27		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance, and
2) %Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A - No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B - Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C - Build With Mitigation	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 2: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			**Mean Wind Speed**			**Effective Gust Wind Speed**		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
	B	Spring	21		Uncomfortable	31	+11%	Acceptable
		Summer	17		Walking	25	+14%	Acceptable
		Fall	19		Walking	27		Acceptable
		Winter	21		Uncomfortable	31		Acceptable
		Annual	19		Walking	28		Acceptable
	C	Spring	21		Uncomfortable	30		Acceptable
		Summer	16		Walking	23		Acceptable
		Fall	19		Walking	26		Acceptable
		Winter	21		Uncomfortable	30		Acceptable
		Annual	19		Walking	27		Acceptable
15	A	Spring	19		Walking	27		Acceptable
		Summer	16		Walking	22		Acceptable
		Fall	18		Walking	25		Acceptable
		Winter	20		Uncomfortable	27		Acceptable
		Annual	18		Walking	26		Acceptable
	B	Spring	27	+42%	Uncomfortable	37	+37%	Unacceptable
		Summer	20	+25%	Uncomfortable	29	+32%	Acceptable
		Fall	24	+33%	Uncomfortable	33	+32%	Unacceptable
		Winter	27	+35%	Uncomfortable	38	+41%	Unacceptable
		Annual	24	+33%	Uncomfortable	34	+31%	Unacceptable
	C	Spring	28	+47%	Dangerous	38	+41%	Unacceptable
		Summer	21	+31%	Uncomfortable	30	+36%	Acceptable
		Fall	25	+39%	Uncomfortable	34	+36%	Unacceptable
		Winter	28	+40%	Dangerous	38	+41%	Unacceptable
		Annual	25	+39%	Uncomfortable	34	+31%	Unacceptable
16	A	Spring	19		Walking	26		Acceptable
		Summer	15		Standing	21		Acceptable
		Fall	17		Walking	24		Acceptable
		Winter	19		Walking	27		Acceptable
		Annual	18		Walking	25		Acceptable
	B	Spring	12	-36%	Sitting	20	-22%	Acceptable
		Summer	10	-32%	Sitting	16	-23%	Acceptable
		Fall	11	-34%	Sitting	18	-24%	Acceptable
		Winter	12	-36%	Sitting	20	-25%	Acceptable
		Annual	11	-38%	Sitting	18	-27%	Acceptable
	C	Spring	12	-36%	Sitting	19	-26%	Acceptable
		Summer	9	-39%	Sitting	15	-28%	Acceptable
		Fall	11	-34%	Sitting	18	-24%	Acceptable
		Winter	12	-36%	Sitting	20	-25%	Acceptable
		Annual	11	-38%	Sitting	18	-27%	Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance, and
2) %Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A - No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B - Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C - Build With Mitigation	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 2: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			**Mean Wind Speed**			**Effective Gust Wind Speed**		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
17	A	Spring	20		Uncomfortable	27		Acceptable
		Summer	15		Standing	21		Acceptable
		Fall	18		Walking	26		Acceptable
		Winter	20		Uncomfortable	28		Acceptable
		Annual	19		Walking	26		Acceptable
	B	Spring	20		Uncomfortable	28		Acceptable
		Summer	15		Standing	21		Acceptable
		Fall	18		Walking	26		Acceptable
		Winter	20		Uncomfortable	28		Acceptable
		Annual	19		Walking	26		Acceptable
	C	Spring	20		Uncomfortable	27		Acceptable
		Summer	14		Standing	20		Acceptable
		Fall	18		Walking	25		Acceptable
		Winter	20		Uncomfortable	28		Acceptable
		Annual	18		Walking	26		Acceptable
18	A	Spring	20		Uncomfortable	27		Acceptable
		Summer	15		Standing	21		Acceptable
		Fall	19		Walking	26		Acceptable
		Winter	20		Uncomfortable	28		Acceptable
		Annual	19		Walking	26		Acceptable
	B	Spring	26	+30%	Uncomfortable	34	+26%	Unacceptable
		Summer	19	+27%	Walking	25	+19%	Acceptable
		Fall	23	+21%	Uncomfortable	31	+19%	Acceptable
		Winter	26	+30%	Uncomfortable	34	+21%	Unacceptable
		Annual	24	+26%	Uncomfortable	31	+19%	Acceptable
	C	Spring	25	+25%	Uncomfortable	33	+22%	Unacceptable
		Summer	18	+20%	Walking	24	+14%	Acceptable
		Fall	23	+21%	Uncomfortable	30	+15%	Acceptable
		Winter	25	+25%	Uncomfortable	33	+18%	Unacceptable
		Annual	23	+21%	Uncomfortable	30	+15%	Acceptable
19	A	Spring	21		Uncomfortable	28		Acceptable
		Summer	16		Walking	22		Acceptable
		Fall	19		Walking	26		Acceptable
		Winter	21		Uncomfortable	29		Acceptable
		Annual	20		Uncomfortable	27		Acceptable
	B	Spring	18	-13%	Walking	26		Acceptable
		Summer	13	-18%	Standing	19	-13%	Acceptable
		Fall	17	-10%	Walking	24		Acceptable
		Winter	19		Walking	27		Acceptable
		Annual	17	-14%	Walking	24	-10%	Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance, and
2) %Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A - No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B - Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C - Build With Mitigation	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 2: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
	C	Spring	18	-13%	Walking	25	-10%	Acceptable
		Summer	13	-18%	Standing	19	-13%	Acceptable
		Fall	16	-15%	Walking	23	-11%	Acceptable
		Winter	18	-13%	Walking	26		Acceptable
		Annual	17	-14%	Walking	24	-10%	Acceptable
20	A	Spring	22		Uncomfortable	28		Acceptable
		Summer	16		Walking	21		Acceptable
		Fall	20		Uncomfortable	27		Acceptable
		Winter	22		Uncomfortable	29		Acceptable
		Annual	20		Uncomfortable	27		Acceptable
	B	Spring	23		Uncomfortable	31	+11%	Acceptable
		Summer	17		Walking	24	+14%	Acceptable
		Fall	21		Uncomfortable	28		Acceptable
		Winter	23		Uncomfortable	31		Acceptable
		Annual	21		Uncomfortable	28		Acceptable
	C	Spring	23		Uncomfortable	31	+11%	Acceptable
		Summer	17		Walking	23	+10%	Acceptable
		Fall	20		Uncomfortable	27		Acceptable
		Winter	23		Uncomfortable	31		Acceptable
		Annual	21		Uncomfortable	28		Acceptable
21	A	Spring	22		Uncomfortable	28		Acceptable
		Summer	16		Walking	22		Acceptable
		Fall	20		Uncomfortable	27		Acceptable
		Winter	22		Uncomfortable	29		Acceptable
		Annual	21		Uncomfortable	27		Acceptable
	B	Spring	16	-26%	Walking	23	-17%	Acceptable
		Summer	12	-24%	Sitting	18	-17%	Acceptable
		Fall	14	-29%	Standing	21	-21%	Acceptable
		Winter	16	-26%	Walking	24	-16%	Acceptable
		Annual	14	-32%	Standing	22	-18%	Acceptable
	C	Spring	16	-26%	Walking	23	-17%	Acceptable
		Summer	12	-24%	Sitting	18	-17%	Acceptable
		Fall	14	-29%	Standing	21	-21%	Acceptable
		Winter	16	-26%	Walking	24	-16%	Acceptable
		Annual	14	-32%	Standing	22	-18%	Acceptable
22	A	Spring	21		Uncomfortable	28		Acceptable
		Summer	16		Walking	21		Acceptable
		Fall	20		Uncomfortable	26		Acceptable
		Winter	21		Uncomfortable	28		Acceptable
		Annual	20		Uncomfortable	26		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance, and
2) %Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A - No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B - Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C - Build With Mitigation	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 2: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			**Mean Wind Speed**			**Effective Gust Wind Speed**		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
	B	Spring	14	-32%	Standing	21	-24%	Acceptable
		Summer	11	-30%	Sitting	16	-23%	Acceptable
		Fall	13	-34%	Standing	20	-22%	Acceptable
		Winter	15	-28%	Standing	22	-20%	Acceptable
		Annual	14	-29%	Standing	21	-18%	Acceptable
	C	Spring	12	-42%	Sitting	19	-31%	Acceptable
		Summer	10	-37%	Sitting	15	-28%	Acceptable
		Fall	11	-44%	Sitting	18	-30%	Acceptable
		Winter	13	-37%	Standing	20	-28%	Acceptable
		Annual	12	-39%	Sitting	18	-30%	Acceptable
23	A	Spring	20		Uncomfortable	26		Acceptable
		Summer	15		Standing	20		Acceptable
		Fall	18		Walking	25		Acceptable
		Winter	20		Uncomfortable	27		Acceptable
		Annual	19		Walking	25		Acceptable
	B	Spring	14	-29%	Standing	21	-18%	Acceptable
		Summer	10	-32%	Sitting	15	-24%	Acceptable
		Fall	13	-27%	Standing	19	-23%	Acceptable
		Winter	15	-24%	Standing	22	-18%	Acceptable
		Annual	13	-31%	Standing	20	-19%	Acceptable
	C	Spring	12	-39%	Sitting	19	-26%	Acceptable
		Summer	9	-39%	Sitting	15	-24%	Acceptable
		Fall	12	-32%	Sitting	18	-27%	Acceptable
		Winter	13	-34%	Standing	21	-21%	Acceptable
		Annual	12	-36%	Sitting	19	-23%	Acceptable
24	A	Spring	20		Uncomfortable	27		Acceptable
		Summer	15		Standing	20		Acceptable
		Fall	19		Walking	25		Acceptable
		Winter	20		Uncomfortable	28		Acceptable
		Annual	19		Walking	26		Acceptable
	B	Spring	10	-49%	Sitting	17	-36%	Acceptable
		Summer	8	-46%	Sitting	13	-34%	Acceptable
		Fall	10	-46%	Sitting	16	-35%	Acceptable
		Winter	11	-44%	Sitting	17	-38%	Acceptable
		Annual	10	-46%	Sitting	16	-37%	Acceptable
	C	Spring	10	-49%	Sitting	16	-40%	Acceptable
		Summer	7	-52%	Sitting	12	-39%	Acceptable
		Fall	9	-52%	Sitting	15	-39%	Acceptable
		Winter	10	-49%	Sitting	17	-38%	Acceptable
		Annual	9	-52%	Sitting	16	-37%	Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance, and
2) %Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A - No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B - Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C - Build With Mitigation	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 2: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			**Mean Wind Speed**			**Effective Gust Wind Speed**		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
25	A	Spring	28		Dangerous	36		Unacceptable
		Summer	20		Uncomfortable	27		Acceptable
		Fall	25		Uncomfortable	32		Unacceptable
		Winter	28		Dangerous	36		Unacceptable
		Annual	25		Uncomfortable	33		Unacceptable
	B	Spring	23	-17%	Uncomfortable	31	-13%	Acceptable
		Summer	18		Walking	24	-10%	Acceptable
		Fall	21	-15%	Uncomfortable	28	-12%	Acceptable
		Winter	23	-17%	Uncomfortable	32	-10%	Unacceptable
		Annual	21	-15%	Uncomfortable	29	-11%	Acceptable
	C	Spring	18	-35%	Walking	26	-27%	Acceptable
		Summer	14	-29%	Standing	21	-21%	Acceptable
		Fall	16	-35%	Walking	23	-27%	Acceptable
		Winter	18	-35%	Walking	26	-27%	Acceptable
		Annual	16	-35%	Walking	24	-26%	Acceptable
26	A	Spring	23		Uncomfortable	31		Acceptable
		Summer	17		Walking	23		Acceptable
		Fall	21		Uncomfortable	28		Acceptable
		Winter	23		Uncomfortable	31		Acceptable
		Annual	21		Uncomfortable	29		Acceptable
	B	Spring	22		Uncomfortable	30		Acceptable
		Summer	18		Walking	24		Acceptable
		Fall	20		Uncomfortable	27		Acceptable
		Winter	22		Uncomfortable	31		Acceptable
		Annual	20		Uncomfortable	28		Acceptable
	C	Spring	18	-21%	Walking	25	-18%	Acceptable
		Summer	13	-23%	Standing	19	-16%	Acceptable
		Fall	16	-23%	Walking	23	-17%	Acceptable
		Winter	18	-21%	Walking	26	-15%	Acceptable
		Annual	17	-18%	Walking	24	-16%	Acceptable
27	A	Spring	20		Uncomfortable	28		Acceptable
		Summer	15		Standing	21		Acceptable
		Fall	19		Walking	26		Acceptable
		Winter	21		Uncomfortable	29		Acceptable
		Annual	20		Uncomfortable	27		Acceptable
	B	Spring	23	+15%	Uncomfortable	30		Acceptable
		Summer	17	+13%	Walking	22		Acceptable
		Fall	21	+11%	Uncomfortable	27		Acceptable
		Winter	23	+10%	Uncomfortable	30		Acceptable
		Annual	21		Uncomfortable	27		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance, and
2) %Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A - No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B - Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C - Build With Mitigation	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 2: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			**Mean Wind Speed**			**Effective Gust Wind Speed**		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
	C	Spring	23	+15%	Uncomfortable	30		Acceptable
		Summer	17	+13%	Walking	22		Acceptable
		Fall	21	+11%	Uncomfortable	27		Acceptable
		Winter	23	+10%	Uncomfortable	30		Acceptable
		Annual	21		Uncomfortable	27		Acceptable
28	A	Spring	21		Uncomfortable	28		Acceptable
		Summer	15		Standing	21		Acceptable
		Fall	19		Walking	26		Acceptable
		Winter	21		Uncomfortable	28		Acceptable
		Annual	19		Walking	26		Acceptable
	B	Spring	15	-28%	Standing	22	-20%	Acceptable
		Summer	12	-19%	Sitting	17	-18%	Acceptable
		Fall	13	-31%	Standing	20	-22%	Acceptable
		Winter	15	-28%	Standing	23	-17%	Acceptable
		Annual	13	-31%	Standing	21	-18%	Acceptable
	C	Spring	14	-32%	Standing	22	-20%	Acceptable
		Summer	12	-19%	Sitting	17	-18%	Acceptable
		Fall	13	-31%	Standing	20	-22%	Acceptable
		Winter	14	-32%	Standing	22	-20%	Acceptable
		Annual	13	-31%	Standing	20	-22%	Acceptable
29	A	Spring	20		Uncomfortable	27		Acceptable
		Summer	15		Standing	20		Acceptable
		Fall	19		Walking	25		Acceptable
		Winter	20		Uncomfortable	27		Acceptable
		Annual	19		Walking	26		Acceptable
	B	Spring	14	-29%	Standing	22	-18%	Acceptable
		Summer	11	-26%	Sitting	16	-19%	Acceptable
		Fall	13	-31%	Standing	20	-19%	Acceptable
		Winter	15	-24%	Standing	22	-18%	Acceptable
		Annual	13	-31%	Standing	21	-18%	Acceptable
	C	Spring	11	-44%	Sitting	18	-32%	Acceptable
		Summer	9	-39%	Sitting	14	-29%	Acceptable
		Fall	11	-41%	Sitting	17	-31%	Acceptable
		Winter	12	-39%	Sitting	19	-29%	Acceptable
		Annual	11	-41%	Sitting	18	-30%	Acceptable
30	A	Spring	21		Uncomfortable	27		Acceptable
		Summer	15		Standing	20		Acceptable
		Fall	19		Walking	25		Acceptable
		Winter	21		Uncomfortable	28		Acceptable
		Annual	19		Walking	26		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance, and
2) %Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A - No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B - Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C - Build With Mitigation	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 2: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			**Mean Wind Speed**			**Effective Gust Wind Speed**		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
	B	Spring	15	-28%	Standing	22	-18%	Acceptable
		Summer	13	-12%	Standing	19		Acceptable
		Fall	14	-25%	Standing	22	-11%	Acceptable
		Winter	17	-18%	Walking	25	-10%	Acceptable
		Annual	15	-20%	Standing	22	-14%	Acceptable
	C	Spring	14	-32%	Standing	20	-25%	Acceptable
		Summer	12	-19%	Sitting	17	-14%	Acceptable
		Fall	13	-31%	Standing	20	-19%	Acceptable
		Winter	15	-28%	Standing	22	-20%	Acceptable
		Annual	14	-25%	Standing	20	-22%	Acceptable
31	A	Spring	21		Uncomfortable	27		Acceptable
		Summer	15		Standing	20		Acceptable
		Fall	19		Walking	25		Acceptable
		Winter	21		Uncomfortable	28		Acceptable
		Annual	19		Walking	26		Acceptable
	B	Spring	14	-32%	Standing	23	-14%	Acceptable
		Summer	12	-19%	Sitting	18		Acceptable
		Fall	14	-25%	Standing	22	-11%	Acceptable
		Winter	16	-23%	Walking	25	-10%	Acceptable
		Annual	14	-25%	Standing	23	-11%	Acceptable
	C	Spring	11	-47%	Sitting	18	-32%	Acceptable
		Summer	9	-39%	Sitting	15	-24%	Acceptable
		Fall	11	-41%	Sitting	17	-31%	Acceptable
		Winter	13	-37%	Standing	20	-28%	Acceptable
		Annual	11	-41%	Sitting	18	-30%	Acceptable
32	A	Spring	21		Uncomfortable	28		Acceptable
		Summer	15		Standing	20		Acceptable
		Fall	19		Walking	25		Acceptable
		Winter	21		Uncomfortable	28		Acceptable
		Annual	19		Walking	26		Acceptable
	B	Spring	22		Uncomfortable	30		Acceptable
		Summer	18	+20%	Walking	24	+20%	Acceptable
		Fall	20		Uncomfortable	28	+12%	Acceptable
		Winter	22		Uncomfortable	31	+11%	Acceptable
		Annual	21	+11%	Uncomfortable	29	+12%	Acceptable
	C	Spring	18	-13%	Walking	25	-10%	Acceptable
		Summer	16		Walking	21		Acceptable
		Fall	17	-10%	Walking	24		Acceptable
		Winter	19		Walking	27		Acceptable
		Annual	18		Walking	25		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance, and
2) %Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A - No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B - Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C - Build With Mitigation	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 2: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			**Mean Wind Speed**			**Effective Gust Wind Speed**		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
33	A	Spring	25		Uncomfortable	32		Unacceptable
		Summer	18		Walking	23		Acceptable
		Fall	22		Uncomfortable	29		Acceptable
		Winter	24		Uncomfortable	32		Unacceptable
		Annual	22		Uncomfortable	29		Acceptable
	B	Spring	24		Uncomfortable	33		Unacceptable
		Summer	18		Walking	26	+13%	Acceptable
		Fall	22		Uncomfortable	31		Acceptable
		Winter	24		Uncomfortable	35		Unacceptable
		Annual	22		Uncomfortable	32	+10%	Unacceptable
	C	Spring	17	-31%	Walking	24	-24%	Acceptable
		Summer	13	-27%	Standing	20	-12%	Acceptable
		Fall	16	-26%	Walking	23	-20%	Acceptable
		Winter	17	-28%	Walking	26	-18%	Acceptable
		Annual	16	-26%	Walking	24	-16%	Acceptable
34	A	Spring	23		Uncomfortable	32		Unacceptable
		Summer	18		Walking	26		Acceptable
		Fall	22		Uncomfortable	30		Acceptable
		Winter	24		Uncomfortable	33		Unacceptable
		Annual	22		Uncomfortable	31		Acceptable
	B	Spring	30	+30%	Dangerous	38	+19%	Unacceptable
		Summer	23	+28%	Uncomfortable	30	+15%	Acceptable
		Fall	27	+23%	Uncomfortable	35	+17%	Unacceptable
		Winter	30	+25%	Dangerous	39	+18%	Unacceptable
		Annual	27	+23%	Uncomfortable	36	+16%	Unacceptable
	C	Spring	25		Uncomfortable	34		Unacceptable
		Summer	19		Walking	26		Acceptable
		Fall	23		Uncomfortable	31		Acceptable
		Winter	26		Uncomfortable	35		Unacceptable
		Annual	23		Uncomfortable	32		Unacceptable
35	A	Spring	23		Uncomfortable	32		Unacceptable
		Summer	20		Uncomfortable	27		Acceptable
		Fall	20		Uncomfortable	29		Acceptable
		Winter	21		Uncomfortable	32		Unacceptable
		Annual	21		Uncomfortable	30		Acceptable
	B	Spring	33	+43%	Dangerous	40	+25%	Unacceptable
		Summer	25	+25%	Uncomfortable	31	+15%	Acceptable
		Fall	29	+45%	Dangerous	36	+24%	Unacceptable
		Winter	33	+57%	Dangerous	41	+28%	Unacceptable
		Annual	30	+43%	Dangerous	37	+23%	Unacceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance, and
2) %Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A - No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B - Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C - Build With Mitigation	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 2: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			**Mean Wind Speed**			**Effective Gust Wind Speed**		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
	C	Spring	30	+30%	Dangerous	37	+16%	Unacceptable
		Summer	23	+15%	Uncomfortable	29		Acceptable
		Fall	26	+30%	Uncomfortable	33	+14%	Unacceptable
		Winter	30	+43%	Dangerous	38	+19%	Unacceptable
		Annual	27	+29%	Uncomfortable	34	+13%	Unacceptable
36	A	Spring	30		Dangerous	37		Unacceptable
		Summer	22		Uncomfortable	28		Acceptable
		Fall	27		Uncomfortable	34		Unacceptable
		Winter	30		Dangerous	38		Unacceptable
		Annual	27		Uncomfortable	35		Unacceptable
	B	Spring	20	-32%	Uncomfortable	28	-23%	Acceptable
		Summer	15	-31%	Standing	21	-24%	Acceptable
		Fall	18	-32%	Walking	25	-25%	Acceptable
		Winter	20	-32%	Uncomfortable	28	-25%	Acceptable
		Annual	18	-32%	Walking	26	-25%	Acceptable
	C	Spring	23	-22%	Uncomfortable	30	-18%	Acceptable
		Summer	17	-22%	Walking	23	-17%	Acceptable
		Fall	20	-25%	Uncomfortable	27	-20%	Acceptable
		Winter	22	-26%	Uncomfortable	30	-20%	Acceptable
		Annual	20	-25%	Uncomfortable	28	-19%	Acceptable
37	A	Spring	26		Uncomfortable	34		Unacceptable
		Summer	19		Walking	25		Acceptable
		Fall	23		Uncomfortable	30		Acceptable
		Winter	26		Uncomfortable	34		Unacceptable
		Annual	24		Uncomfortable	31		Acceptable
	B	Spring	26		Uncomfortable	33		Unacceptable
		Summer	19		Walking	25		Acceptable
		Fall	23		Uncomfortable	30		Acceptable
		Winter	26		Uncomfortable	34		Unacceptable
		Annual	23		Uncomfortable	31		Acceptable
	C	Spring	22	-14%	Uncomfortable	29	-14%	Acceptable
		Summer	17	-10%	Walking	22	-11%	Acceptable
		Fall	19	-16%	Walking	26	-12%	Acceptable
		Winter	22	-14%	Uncomfortable	29	-14%	Acceptable
		Annual	20	-16%	Uncomfortable	26	-15%	Acceptable
38	A	Spring	23		Uncomfortable	30		Acceptable
		Summer	17		Walking	22		Acceptable
		Fall	20		Uncomfortable	27		Acceptable
		Winter	22		Uncomfortable	30		Acceptable
		Annual	21		Uncomfortable	28		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance, and
2) %Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A - No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B - Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C - Build With Mitigation	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 2: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			**Mean Wind Speed**			**Effective Gust Wind Speed**		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
	B	Spring	29	+26%	Dangerous	37	+23%	Unacceptable
		Summer	22	+29%	Uncomfortable	28	+27%	Acceptable
		Fall	26	+30%	Uncomfortable	33	+22%	Unacceptable
		Winter	29	+32%	Dangerous	37	+23%	Unacceptable
		Annual	27	+29%	Uncomfortable	34	+21%	Unacceptable
	C	Spring	28	+22%	Dangerous	36	+20%	Unacceptable
		Summer	22	+29%	Uncomfortable	27	+23%	Acceptable
		Fall	26	+30%	Uncomfortable	33	+22%	Unacceptable
		Winter	29	+32%	Dangerous	37	+23%	Unacceptable
		Annual	27	+29%	Uncomfortable	34	+21%	Unacceptable
39	A	Spring	21		Uncomfortable	30		Acceptable
		Summer	17		Walking	23		Acceptable
		Fall	19		Walking	28		Acceptable
		Winter	22		Uncomfortable	31		Acceptable
		Annual	20		Uncomfortable	28		Acceptable
	B	Spring	14	-32%	Standing	23	-22%	Acceptable
		Summer	12	-28%	Sitting	20	-12%	Acceptable
		Fall	14	-25%	Standing	22	-20%	Acceptable
		Winter	16	-26%	Walking	26	-15%	Acceptable
		Annual	14	-29%	Standing	23	-17%	Acceptable
	C	Spring	16	-23%	Walking	24	-19%	Acceptable
		Summer	13	-23%	Standing	20	-12%	Acceptable
		Fall	15	-20%	Standing	23	-17%	Acceptable
		Winter	17	-22%	Walking	26	-15%	Acceptable
		Annual	16	-19%	Walking	23	-17%	Acceptable
40	A	Spring	19		Walking	28		Acceptable
		Summer	15		Standing	21		Acceptable
		Fall	18		Walking	26		Acceptable
		Winter	20		Uncomfortable	29		Acceptable
		Annual	18		Walking	27		Acceptable
	B	Spring	18		Walking	26		Acceptable
		Summer	15		Standing	22		Acceptable
		Fall	17		Walking	25		Acceptable
		Winter	18		Walking	27		Acceptable
		Annual	17		Walking	25		Acceptable
	C	Spring	17	-10%	Walking	26		Acceptable
		Summer	15		Standing	22		Acceptable
		Fall	16	-10%	Walking	24		Acceptable
		Winter	18		Walking	27		Acceptable
		Annual	17		Walking	25		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance, and
2) %Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A - No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B - Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C - Build With Mitigation	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 2: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			**Mean Wind Speed**			**Effective Gust Wind Speed**		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
41	A	Spring	28		Dangerous	36		Unacceptable
		Summer	20		Uncomfortable	27		Acceptable
		Fall	25		Uncomfortable	33		Unacceptable
		Winter	28		Dangerous	37		Unacceptable
		Annual	26		Uncomfortable	34		Unacceptable
	B	Spring	17	-38%	Walking	25	-30%	Acceptable
		Summer	14	-29%	Standing	22	-18%	Acceptable
		Fall	16	-35%	Walking	24	-26%	Acceptable
		Winter	17	-38%	Walking	26	-29%	Acceptable
		Annual	16	-37%	Walking	24	-28%	Acceptable
	C	Spring	15	-45%	Standing	24	-32%	Acceptable
		Summer	13	-34%	Standing	20	-25%	Acceptable
		Fall	15	-39%	Standing	23	-29%	Acceptable
		Winter	16	-42%	Walking	25	-31%	Acceptable
		Annual	15	-41%	Standing	23	-31%	Acceptable
42	A	Spring	25		Uncomfortable	34		Unacceptable
		Summer	18		Walking	24		Acceptable
		Fall	22		Uncomfortable	31		Acceptable
		Winter	24		Uncomfortable	33		Unacceptable
		Annual	22		Uncomfortable	31		Acceptable
	B	Spring	19	-23%	Walking	27	-20%	Acceptable
		Summer	15	-16%	Standing	21	-12%	Acceptable
		Fall	17	-22%	Walking	24	-22%	Acceptable
		Winter	19	-20%	Walking	28	-14%	Acceptable
		Annual	17	-22%	Walking	25	-18%	Acceptable
	C	Spring	15	-39%	Standing	23	-31%	Acceptable
		Summer	12	-32%	Sitting	18	-24%	Acceptable
		Fall	14	-35%	Standing	22	-28%	Acceptable
		Winter	16	-32%	Walking	25	-23%	Acceptable
		Annual	14	-35%	Standing	22	-28%	Acceptable
43	A	Spring	22		Uncomfortable	31		Acceptable
		Summer	17		Walking	24		Acceptable
		Fall	21		Uncomfortable	29		Acceptable
		Winter	23		Uncomfortable	32		Unacceptable
		Annual	21		Uncomfortable	30		Acceptable
	B	Spring	20		Uncomfortable	28		Acceptable
		Summer	16		Walking	23		Acceptable
		Fall	18	-13%	Walking	26		Acceptable
		Winter	20	-12%	Uncomfortable	29		Acceptable
		Annual	18	-13%	Walking	26	-12%	Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance, and
2) %Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A - No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B - Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C - Build With Mitigation	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 2: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			**Mean Wind Speed**			**Effective Gust Wind Speed**		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
	C	Spring	18	-17%	Walking	26	-15%	Acceptable
		Summer	15	-11%	Standing	21	-12%	Acceptable
		Fall	17	-18%	Walking	24	-16%	Acceptable
		Winter	18	-21%	Walking	26	-18%	Acceptable
		Annual	17	-18%	Walking	25	-16%	Acceptable
44	A	Spring	20		Uncomfortable	28		Acceptable
		Summer	15		Standing	21		Acceptable
		Fall	19		Walking	27		Acceptable
		Winter	21		Uncomfortable	30		Acceptable
		Annual	19		Walking	27		Acceptable
	B	Spring	24	+20%	Uncomfortable	33	+18%	Unacceptable
		Summer	18	+20%	Walking	26	+24%	Acceptable
		Fall	22	+16%	Uncomfortable	31	+15%	Acceptable
		Winter	24	+14%	Uncomfortable	34	+13%	Unacceptable
		Annual	22	+16%	Uncomfortable	31	+15%	Acceptable
	C	Spring	19		Walking	28		Acceptable
		Summer	15		Standing	21		Acceptable
		Fall	18		Walking	26		Acceptable
		Winter	20		Uncomfortable	28		Acceptable
		Annual	18		Walking	26		Acceptable
45	A	Spring	18		Walking	27		Acceptable
		Summer	14		Standing	21		Acceptable
		Fall	17		Walking	25		Acceptable
		Winter	19		Walking	28		Acceptable
		Annual	17		Walking	26		Acceptable
	B	Spring	19		Walking	26		Acceptable
		Summer	15		Standing	21		Acceptable
		Fall	18		Walking	25		Acceptable
		Winter	20		Uncomfortable	29		Acceptable
		Annual	18		Walking	26		Acceptable
	C	Spring	18		Walking	26		Acceptable
		Summer	16	+14%	Walking	22		Acceptable
		Fall	18		Walking	25		Acceptable
		Winter	20		Uncomfortable	29		Acceptable
		Annual	18		Walking	26		Acceptable
46	A	Spring	17		Walking	26		Acceptable
		Summer	13		Standing	20		Acceptable
		Fall	16		Walking	24		Acceptable
		Winter	18		Walking	27		Acceptable
		Annual	16		Walking	25		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance, and
2) %Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A - No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B - Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C - Build With Mitigation	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 2: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			**Mean Wind Speed**			**Effective Gust Wind Speed**		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
	B	Spring	12	-28%	Sitting	20	-22%	Acceptable
		Summer	10	-22%	Sitting	17	-14%	Acceptable
		Fall	12	-24%	Sitting	19	-20%	Acceptable
		Winter	14	-21%	Standing	22	-18%	Acceptable
		Annual	12	-24%	Sitting	20	-19%	Acceptable
	C	Spring	13	-23%	Standing	20	-22%	Acceptable
		Summer	11	-14%	Sitting	17	-14%	Acceptable
		Fall	12	-24%	Sitting	19	-20%	Acceptable
		Winter	14	-21%	Standing	23	-14%	Acceptable
		Annual	13	-18%	Standing	20	-19%	Acceptable
47	A	Spring	17		Walking	25		Acceptable
		Summer	13		Standing	19		Acceptable
		Fall	15		Standing	23		Acceptable
		Winter	17		Walking	26		Acceptable
		Annual	15		Standing	24		Acceptable
	B	Spring	17		Walking	25		Acceptable
		Summer	14		Standing	21	+11%	Acceptable
		Fall	15		Standing	23		Acceptable
		Winter	17		Walking	25		Acceptable
		Annual	16		Walking	24		Acceptable
	C	Spring	17		Walking	25		Acceptable
		Summer	14		Standing	21	+11%	Acceptable
		Fall	16		Walking	23		Acceptable
		Winter	17		Walking	26		Acceptable
		Annual	16		Walking	24		Acceptable
48	A	Spring	22		Uncomfortable	31		Acceptable
		Summer	16		Walking	22		Acceptable
		Fall	20		Uncomfortable	28		Acceptable
		Winter	22		Uncomfortable	31		Acceptable
		Annual	20		Uncomfortable	29		Acceptable
	B	Spring	21		Uncomfortable	29		Acceptable
		Summer	18	+13%	Walking	25	+14%	Acceptable
		Fall	20		Uncomfortable	27		Acceptable
		Winter	22		Uncomfortable	30		Acceptable
		Annual	20		Uncomfortable	28		Acceptable
	C	Spring	21		Uncomfortable	29		Acceptable
		Summer	18	+13%	Walking	24		Acceptable
		Fall	19		Walking	27		Acceptable
		Winter	22		Uncomfortable	30		Acceptable
		Annual	20		Uncomfortable	28		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance, and
2) %Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A - No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B - Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C - Build With Mitigation	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 2: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			**Mean Wind Speed**			**Effective Gust Wind Speed**		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
49	A	Spring	17		Walking	26		Acceptable
		Summer	15		Standing	22		Acceptable
		Fall	16		Walking	25		Acceptable
		Winter	18		Walking	27		Acceptable
		Annual	16		Walking	25		Acceptable
	B	Spring	17		Walking	24		Acceptable
		Summer	13	-12%	Standing	19	-13%	Acceptable
		Fall	16		Walking	23		Acceptable
		Winter	17		Walking	25		Acceptable
		Annual	16		Walking	23		Acceptable
	C	Spring	17		Walking	24		Acceptable
		Summer	13	-12%	Standing	18	-17%	Acceptable
		Fall	15		Standing	22	-11%	Acceptable
		Winter	17		Walking	24	-10%	Acceptable
		Annual	16		Walking	23		Acceptable
50	A	Spring	19		Walking	28		Acceptable
		Summer	17		Walking	25		Acceptable
		Fall	18		Walking	27		Acceptable
		Winter	20		Uncomfortable	30		Acceptable
		Annual	18		Walking	27		Acceptable
	B	Spring	17	-10%	Walking	24	-13%	Acceptable
		Summer	14	-17%	Standing	20	-19%	Acceptable
		Fall	16	-10%	Walking	23	-14%	Acceptable
		Winter	19		Walking	26	-12%	Acceptable
		Annual	17		Walking	24	-10%	Acceptable
	C	Spring	17	-10%	Walking	24	-13%	Acceptable
		Summer	14	-17%	Standing	19	-23%	Acceptable
		Fall	16	-10%	Walking	23	-14%	Acceptable
		Winter	18		Walking	26	-12%	Acceptable
		Annual	17		Walking	24	-10%	Acceptable
51	A	Spring	21		Uncomfortable	29		Acceptable
		Summer	16		Walking	22		Acceptable
		Fall	19		Walking	27		Acceptable
		Winter	21		Uncomfortable	31		Acceptable
		Annual	19		Walking	28		Acceptable
	B	Spring	9	-56%	Sitting	15	-47%	Acceptable
		Summer	8	-49%	Sitting	13	-40%	Acceptable
		Fall	9	-52%	Sitting	14	-47%	Acceptable
		Winter	10	-51%	Sitting	16	-47%	Acceptable
		Annual	9	-52%	Sitting	15	-45%	Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance, and
2) %Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A - No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B - Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C - Build With Mitigation	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 2: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
	C	Spring	8	-61%	Sitting	14	-51%	Acceptable
		Summer	7	-55%	Sitting	12	-44%	Acceptable
		Fall	8	-57%	Sitting	14	-47%	Acceptable
		Winter	9	-56%	Sitting	15	-51%	Acceptable
		Annual	8	-57%	Sitting	14	-49%	Acceptable
52	A	Spring	17		Walking	25		Acceptable
		Summer	13		Standing	19		Acceptable
		Fall	15		Standing	23		Acceptable
		Winter	18		Walking	26		Acceptable
		Annual	16		Walking	23		Acceptable
	B	Spring	13	-23%	Standing	21	-15%	Acceptable
		Summer	10	-22%	Sitting	17	-10%	Acceptable
		Fall	12	-19%	Sitting	20	-12%	Acceptable
		Winter	14	-21%	Standing	22	-14%	Acceptable
		Annual	13	-18%	Standing	21		Acceptable
	C	Spring	13	-23%	Standing	21	-15%	Acceptable
		Summer	10	-22%	Sitting	17	-10%	Acceptable
		Fall	12	-19%	Sitting	20	-12%	Acceptable
		Winter	14	-21%	Standing	23	-11%	Acceptable
		Annual	13	-18%	Standing	21		Acceptable
53	A	Spring	16		Walking	24		Acceptable
		Summer	13		Standing	19		Acceptable
		Fall	15		Standing	23		Acceptable
		Winter	17		Walking	25		Acceptable
		Annual	16		Walking	23		Acceptable
	B	Spring	15		Standing	23		Acceptable
		Summer	13		Standing	19		Acceptable
		Fall	14		Standing	21		Acceptable
		Winter	15	-11%	Standing	23		Acceptable
		Annual	14	-12%	Standing	22		Acceptable
	C	Spring	16		Walking	23		Acceptable
		Summer	14		Standing	20		Acceptable
		Fall	14		Standing	21		Acceptable
		Winter	15	-11%	Standing	23		Acceptable
		Annual	15		Standing	22		Acceptable
54	A	Spring	15		Standing	23		Acceptable
		Summer	12		Sitting	17		Acceptable
		Fall	14		Standing	21		Acceptable
		Winter	16		Walking	23		Acceptable
		Annual	14		Standing	21		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance, and
2) %Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A - No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B - Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C - Build With Mitigation	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 2: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			**Mean Wind Speed**			**Effective Gust Wind Speed**		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
	B	Spring	14		Standing	22		Acceptable
		Summer	12		Sitting	19	+12%	Acceptable
		Fall	13		Standing	20		Acceptable
		Winter	14	-12%	Standing	22		Acceptable
		Annual	13		Standing	21		Acceptable
	C	Spring	13	-12%	Standing	22		Acceptable
		Summer	12		Sitting	19	+12%	Acceptable
		Fall	12	-13%	Sitting	20		Acceptable
		Winter	14	-12%	Standing	22		Acceptable
		Annual	13		Standing	21		Acceptable
55	A	Spring	17		Walking	25		Acceptable
		Summer	14		Standing	21		Acceptable
		Fall	16		Walking	24		Acceptable
		Winter	17		Walking	26		Acceptable
		Annual	16		Walking	24		Acceptable
	B	Spring	17		Walking	26		Acceptable
		Summer	14		Standing	22		Acceptable
		Fall	16		Walking	24		Acceptable
		Winter	18		Walking	27		Acceptable
		Annual	16		Walking	25		Acceptable
	C	Spring	17		Walking	26		Acceptable
		Summer	14		Standing	21		Acceptable
		Fall	16		Walking	24		Acceptable
		Winter	17		Walking	26		Acceptable
		Annual	16		Walking	24		Acceptable
56	A	Spring	16		Walking	24		Acceptable
		Summer	13		Standing	18		Acceptable
		Fall	15		Standing	22		Acceptable
		Winter	17		Walking	25		Acceptable
		Annual	15		Standing	23		Acceptable
	B	Spring	13	-18%	Standing	21	-12%	Acceptable
		Summer	11	-14%	Sitting	17		Acceptable
		Fall	12	-19%	Sitting	19	-13%	Acceptable
		Winter	13	-23%	Standing	21	-15%	Acceptable
		Annual	12	-19%	Sitting	20	-12%	Acceptable
	C	Spring	13	-18%	Standing	20	-16%	Acceptable
		Summer	11	-14%	Sitting	17		Acceptable
		Fall	12	-19%	Sitting	18	-17%	Acceptable
		Winter	13	-23%	Standing	20	-19%	Acceptable
		Annual	12	-19%	Sitting	19	-16%	Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance, and
2) %Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A - No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B - Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C - Build With Mitigation	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 2: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			**Mean Wind Speed**			**Effective Gust Wind Speed**		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
57	A	Spring	15		Standing	23		Acceptable
		Summer	12		Sitting	18		Acceptable
		Fall	15		Standing	22		Acceptable
		Winter	17		Walking	25		Acceptable
		Annual	15		Standing	23		Acceptable
	B	Spring	16		Walking	23		Acceptable
		Summer	13		Standing	18		Acceptable
		Fall	15		Standing	22		Acceptable
		Winter	18		Walking	24		Acceptable
		Annual	16		Walking	22		Acceptable
	C	Spring	16		Walking	23		Acceptable
		Summer	13		Standing	18		Acceptable
		Fall	15		Standing	22		Acceptable
		Winter	18		Walking	24		Acceptable
		Annual	16		Walking	22		Acceptable
58	A	Spring	15		Standing	23		Acceptable
		Summer	11		Sitting	17		Acceptable
		Fall	14		Standing	22		Acceptable
		Winter	17		Walking	25		Acceptable
		Annual	15		Standing	22		Acceptable
	B	Spring	15		Standing	21		Acceptable
		Summer	12		Sitting	17		Acceptable
		Fall	14		Standing	20		Acceptable
		Winter	16		Walking	23		Acceptable
		Annual	14		Standing	21		Acceptable
	C	Spring	15		Standing	21		Acceptable
		Summer	12		Sitting	17		Acceptable
		Fall	14		Standing	20		Acceptable
		Winter	16		Walking	23		Acceptable
		Annual	14		Standing	21		Acceptable
59	A	Spring	16		Walking	24		Acceptable
		Summer	13		Standing	18		Acceptable
		Fall	15		Standing	22		Acceptable
		Winter	17		Walking	25		Acceptable
		Annual	15		Standing	23		Acceptable
	B	Spring	13	-18%	Standing	19	-20%	Acceptable
		Summer	10	-22%	Sitting	15	-16%	Acceptable
		Fall	12	-19%	Sitting	18	-17%	Acceptable
		Winter	14	-17%	Standing	21	-15%	Acceptable
		Annual	12	-19%	Sitting	19	-16%	Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance, and
2) %Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A - No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
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C - Build With Mitigation	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 2: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			**Mean Wind Speed**			**Effective Gust Wind Speed**		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
	C	Spring	13	-18%	Standing	19	-20%	Acceptable
		Summer	10	-22%	Sitting	15	-16%	Acceptable
		Fall	12	-19%	Sitting	18	-17%	Acceptable
		Winter	14	-17%	Standing	21	-15%	Acceptable
		Annual	12	-19%	Sitting	19	-16%	Acceptable
60	A	Spring	23		Uncomfortable	32		Unacceptable
		Summer	17		Walking	23		Acceptable
		Fall	21		Uncomfortable	29		Acceptable
		Winter	23		Uncomfortable	32		Unacceptable
		Annual	21		Uncomfortable	30		Acceptable
	B	Spring	12	-47%	Sitting	20	-37%	Acceptable
		Summer	9	-46%	Sitting	15	-34%	Acceptable
		Fall	12	-42%	Sitting	19	-33%	Acceptable
		Winter	13	-42%	Standing	22	-30%	Acceptable
		Annual	12	-42%	Sitting	19	-36%	Acceptable
	C	Spring	13	-42%	Standing	20	-37%	Acceptable
		Summer	10	-40%	Sitting	16	-29%	Acceptable
		Fall	12	-42%	Sitting	19	-33%	Acceptable
		Winter	14	-38%	Standing	22	-30%	Acceptable
		Annual	12	-42%	Sitting	20	-32%	Acceptable
61	A	Spring	18		Walking	26		Acceptable
		Summer	14		Standing	19		Acceptable
		Fall	17		Walking	24		Acceptable
		Winter	19		Walking	27		Acceptable
		Annual	17		Walking	25		Acceptable
	B	Spring	15	-16%	Standing	23	-11%	Acceptable
		Summer	13		Standing	19		Acceptable
		Fall	14	-17%	Standing	22		Acceptable
		Winter	15	-20%	Standing	24	-10%	Acceptable
		Annual	14	-17%	Standing	22	-11%	Acceptable
	C	Spring	12	-32%	Sitting	20	-22%	Acceptable
		Summer	10	-28%	Sitting	16	-15%	Acceptable
		Fall	11	-34%	Sitting	18	-24%	Acceptable
		Winter	13	-31%	Standing	21	-21%	Acceptable
		Annual	12	-28%	Sitting	19	-23%	Acceptable
62	A	Spring	16		Walking	24		Acceptable
		Summer	13		Standing	18		Acceptable
		Fall	15		Standing	22		Acceptable
		Winter	17		Walking	25		Acceptable
		Annual	15		Standing	23		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance, and
2) %Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A - No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B - Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C - Build With Mitigation	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 2: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			**Mean Wind Speed**			**Effective Gust Wind Speed**		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
	B	Spring	15		Standing	23		Acceptable
		Summer	11	-14%	Sitting	17		Acceptable
		Fall	14		Standing	23		Acceptable
		Winter	16		Walking	26		Acceptable
		Annual	14		Standing	23		Acceptable
	C	Spring	14	-12%	Standing	23		Acceptable
		Summer	11	-14%	Sitting	17		Acceptable
		Fall	13	-12%	Standing	22		Acceptable
		Winter	16		Walking	25		Acceptable
		Annual	14		Standing	22		Acceptable
63	A	Spring	14		Standing	21		Acceptable
		Summer	11		Sitting	17		Acceptable
		Fall	13		Standing	20		Acceptable
		Winter	14		Standing	22		Acceptable
		Annual	13		Standing	20		Acceptable
	B	Spring	16	+14%	Walking	24	+14%	Acceptable
		Summer	12		Sitting	18		Acceptable
		Fall	15	+15%	Standing	23	+15%	Acceptable
		Winter	17	+21%	Walking	25	+14%	Acceptable
		Annual	15	+15%	Standing	23	+15%	Acceptable
	C	Spring	13		Standing	20		Acceptable
		Summer	9	-17%	Sitting	15	-11%	Acceptable
		Fall	12		Sitting	19		Acceptable
		Winter	14		Standing	22		Acceptable
		Annual	13		Standing	20		Acceptable
64	A	Spring	15		Standing	24		Acceptable
		Summer	11		Sitting	18		Acceptable
		Fall	14		Standing	23		Acceptable
		Winter	16		Walking	25		Acceptable
		Annual	14		Standing	23		Acceptable
	B	Spring	10	-32%	Sitting	16	-32%	Acceptable
		Summer	8	-26%	Sitting	13	-27%	Acceptable
		Fall	9	-35%	Sitting	15	-34%	Acceptable
		Winter	11	-30%	Sitting	17	-31%	Acceptable
		Annual	10	-28%	Sitting	16	-29%	Acceptable
	C	Spring	11	-26%	Sitting	18	-24%	Acceptable
		Summer	9	-17%	Sitting	15	-16%	Acceptable
		Fall	10	-28%	Sitting	16	-29%	Acceptable
		Winter	12	-24%	Sitting	18	-27%	Acceptable
		Annual	11	-20%	Sitting	17	-25%	Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance, and
2) %Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A - No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B - Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C - Build With Mitigation	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 2: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			**Mean Wind Speed**			**Effective Gust Wind Speed**		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
65	A	Spring	15		Standing	21		Acceptable
		Summer	12		Sitting	16		Acceptable
		Fall	14		Standing	20		Acceptable
		Winter	16		Walking	22		Acceptable
		Annual	14		Standing	20		Acceptable
	B	Spring	9	-39%	Sitting	14	-32%	Acceptable
		Summer	8	-32%	Sitting	12	-24%	Acceptable
		Fall	9	-35%	Sitting	14	-29%	Acceptable
		Winter	10	-37%	Sitting	15	-31%	Acceptable
		Annual	9	-35%	Sitting	14	-29%	Acceptable
	C	Spring	9	-39%	Sitting	14	-32%	Acceptable
		Summer	7	-41%	Sitting	12	-24%	Acceptable
		Fall	9	-35%	Sitting	14	-29%	Acceptable
		Winter	10	-37%	Sitting	16	-26%	Acceptable
		Annual	9	-35%	Sitting	14	-29%	Acceptable
66	A	Spring	14		Standing	22		Acceptable
		Summer	11		Sitting	17		Acceptable
		Fall	13		Standing	21		Acceptable
		Winter	15		Standing	23		Acceptable
		Annual	13		Standing	21		Acceptable
	B	Spring	23	+64%	Uncomfortable	32	+45%	Unacceptable
		Summer	17	+55%	Walking	23	+35%	Acceptable
		Fall	21	+62%	Uncomfortable	28	+33%	Acceptable
		Winter	23	+52%	Uncomfortable	31	+35%	Acceptable
		Annual	21	+62%	Uncomfortable	29	+38%	Acceptable
	C	Spring	17	+21%	Walking	25	+14%	Acceptable
		Summer	13	+18%	Standing	18		Acceptable
		Fall	16	+23%	Walking	22		Acceptable
		Winter	17	+13%	Walking	25		Acceptable
		Annual	16	+23%	Walking	23	+10%	Acceptable
67	A	Spring	15		Standing	23		Acceptable
		Summer	12		Sitting	17		Acceptable
		Fall	14		Standing	21		Acceptable
		Winter	16		Walking	24		Acceptable
		Annual	14		Standing	22		Acceptable
	B	Spring	28	+87%	Dangerous	38	+65%	Unacceptable
		Summer	21	+75%	Uncomfortable	28	+65%	Acceptable
		Fall	26	+86%	Uncomfortable	34	+62%	Unacceptable
		Winter	28	+75%	Dangerous	38	+58%	Unacceptable
		Annual	26	+86%	Uncomfortable	35	+58%	Unacceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance, and
2) %Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A - No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B - Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C - Build With Mitigation	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 2: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			**Mean Wind Speed**			**Effective Gust Wind Speed**		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
	C	Spring	23	+52%	Uncomfortable	31	+35%	Acceptable
		Summer	17	+42%	Walking	23	+35%	Acceptable
		Fall	21	+50%	Uncomfortable	29	+38%	Acceptable
		Winter	23	+44%	Uncomfortable	31	+29%	Acceptable
		Annual	21	+50%	Uncomfortable	29	+32%	Acceptable
68	A	Spring	14		Standing	21		Acceptable
		Summer	11		Sitting	16		Acceptable
		Fall	13		Standing	19		Acceptable
		Winter	14		Standing	21		Acceptable
		Annual	13		Standing	19		Acceptable
	B	Spring	16	+14%	Walking	26	+24%	Acceptable
		Summer	11		Sitting	19	+19%	Acceptable
		Fall	14		Standing	23	+21%	Acceptable
		Winter	15		Standing	25	+19%	Acceptable
		Annual	14		Standing	23	+21%	Acceptable
	C	Spring	23	+64%	Uncomfortable	32	+52%	Unacceptable
		Summer	17	+55%	Walking	23	+44%	Acceptable
		Fall	21	+62%	Uncomfortable	28	+47%	Acceptable
		Winter	23	+64%	Uncomfortable	31	+48%	Acceptable
		Annual	21	+62%	Uncomfortable	29	+52%	Acceptable
69	A	Spring	16		Walking	25		Acceptable
		Summer	13		Standing	20		Acceptable
		Fall	15		Standing	23		Acceptable
		Winter	17		Walking	26		Acceptable
		Annual	15		Standing	24		Acceptable
	B	Spring	10	-37%	Sitting	16	-35%	Acceptable
		Summer	8	-37%	Sitting	12	-39%	Acceptable
		Fall	9	-39%	Sitting	15	-34%	Acceptable
		Winter	10	-40%	Sitting	17	-34%	Acceptable
		Annual	9	-39%	Sitting	15	-37%	Acceptable
	C	Spring	10	-37%	Sitting	16	-35%	Acceptable
		Summer	8	-37%	Sitting	12	-39%	Acceptable
		Fall	10	-32%	Sitting	15	-34%	Acceptable
		Winter	11	-34%	Sitting	17	-34%	Acceptable
		Annual	10	-32%	Sitting	16	-32%	Acceptable
70	A	Spring	17		Walking	25		Acceptable
		Summer	13		Standing	19		Acceptable
		Fall	16		Walking	23		Acceptable
		Winter	18		Walking	26		Acceptable
		Annual	16		Walking	24		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance, and
2) %Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A - No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B - Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C - Build With Mitigation	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 2: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			**Mean Wind Speed**			**Effective Gust Wind Speed**		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
	B	Spring	32	+88%	Dangerous	42	+68%	Unacceptable
		Summer	23	+77%	Uncomfortable	31	+63%	Acceptable
		Fall	29	+81%	Dangerous	37	+61%	Unacceptable
		Winter	32	+78%	Dangerous	42	+62%	Unacceptable
		Annual	29	+81%	Dangerous	38	+58%	Unacceptable
	C	Spring	27	+58%	Uncomfortable	36	+44%	Unacceptable
		Summer	20	+54%	Uncomfortable	26	+37%	Acceptable
		Fall	25	+56%	Uncomfortable	32	+39%	Unacceptable
		Winter	27	+50%	Uncomfortable	36	+38%	Unacceptable
		Annual	25	+56%	Uncomfortable	32	+33%	Unacceptable
71	A	Spring	19		Walking	26		Acceptable
		Summer	15		Standing	20		Acceptable
		Fall	17		Walking	24		Acceptable
		Winter	19		Walking	27		Acceptable
		Annual	17		Walking	25		Acceptable
	B	Spring	30	+58%	Dangerous	38	+46%	Unacceptable
		Summer	22	+47%	Uncomfortable	28	+40%	Acceptable
		Fall	27	+58%	Uncomfortable	34	+42%	Unacceptable
		Winter	30	+58%	Dangerous	38	+41%	Unacceptable
		Annual	27	+58%	Uncomfortable	35	+40%	Unacceptable
	C	Spring	24	+26%	Uncomfortable	32	+23%	Unacceptable
		Summer	18	+20%	Walking	24	+20%	Acceptable
		Fall	22	+29%	Uncomfortable	29	+21%	Acceptable
		Winter	24	+26%	Uncomfortable	33	+22%	Unacceptable
		Annual	22	+29%	Uncomfortable	30	+20%	Acceptable
72	A	Spring	19		Walking	26		Acceptable
		Summer	14		Standing	19		Acceptable
		Fall	17		Walking	24		Acceptable
		Winter	19		Walking	27		Acceptable
		Annual	17		Walking	25		Acceptable
	B	Spring	15	-20%	Standing	22	-14%	Acceptable
		Summer	13		Standing	18		Acceptable
		Fall	14	-17%	Standing	21	-12%	Acceptable
		Winter	15	-20%	Standing	23	-14%	Acceptable
		Annual	14	-17%	Standing	21	-15%	Acceptable
	C	Spring	14	-25%	Standing	20	-22%	Acceptable
		Summer	12	-13%	Sitting	17	-10%	Acceptable
		Fall	13	-23%	Standing	19	-20%	Acceptable
		Winter	14	-25%	Standing	20	-25%	Acceptable
		Annual	13	-23%	Standing	19	-23%	Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance, and
2) %Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A - No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B - Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C - Build With Mitigation	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 2: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			**Mean Wind Speed**			**Effective Gust Wind Speed**		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
73	A	Spring	19		Walking	26		Acceptable
		Summer	14		Standing	19		Acceptable
		Fall	18		Walking	24		Acceptable
		Winter	19		Walking	26		Acceptable
		Annual	18		Walking	24		Acceptable
	B	Spring	23	+21%	Uncomfortable	32	+23%	Unacceptable
		Summer	18	+29%	Walking	25	+32%	Acceptable
		Fall	21	+17%	Uncomfortable	29	+21%	Acceptable
		Winter	23	+21%	Uncomfortable	33	+27%	Unacceptable
		Annual	21	+17%	Uncomfortable	30	+25%	Acceptable
	C	Spring	20		Uncomfortable	28		Acceptable
		Summer	15		Standing	22	+16%	Acceptable
		Fall	18		Walking	26		Acceptable
		Winter	20		Uncomfortable	29	+12%	Acceptable
		Annual	18		Walking	26		Acceptable
74	A	Spring	18		Walking	25		Acceptable
		Summer	13		Standing	18		Acceptable
		Fall	17		Walking	23		Acceptable
		Winter	18		Walking	25		Acceptable
		Annual	17		Walking	23		Acceptable
	B	Spring	30	+67%	Dangerous	37	+48%	Unacceptable
		Summer	22	+69%	Uncomfortable	28	+56%	Acceptable
		Fall	27	+58%	Uncomfortable	34	+48%	Unacceptable
		Winter	30	+67%	Dangerous	37	+48%	Unacceptable
		Annual	28	+65%	Dangerous	34	+48%	Unacceptable
	C	Spring	23	+28%	Uncomfortable	29	+16%	Acceptable
		Summer	17	+31%	Walking	22	+22%	Acceptable
		Fall	21	+24%	Uncomfortable	27	+17%	Acceptable
		Winter	23	+28%	Uncomfortable	30	+20%	Acceptable
		Annual	21	+24%	Uncomfortable	27	+17%	Acceptable
75	A	Spring	17		Walking	24		Acceptable
		Summer	12		Sitting	18		Acceptable
		Fall	16		Walking	22		Acceptable
		Winter	17		Walking	24		Acceptable
		Annual	16		Walking	23		Acceptable
	B	Spring	23	+35%	Uncomfortable	29	+21%	Acceptable
		Summer	17	+42%	Walking	21	+17%	Acceptable
		Fall	21	+31%	Uncomfortable	26	+18%	Acceptable
		Winter	23	+35%	Uncomfortable	29	+21%	Acceptable
		Annual	21	+31%	Uncomfortable	27	+17%	Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance, and
2) %Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A - No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B - Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C - Build With Mitigation	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 2: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			**Mean Wind Speed**			**Effective Gust Wind Speed**		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
	C	Spring	18		Walking	24		Acceptable
		Summer	13		Standing	17		Acceptable
		Fall	17		Walking	22		Acceptable
		Winter	18		Walking	24		Acceptable
		Annual	17		Walking	22		Acceptable
76	A	Spring	14		Standing	21		Acceptable
		Summer	10		Sitting	15		Acceptable
		Fall	13		Standing	18		Acceptable
		Winter	14		Standing	20		Acceptable
		Annual	13		Standing	19		Acceptable
	B	Spring	8	-42%	Sitting	14	-32%	Acceptable
		Summer	7	-29%	Sitting	11	-26%	Acceptable
		Fall	8	-37%	Sitting	14	-21%	Acceptable
		Winter	9	-35%	Sitting	16	-19%	Acceptable
		Annual	8	-37%	Sitting	14	-25%	Acceptable
	C	Spring	9	-35%	Sitting	15	-28%	Acceptable
		Summer	7	-29%	Sitting	12	-19%	Acceptable
		Fall	8	-37%	Sitting	14	-21%	Acceptable
		Winter	10	-28%	Sitting	16	-19%	Acceptable
		Annual	9	-30%	Sitting	15	-20%	Acceptable
77	A	Spring	16		Walking	23		Acceptable
		Summer	12		Sitting	17		Acceptable
		Fall	14		Standing	21		Acceptable
		Winter	16		Walking	24		Acceptable
		Annual	14		Standing	21		Acceptable
	B	Spring	10	-37%	Sitting	16	-29%	Acceptable
		Summer	7	-41%	Sitting	12	-28%	Acceptable
		Fall	9	-35%	Sitting	15	-28%	Acceptable
		Winter	10	-37%	Sitting	17	-28%	Acceptable
		Annual	9	-35%	Sitting	15	-28%	Acceptable
	C	Spring	11	-30%	Sitting	18	-21%	Acceptable
		Summer	8	-32%	Sitting	13	-23%	Acceptable
		Fall	10	-28%	Sitting	16	-23%	Acceptable
		Winter	11	-30%	Sitting	18	-24%	Acceptable
		Annual	10	-28%	Sitting	17	-18%	Acceptable
78	A	Spring	20		Uncomfortable	26		Acceptable
		Summer	14		Standing	19		Acceptable
		Fall	18		Walking	24		Acceptable
		Winter	20		Uncomfortable	27		Acceptable
		Annual	18		Walking	25		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance, and
2) %Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A - No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B - Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C - Build With Mitigation	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 2: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			**Mean Wind Speed**			**Effective Gust Wind Speed**		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
	B	Spring	19		Walking	27		Acceptable
		Summer	14		Standing	20		Acceptable
		Fall	17		Walking	25		Acceptable
		Winter	19		Walking	28		Acceptable
		Annual	18		Walking	26		Acceptable
	C	Spring	17	-14%	Walking	24		Acceptable
		Summer	13		Standing	18		Acceptable
		Fall	16	-10%	Walking	22		Acceptable
		Winter	18		Walking	26		Acceptable
		Annual	16	-10%	Walking	23		Acceptable
79	A	Spring	18		Walking	25		Acceptable
		Summer	14		Standing	20		Acceptable
		Fall	17		Walking	23		Acceptable
		Winter	18		Walking	25		Acceptable
		Annual	17		Walking	24		Acceptable
	B	Spring	15	-16%	Standing	23		Acceptable
		Summer	11	-20%	Sitting	17	-14%	Acceptable
		Fall	14	-17%	Standing	21		Acceptable
		Winter	15	-16%	Standing	23		Acceptable
		Annual	14	-17%	Standing	21	-12%	Acceptable
	C	Spring	13	-27%	Standing	20	-19%	Acceptable
		Summer	9	-35%	Sitting	14	-29%	Acceptable
		Fall	12	-28%	Sitting	18	-21%	Acceptable
		Winter	13	-27%	Standing	20	-19%	Acceptable
		Annual	12	-28%	Sitting	18	-24%	Acceptable
80	A	Spring	20		Uncomfortable	26		Acceptable
		Summer	14		Standing	20		Acceptable
		Fall	18		Walking	24		Acceptable
		Winter	20		Uncomfortable	27		Acceptable
		Annual	18		Walking	25		Acceptable
	B	Spring	18		Walking	26		Acceptable
		Summer	13		Standing	18		Acceptable
		Fall	16	-10%	Walking	23		Acceptable
		Winter	18		Walking	26		Acceptable
		Annual	17		Walking	24		Acceptable
	C	Spring	15	-24%	Standing	22	-14%	Acceptable
		Summer	11	-20%	Sitting	17	-14%	Acceptable
		Fall	14	-21%	Standing	20	-16%	Acceptable
		Winter	15	-24%	Standing	22	-18%	Acceptable
		Annual	14	-21%	Standing	20	-19%	Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance, and
2) %Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A - No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B - Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C - Build With Mitigation	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 2: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			**Mean Wind Speed**			**Effective Gust Wind Speed**		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
81	A	Spring	19		Walking	25		Acceptable
		Summer	14		Standing	18		Acceptable
		Fall	17		Walking	23		Acceptable
		Winter	19		Walking	25		Acceptable
		Annual	17		Walking	24		Acceptable
	B	Spring	17	-10%	Walking	24		Acceptable
		Summer	14		Standing	19		Acceptable
		Fall	16		Walking	23		Acceptable
		Winter	18		Walking	25		Acceptable
		Annual	17		Walking	23		Acceptable
	C	Spring	16	-15%	Walking	23		Acceptable
		Summer	13		Standing	19		Acceptable
		Fall	15	-11%	Standing	22		Acceptable
		Winter	17	-10%	Walking	24		Acceptable
		Annual	16		Walking	22		Acceptable
82	A	Spring	19		Walking	25		Acceptable
		Summer	14		Standing	19		Acceptable
		Fall	17		Walking	24		Acceptable
		Winter	19		Walking	26		Acceptable
		Annual	17		Walking	24		Acceptable
	B	Spring	10	-46%	Sitting	15	-39%	Acceptable
		Summer	8	-42%	Sitting	12	-36%	Acceptable
		Fall	9	-46%	Sitting	15	-37%	Acceptable
		Winter	11	-41%	Sitting	17	-34%	Acceptable
		Annual	10	-40%	Sitting	15	-37%	Acceptable
	C	Spring	9	-52%	Sitting	15	-39%	Acceptable
		Summer	8	-42%	Sitting	12	-36%	Acceptable
		Fall	9	-46%	Sitting	14	-41%	Acceptable
		Winter	10	-46%	Sitting	16	-37%	Acceptable
		Annual	9	-46%	Sitting	15	-37%	Acceptable
83	A	Spring	18		Walking	25		Acceptable
		Summer	13		Standing	18		Acceptable
		Fall	17		Walking	23		Acceptable
		Winter	18		Walking	25		Acceptable
		Annual	17		Walking	23		Acceptable
	B	Spring	18		Walking	24		Acceptable
		Summer	13		Standing	17		Acceptable
		Fall	16		Walking	22		Acceptable
		Winter	18		Walking	24		Acceptable
		Annual	16		Walking	22		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance, and
2) %Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A - No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B - Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C - Build With Mitigation	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 2: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
	C	Spring	15	-16%	Standing	21	-15%	Acceptable
		Summer	11	-14%	Sitting	16	-10%	Acceptable
		Fall	14	-17%	Standing	20	-12%	Acceptable
		Winter	15	-16%	Standing	22	-11%	Acceptable
		Annual	14	-17%	Standing	21		Acceptable
84	A	Spring	18		Walking	25		Acceptable
		Summer	13		Standing	18		Acceptable
		Fall	17		Walking	23		Acceptable
		Winter	18		Walking	25		Acceptable
		Annual	17		Walking	24		Acceptable
	B	Spring	25	+39%	Uncomfortable	30	+20%	Acceptable
		Summer	18	+38%	Walking	22	+22%	Acceptable
		Fall	22	+29%	Uncomfortable	28	+22%	Acceptable
		Winter	25	+39%	Uncomfortable	30	+20%	Acceptable
		Annual	23	+35%	Uncomfortable	28	+17%	Acceptable
	C	Spring	19		Walking	25		Acceptable
		Summer	14		Standing	19		Acceptable
		Fall	17		Walking	23		Acceptable
		Winter	19		Walking	25		Acceptable
		Annual	18		Walking	23		Acceptable
85	A	Spring	20		Uncomfortable	27		Acceptable
		Summer	15		Standing	20		Acceptable
		Fall	19		Walking	25		Acceptable
		Winter	21		Uncomfortable	28		Acceptable
		Annual	19		Walking	26		Acceptable
	B	Spring	20		Uncomfortable	29		Acceptable
		Summer	15		Standing	22	+10%	Acceptable
		Fall	19		Walking	27		Acceptable
		Winter	20		Uncomfortable	29		Acceptable
		Annual	19		Walking	27		Acceptable
	C	Spring	19		Walking	27		Acceptable
		Summer	14		Standing	20		Acceptable
		Fall	18		Walking	25		Acceptable
		Winter	19		Walking	27		Acceptable
		Annual	18		Walking	25		Acceptable
86	A	Spring	21		Uncomfortable	28		Acceptable
		Summer	16		Walking	21		Acceptable
		Fall	19		Walking	26		Acceptable
		Winter	21		Uncomfortable	28		Acceptable
		Annual	20		Uncomfortable	26		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance, and
2) %Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A - No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B - Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C - Build With Mitigation	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 2: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			**Mean Wind Speed**			**Effective Gust Wind Speed**		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
	B	Spring	22		Uncomfortable	32	+14%	Unacceptable
		Summer	17		Walking	24	+14%	Acceptable
		Fall	20		Uncomfortable	29	+12%	Acceptable
		Winter	23	+10%	Uncomfortable	32	+14%	Unacceptable
		Annual	21		Uncomfortable	29	+12%	Acceptable
	C	Spring	19		Walking	27		Acceptable
		Summer	15		Standing	21		Acceptable
		Fall	17	-10%	Walking	24		Acceptable
		Winter	19		Walking	27		Acceptable
		Annual	17	-14%	Walking	25		Acceptable
87	A	Spring	22		Uncomfortable	29		Acceptable
		Summer	17		Walking	22		Acceptable
		Fall	21		Uncomfortable	27		Acceptable
		Winter	23		Uncomfortable	30		Acceptable
		Annual	21		Uncomfortable	28		Acceptable
	B	Spring	25	+14%	Uncomfortable	34	+17%	Unacceptable
		Summer	18		Walking	25	+14%	Acceptable
		Fall	22		Uncomfortable	31	+15%	Acceptable
		Winter	25		Uncomfortable	34	+13%	Unacceptable
		Annual	22		Uncomfortable	31	+11%	Acceptable
	C	Spring	19	-13%	Walking	28		Acceptable
		Summer	15	-11%	Standing	22		Acceptable
		Fall	17	-18%	Walking	25		Acceptable
		Winter	19	-16%	Walking	28		Acceptable
		Annual	17	-18%	Walking	25	-10%	Acceptable
88	A	Spring	22		Uncomfortable	28		Acceptable
		Summer	16		Walking	22		Acceptable
		Fall	20		Uncomfortable	27		Acceptable
		Winter	22		Uncomfortable	29		Acceptable
		Annual	20		Uncomfortable	27		Acceptable
	B	Spring	24		Uncomfortable	32	+14%	Unacceptable
		Summer	17		Walking	23		Acceptable
		Fall	21		Uncomfortable	28		Acceptable
		Winter	23		Uncomfortable	31		Acceptable
		Annual	21		Uncomfortable	29		Acceptable
	C	Spring	16	-26%	Walking	21	-24%	Acceptable
		Summer	11	-30%	Sitting	15	-31%	Acceptable
		Fall	14	-29%	Standing	19	-29%	Acceptable
		Winter	15	-31%	Standing	21	-27%	Acceptable
		Annual	14	-29%	Standing	19	-29%	Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance, and
2) %Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A - No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B - Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C - Build With Mitigation	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 2: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			**Mean Wind Speed**			**Effective Gust Wind Speed**		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
89	A	Spring	21		Uncomfortable	28		Acceptable
		Summer	16		Walking	21		Acceptable
		Fall	19		Walking	26		Acceptable
		Winter	21		Uncomfortable	28		Acceptable
		Annual	20		Uncomfortable	26		Acceptable
	B	Spring	24	+14%	Uncomfortable	33	+18%	Unacceptable
		Summer	18	+13%	Walking	24	+14%	Acceptable
		Fall	22	+16%	Uncomfortable	29	+12%	Acceptable
		Winter	24	+14%	Uncomfortable	32	+14%	Unacceptable
		Annual	22	+10%	Uncomfortable	30	+15%	Acceptable
	C	Spring	19		Walking	26		Acceptable
		Summer	14	-12%	Standing	19		Acceptable
		Fall	17	-10%	Walking	23	-11%	Acceptable
		Winter	19		Walking	26		Acceptable
		Annual	18		Walking	24		Acceptable
90	A	Spring	19		Walking	26		Acceptable
		Summer	14		Standing	19		Acceptable
		Fall	18		Walking	24		Acceptable
		Winter	19		Walking	26		Acceptable
		Annual	18		Walking	24		Acceptable
	B	Spring	17	-10%	Walking	24		Acceptable
		Summer	12	-13%	Sitting	18		Acceptable
		Fall	15	-16%	Standing	22		Acceptable
		Winter	17	-10%	Walking	24		Acceptable
		Annual	16	-10%	Walking	23		Acceptable
	C	Spring	13	-31%	Standing	20	-22%	Acceptable
		Summer	11	-20%	Sitting	16	-15%	Acceptable
		Fall	12	-32%	Sitting	19	-20%	Acceptable
		Winter	14	-25%	Standing	21	-18%	Acceptable
		Annual	13	-27%	Standing	19	-20%	Acceptable
91	A	Spring	20		Uncomfortable	27		Acceptable
		Summer	15		Standing	20		Acceptable
		Fall	19		Walking	25		Acceptable
		Winter	21		Uncomfortable	28		Acceptable
		Annual	19		Walking	26		Acceptable
	B	Spring	25	+25%	Uncomfortable	33	+22%	Unacceptable
		Summer	18	+20%	Walking	24	+20%	Acceptable
		Fall	22	+16%	Uncomfortable	30	+20%	Acceptable
		Winter	24	+14%	Uncomfortable	33	+18%	Unacceptable
		Annual	23	+21%	Uncomfortable	31	+19%	Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance, and
2) %Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A - No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B - Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C - Build With Mitigation	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 2: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
	C	Spring	20		Uncomfortable	27		Acceptable
		Summer	14		Standing	20		Acceptable
		Fall	18		Walking	25		Acceptable
		Winter	20		Uncomfortable	27		Acceptable
		Annual	18		Walking	25		Acceptable
92	A	Spring	23		Uncomfortable	30		Acceptable
		Summer	17		Walking	22		Acceptable
		Fall	21		Uncomfortable	28		Acceptable
		Winter	23		Uncomfortable	30		Acceptable
		Annual	21		Uncomfortable	28		Acceptable
	B	Spring	32	+39%	Dangerous	40	+33%	Unacceptable
		Summer	23	+35%	Uncomfortable	29	+32%	Acceptable
		Fall	29	+38%	Dangerous	36	+29%	Unacceptable
		Winter	32	+39%	Dangerous	39	+30%	Unacceptable
		Annual	29	+38%	Dangerous	36	+29%	Unacceptable
	C	Spring	19	-16%	Walking	27		Acceptable
		Summer	15	-11%	Standing	21		Acceptable
		Fall	17	-18%	Walking	24	-13%	Acceptable
		Winter	20	-12%	Uncomfortable	27		Acceptable
		Annual	18	-13%	Walking	24	-13%	Acceptable
93	A	Spring	21		Uncomfortable	28		Acceptable
		Summer	16		Walking	22		Acceptable
		Fall	19		Walking	26		Acceptable
		Winter	21		Uncomfortable	28		Acceptable
		Annual	19		Walking	26		Acceptable
	B	Spring	14	-32%	Standing	22	-20%	Acceptable
		Summer	11	-30%	Sitting	16	-26%	Acceptable
		Fall	13	-31%	Standing	20	-22%	Acceptable
		Winter	15	-28%	Standing	22	-20%	Acceptable
		Annual	14	-25%	Standing	21	-18%	Acceptable
	C	Spring	14	-32%	Standing	21	-24%	Acceptable
		Summer	10	-37%	Sitting	15	-31%	Acceptable
		Fall	13	-31%	Standing	20	-22%	Acceptable
		Winter	14	-32%	Standing	21	-24%	Acceptable
		Annual	13	-31%	Standing	20	-22%	Acceptable
94	A	Spring	20		Uncomfortable	28		Acceptable
		Summer	16		Walking	23		Acceptable
		Fall	19		Walking	26		Acceptable
		Winter	21		Uncomfortable	29		Acceptable
		Annual	19		Walking	27		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance, and
2) %Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A - No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B - Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C - Build With Mitigation	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 2: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			**Mean Wind Speed**			**Effective Gust Wind Speed**		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
	B	Spring	18		Walking	28		Acceptable
		Summer	14	-12%	Standing	21		Acceptable
		Fall	16	-15%	Walking	25		Acceptable
		Winter	18	-13%	Walking	28		Acceptable
		Annual	17	-10%	Walking	25		Acceptable
	C	Spring	17	-14%	Walking	25	-10%	Acceptable
		Summer	13	-18%	Standing	18	-21%	Acceptable
		Fall	15	-20%	Standing	22	-14%	Acceptable
		Winter	17	-18%	Walking	25	-13%	Acceptable
		Annual	15	-20%	Standing	23	-14%	Acceptable
95	A	Spring	28		Dangerous	36		Unacceptable
		Summer	20		Uncomfortable	27		Acceptable
		Fall	25		Uncomfortable	33		Unacceptable
		Winter	27		Uncomfortable	36		Unacceptable
		Annual	26		Uncomfortable	34		Unacceptable
	B	Spring	20	-28%	Uncomfortable	27	-24%	Acceptable
		Summer	16	-19%	Walking	22	-18%	Acceptable
		Fall	19	-23%	Walking	25	-23%	Acceptable
		Winter	20	-25%	Uncomfortable	27	-24%	Acceptable
		Annual	19	-26%	Walking	26	-23%	Acceptable
	C	Spring	19	-31%	Walking	26	-27%	Acceptable
		Summer	15	-24%	Standing	21	-21%	Acceptable
		Fall	18	-27%	Walking	24	-26%	Acceptable
		Winter	19	-29%	Walking	26	-27%	Acceptable
		Annual	18	-30%	Walking	24	-28%	Acceptable
96	A	Spring	27		Uncomfortable	37		Unacceptable
		Summer	21		Uncomfortable	29		Acceptable
		Fall	25		Uncomfortable	34		Unacceptable
		Winter	27		Uncomfortable	37		Unacceptable
		Annual	25		Uncomfortable	35		Unacceptable
	B	Spring	25		Uncomfortable	32	-13%	Unacceptable
		Summer	20		Uncomfortable	25	-13%	Acceptable
		Fall	23		Uncomfortable	30	-11%	Acceptable
		Winter	25		Uncomfortable	32	-13%	Unacceptable
		Annual	24		Uncomfortable	30	-13%	Acceptable
	C	Spring	26		Uncomfortable	32	-13%	Unacceptable
		Summer	20		Uncomfortable	26		Acceptable
		Fall	24		Uncomfortable	30	-11%	Acceptable
		Winter	25		Uncomfortable	32	-13%	Unacceptable
		Annual	24		Uncomfortable	31	-10%	Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance, and
2) %Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A - No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B - Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C - Build With Mitigation	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 2: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			**Mean Wind Speed**			**Effective Gust Wind Speed**		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
97	A	Spring	24		Uncomfortable	33		Unacceptable
		Summer	19		Walking	26		Acceptable
		Fall	22		Uncomfortable	30		Acceptable
		Winter	25		Uncomfortable	33		Unacceptable
		Annual	23		Uncomfortable	31		Acceptable
	B	Spring	21	-12%	Uncomfortable	28	-14%	Acceptable
		Summer	16	-15%	Walking	21	-18%	Acceptable
		Fall	19	-13%	Walking	25	-16%	Acceptable
		Winter	20	-19%	Uncomfortable	27	-17%	Acceptable
		Annual	19	-16%	Walking	26	-15%	Acceptable
	C	Spring	20	-16%	Uncomfortable	27	-17%	Acceptable
		Summer	15	-20%	Standing	20	-22%	Acceptable
		Fall	18	-17%	Walking	25	-16%	Acceptable
		Winter	20	-19%	Uncomfortable	26	-20%	Acceptable
		Annual	19	-16%	Walking	25	-18%	Acceptable
98	A	Spring	23		Uncomfortable	31		Acceptable
		Summer	18		Walking	24		Acceptable
		Fall	21		Uncomfortable	28		Acceptable
		Winter	23		Uncomfortable	31		Acceptable
		Annual	22		Uncomfortable	29		Acceptable
	B	Spring	12	-47%	Sitting	19	-38%	Acceptable
		Summer	9	-49%	Sitting	15	-37%	Acceptable
		Fall	11	-47%	Sitting	18	-35%	Acceptable
		Winter	12	-47%	Sitting	19	-38%	Acceptable
		Annual	11	-49%	Sitting	18	-37%	Acceptable
	C	Spring	12	-47%	Sitting	19	-38%	Acceptable
		Summer	10	-43%	Sitting	16	-32%	Acceptable
		Fall	11	-47%	Sitting	18	-35%	Acceptable
		Winter	12	-47%	Sitting	19	-38%	Acceptable
		Annual	11	-49%	Sitting	18	-37%	Acceptable
99	A	Spring	22		Uncomfortable	28		Acceptable
		Summer	16		Walking	22		Acceptable
		Fall	20		Uncomfortable	26		Acceptable
		Winter	22		Uncomfortable	29		Acceptable
		Annual	20		Uncomfortable	27		Acceptable
	B	Spring	21		Uncomfortable	29		Acceptable
		Summer	15		Standing	21		Acceptable
		Fall	19		Walking	26		Acceptable
		Winter	21		Uncomfortable	29		Acceptable
		Annual	19		Walking	26		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance, and
2) %Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A - No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B - Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C - Build With Mitigation	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 2: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			**Mean Wind Speed**			**Effective Gust Wind Speed**		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
	C	Spring	21		Uncomfortable	28		Acceptable
		Summer	15		Standing	20		Acceptable
		Fall	18		Walking	25		Acceptable
		Winter	20		Uncomfortable	27		Acceptable
		Annual	18		Walking	25		Acceptable
100	A	Spring	22		Uncomfortable	29		Acceptable
		Summer	17		Walking	22		Acceptable
		Fall	20		Uncomfortable	27		Acceptable
		Winter	22		Uncomfortable	29		Acceptable
		Annual	21		Uncomfortable	28		Acceptable
	B	Spring	19	-13%	Walking	27		Acceptable
		Summer	14	-17%	Standing	20		Acceptable
		Fall	17	-14%	Walking	24	-10%	Acceptable
		Winter	19	-13%	Walking	27		Acceptable
		Annual	18	-13%	Walking	25	-10%	Acceptable
	C	Spring	17	-22%	Walking	22	-23%	Acceptable
		Summer	13	-23%	Standing	16	-26%	Acceptable
		Fall	15	-24%	Standing	20	-25%	Acceptable
		Winter	17	-22%	Walking	22	-23%	Acceptable
		Annual	16	-23%	Walking	21	-24%	Acceptable
101	A	Spring	18		Walking	27		Acceptable
		Summer	14		Standing	20		Acceptable
		Fall	17		Walking	26		Acceptable
		Winter	19		Walking	29		Acceptable
		Annual	18		Walking	27		Acceptable
	B	Spring	13	-27%	Standing	20	-25%	Acceptable
		Summer	10	-28%	Sitting	15	-24%	Acceptable
		Fall	13	-23%	Standing	19	-26%	Acceptable
		Winter	14	-25%	Standing	21	-27%	Acceptable
		Annual	13	-27%	Standing	19	-29%	Acceptable
	C	Spring	14	-21%	Standing	21	-21%	Acceptable
		Summer	10	-28%	Sitting	15	-24%	Acceptable
		Fall	13	-23%	Standing	19	-26%	Acceptable
		Winter	14	-25%	Standing	21	-27%	Acceptable
		Annual	13	-27%	Standing	19	-29%	Acceptable
102	A	Spring	19		Walking	29		Acceptable
		Summer	14		Standing	22		Acceptable
		Fall	18		Walking	27		Acceptable
		Winter	20		Uncomfortable	30		Acceptable
		Annual	18		Walking	28		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance, and
2) %Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A - No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B - Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C - Build With Mitigation	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 2: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			**Mean Wind Speed**			**Effective Gust Wind Speed**		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
	B	Spring	15	-20%	Standing	23	-20%	Acceptable
		Summer	12	-13%	Sitting	17	-22%	Acceptable
		Fall	14	-21%	Standing	21	-21%	Acceptable
		Winter	16	-19%	Walking	24	-19%	Acceptable
		Annual	14	-21%	Standing	22	-20%	Acceptable
	C	Spring	15	-20%	Standing	23	-20%	Acceptable
		Summer	11	-20%	Sitting	17	-22%	Acceptable
		Fall	14	-21%	Standing	21	-21%	Acceptable
		Winter	16	-19%	Walking	24	-19%	Acceptable
		Annual	14	-21%	Standing	22	-20%	Acceptable
103	A	Spring	21		Uncomfortable	28		Acceptable
		Summer	16		Walking	22		Acceptable
		Fall	19		Walking	26		Acceptable
		Winter	21		Uncomfortable	28		Acceptable
		Annual	20		Uncomfortable	27		Acceptable
	B	Spring	19		Walking	27		Acceptable
		Summer	14	-12%	Standing	19	-13%	Acceptable
		Fall	17	-10%	Walking	24		Acceptable
		Winter	19		Walking	27		Acceptable
		Annual	17	-14%	Walking	24	-10%	Acceptable
	C	Spring	18	-13%	Walking	25	-10%	Acceptable
		Summer	14	-12%	Standing	18	-17%	Acceptable
		Fall	17	-10%	Walking	23	-11%	Acceptable
		Winter	18	-13%	Walking	25	-10%	Acceptable
		Annual	17	-14%	Walking	23	-14%	Acceptable
104	A	Spring	22		Uncomfortable	29		Acceptable
		Summer	16		Walking	22		Acceptable
		Fall	20		Uncomfortable	28		Acceptable
		Winter	22		Uncomfortable	30		Acceptable
		Annual	20		Uncomfortable	28		Acceptable
	B	Spring	16	-26%	Walking	24	-16%	Acceptable
		Summer	11	-30%	Sitting	17	-22%	Acceptable
		Fall	14	-29%	Standing	21	-24%	Acceptable
		Winter	15	-31%	Standing	23	-22%	Acceptable
		Annual	14	-29%	Standing	21	-24%	Acceptable
	C	Spring	15	-31%	Standing	22	-23%	Acceptable
		Summer	11	-30%	Sitting	16	-26%	Acceptable
		Fall	13	-34%	Standing	20	-28%	Acceptable
		Winter	14	-35%	Standing	21	-29%	Acceptable
		Annual	13	-34%	Standing	20	-28%	Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance, and
2) %Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A - No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B - Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C - Build With Mitigation	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 2: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			**Mean Wind Speed**			**Effective Gust Wind Speed**		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
105	A	Spring	19		Walking	26		Acceptable
		Summer	14		Standing	21		Acceptable
		Fall	18		Walking	25		Acceptable
		Winter	19		Walking	27		Acceptable
		Annual	18		Walking	25		Acceptable
	B	Spring	17	-10%	Walking	24		Acceptable
		Summer	13		Standing	19		Acceptable
		Fall	16	-10%	Walking	23		Acceptable
		Winter	17	-10%	Walking	24	-10%	Acceptable
		Annual	16	-10%	Walking	23		Acceptable
	C	Spring	16	-15%	Walking	24		Acceptable
		Summer	13		Standing	19		Acceptable
		Fall	15	-16%	Standing	23		Acceptable
		Winter	17	-10%	Walking	24	-10%	Acceptable
		Annual	16	-10%	Walking	23		Acceptable
106	A	Spring	18		Walking	26		Acceptable
		Summer	14		Standing	19		Acceptable
		Fall	17		Walking	24		Acceptable
		Winter	18		Walking	26		Acceptable
		Annual	17		Walking	24		Acceptable
	B	Spring	10	-43%	Sitting	16	-37%	Acceptable
		Summer	8	-42%	Sitting	13	-31%	Acceptable
		Fall	9	-46%	Sitting	15	-37%	Acceptable
		Winter	10	-43%	Sitting	16	-37%	Acceptable
		Annual	9	-46%	Sitting	15	-37%	Acceptable
	C	Spring	10	-43%	Sitting	16	-37%	Acceptable
		Summer	8	-42%	Sitting	13	-31%	Acceptable
		Fall	9	-46%	Sitting	15	-37%	Acceptable
		Winter	10	-43%	Sitting	17	-34%	Acceptable
		Annual	10	-40%	Sitting	15	-37%	Acceptable
107	A	Spring	19		Walking	26		Acceptable
		Summer	14		Standing	20		Acceptable
		Fall	18		Walking	24		Acceptable
		Winter	19		Walking	26		Acceptable
		Annual	18		Walking	25		Acceptable
	B	Spring	13	-31%	Standing	19	-26%	Acceptable
		Summer	10	-28%	Sitting	14	-29%	Acceptable
		Fall	12	-32%	Sitting	18	-24%	Acceptable
		Winter	13	-31%	Standing	19	-26%	Acceptable
		Annual	12	-32%	Sitting	18	-27%	Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance, and
2) %Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A - No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B - Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C - Build With Mitigation	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 2: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			**Mean Wind Speed**			**Effective Gust Wind Speed**		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
	C	Spring	12	-36%	Sitting	18	-30%	Acceptable
		Summer	9	-35%	Sitting	14	-29%	Acceptable
		Fall	11	-38%	Sitting	17	-28%	Acceptable
		Winter	12	-36%	Sitting	19	-26%	Acceptable
		Annual	11	-38%	Sitting	17	-31%	Acceptable
108	A	Spring	18		Walking	24		Acceptable
		Summer	13		Standing	18		Acceptable
		Fall	17		Walking	23		Acceptable
		Winter	18		Walking	25		Acceptable
		Annual	17		Walking	23		Acceptable
	B	Spring	12	-32%	Sitting	18	-24%	Acceptable
		Summer	9	-30%	Sitting	14	-21%	Acceptable
		Fall	11	-34%	Sitting	17	-25%	Acceptable
		Winter	12	-32%	Sitting	18	-27%	Acceptable
		Annual	11	-34%	Sitting	17	-25%	Acceptable
	C	Spring	12	-32%	Sitting	18	-24%	Acceptable
		Summer	10	-22%	Sitting	15	-16%	Acceptable
		Fall	11	-34%	Sitting	17	-25%	Acceptable
		Winter	12	-32%	Sitting	18	-27%	Acceptable
		Annual	11	-34%	Sitting	17	-25%	Acceptable
109	A	Spring	21		Uncomfortable	27		Acceptable
		Summer	15		Standing	20		Acceptable
		Fall	19		Walking	25		Acceptable
		Winter	21		Uncomfortable	27		Acceptable
		Annual	20		Uncomfortable	26		Acceptable
	B	Spring	13	-37%	Standing	20	-25%	Acceptable
		Summer	9	-39%	Sitting	15	-24%	Acceptable
		Fall	12	-36%	Sitting	19	-23%	Acceptable
		Winter	14	-32%	Standing	21	-21%	Acceptable
		Annual	12	-39%	Sitting	19	-26%	Acceptable
	C	Spring	14	-32%	Standing	21	-21%	Acceptable
		Summer	10	-32%	Sitting	15	-24%	Acceptable
		Fall	12	-36%	Sitting	19	-23%	Acceptable
		Winter	14	-32%	Standing	21	-21%	Acceptable
		Annual	13	-34%	Standing	19	-26%	Acceptable
110	A	Spring	21		Uncomfortable	28		Acceptable
		Summer	16		Walking	21		Acceptable
		Fall	20		Uncomfortable	26		Acceptable
		Winter	21		Uncomfortable	28		Acceptable
		Annual	20		Uncomfortable	27		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance, and
2) %Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A - No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B - Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C - Build With Mitigation	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 2: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			**Mean Wind Speed**			**Effective Gust Wind Speed**		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
	B	Spring	22		Uncomfortable	31	+11%	Acceptable
		Summer	16		Walking	23	+10%	Acceptable
		Fall	19		Walking	28		Acceptable
		Winter	22		Uncomfortable	31	+11%	Acceptable
		Annual	20		Uncomfortable	28		Acceptable
	C	Spring	20		Uncomfortable	28		Acceptable
		Summer	15		Standing	20		Acceptable
		Fall	18		Walking	25		Acceptable
		Winter	20		Uncomfortable	28		Acceptable
		Annual	18		Walking	25		Acceptable
111	A	Spring	20		Uncomfortable	27		Acceptable
		Summer	15		Standing	21		Acceptable
		Fall	19		Walking	25		Acceptable
		Winter	20		Uncomfortable	27		Acceptable
		Annual	19		Walking	26		Acceptable
	B	Spring	17	-14%	Walking	24	-10%	Acceptable
		Summer	13	-12%	Standing	18	-13%	Acceptable
		Fall	15	-20%	Standing	21	-15%	Acceptable
		Winter	17	-14%	Walking	24	-10%	Acceptable
		Annual	15	-20%	Standing	22	-14%	Acceptable
	C	Spring	15	-24%	Standing	22	-18%	Acceptable
		Summer	11	-26%	Sitting	16	-23%	Acceptable
		Fall	13	-31%	Standing	19	-23%	Acceptable
		Winter	15	-24%	Standing	22	-18%	Acceptable
		Annual	13	-31%	Standing	20	-22%	Acceptable
112	A	Spring	19		Walking	25		Acceptable
		Summer	14		Standing	19		Acceptable
		Fall	17		Walking	23		Acceptable
		Winter	19		Walking	25		Acceptable
		Annual	18		Walking	24		Acceptable
	B	Spring	11	-41%	Sitting	18	-27%	Acceptable
		Summer	9	-35%	Sitting	14	-25%	Acceptable
		Fall	11	-34%	Sitting	17	-25%	Acceptable
		Winter	13	-31%	Standing	20	-19%	Acceptable
		Annual	11	-38%	Sitting	18	-24%	Acceptable
	C	Spring	11	-41%	Sitting	18	-27%	Acceptable
		Summer	9	-35%	Sitting	14	-25%	Acceptable
		Fall	11	-34%	Sitting	17	-25%	Acceptable
		Winter	12	-36%	Sitting	20	-19%	Acceptable
		Annual	11	-38%	Sitting	18	-24%	Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance, and
2) %Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A - No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B - Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C - Build With Mitigation	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 2: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			**Mean Wind Speed**			**Effective Gust Wind Speed**		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
113	A	Spring	19		Walking	25		Acceptable
		Summer	14		Standing	18		Acceptable
		Fall	17		Walking	23		Acceptable
		Winter	19		Walking	25		Acceptable
		Annual	18		Walking	23		Acceptable
	B	Spring	7	-62%	Sitting	13	-47%	Acceptable
		Summer	6	-56%	Sitting	10	-43%	Acceptable
		Fall	7	-58%	Sitting	12	-47%	Acceptable
		Winter	8	-57%	Sitting	14	-43%	Acceptable
		Annual	7	-60%	Sitting	13	-42%	Acceptable
	C	Spring	8	-57%	Sitting	13	-47%	Acceptable
		Summer	6	-56%	Sitting	10	-43%	Acceptable
		Fall	7	-58%	Sitting	12	-47%	Acceptable
		Winter	8	-57%	Sitting	14	-43%	Acceptable
		Annual	8	-55%	Sitting	13	-42%	Acceptable
114	A	Spring	19		Walking	25		Acceptable
		Summer	14		Standing	18		Acceptable
		Fall	17		Walking	23		Acceptable
		Winter	18		Walking	25		Acceptable
		Annual	17		Walking	23		Acceptable
	B	Spring	11	-41%	Sitting	17	-31%	Acceptable
		Summer	8	-42%	Sitting	13	-27%	Acceptable
		Fall	11	-34%	Sitting	16	-29%	Acceptable
		Winter	12	-32%	Sitting	18	-27%	Acceptable
		Annual	11	-34%	Sitting	17	-25%	Acceptable
	C	Spring	11	-41%	Sitting	17	-31%	Acceptable
		Summer	8	-42%	Sitting	13	-27%	Acceptable
		Fall	11	-34%	Sitting	16	-29%	Acceptable
		Winter	12	-32%	Sitting	18	-27%	Acceptable
		Annual	11	-34%	Sitting	17	-25%	Acceptable
115	A	Spring	19		Walking	25		Acceptable
		Summer	14		Standing	18		Acceptable
		Fall	17		Walking	23		Acceptable
		Winter	18		Walking	25		Acceptable
		Annual	17		Walking	23		Acceptable
	B	Spring	10	-46%	Sitting	17	-31%	Acceptable
		Summer	8	-42%	Sitting	13	-27%	Acceptable
		Fall	9	-46%	Sitting	16	-29%	Acceptable
		Winter	11	-38%	Sitting	19	-23%	Acceptable
		Annual	10	-40%	Sitting	17	-25%	Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance, and
2) %Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A - No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B - Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C - Build With Mitigation	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 2: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			**Mean Wind Speed**			**Effective Gust Wind Speed**		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
	C	Spring	10	-46%	Sitting	17	-31%	Acceptable
		Summer	8	-42%	Sitting	13	-27%	Acceptable
		Fall	9	-46%	Sitting	16	-29%	Acceptable
		Winter	11	-38%	Sitting	18	-27%	Acceptable
		Annual	10	-40%	Sitting	17	-25%	Acceptable
116	A	Spring	19		Walking	26		Acceptable
		Summer	14		Standing	20		Acceptable
		Fall	18		Walking	24		Acceptable
		Winter	19		Walking	26		Acceptable
		Annual	18		Walking	25		Acceptable
	B	Spring	12	-36%	Sitting	18	-30%	Acceptable
		Summer	9	-35%	Sitting	14	-29%	Acceptable
		Fall	11	-38%	Sitting	17	-28%	Acceptable
		Winter	12	-36%	Sitting	19	-26%	Acceptable
		Annual	11	-38%	Sitting	17	-31%	Acceptable
	C	Spring	10	-46%	Sitting	16	-37%	Acceptable
		Summer	7	-49%	Sitting	12	-39%	Acceptable
		Fall	9	-49%	Sitting	15	-37%	Acceptable
		Winter	10	-46%	Sitting	17	-34%	Acceptable
		Annual	9	-49%	Sitting	16	-35%	Acceptable
117	A	Spring	18		Walking	25		Acceptable
		Summer	13		Standing	19		Acceptable
		Fall	17		Walking	23		Acceptable
		Winter	18		Walking	26		Acceptable
		Annual	17		Walking	24		Acceptable
	B	Spring	8	-55%	Sitting	14	-43%	Acceptable
		Summer	7	-45%	Sitting	11	-41%	Acceptable
		Fall	8	-52%	Sitting	13	-42%	Acceptable
		Winter	9	-49%	Sitting	15	-41%	Acceptable
		Annual	8	-52%	Sitting	14	-41%	Acceptable
	C	Spring	8	-55%	Sitting	14	-43%	Acceptable
		Summer	7	-45%	Sitting	11	-41%	Acceptable
		Fall	8	-52%	Sitting	13	-42%	Acceptable
		Winter	9	-49%	Sitting	15	-41%	Acceptable
		Annual	8	-52%	Sitting	14	-41%	Acceptable
118	A	Spring	18		Walking	25		Acceptable
		Summer	13		Standing	19		Acceptable
		Fall	16		Walking	23		Acceptable
		Winter	18		Walking	25		Acceptable
		Annual	17		Walking	24		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance, and
2) %Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A - No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B - Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C - Build With Mitigation	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 2: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			**Mean Wind Speed**			**Effective Gust Wind Speed**		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
	B	Spring	17		Walking	24		Acceptable
		Summer	13		Standing	19		Acceptable
		Fall	16		Walking	23		Acceptable
		Winter	17		Walking	25		Acceptable
		Annual	16		Walking	23		Acceptable
	C	Spring	16	-10%	Walking	23		Acceptable
		Summer	13		Standing	18		Acceptable
		Fall	15		Standing	22		Acceptable
		Winter	16	-10%	Walking	23		Acceptable
		Annual	15	-11%	Standing	22		Acceptable
119	A	Spring	18		Walking	25		Acceptable
		Summer	14		Standing	19		Acceptable
		Fall	17		Walking	23		Acceptable
		Winter	18		Walking	25		Acceptable
		Annual	17		Walking	24		Acceptable
	B	Spring	15	-16%	Standing	22	-11%	Acceptable
		Summer	13		Standing	19		Acceptable
		Fall	13	-23%	Standing	20	-12%	Acceptable
		Winter	14	-21%	Standing	21	-15%	Acceptable
		Annual	14	-17%	Standing	21	-12%	Acceptable
	C	Spring	15	-16%	Standing	22	-11%	Acceptable
		Summer	13		Standing	19		Acceptable
		Fall	13	-23%	Standing	20	-12%	Acceptable
		Winter	14	-21%	Standing	21	-15%	Acceptable
		Annual	14	-17%	Standing	20	-16%	Acceptable
120	A	Spring	18		Walking	24		Acceptable
		Summer	13		Standing	17		Acceptable
		Fall	16		Walking	22		Acceptable
		Winter	17		Walking	24		Acceptable
		Annual	16		Walking	22		Acceptable
	B	Spring	12	-32%	Sitting	19	-20%	Acceptable
		Summer	11	-14%	Sitting	15	-11%	Acceptable
		Fall	11	-30%	Sitting	17	-22%	Acceptable
		Winter	12	-28%	Sitting	19	-20%	Acceptable
		Annual	12	-24%	Sitting	18	-17%	Acceptable
	C	Spring	12	-32%	Sitting	18	-24%	Acceptable
		Summer	10	-22%	Sitting	15	-11%	Acceptable
		Fall	11	-30%	Sitting	17	-22%	Acceptable
		Winter	12	-28%	Sitting	19	-20%	Acceptable
		Annual	11	-30%	Sitting	18	-17%	Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance, and
2) %Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A - No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B - Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C - Build With Mitigation	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 2: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			**Mean Wind Speed**			**Effective Gust Wind Speed**		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
121	A	Spring	18		Walking	24		Acceptable
		Summer	13		Standing	17		Acceptable
		Fall	16		Walking	22		Acceptable
		Winter	17		Walking	24		Acceptable
		Annual	16		Walking	22		Acceptable
	B	Spring	11	-38%	Sitting	18	-24%	Acceptable
		Summer	8	-37%	Sitting	13	-23%	Acceptable
		Fall	10	-37%	Sitting	17	-22%	Acceptable
		Winter	12	-28%	Sitting	20	-16%	Acceptable
		Annual	11	-30%	Sitting	18	-17%	Acceptable
	C	Spring	11	-38%	Sitting	18	-24%	Acceptable
		Summer	8	-37%	Sitting	13	-23%	Acceptable
		Fall	10	-37%	Sitting	17	-22%	Acceptable
		Winter	12	-28%	Sitting	20	-16%	Acceptable
		Annual	11	-30%	Sitting	18	-17%	Acceptable
122	A	Spring	18		Walking	24		Acceptable
		Summer	13		Standing	17		Acceptable
		Fall	16		Walking	22		Acceptable
		Winter	18		Walking	24		Acceptable
		Annual	17		Walking	22		Acceptable
	B	Spring	10	-43%	Sitting	17	-28%	Acceptable
		Summer	8	-37%	Sitting	13	-23%	Acceptable
		Fall	10	-37%	Sitting	16	-26%	Acceptable
		Winter	11	-38%	Sitting	18	-24%	Acceptable
		Annual	10	-40%	Sitting	17	-22%	Acceptable
	C	Spring	10	-43%	Sitting	17	-28%	Acceptable
		Summer	8	-37%	Sitting	13	-23%	Acceptable
		Fall	10	-37%	Sitting	16	-26%	Acceptable
		Winter	11	-38%	Sitting	18	-24%	Acceptable
		Annual	10	-40%	Sitting	17	-22%	Acceptable
123	A	Spring	19		Walking	25		Acceptable
		Summer	13		Standing	18		Acceptable
		Fall	17		Walking	23		Acceptable
		Winter	19		Walking	25		Acceptable
		Annual	17		Walking	23		Acceptable
	B	Spring	13	-31%	Standing	20	-19%	Acceptable
		Summer	11	-14%	Sitting	16	-10%	Acceptable
		Fall	12	-28%	Sitting	19	-16%	Acceptable
		Winter	15	-20%	Standing	22	-11%	Acceptable
		Annual	13	-23%	Standing	20	-12%	Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance, and
2) %Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A - No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B - Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C - Build With Mitigation	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 2: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			**Mean Wind Speed**			**Effective Gust Wind Speed**		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
	C	Spring	13	-31%	Standing	20	-19%	Acceptable
		Summer	10	-22%	Sitting	16	-10%	Acceptable
		Fall	12	-28%	Sitting	18	-21%	Acceptable
		Winter	14	-25%	Standing	21	-15%	Acceptable
		Annual	13	-23%	Standing	19	-16%	Acceptable
124	A	Spring	18		Walking	24		Acceptable
		Summer	13		Standing	17		Acceptable
		Fall	16		Walking	22		Acceptable
		Winter	17		Walking	24		Acceptable
		Annual	16		Walking	22		Acceptable
	B	Spring	9	-49%	Sitting	15	-37%	Acceptable
		Summer	7	-45%	Sitting	12	-28%	Acceptable
		Fall	9	-43%	Sitting	15	-31%	Acceptable
		Winter	10	-40%	Sitting	17	-28%	Acceptable
		Annual	9	-43%	Sitting	15	-31%	Acceptable
	C	Spring	9	-49%	Sitting	15	-37%	Acceptable
		Summer	7	-45%	Sitting	12	-28%	Acceptable
		Fall	8	-49%	Sitting	14	-35%	Acceptable
		Winter	10	-40%	Sitting	16	-32%	Acceptable
		Annual	9	-43%	Sitting	15	-31%	Acceptable
125	A	Spring	19		Walking	26		Acceptable
		Summer	14		Standing	19		Acceptable
		Fall	17		Walking	24		Acceptable
		Winter	18		Walking	26		Acceptable
		Annual	17		Walking	24		Acceptable
	B	Spring	9	-52%	Sitting	14	-45%	Acceptable
		Summer	7	-49%	Sitting	11	-41%	Acceptable
		Fall	8	-52%	Sitting	13	-45%	Acceptable
		Winter	9	-49%	Sitting	14	-45%	Acceptable
		Annual	8	-52%	Sitting	13	-45%	Acceptable
	C	Spring	10	-46%	Sitting	16	-37%	Acceptable
		Summer	8	-42%	Sitting	13	-31%	Acceptable
		Fall	9	-46%	Sitting	15	-37%	Acceptable
		Winter	10	-43%	Sitting	17	-34%	Acceptable
		Annual	10	-40%	Sitting	16	-32%	Acceptable
126	A	Spring	19		Walking	26		Acceptable
		Summer	13		Standing	19		Acceptable
		Fall	17		Walking	24		Acceptable
		Winter	18		Walking	26		Acceptable
		Annual	17		Walking	24		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance, and
2) %Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A - No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B - Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C - Build With Mitigation	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 2: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			**Mean Wind Speed**			**Effective Gust Wind Speed**		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
	B	Spring	14	-25%	Standing	20	-22%	Acceptable
		Summer	10	-22%	Sitting	15	-20%	Acceptable
		Fall	13	-23%	Standing	18	-24%	Acceptable
		Winter	14	-21%	Standing	20	-22%	Acceptable
		Annual	13	-23%	Standing	19	-20%	Acceptable
	C	Spring	12	-36%	Sitting	18	-30%	Acceptable
		Summer	9	-30%	Sitting	14	-25%	Acceptable
		Fall	11	-34%	Sitting	17	-28%	Acceptable
		Winter	12	-32%	Sitting	19	-26%	Acceptable
		Annual	12	-28%	Sitting	18	-24%	Acceptable
127	A	Spring	16		Walking	23		Acceptable
		Summer	13		Standing	18		Acceptable
		Fall	15		Standing	22		Acceptable
		Winter	16		Walking	23		Acceptable
		Annual	15		Standing	22		Acceptable
	B	Spring	12	-24%	Sitting	18	-21%	Acceptable
		Summer	9	-30%	Sitting	13	-27%	Acceptable
		Fall	11	-26%	Sitting	17	-22%	Acceptable
		Winter	13	-18%	Standing	19	-16%	Acceptable
		Annual	12	-19%	Sitting	18	-17%	Acceptable
	C	Spring	11	-30%	Sitting	18	-21%	Acceptable
		Summer	8	-37%	Sitting	13	-27%	Acceptable
		Fall	10	-32%	Sitting	16	-26%	Acceptable
		Winter	12	-24%	Sitting	18	-21%	Acceptable
		Annual	11	-26%	Sitting	17	-22%	Acceptable
128	A	Spring	17		Walking	24		Acceptable
		Summer	13		Standing	18		Acceptable
		Fall	16		Walking	23		Acceptable
		Winter	18		Walking	25		Acceptable
		Annual	16		Walking	23		Acceptable
	B	Spring	15	-11%	Standing	21	-12%	Acceptable
		Summer	11	-14%	Sitting	15	-16%	Acceptable
		Fall	14	-12%	Standing	19	-16%	Acceptable
		Winter	16	-10%	Walking	22	-11%	Acceptable
		Annual	15		Standing	20	-12%	Acceptable
	C	Spring	15	-11%	Standing	21	-12%	Acceptable
		Summer	11	-14%	Sitting	16	-10%	Acceptable
		Fall	14	-12%	Standing	20	-12%	Acceptable
		Winter	16	-10%	Walking	22	-11%	Acceptable
		Annual	14	-12%	Standing	21		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance, and
2) %Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A - No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B - Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C - Build With Mitigation	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 2: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			**Mean Wind Speed**			**Effective Gust Wind Speed**		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
129	A	Spring	18		Walking	24		Acceptable
		Summer	13		Standing	18		Acceptable
		Fall	17		Walking	23		Acceptable
		Winter	18		Walking	25		Acceptable
		Annual	17		Walking	23		Acceptable
	B	Spring	11	-38%	Sitting	17	-28%	Acceptable
		Summer	9	-30%	Sitting	15	-16%	Acceptable
		Fall	10	-40%	Sitting	16	-29%	Acceptable
		Winter	10	-43%	Sitting	17	-31%	Acceptable
		Annual	10	-40%	Sitting	16	-29%	Acceptable
	C	Spring	12	-32%	Sitting	18	-24%	Acceptable
		Summer	11	-14%	Sitting	17		Acceptable
		Fall	11	-34%	Sitting	17	-25%	Acceptable
		Winter	11	-38%	Sitting	18	-27%	Acceptable
		Annual	11	-34%	Sitting	17	-25%	Acceptable
130	A	Spring	18		Walking	25		Acceptable
		Summer	13		Standing	18		Acceptable
		Fall	17		Walking	23		Acceptable
		Winter	18		Walking	25		Acceptable
		Annual	17		Walking	23		Acceptable
	B	Spring	9	-49%	Sitting	14	-43%	Acceptable
		Summer	7	-45%	Sitting	11	-38%	Acceptable
		Fall	8	-52%	Sitting	13	-42%	Acceptable
		Winter	9	-49%	Sitting	15	-39%	Acceptable
		Annual	8	-52%	Sitting	14	-38%	Acceptable
	C	Spring	9	-49%	Sitting	15	-39%	Acceptable
		Summer	7	-45%	Sitting	12	-32%	Acceptable
		Fall	8	-52%	Sitting	14	-38%	Acceptable
		Winter	10	-43%	Sitting	17	-31%	Acceptable
		Annual	9	-46%	Sitting	15	-34%	Acceptable
131	A	Spring	19		Walking	24		Acceptable
		Summer	14		Standing	19		Acceptable
		Fall	17		Walking	23		Acceptable
		Winter	18		Walking	24		Acceptable
		Annual	17		Walking	23		Acceptable
	B	Spring	10	-46%	Sitting	15	-37%	Acceptable
		Summer	8	-42%	Sitting	12	-36%	Acceptable
		Fall	9	-46%	Sitting	14	-38%	Acceptable
		Winter	11	-38%	Sitting	16	-32%	Acceptable
		Annual	10	-40%	Sitting	15	-34%	Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance, and
2) %Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A - No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B - Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C - Build With Mitigation	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 2: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			**Mean Wind Speed**			**Effective Gust Wind Speed**		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
	C	Spring	10	-46%	Sitting	15	-37%	Acceptable
		Summer	8	-42%	Sitting	12	-36%	Acceptable
		Fall	9	-46%	Sitting	14	-38%	Acceptable
		Winter	11	-38%	Sitting	17	-28%	Acceptable
		Annual	10	-40%	Sitting	15	-34%	Acceptable
132	A	Spring	19		Walking	25		Acceptable
		Summer	14		Standing	19		Acceptable
		Fall	17		Walking	23		Acceptable
		Winter	19		Walking	25		Acceptable
		Annual	18		Walking	24		Acceptable
	B	Spring	12	-36%	Sitting	18	-27%	Acceptable
		Summer	9	-35%	Sitting	14	-25%	Acceptable
		Fall	11	-34%	Sitting	17	-25%	Acceptable
		Winter	13	-31%	Standing	20	-19%	Acceptable
		Annual	12	-32%	Sitting	18	-24%	Acceptable
	C	Spring	13	-31%	Standing	21	-15%	Acceptable
		Summer	11	-20%	Sitting	16	-15%	Acceptable
		Fall	13	-23%	Standing	20	-12%	Acceptable
		Winter	15	-20%	Standing	23		Acceptable
		Annual	13	-27%	Standing	21	-12%	Acceptable
133	A	Spring	18		Walking	23		Acceptable
		Summer	13		Standing	17		Acceptable
		Fall	16		Walking	22		Acceptable
		Winter	17		Walking	23		Acceptable
		Annual	16		Walking	22		Acceptable
	B	Spring	10	-43%	Sitting	15	-34%	Acceptable
		Summer	8	-37%	Sitting	12	-28%	Acceptable
		Fall	10	-37%	Sitting	14	-35%	Acceptable
		Winter	11	-34%	Sitting	17	-25%	Acceptable
		Annual	10	-37%	Sitting	15	-31%	Acceptable
	C	Spring	8	-55%	Sitting	15	-34%	Acceptable
		Summer	7	-45%	Sitting	12	-28%	Acceptable
		Fall	8	-49%	Sitting	14	-35%	Acceptable
		Winter	9	-46%	Sitting	16	-29%	Acceptable
		Annual	8	-49%	Sitting	15	-31%	Acceptable
134	A	Spring	13		Standing	21		Acceptable
		Summer	10		Sitting	15		Acceptable
		Fall	12		Sitting	19		Acceptable
		Winter	14		Standing	21		Acceptable
		Annual	13		Standing	20		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance, and
2) %Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A - No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B - Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C - Build With Mitigation	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 2: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			**Mean Wind Speed**			**Effective Gust Wind Speed**		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
	B	Spring	11	-14%	Sitting	16	-23%	Acceptable
		Summer	8	-19%	Sitting	13	-12%	Acceptable
		Fall	10	-16%	Sitting	15	-20%	Acceptable
		Winter	11	-20%	Sitting	17	-18%	Acceptable
		Annual	10	-22%	Sitting	16	-19%	Acceptable
	C	Spring	10	-22%	Sitting	15	-28%	Acceptable
		Summer	7	-29%	Sitting	11	-26%	Acceptable
		Fall	9	-24%	Sitting	14	-25%	Acceptable
		Winter	10	-28%	Sitting	15	-28%	Acceptable
		Annual	9	-30%	Sitting	14	-29%	Acceptable
135	A	Spring	15		Standing	22		Acceptable
		Summer	11		Sitting	16		Acceptable
		Fall	14		Standing	20		Acceptable
		Winter	15		Standing	22		Acceptable
		Annual	14		Standing	20		Acceptable
	B	Spring	9	-39%	Sitting	15	-31%	Acceptable
		Summer	8	-26%	Sitting	13	-18%	Acceptable
		Fall	8	-42%	Sitting	13	-34%	Acceptable
		Winter	9	-39%	Sitting	15	-31%	Acceptable
		Annual	8	-42%	Sitting	14	-29%	Acceptable
	C	Spring	8	-46%	Sitting	14	-35%	Acceptable
		Summer	7	-35%	Sitting	11	-30%	Acceptable
		Fall	8	-42%	Sitting	13	-34%	Acceptable
		Winter	8	-46%	Sitting	14	-35%	Acceptable
		Annual	8	-42%	Sitting	13	-34%	Acceptable
136	A	Spring	17		Walking	26		Acceptable
		Summer	12		Sitting	18		Acceptable
		Fall	15		Standing	23		Acceptable
		Winter	16		Walking	25		Acceptable
		Annual	15		Standing	23		Acceptable
	B	Spring	11	-34%	Sitting	16	-37%	Acceptable
		Summer	8	-32%	Sitting	12	-32%	Acceptable
		Fall	10	-32%	Sitting	15	-34%	Acceptable
		Winter	11	-30%	Sitting	16	-35%	Acceptable
		Annual	10	-32%	Sitting	15	-34%	Acceptable
	C	Spring	9	-46%	Sitting	14	-45%	Acceptable
		Summer	7	-41%	Sitting	10	-43%	Acceptable
		Fall	8	-46%	Sitting	13	-42%	Acceptable
		Winter	10	-37%	Sitting	15	-39%	Acceptable
		Annual	9	-39%	Sitting	13	-42%	Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance, and
2) %Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A - No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B - Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C - Build With Mitigation	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 2: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			**Mean Wind Speed**			**Effective Gust Wind Speed**		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
137	A	Spring	24		Uncomfortable	30		Acceptable
		Summer	17		Walking	22		Acceptable
		Fall	21		Uncomfortable	27		Acceptable
		Winter	24		Uncomfortable	30		Acceptable
		Annual	22		Uncomfortable	28		Acceptable
	B	Spring	7	-70%	Sitting	12	-58%	Acceptable
		Summer	6	-64%	Sitting	9	-58%	Acceptable
		Fall	7	-66%	Sitting	11	-58%	Acceptable
		Winter	8	-66%	Sitting	13	-56%	Acceptable
		Annual	7	-67%	Sitting	12	-56%	Acceptable
	C	Spring	7	-70%	Sitting	11	-62%	Acceptable
		Summer	5	-70%	Sitting	9	-58%	Acceptable
		Fall	6	-70%	Sitting	11	-58%	Acceptable
		Winter	7	-70%	Sitting	12	-58%	Acceptable
		Annual	7	-67%	Sitting	11	-60%	Acceptable
138	A	Spring	12		Sitting	18		Acceptable
		Summer	9		Sitting	14		Acceptable
		Fall	11		Sitting	18		Acceptable
		Winter	13		Standing	19		Acceptable
		Annual	12		Sitting	18		Acceptable
	B	Spring	8	-32%	Sitting	13	-27%	Acceptable
		Summer	6	-32%	Sitting	10	-28%	Acceptable
		Fall	8	-26%	Sitting	12	-32%	Acceptable
		Winter	8	-37%	Sitting	13	-31%	Acceptable
		Annual	8	-32%	Sitting	13	-27%	Acceptable
	C	Spring	8	-32%	Sitting	13	-27%	Acceptable
		Summer	6	-32%	Sitting	10	-28%	Acceptable
		Fall	7	-35%	Sitting	12	-32%	Acceptable
		Winter	8	-37%	Sitting	13	-31%	Acceptable
		Annual	7	-41%	Sitting	13	-27%	Acceptable
139	A	Spring	15		Standing	21		Acceptable
		Summer	11		Sitting	16		Acceptable
		Fall	14		Standing	19		Acceptable
		Winter	15		Standing	21		Acceptable
		Annual	14		Standing	20		Acceptable
	B	Spring	9	-39%	Sitting	14	-32%	Acceptable
		Summer	7	-35%	Sitting	11	-30%	Acceptable
		Fall	8	-42%	Sitting	13	-31%	Acceptable
		Winter	9	-39%	Sitting	14	-32%	Acceptable
		Annual	8	-42%	Sitting	13	-34%	Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance, and
2) %Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A - No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
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C - Build With Mitigation	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 2: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			**Mean Wind Speed**			**Effective Gust Wind Speed**		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
	C	Spring	9	-39%	Sitting	14	-32%	Acceptable
		Summer	7	-35%	Sitting	11	-30%	Acceptable
		Fall	8	-42%	Sitting	13	-31%	Acceptable
		Winter	9	-39%	Sitting	14	-32%	Acceptable
		Annual	8	-42%	Sitting	13	-34%	Acceptable
140	A	Spring	13		Standing	19		Acceptable
		Summer	11		Sitting	16		Acceptable
		Fall	12		Sitting	18		Acceptable
		Winter	13		Standing	19		Acceptable
		Annual	12		Sitting	18		Acceptable
	B	Spring	7	-45%	Sitting	12	-36%	Acceptable
		Summer	5	-54%	Sitting	9	-43%	Acceptable
		Fall	7	-41%	Sitting	11	-38%	Acceptable
		Winter	7	-45%	Sitting	12	-36%	Acceptable
		Annual	7	-41%	Sitting	11	-38%	Acceptable
	C	Spring	8	-37%	Sitting	13	-31%	Acceptable
		Summer	6	-44%	Sitting	10	-37%	Acceptable
		Fall	7	-41%	Sitting	12	-32%	Acceptable
		Winter	8	-37%	Sitting	14	-25%	Acceptable
		Annual	8	-32%	Sitting	13	-27%	Acceptable
141	A	Spring	17		Walking	23		Acceptable
		Summer	12		Sitting	16		Acceptable
		Fall	15		Standing	21		Acceptable
		Winter	17		Walking	23		Acceptable
		Annual	16		Walking	21		Acceptable
	B	Spring	14	-17%	Standing	21		Acceptable
		Summer	11		Sitting	16		Acceptable
		Fall	13	-12%	Standing	20		Acceptable
		Winter	15	-11%	Standing	22		Acceptable
		Annual	14	-12%	Standing	20		Acceptable
	C	Spring	14	-17%	Standing	20	-12%	Acceptable
		Summer	10	-16%	Sitting	15		Acceptable
		Fall	13	-12%	Standing	19		Acceptable
		Winter	14	-17%	Standing	21		Acceptable
		Annual	13	-18%	Standing	20		Acceptable
142	A	Spring	19		Walking	25		Acceptable
		Summer	13		Standing	18		Acceptable
		Fall	17		Walking	23		Acceptable
		Winter	18		Walking	25		Acceptable
		Annual	17		Walking	23		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance, and
2) %Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A - No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B - Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C - Build With Mitigation	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 2: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			**Mean Wind Speed**			**Effective Gust Wind Speed**		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
	B	Spring	14	-25%	Standing	22	-11%	Acceptable
		Summer	11	-14%	Sitting	16	-10%	Acceptable
		Fall	13	-23%	Standing	20	-12%	Acceptable
		Winter	15	-16%	Standing	23		Acceptable
		Annual	13	-23%	Standing	21		Acceptable
	C	Spring	13	-31%	Standing	20	-19%	Acceptable
		Summer	9	-30%	Sitting	15	-16%	Acceptable
		Fall	12	-28%	Sitting	18	-21%	Acceptable
		Winter	13	-27%	Standing	21	-15%	Acceptable
		Annual	12	-28%	Sitting	19	-16%	Acceptable
143	A	Spring	17		Walking	23		Acceptable
		Summer	13		Standing	17		Acceptable
		Fall	16		Walking	21		Acceptable
		Winter	17		Walking	23		Acceptable
		Annual	16		Walking	22		Acceptable
	B	Spring	12	-28%	Sitting	18	-21%	Acceptable
		Summer	8	-37%	Sitting	13	-23%	Acceptable
		Fall	11	-30%	Sitting	16	-23%	Acceptable
		Winter	12	-28%	Sitting	19	-16%	Acceptable
		Annual	11	-30%	Sitting	17	-22%	Acceptable
	C	Spring	11	-34%	Sitting	17	-25%	Acceptable
		Summer	8	-37%	Sitting	12	-28%	Acceptable
		Fall	10	-37%	Sitting	16	-23%	Acceptable
		Winter	12	-28%	Sitting	18	-21%	Acceptable
		Annual	11	-30%	Sitting	16	-26%	Acceptable
144	A	Spring	19		Walking	26		Acceptable
		Summer	15		Standing	20		Acceptable
		Fall	17		Walking	24		Acceptable
		Winter	19		Walking	26		Acceptable
		Annual	18		Walking	24		Acceptable
	B	Spring	17	-10%	Walking	24		Acceptable
		Summer	14		Standing	20		Acceptable
		Fall	15	-11%	Standing	22		Acceptable
		Winter	16	-15%	Walking	23	-11%	Acceptable
		Annual	15	-16%	Standing	22		Acceptable
	C	Spring	16	-15%	Walking	23	-11%	Acceptable
		Summer	14		Standing	19		Acceptable
		Fall	15	-11%	Standing	21	-12%	Acceptable
		Winter	16	-15%	Walking	22	-14%	Acceptable
		Annual	15	-16%	Standing	21	-12%	Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance, and
2) %Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A - No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B - Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C - Build With Mitigation	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 2: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			**Mean Wind Speed**			**Effective Gust Wind Speed**		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
145	A	Spring	13		Standing	20		Acceptable
		Summer	9		Sitting	14		Acceptable
		Fall	12		Sitting	18		Acceptable
		Winter	13		Standing	19		Acceptable
		Annual	12		Sitting	18		Acceptable
	B	Spring	18	+38%	Walking	25	+25%	Acceptable
		Summer	16	+78%	Walking	22	+57%	Acceptable
		Fall	17	+42%	Walking	22	+22%	Acceptable
		Winter	17	+31%	Walking	24	+26%	Acceptable
		Annual	17	+42%	Walking	23	+28%	Acceptable
	C	Spring	20	+54%	Uncomfortable	27	+35%	Acceptable
		Summer	18	+100%	Walking	23	+64%	Acceptable
		Fall	18	+50%	Walking	24	+33%	Acceptable
		Winter	18	+38%	Walking	25	+32%	Acceptable
		Annual	18	+50%	Walking	25	+39%	Acceptable
146	A	Spring	15		Standing	21		Acceptable
		Summer	11		Sitting	15		Acceptable
		Fall	14		Standing	19		Acceptable
		Winter	15		Standing	21		Acceptable
		Annual	14		Standing	19		Acceptable
	B	Spring	8	-46%	Sitting	13	-37%	Acceptable
		Summer	6	-44%	Sitting	9	-39%	Acceptable
		Fall	7	-49%	Sitting	12	-36%	Acceptable
		Winter	8	-46%	Sitting	13	-37%	Acceptable
		Annual	8	-42%	Sitting	12	-36%	Acceptable
	C	Spring	7	-52%	Sitting	12	-42%	Acceptable
		Summer	6	-44%	Sitting	9	-39%	Acceptable
		Fall	7	-49%	Sitting	12	-36%	Acceptable
		Winter	8	-46%	Sitting	13	-37%	Acceptable
		Annual	7	-49%	Sitting	12	-36%	Acceptable
147	A	Spring	19		Walking	26		Acceptable
		Summer	14		Standing	18		Acceptable
		Fall	18		Walking	24		Acceptable
		Winter	19		Walking	26		Acceptable
		Annual	18		Walking	24		Acceptable
	B	Spring	17	-10%	Walking	24		Acceptable
		Summer	12	-13%	Sitting	18		Acceptable
		Fall	15	-16%	Standing	22		Acceptable
		Winter	17	-10%	Walking	24		Acceptable
		Annual	15	-16%	Standing	23		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance, and
2) %Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A - No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B - Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C - Build With Mitigation	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 2: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			**Mean Wind Speed**			**Effective Gust Wind Speed**		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
	C	Spring	15	-20%	Standing	23	-11%	Acceptable
		Summer	11	-20%	Sitting	17		Acceptable
		Fall	14	-21%	Standing	21	-12%	Acceptable
		Winter	15	-20%	Standing	23	-11%	Acceptable
		Annual	14	-21%	Standing	22		Acceptable
148	A	Spring	18		Walking	25		Acceptable
		Summer	14		Standing	19		Acceptable
		Fall	17		Walking	24		Acceptable
		Winter	18		Walking	26		Acceptable
		Annual	17		Walking	24		Acceptable
	B	Spring	20	+11%	Uncomfortable	27		Acceptable
		Summer	17	+21%	Walking	22	+16%	Acceptable
		Fall	18		Walking	25		Acceptable
		Winter	20	+11%	Uncomfortable	28		Acceptable
		Annual	19	+12%	Walking	26		Acceptable
	C	Spring	21	+17%	Uncomfortable	27		Acceptable
		Summer	18	+29%	Walking	23	+21%	Acceptable
		Fall	19	+12%	Walking	25		Acceptable
		Winter	20	+11%	Uncomfortable	27		Acceptable
		Annual	19	+12%	Walking	26		Acceptable
149	A	Spring	19		Walking	26		Acceptable
		Summer	14		Standing	19		Acceptable
		Fall	18		Walking	24		Acceptable
		Winter	19		Walking	26		Acceptable
		Annual	18		Walking	24		Acceptable
	B	Spring	19		Walking	26		Acceptable
		Summer	15		Standing	20		Acceptable
		Fall	18		Walking	24		Acceptable
		Winter	19		Walking	26		Acceptable
		Annual	18		Walking	25		Acceptable
	C	Spring	18		Walking	25		Acceptable
		Summer	13		Standing	19		Acceptable
		Fall	16	-10%	Walking	23		Acceptable
		Winter	17	-10%	Walking	25		Acceptable
		Annual	16	-10%	Walking	23		Acceptable
150	A	Spring	20		Uncomfortable	26		Acceptable
		Summer	16		Walking	20		Acceptable
		Fall	18		Walking	24		Acceptable
		Winter	20		Uncomfortable	26		Acceptable
		Annual	18		Walking	25		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance, and
2) %Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A - No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B - Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C - Build With Mitigation	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 2: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			**Mean Wind Speed**			**Effective Gust Wind Speed**		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
	B	Spring	20		Uncomfortable	28		Acceptable
		Summer	16		Walking	22	+10%	Acceptable
		Fall	18		Walking	26		Acceptable
		Winter	20		Uncomfortable	28		Acceptable
		Annual	18		Walking	26		Acceptable
	C	Spring	18		Walking	27		Acceptable
		Summer	14	-12%	Standing	21		Acceptable
		Fall	17		Walking	24		Acceptable
		Winter	18		Walking	27		Acceptable
		Annual	17		Walking	25		Acceptable
151	A	Spring	17		Walking	23		Acceptable
		Summer	14		Standing	20		Acceptable
		Fall	15		Standing	22		Acceptable
		Winter	16		Walking	23		Acceptable
		Annual	16		Walking	22		Acceptable
	B	Spring	15	-11%	Standing	23		Acceptable
		Summer	12	-13%	Sitting	18		Acceptable
		Fall	14		Standing	22		Acceptable
		Winter	17		Walking	25		Acceptable
		Annual	15		Standing	23		Acceptable
	C	Spring	14	-17%	Standing	21		Acceptable
		Summer	12	-13%	Sitting	17	-14%	Acceptable
		Fall	13	-12%	Standing	20		Acceptable
		Winter	15		Standing	23		Acceptable
		Annual	14	-12%	Standing	21		Acceptable
152	A	Spring	20		Uncomfortable	27		Acceptable
		Summer	15		Standing	20		Acceptable
		Fall	18		Walking	25		Acceptable
		Winter	20		Uncomfortable	27		Acceptable
		Annual	19		Walking	25		Acceptable
	B	Spring	16	-19%	Walking	23	-14%	Acceptable
		Summer	12	-19%	Sitting	17	-14%	Acceptable
		Fall	14	-21%	Standing	21	-15%	Acceptable
		Winter	16	-19%	Walking	23	-14%	Acceptable
		Annual	15	-20%	Standing	22	-11%	Acceptable
	C	Spring	15	-24%	Standing	22	-18%	Acceptable
		Summer	11	-26%	Sitting	17	-14%	Acceptable
		Fall	13	-27%	Standing	20	-19%	Acceptable
		Winter	15	-24%	Standing	22	-18%	Acceptable
		Annual	14	-25%	Standing	21	-15%	Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance, and
2) %Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A - No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B - Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C - Build With Mitigation	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 2: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			**Mean Wind Speed**			**Effective Gust Wind Speed**		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
153	A	Spring	17		Walking	22		Acceptable
		Summer	12		Sitting	16		Acceptable
		Fall	15		Standing	20		Acceptable
		Winter	16		Walking	22		Acceptable
		Annual	15		Standing	21		Acceptable
	B	Spring	11	-34%	Sitting	16	-26%	Acceptable
		Summer	9	-24%	Sitting	13	-18%	Acceptable
		Fall	9	-39%	Sitting	14	-29%	Acceptable
		Winter	10	-37%	Sitting	16	-26%	Acceptable
		Annual	10	-32%	Sitting	15	-28%	Acceptable
	C	Spring	12	-28%	Sitting	18	-17%	Acceptable
		Summer	11		Sitting	15		Acceptable
		Fall	11	-26%	Sitting	16	-19%	Acceptable
		Winter	11	-30%	Sitting	17	-22%	Acceptable
		Annual	11	-26%	Sitting	16	-23%	Acceptable
154	A	Spring	21		Uncomfortable	29		Acceptable
		Summer	18		Walking	25		Acceptable
		Fall	20		Uncomfortable	27		Acceptable
		Winter	21		Uncomfortable	30		Acceptable
		Annual	20		Uncomfortable	28		Acceptable
	B	Spring	16	-23%	Walking	24	-16%	Acceptable
		Summer	13	-27%	Standing	20	-19%	Acceptable
		Fall	14	-29%	Standing	22	-18%	Acceptable
		Winter	16	-23%	Walking	24	-19%	Acceptable
		Annual	15	-24%	Standing	23	-17%	Acceptable
	C	Spring	16	-23%	Walking	24	-16%	Acceptable
		Summer	13	-27%	Standing	20	-19%	Acceptable
		Fall	14	-29%	Standing	22	-18%	Acceptable
		Winter	16	-23%	Walking	24	-19%	Acceptable
		Annual	15	-24%	Standing	23	-17%	Acceptable
155	A	Spring	18		Walking	26		Acceptable
		Summer	14		Standing	20		Acceptable
		Fall	17		Walking	25		Acceptable
		Winter	19		Walking	27		Acceptable
		Annual	17		Walking	25		Acceptable
	B	Spring	15	-16%	Standing	22	-14%	Acceptable
		Summer	11	-20%	Sitting	17	-14%	Acceptable
		Fall	13	-23%	Standing	20	-19%	Acceptable
		Winter	15	-20%	Standing	22	-18%	Acceptable
		Annual	13	-23%	Standing	21	-15%	Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance, and
2) %Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

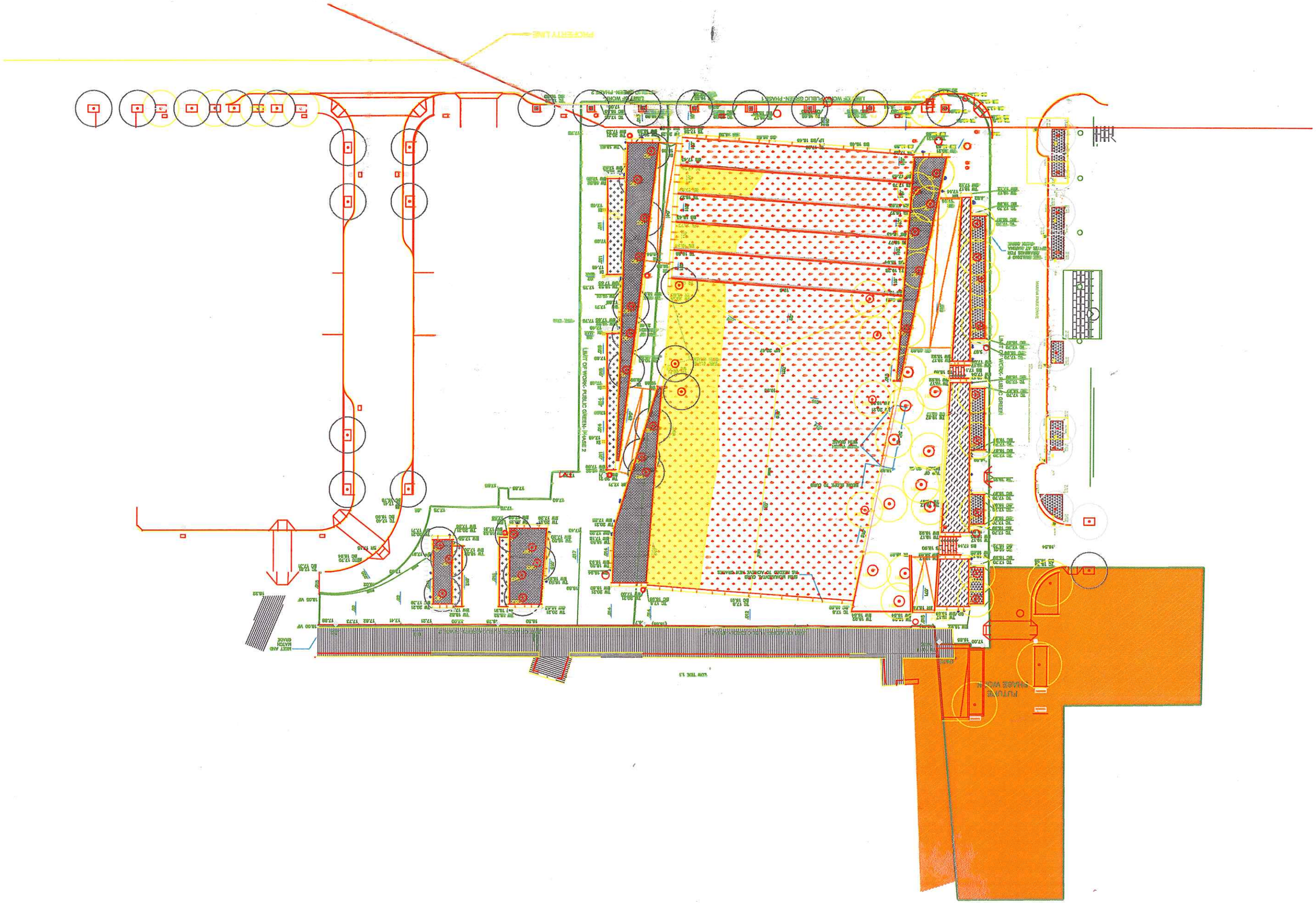
Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A - No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B - Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C - Build With Mitigation	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 2: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			**Mean Wind Speed**			**Effective Gust Wind Speed**		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
	C	Spring	13	-27%	Standing	21	-18%	Acceptable
		Summer	10	-28%	Sitting	16	-19%	Acceptable
		Fall	13	-23%	Standing	20	-19%	Acceptable
		Winter	13	-31%	Standing	22	-18%	Acceptable
		Annual	13	-23%	Standing	20	-19%	Acceptable
156	A	Spring	22		Uncomfortable	29		Acceptable
		Summer	16		Walking	21		Acceptable
		Fall	20		Uncomfortable	27		Acceptable
		Winter	22		Uncomfortable	29		Acceptable
		Annual	20		Uncomfortable	27		Acceptable
	B	Spring	18	-17%	Walking	26		Acceptable
		Summer	15		Standing	21		Acceptable
		Fall	16	-19%	Walking	24	-10%	Acceptable
		Winter	18	-17%	Walking	27		Acceptable
		Annual	17	-14%	Walking	25		Acceptable
	C	Spring	10	-54%	Sitting	13	-54%	Acceptable
		Summer	8	-49%	Sitting	11	-47%	Acceptable
		Fall	9	-54%	Sitting	13	-51%	Acceptable
		Winter	10	-54%	Sitting	14	-51%	Acceptable
		Annual	9	-54%	Sitting	13	-51%	Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance, and
2) %Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A - No Build	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B - Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C - Build With Mitigation	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		


PROPERTY LINE
LIMIT OF WORK- PUBLIC GREEN- PHASE 2
LIMIT OF WORK- PUBLIC GREEN- PHASE 1
LIMIT OF WORK- PUBLIC GREEN
FUTURE PHASE WORK

Appendix D

Greenhouse Gas Emissions

APPENDIX D
GHG ANALYSIS

D1 MEP System Descriptions by Block

D2 Block Design Parameters

D3 Tenant Manual Samples

D4 Solar Thermal Hot Water Preliminary Evaluation

D5 Cogeneration Pre-Concept Study

D6 Modeling Results by Block

D7 Case 3 Technology Summaries

D8 Roof-top Photovoltaic Systems Preliminary Evaluation

APPENDIX D1
MEP System Descriptions by Block

Block "A" - Tower Residential - Podium Marketing and Restaurant	
Building General Description	
The building complex consists 7 stories, 34 residential condo units totaling 66,000 SF occupying four stories, retail/restaurant totaling 26,000 SF occupying two stories, one penthouse level, and one sub-level parking level.	
System	**Base System Description**
HVAC	The base system shall consists of water cooled heat pump terminals, remote mounted induced draft cooling tower, condenser water distribution system, central energy recovery air handler units and central temperature control systems. • The condo units will be provided with water cooled 410 refrigerant heat pump units with high efficient motors and MERV 8 to MERV 13 filtration. The unit level controls shall be stand alone type wall mounted LCD thermostats with 24/7 programming capabilities. The program is not defined to the point where the kitchen exhaust system is described, if kitchen hoods are required the system shall be a centralized type with roof mounted exhaust fans, common vertical exhaust risers (sub-duct systems) and individual hood controls to allow efficient sizing of the common system. • Central located 100% outside supply air and exhaust air fans will provide air transfer to the individual condo units and corridors heat pumps. The system is configured with main supply fans with filter section located at the roof level or penthouse delivering the outside air to a vertical common ductwork shafts, individual floor level branch take-offs to the heat pumps at the code minimum ventilation rate. The heat pumps shall be sized to handle the room load and the ventilation load. Vanderweil Engineers has developed recommended engineering system improvements over the baseline system as illustrated within the sustainable matrices recommendations worksheet. Under this case the recommended sustainable alternate is central energy recovery unit with total energy wheel in place of the central supply fan assembly. • The condenser water system shall consists of roof mounted induced draft cooling towers, plate and frame heat exchangers to decouple the tower water from the building side clean condenser water, pump assemblies for the tower side and building side with variable frequency drives, tower filtration assembly, chemical treatment for the open tower system and closed building side system, and distribution piping. The system shall provide condenser water to the individual condo units, common space terminal units and a 24/7 cooling requirements. The individual condo units have the option to be provided with energy meters "BTU" to monitor and track the condenser water (energy transfer rate) usage to translate the cost back to the condo tenants. • Heating hot water plant shall consist of modular high efficient condensing boilers, variable primary pumping configuration, chemical treatment, hot water specialties, distribution piping. Hot water system shall serve the heat pump loop. • The sub-level parking garage shall be provided with central exhaust and supply air make-up system conforming to code, the system shall be controlled through CO monitoring and alarm system to allow the fans to vary capacity based on the CO levels within the zones. • The retail and restaurant will be provided condensing water and allocated shaft space for ventilation/make-up air and kitchen exhaust, RGV assumes at this point the retail and the restaurant are under the tenant fit-up. • The building will be provided with Direct Digital Controls (DDC) for the central systems and tenant energy monitoring.
Electrical	The electric service to the building will most likely be a single service at 480/277 from an Nstar transformer vault. The building will require a diesel powered emergency/standby generator. The generator will provide emergency and standby power for egress lighting, fire alarm, fire pump, stairwell pressurization fans, and elevators. The generator is anticipated to be located on the roof of the building.

Fire Protection	• The building's fire suppression system is a fully sprinkled building with dry sprinklers in un-heated areas such as parking garage and loading docks. Each floor will be zoned separately by means of a sprinkler control valve station. The larger unheated areas, such as the garage and loading dock will require a dry pipe valve and distribution piping. • Fire pump to supplement the municipal water pressure is an electric type, 75 horse power. • Fire Standpipes and fire department valves located in egress stairs.
Plumbing	• Water service is a separate feed from the municipal main. • A domestic water booster with a hydro pneumatic tank will be supplied to supplement municipal water pressure. The building's height indicates that there will be 2 domestic water pressure zones: 1st and 2nd level street pressure, 3rd thru 7th (penthouse) levels will be supplemented by the domestic water booster pump. • Low flow plumbing fixtures to meet the 1992 EPA guide lines. • Domestic hot water will be by point of use electric storage water heaters located in each of the residential units. I it is proposed that the retail tenants' will provide their own domestic hot water equipment. • A sanitary building sewer, gravity system, will be provided. A single stack waste and vent system (trade name "SoVent") is proposed for the residential fixtures • Natural gas will be supplied for the boilers/heating system. Separately meter natural gas systems will be provide to the ground floor retail and to the residential units for cooking purposes. • Metering for domestic water and natural gas will be provided at the main service entrances. Sub-metering will be provided for the various uses in the building • A non-potable water system for mechanical make-up; system to include reduced pressure backflow preventor, distribution piping and insulation. • A non-potable water system for irrigation will be provided; system to include reduced pressure backflow preventor. • Internal roof drain - storm water collection system. Part of this rainwater will be diverted back to a soil recharge system. • A garage waste drainage system will be provided; this will include a gasoline & sand trap and an ejector station
References	HVAC heating and cooling load estimate work sheet Electrical demand load worksheet

Block "B" - Corporate Office - Health Club - Retail	
Building General Description	
The building complex consists 21 stories, Office occupies 17 levels at 500,000 SF, Retail podium occupies 2 levels at 72,000 SF with additional 5,000 SF of education, one penthouse level, and three sub-levels of parking.	
System	**Base System Description**
HVAC	• The system concept is based on floor by floor DX self-contained variable volume air handler units, hot water high efficiency condensing boiler plant, remote mounted cooling towers, condenser water distribution system, dedicated central energy recovery air handler unit - provides 100% outdoor air to the floor by floor units and exhaust from the space/toilets, and controls. The packaged DX air handler units reject the heat from the compressors into the central condenser water loop and in return rejects the heat from the water to the air through the cooling tower process. • Heating hot water plant shall consist of modular high efficient condensing boilers, variable primary pumping configuration, chemical treatment, hot water specialties, distribution piping. Hot water system shall serve the offices tower, health club and retail. All tenants hot water connections shall be provided with energy meters "BTU" for monitoring and transferring the cost back to the tenant. • The condenser water system shall consists of roof mounted induced draft cooling towers, plate and frame heat exchangers to decouple the tower water from the building side clean condenser water, pump assemblies for the tower side and building side with variable frequency drives, tower filtration assembly, chemical treatment for the open tower system or no chemical system "Dolphin System" and closed building side system, and distribution piping. The system shall provide condenser water to the individual floor level packaged DX units and a 24/7 cooling requirements. The individual tenants will be provided with energy meters "BTU" to monitor and track the condenser water (energy transfer rate) usage to translate the cost back to the tenants. • Central located 100% outside supply and exhaust air fans will provide air transfer to the individual air handler mechanical room at each floor level. The system is configured with main supply fans with filter section located at the roof level or penthouse delivering the outside air to a vertical common ductwork shafts. The air distribiution shall consists of vertical supply and exhaust risers serving the individual floors mechaincal rooms, floor level branch take-offs to the indidivudal mechanical rooms through VAV boxes providing code required pre-conditioned ventilation air. Exhaust riser shall incorporate sub-duct fittings to avoid the fire/smoke damper assemblies, the exhaust from the comon floor level return air plenum shall be ducted back to the floor level exhaust bos and up through the vertical exhaust risers to the exhaust fans and then discharged to the atmophare. Vanderweil Engineers has developed recommended engineering system improvements over the baseline system as illustrated within the sustainable matrices recommendations worksheet. Under this case the recommended sustainable alternate is central energy recovery unit with total energy wheel in place of the central supply and exhaust fan assemblies. • Self-contained air handling units with double walled construction, compressors, supply fans, premium efficient motors, variable frequency drives, airflow measuring, cooling and heating coils, pre-filters and MERV 13 final filters. • Air distribution- The floor level packaged DX air handler units conditioned is shall be distributed through a med pressure supply air duct loop within the interior zone. Branch take-offs to VAV boxes serving the interior zones and fan powered boxes with hot water reheat on the exterior zones. Fan powered boxes will be provided with variable speed ECM motors. •The retail zones will be provided with the base minimum ventilation air per code from central air handler units or energy recovery units. The air shall be distributed to the space through med pressure ductwork connected to zone level VAV boxes controlled from the central DDC system. Metered condenser water and hot water (to be reviewed) shall be provided to each tenant to connect to the tenant provided heat pumps. RGV to review the loads to determine if electric supplemental heat (provided by tenant) with the heat humps is more cost effective vs. the hot water distribution system. Restaurant and kitchens HVAC system will be based on heat pumps, base building supplied condenser water and minimum code supplied ventilation air through energy recovery units, kitchen make-up/grease exhaust ductwork shafts will be provided and space allocation for kitchen hood make-up air handler unit supplied by tenant.

	• The sub-level parking garage shall be provided with central exhaust and supply air make-up system conforming to code, the system shall be controlled through CO monitoring and alarm system to allow the fans to vary capacity based on the CO levels within the zones. The exhaust rate shall modulate between 1.5 CFM/SF to 0.5 CFM/SF. • Demand controlled ventilation (CO2) control for high occupancy spaces. • Toilet and misc. exhaust air systems. • Hot water radiant floor heating system for Lobby spaces. • The building will be provided with Direct Digital Controls (DDC) for the central systems and tenant energy monitoring.
Electrical	The preliminary load estimate for the building will require multiple 480/277 Volt services. It is likely that the service will be separated into three or four services based on the building program and electrical loads. The building will require a diesel powered emergency/standby generator. The generator will provide emergency/standby power for egress lighting, fire alarm, fire pump, stairwell pressurization fans, and elevators. The generator is anticipated to be located on the roof of the building.
Fire Protection	• The building's fire suppression system is a fully sprinkled building. Dry sprinklers will be provided in un-heated areas such as parking garage and loading docks. Each floor will be zoned separately by means of a sprinkler control valve station. The larger unheated areas, such as the garage and loading dock will require a dry pipe valve and distribution piping. • Fire pump to supplement the municipal water pressure is an electric type, 250 horse power. • Fire Standpipes and fire department valves located in egress stairs.
Plumbing	• Water service is a separate feed from the municipal main. • A domestic water booster with a hydro pneumatic tank will be supplied to supplement municipal water pressure. The building's height indicates that there will be 4 domestic water pressure zones: 1st, 2nd and 3rd Levels street pressure and is Zone 1, 4th thru 8th Levels is zone 2, 9th thru 14th Levels is zone 3, 15th thru Penthouse Levels is zone 4. Zones 2 thru 4 are boosted and will be fed from an express domestic cold water riser. • Low flow plumbing fixtures to meet the 1992 EPA guide lines. • Domestic hot water will be point-of-use electric storage water heaters located in the core areas. There will be one heater to serve three floors. Each heater will be equipped with a circulation pump to maintain hot water at each fixture. It is proposed that the retail tenants' will provide their own domestic hot water equipment. • A sanitary building sewer, gravity system, will be provided. • Natural gas will be supplied for the boilers/heating system. Separate metering of natural gas will be provided for the retail and the base building systems. • Metering for domestic water will be provided at the main service entrances. • A non-potable water system for mechanical make-up; system to include reduced pressure backflow preventor, distribution piping and insulation. • A non-potable water system for irrigation will be provided; system to include reduced pressure backflow preventor. • Internal roof drain - storm water collection system. Part of this rainwater will be diverted back to a soil recharge system. • A garage waste drainage system will be provided; this will include a gasoline & sand trap and an ejector station
References	HVAC heating and cooling load estimate work sheet Electrical demand load estimate work sheet

Block "C" - Tower Residential - Cinema- Sports Bar- and Retail/Restaurant	
Building General Description	
The building complex consists 20 stories, 189 residential apartment units totaling 189,000 SF occupying 17 stories, retail/restaurant totaling 204,000 SF occupying five stories, one penthouse level, and three sub-level parking level.	
System	**Base System Description**
HVAC	The base system shall consists of water cooled heat pump terminals, remote mounted induced draft cooling tower, condenser water distribution system, central energy recovery air handler units and central temperature control systems. • The condo units will be provided with water cooled 410 refrigerant heat pump units with high efficient ECM motors and MERV 8 to MERV 13 filtration. The unit level controls shall be stand alone type wall mounted LCD thermostats with 24/7 programming capabilities. The program is not defined to the point where the kitchen exhaust system is described, if kitchen hoods are required the system shall be a centralized type with roof mounted exhaust fans, common vertical exhaust risers (sub-duct systems) and individual hood controls to allow efficient sizing of the common system, • Central located 100% outside supply air and exhaust air fans will provide air to the individual apartment units and corridors heat pumps. The system is configured with main supply fans with filter section located at the roof level or penthouse delivering the outside air to a vertical common ductwork shafts, individual floor level branch take-offs to the heat pumps at the code minimum ventilation rate. The heat pumps shall be sized to handle the room load and the ventilation load. Vanderweil Engineers has developed recommended engineering system improvements over the baseline system as illustrated within the sustainable matrices recommendations worksheet. Under this case the recommended sustainable alternate is central energy recovery unit with total energy wheel in place of the central supply fan assembly. • The condenser water system shall consists of roof mounted induced draft cooling towers, plate and frame heat exchangers to decouple the tower water from the building side clean condenser water, pump assemblies for the tower side and building side with variable frequency drives, tower filtration assembly, chemical treatment for the open tower system and closed building side system, and distribution piping. The system shall provide condenser water to the individual condo units, common space terminal units and a 24/7 cooling requirements. The individual condo units have the option to be provided with energy meters "BTU" to monitor and track the condenser water (energy transfer rate) usage to translate the cost back to the condo tenants. • Heating hot water plant shall consist of modular high efficient condensing boilers, variable primary pumping configuration, chemical treatment, hot water specialties, distribution piping. Hot water system shall serve the heat pump loop. • The sub-level parking garage shall be provided with central exhaust and supply air make-up system conforming to code, the system shall be controlled through CO monitoring and alarm system to allow the fans to vary capacity based on the CO levels within the zones. • The retail and restaurant will be provided condensing water and allocated shaft space for ventilation/make-up air and kitchen exhaust, RGV assumes at this point the retail and the restaurant are under the tenant fit-up. • The Cinema will be provided with self-contained DX water cooled or roof mounted DX gas fired unit, this will be depend on the weather the unit is located in doors or outdoors. The unit will include, mixing box, pre-filters, final filters, cooling coil, hot water coil, supply and return/exhaust fans on varibale frequency drives. the condenser water will be metered by the central DDC system. • Demand controlled ventilation (CO2) control for high occupancy spaces. • Toilet and misc. exhaust air systems. • The building will be provided with Direct Digital Controls (DDC) for the central systems and tenant energy monitoring.

Electrical	The preliminary load estimate for the building will require multiple 480/277 Volt services. It is likely that the service will be separated into two to four services based on the building program and electrical loads. The building will require a diesel powered emergency/standby generator. As a minimum, the generator will provide emergency/standby power for egress lighting, fire alarm, fire pump, stairwell pressurization fans, and elevators. It is also conceivable that the building will be equipped with an atrium requiring emergency/standby power for the atrium smoke exhaust systems. The generator is anticipated to be located on the roof of the building.
Fire Protection	• The building's fire suppression system is a fully sprinkled building with dry sprinklers in un-heated areas such as parking garage and loading docks. Each floor will be zoned seperately by means of a sprinkler control valve station. The larger unheated areas, such as the garage and loading dock will require a dry pipe valve and distribution piping. • Fire pump to supplement the municipal water pressure is an electric type, 250 horse power. • Fire Standpipes and fire department valves located in egress stairs.
Plumbing	• Water service is a separate feed from the municipal main. • A domestic water booster with a hydro pneumatic tank will be supplied to supplement municipal water pressure. The building's height indicates that there will be 4 domestic water pressure zones: 1st and 2nd Levels are street pressure and is Zone 1, 3rd thru 5th Levels is zone 2, 6th thru 12th Levels is zone 3, 13th thru Penthouse Levels is zone 4. Zones 2 thru 4 are boosted and will be fed from an express domestic cold water riser. • Low flow plumbing fixtures to meet the 1992 EPA guide lines. • Domestic hot water will be supplied from the hot water heating plant. The hot water distribution will be divided into pressure zones identical to the domestic cold water system. The system will be fully cirulated. It is proposed that the retail tenant's will provide their own domestic hot water equipment. • A sanitary building sewer, gravity system, will be provided. A single stack waste and vent system (trade name "SoVent") is proposed for the residential units and a convential drain system for the retail spaces. • Natural gas will be supplied for the boilers/heating system. Separate metering of natural gas will be provided for the retail and the base building systems. • Metering for domestic water will be provided at the main service entrances. • A non-potable water system for mechanical make-up; system to include reduced pressure backflow preventor, distribution piping and insulation. • A non-potable water system for irrigation will be provided; system to include reduced pressure backflow preventor. • Internal roof drain - storm water collection system. Part of this rainwater will be diverted back to a soil recharge system. • A garage waste drainage system will be provided; this will include a gasoline & sand trap and an ejector station
References	HVAC heating and cooling load estimate work sheet Electrical demand load estimate work sheet

Block "D"- Tower Residential - Retail/Restaurant Podium	
Building General Description	
The building complex consists 21 stories, 300 residential apartment units totaling 270,000 SF occupying 18 stories, retail/restaurant totaling 75,000 SF occupying two stories, one penthouse level, and three sub-level parking level.	
System	**Base System Description**
HVAC	The base system shall consists of water cooled heat pump terminals, remote mounted induced draft cooling tower, condenser water distribution system, central energy recovery air handler units and central temperature control systems. • The apartments units will be provided with water cooled 410 refrigerant heat pump units with high efficient ECM motors and MERV 8 to MERV 13 filtration. The unit level controls shall be stand alone type wall mounted LCD thermostats with 24/7 programming capabilities. The program is not defined to the point where the kitchen exhaust system is described, if kitchen hoods are required the system shall be a centralized type with roof mounted exhaust fans, common vertical exhaust risers (sub-duct systems) and individual hood controls to allow efficient sizing of the common system, • Central located 100% outside supply air and exhaust air fans will provide air to the individual apartment units and corridors heat pumps. The system is configured with main supply fans with filter section located at the roof level or penthouse delivering the outside air to a vertical common ductwork shafts, individual floor level branch take-offs to the heat pumps at the code minimum ventilation rate. The heat pumps shall be sized to handle the room load and the ventilation load. Vanderweil Engineers has developed recommended engineering system improvements over the baseline system as illustrated within the sustainable matrices recommendations worksheet. Under this case the recommended sustainable alternate is central energy recovery unit with total energy wheel in place of the central supply fan assembly. • The condenser water system shall consists of roof mounted induced draft cooling towers, plate and frame heat exchangers to decouple the tower water from the building side clean condenser water, pump assemblies for the tower side and building side with variable frequency drives, tower filtration assembly, chemical treatment for the open tower system and closed building side system, and distribution piping. The system shall provide condenser water to the individual apartment units, common space terminal units and a 24/7 cooling requirements. The individual condo units have the option to be provided with energy meters "BTU" to monitor and track the condenser water (energy transfer rate) usage to translate the cost back to the condo tenants. • Heating hot water plant shall consist of modular high efficient condensing boilers, variable primary pumping configuration, chemical treatment, hot water specialties, distribution piping. Hot water system shall serve the heat pump loop. • The sub-level parking garage shall be provided with central exhaust and supply air make-up system conforming to code, the system shall be controlled through CO monitoring and alarm system to allow the fans to vary capacity based on the CO levels within the zones. • The retail and restaurant will be provided condensing water and allocated shaft space for ventilation/make-up air and kitchen exhaust, RGV assumes at this point the retail and the restaurant are under the tenant fit-up. • Demand controlled ventilation (CO2) control for high occupancy spaces. • Toilet and misc. exhaust air systems. • The building will be provided with Direct Digital Controls (DDC) for the central systems and tenant energy monitoring.
Electrical	The preliminary load estimate for the building will require multiple 480/277 Volt services. It is likely that the service will be separated into at least two services based on the building program and electrical loads. The building will require a diesel powered emergency/standby generator. As a minimum, the generator will provide emergency/standby power for egress lighting, fire alarm, fire pump, stairwell pressurization fans, and elevators. The generator is anticipated to be located on the roof of the building.

Fire Protection	• The building's fire suppression system is a fully sprinkled building with dry sprinklers in un-heated areas such as parking garage and loading docks. Each floor will be zoned seperately by means of a sprinkler control valve station. The larger unheated areas, such as the garage and loading dock will require a dry pipe valve and distribution piping. • Fire pump to supplement the municipal water pressure is an electric type, 250 horse power. • Fire Standpipes and fire department valves located in egress stairs.
Plumbing	• Water service is a separate feed from the municipal main. • A domestic water booster with a hydro pneumatic tank will be supplied to supplement municipal water pressure. The building's height indicates that there will be 4 domestic water pressure zones: 1st and 2nd Levels are street pressure and is Zone 1, 3rd thru 8th Levels is zone 2, 9th thru 14th Levels is zone 3, 15th thru Penthouse Levels is zone 4. Zones 2 thru 4 are boosted and will be fed from an express domestic cold water riser. • Low flow plumbing fixtures to meet the 1992 EPA guide lines. • Domestic hot water will be supplied from the hot water heating plant. The hot water distribution will be divided into pressure zones identical to the domestic cold water system. The system will be fully cirulated. It is proposed that the retail tenant's will provide their own domestic hot water equipment. • A sanitary building sewer, gravity system, will be provided. A single stack waste and vent system (trade name "SoVent") is proposed for the residential units and a convential drain system for the retail spaces. • Natural gas will be supplied for the boilers/heating system. Separate metering of natural gas will be provided for the retail and the base building systems. • Metering for domestic water will be provided at the main service entrances. • A non-potable water system for mechanical make-up; system to include reduced pressure backflow preventor, distribution piping and insulation. • A non-potable water system for irrigation will be provided; system to include reduced pressure backflow preventor. • Internal roof drain - storm water collection system. Part of this rainwater will be diverted back to a soil recharge system. • A garage waste drainage system will be provided; this will include a gasoline & sand trap and an ejector station
References	HVAC heating and cooling load estimate work sheet Electrical demand load estimate work sheet

Block "F1" & "F2" - Corporate Office - Health Club - Retail	
Building General Description	
The building complex consists 1 story structure, Retail podium occupies 1 level at 7,000 SF and three sub-levels of parking.	
System	**Baseline System Description**
HVAC	• The system concept is based on a roof mounted packaged DX variable volume air handler unit. The packaged DX rooftop air handler unit serves the retail and common zones, parking area is not conditioned. Terminal VAV and fan powered boxes with electric reheat will serve the retail tenant zones • Heating within the retail zones would be based on terminal electric heating coils, the central rooftop unit would be provided with gas fired section to pre-condition the supply at to 55 F. • The Rooftop air handling units with outside intake hood, mixing section, airside economizers, pre-filters and MERV 13 final filters, exhaust/return fans, supply fans, premium efficient motors, variable frequency drives, airflow measuring, heating gas fired furnace, DX cooling coil , air cooled condenser section and unit mounted packaged controls . • Air distribution- The rooftop packaged DX air handler unit shall distributed the conditioned air through a med pressure supply air duct loop within the interior zone. Brach take-offs to VAV boxes serving the interior zones and fan powered boxes with electric reheat on the exterior zones. Fan powered boxes will be provided with variable speed ECM motors. •The Retail shall be provided with 55F air through zone level VAV boxes and fan powered boxes, air flow to the specific zones shall be sized based on the estimated retail zone. Restaurant and kitchens HVAC system will be served off the base building VAV system, kitchen make-up/grease exhaust ductwork shafts will be provided and space allocation for kitchen hood make-up air handler unit supplied by tenant. • The sub-level parking garage shall be provided with central exhaust and supply air make-up system conforming to code, the system shall be controlled through CO monitoring and alarm system to allow the fans to vary capacity based on the CO levels within the zones. The exhaust rate shall modulate between 1.5 CFM/SF to 0.5 CFM/SF. • Demand controlled ventilation (CO2) control for high occupancy spaces. • Toilet and misc. exhaust air systems. • The building will be provided with Direct Digital Controls (DDC) for the central systems and tenant energy monitoring.

Electrical	The program for this building is limited, the preliminary estimated loads indicate a small service at 480/277 Volts or 208/120 Volts. No emergency generator would be provided for this building. Emergency power will be provided by battery powered systems for egress lighting and fire alarm systems
Fire Protection	• The building's fire suppression system is a fully sprinkled building with dry sprinklers in un-heated areas.
Plumbing	• Water service is a separate feed from the municipal main. • At the time it does not appear the elevated domestic water pressure is required therefore no booster pump. • Low flow plumbing fixtures to meet the 1992 EPA guide lines. • Domestic hot water will be by provided tenant. • A sanitary building sewer, gravity system, will be provided. • Natural gas will be supplied for the boilers/heating system and cooking needs in the residential area. • Metering for domestic water and natural gas will be provided at the main service entrances. • A non-potable water system for mechanical make-up; system to include reduced pressure backflow preventor, distribution piping and insulation. • A non-potable water system for irrigation will be provided; system to include reduced pressure backflow preventor. • External and Internal roof drain - storm water collection system. Part of this rainwater will be diverted back to a soil recharge system.
References	HVAC heating and cooling load estimate work sheet Electrical demand load estimate work sheet

Block "G" - Hotel-Condo - Podium Retail

Building General Description

The building complex consists 21 stories, 250 residential condo units totaling 243,000 SF occupying nine stories, 250 hotel units totaling 243,000 SF occupying nine stories, retail/restaurant totaling 75,000 SF occupying two stories, one penthouse level, and three sub-level parking level.

System	Base System Description
HVAC	• The hotel and retail system is based on a central water cooled chiller plant and hot water plant, remote cooling towers, hotel guest room level fan coil units, central energy recovery units providing pre-conditioned outside ventilation air, garage exhaust system and central direct digital control system. • The condo system will be based on a separate heat-pump loop consisting of cooling towers, pump distribution, plate and frame heat exchangers and controls. The system are being separated due to liability associated with the condo association issues. • The chiller plant shall consist of two centrifugal water cooled chillers, chilled water variable primary pumping configuration, water specialties and distribution piping to serve the condo, common spaces and retail. Retail tenants will be required to provide energy meters for the chilled water system. • The condenser water system shall be comprised of remote mounted cooling towers, plate and frame heat exchangers for condenser 24/7 loop/free cooling, constant flow pumps configured in parallel, chemical treatment, electronic "Dolphin system" or sand filter system, piping. Condenser loop services the chillers and the optional 24/7 equipment riser (optional). • Heating hot water plant shall consist of modular high efficient condensing boilers, variable primary pumping configuration, chemical treatment, hot water specialties, distribution piping. Hot water system shall serve the condo fan coil units, common spaces and retail. Retail can be either electric reheat or hot water reheat with energy metering. • Central located 100% outside supply air and exhaust air fans will provide air to the individual hotel guest room and corridor fan coil units and condo heat pumps. The system is configured with main supply fans with filter section located at the roof level or penthouse delivering the outside air to a vertical common ductwork shafts, individual floor level branch take-offs to the fan coil units and heat pumps at the code minimum ventilation rate. The fan coil units and heat pump units shall be sized to handle the room load and the ventilation load. Vanderweil Engineers has developed recommended engineering system improvements over the baseline system as illustrated within the sustainable matrices recommendations worksheet. Under this case the recommended sustainable alternate is central energy recovery unit with total energy wheel in place of the central supply fan assembly. • The Hotel guest rooms will be provided with four pipe fan coil units with high efficient ECM motors, chilled water coil, hot water or electric heating coils and MERV 8 to MERV 13 filtration. Corridor and general spaces will be heated and cooled through horizontal of vertical mounted fan coil units. The hotel guest rooms shall be provided with room controller design specifically for hotel guest room functionality, this controller will incorporate a temperature sensor, occupancy sensor, card key assembly, lighting controls, Heat pump control integration, unoccuppied/occuppied control for energy reduction, etc. • The condo units will be provided with water cooled 410 refrigerant heat pump units with high efficient ECM motors and MERV 8 to MERV 13 filtration. The unit level controls shall be stand alone type wall mounted LCD thermostats with 24/7 programming capabilities. The program is not defined to the point where the kitchen exhaust system is described, if kitchen hoods are required the system shall be a centralized type with roof mounted exhaust fans, common vertical exhaust risers (sub-duct systems) and individual hood controls to allow efficient sizing of the common system. • The sub-level parking garage shall be provided with central exhaust and supply air make-up system conforming to code, the system shall be controlled through CO monitoring and alarm system to allow the fans to vary capacity based on the CO levels within the zones. The retail and restaurant will be provided metered chilled water, hot water and allocated shaft space for ventilation/make-up air and kitchen exhaust, RGV assumes at this point the retail and the restaurant are under the tenant fit-up. • The building will be provided with Direct Digital Controls (DDC) for the central systems and tenant energy monitoring.

Electrical	The preliminary load estimate for the building will require multiple 480/277 Volt services. It is likely that the service will be separated into two to four services based on the building program and electrical loads. The building will require a diesel powered emergency/standby generator. As a minimum, the generator will provide emergency/standby power for egress lighting, fire alarm, fire pump, stairwell pressurization fans, and elevators. It is also conceivable that the building will be equipped with an atrium requiring emergency/standby power for the atrium smoke exhaust systems. The generator is anticipated to be located on the roof of the building.
Fire Protection	• The building's fire suppression system is a fully sprinkled building with dry sprinklers in un-heated areas such as parking garage and loading docks. Each floor will be zoned seperately by means of a sprinkler control valve station. The larger unheated areas, such as the garage and loading dock will require a dry pipe valve and distribution piping. • Fire pump to supplement the municipal water pressure is an electric type, 250 horse power. • Fire Standpipes and fire department valves located in egress stairs.
Plumbing	• Water service is a separate feed from the municipal main. • A domestic water booster with a hydro pneumatic tank will be supplied to supplement municipal water pressure. The building's height indicates that there will be 5 domestic water pressure zones: 1st and 2nd are street pressure and is Zone 1, 3rd thru 7th Levels is zone 2, 8th thru 11th Levels is zone 3, 12th thru 16th Levels is zone 4, and 17th thru Penthouse Levels is zone 5. Zones 2 thru 5 are boosted and will be fed from an express domestic cold water riser. • Low flow plumbing fixtures to meet the 1992 EPA guide lines. • Domestic hot water for the condominum will be by point of use electric storage water heaters located in each of the residential units. The Hotel domestic water heating will be supplied from the hot water heating plant. The hot water distribution for the hotel will be divided into pressure zones indentical to the domestic cold water system. The system will be fully cirulated. It it is proposed that the retail tenants' will provide their own domestic hot water equipment. • A sanitary building sewer, gravity system, will be provided. A single stack waste and vent system (trade name "SoVent") is proposed for the residential units and a convential drain system for the retail spaces. • Natural gas will be supplied for the boilers/heating system. Separate metering of natural gas will be provided for the retail and the base building systems. • Metering for domestic water will be provided at the main service entrances. • A non-potable water system for mechanical make-up; system to include reduced pressure backflow preventor, distribution piping and insulation. • A non-potable water system for irrigation will be provided; system to include reduced pressure backflow preventor. • Internal roof drain - storm water collection system. Part of this rainwater will be diverted back to a soil recharge system. • A garage waste drainage system will be provided; this will include a gasoline & sand trap and an ejector station
References	HVAC heating and cooling load estimate work sheet
	Electrical demand load estimate work sheet

Block "H" - Church	
Building General Description	
The building complex consists 5 stories, church functions and administration totaling 25,000 SF and three sub-levels of parking.	
System	**Baseline System Description**
HVAC	• The system concept is based on a roof mounted packaged DX variable volume air handler unit. The packaged DX rooftop air handler unit serves the main church and associated support spaces, parking area is not conditioned. • Heating hot water plant shall consist of modular high efficient condensing boilers, variable primary pumping configuration, chemical treatment, hot water specialties, distribution piping. Hot water system shall serve the main chaurch levels and office area. • Heating within the zones would be based on terminal hot water heating coils, the central rooftop unit would be provided with gas fired section to pre-condition the supply at to 55 F. • The Rooftop air handling units with outside intake hood, mixing section, airside economizers, pre-filters and MERV 13 final filters, exhaust/return fans, supply fans, premium efficient motors, variable frequency drives, airflow measuring, heating gas fired furnace, DX cooling coil , air cooled condenser section and unit mounted packaged controls . • Air distribution- The rooftop packaged DX air handler unit shall distributed the conditioned air through a med pressure supply air ductwork to the multiple zones. Brach take-offs to VAV boxes serving the interior zones and fan powered boxes with electric reheat on the exterior zones. Fan powered boxes will be provided with variable speed ECM motors. • The sub-level parking garage shall be provided with central exhaust and supply air make-up system conforming to code, the system shall be controlled through CO monitoring and alarm system to allow the fans to vary capacity based on the CO levels within the zones. The exhaust rate shall modulate between 1.5 CFM/SF to 0.5 CFM/SF. • Demand controlled ventilation (CO2) control for high occupancy spaces. • Toilet and misc. exhaust air systems. • The building will be provided with Direct Digital Controls (DDC) for the central systems and tenant energy monitoring.
Electrical	The electric service to the building will most likely be a single service at 480/277 from an Nstar transformer vault. The building will require a diesel powered emergency/standby generator. As a minimum, the generator will provide emergency and standby power for egress lighting, fire alarm, fire pump, stairwell pressurization fans, and elevators. The generator is anticipated to be located on the roof of the building.
Fire Protection	• The building's fire suppression system is a fully sprinkled building with dry sprinklers in un-heated areas. • Fire Standpipes and fire department valves located in egress stairs.

Plumbing	• Water service is a separate feed from the municipal main. • At the time it does not appear the elevated domestic water pressure is required therefore no booster pump. • Low flow plumbing fixtures to meet the 1992 EPA guide lines. • Domestic hot water will be by point of use electric storage water heaters. • A sanitary building sewer, gravity system, will be provided. • Natural gas will be supplied for the boilers/heating system and cooking needs in the residential area. • Metering for domestic water and natural gas will be provided at the main service entrances. • A non-potable water system for mechanical make-up; system to include reduced pressure backflow preventor, distribution piping and insulation. • A non-potable water system for irrigation will be provided; system to include reduced pressure backflow preventor. • External and Internal roof drain - storm water collection system. Part of this rainwater will be diverted back to a soil recharge system.
References	HVAC heating and cooling load estimate work sheet Electrical demand load estimate work sheet

Block "J" - Tower Residential - Retail/Restaurant	
Building General Description	
The building complex consists 10 stories, 86 residential apartment units totaling 77,000 SF occupying 8 stories, and retail/restaurant totaling 20,000 SF occupying two stories.	
System	**Base System Description**
HVAC	The base system shall consists of water cooled heat pump terminals, remote mounted induced draft cooling tower, condenser water distribution system, central energy recovery air handler units and central temperature control systems. • The apartment units will be provided with water cooled 410 refrigerant heat pump units with high efficient ECM motors and MERV 8 to MERV 13 filtration. The unit level controls shall be stand alone type wall mounted LCD thermostats with 24/7 programming capabilities. The program is not defined to the point where the kitchen exhaust system is described, if kitchen hoods are required the system shall be a centralized type with roof mounted exhaust fans, common vertical exhaust risers (sub-duct systems) and individual hood controls to allow efficient sizing of the common system, • Central located 100% outside supply air and exhaust air fans will provide air transfer to the individual apartment units and corridors heat pumps. The system is configured with main supply fans with filter section located at the roof level or penthouse delivering the outside air to a vertical common ductwork shafts, individual floor level branch take-offs to the heat pumps at the code minimum ventilation rate. The heat pumps shall be sized to handle the room load and the ventilation load. Vanderweil Engineers has developed recommended engineering system improvements over the baseline system as illustrated within the sustainable matrices recommendations worksheet. Under this case the recommended sustainable alternate is central energy recovery unit with total energy wheel in place of the central supply fan assembly. • The condenser water system shall consists of roof mounted induced draft cooling towers, plate and frame heat exchangers to decouple the tower water from the building side clean condenser water, pump assemblies for the tower side and building side with variable frequency drives, tower filtration assembly, chemical treatment for the open tower system and closed building side system, and distribution piping. The system shall provide condenser water to the individual condo units, common space terminal units and a 24/7 cooling requirements. The individual condo units have the option to be provided with energy meters "BTU" to monitor and track the condenser water (energy transfer rate) usage to translate the cost back to the condo tenants. • Heating hot water plant shall consist of modular high efficient condensing boilers, variable primary pumping configuration, chemical treatment, hot water specialties, distribution piping. Hot water system shall serve the heat pump loop. • The retail and restaurant will be provided condensing water and allocated shaft space for ventilation/make-up air and kitchen exhaust, RGV assumes at this point the retail and the restaurant are under the tenant fit-up. • Demand controlled ventilation (CO2) control for high occupancy spaces. • Toilet and misc. exhaust air systems. • The building will be provided with Direct Digital Controls (DDC) for the central systems and tenant energy monitoring.

Electrical	The electric service to the building will most likely be a single service at 480/277 from an Nstar transformer vault. The building will require a diesel powered emergency/standby generator. As a minimum, the generator will provide emergency and standby power for egress lighting, fire alarm, fire pump, stairwell pressurization fans, and elevators. The generator is anticipated to be located on the roof of the building.
Fire Protection	• The building's fire suppression system is a fully sprinkled building with dry sprinklers in un-heated areas such as loading docks. Each floor will be zoned seperately by means of a sprinkler control valve station. • Fire pump to supplement the municipal water pressure is an electric type, 125 horse power. • Fire Standpipes and fire department valves located in egress stairs.
Plumbing	• Water service is a separate feed from the municipal main. • A domestic water booster with a hydro pneumatic tank will be supplied to supplement municipal water pressure. The building's height indicates that there will be 2 domestic water pressure zones: 1st and 2nd level street pressure, 3rd thru 10th levels will be supplemented by the domestic water booster pump. • Low flow plumbing fixtures to meet the 1992 EPA guide lines. • Domestic hot water will be a central system fed by the mechanical boilers. • A sanitary building sewer, gravity system, will be provided. A single stack waste and vent system (trade name "SoVent") is proposed for the residential fixtures • Natural gas will be supplied for the boilers/heating system. Separately meter natural gas systems will be provide to the ground floor retail and to the residential units for cooking purposes. • Metering for domestic water and natural gas will be provided at the main service entrances. Sub-metering will be provided for the various uses in the building • A non-potable water system for mechanical make-up; system to include reduced pressure backflow preventor, distribution piping and insulation. • A non-potable water system for irrigation will be provided; system to include reduced pressure backflow preventor. • Internal roof drain - storm water collection system. Part of this rainwater will be diverted back to a soil recharge system.
References	HVAC heating and cooling load estimate work sheet Electrical demand load estimate work sheet

Block "K" - Residential Condo- Hotel - Retail	
Building General Description	
The building complex consists 17 stories, 215 residential condo units totaling 236,000 SF occupying eleven stories, 125 hotel units totaling 114,000 SF occupying three stories, retail/restaurant totaling 85,000 SF occupying two stories, one penthouse level, and three sub-level parking level.	
System	**Baseline System Description**
HVAC	The base system shall consists of water cooled heat pump terminals, remote mounted induced draft cooling towers, condenser water distribution system, hot water boiler plant, central energy recovery air handler units and central temperature control systems. The systems between the condo units and Hotel shall be completely separated to limit liability. • The condo units will be provided with water cooled 410 refrigerant heat pump units with high efficient ECM motors and MERV 8 to MERV 13 filtration. The unit level controls shall be stand alone type wall mounted LCD thermostats with 24/7 programming capabilities. The program is not defined to the point where the kitchen exhaust system is described, if kitchen hoods are required the system shall be a centralized type with roof mounted exhaust fans, common vertical exhaust risers (sub-duct systems) and individual hood controls to allow efficient sizing of the common system. • The Hotel units will be provided with water cooled 410 refrigerant heat pump units with high efficient ECM motors and MERV 8 to MERV 13 filtration. The hotel guest rooms shall be provided with room controller design specifically for hotel guest room functionality, this controller will incorporate a temperature sensor, occupancy sensor, card key assembly, lighting controls, Heat pump control integration, unoccuppied/occuppied control for energy reduction, etc. • Central located 100% outside supply air and exhaust air fans will provide air transfer to the individual Hotel guest rooms, condo units and corridor heat pumps. The system is configured with main supply fans with filter section located at the roof level or penthouse delivering the outside air to a vertical common ductwork shafts, individual floor level branch take-offs to the heat pumps at the code minimum ventilation rate. The heat pumps shall be sized to handle the room load and the ventilation load. Vanderweil Engineers has developed recommended engineering system improvements over the baseline system as illustrated within the sustainable matrices recommendations worksheet. Under this case the recommended sustainable alternate is central energy recovery unit with total energy wheel in place of the central supply fan assembly. • The condenser water system shall consists of roof mounted induced draft cooling towers, plate and frame heat exchangers to decouple the tower water from the building side clean condenser water, pump assemblies for the tower side and building side with variable frequency drives, tower filtration assembly, chemical treatment for the open tower system and closed building side system, and distribution piping. The system shall provide condenser water to the individual condo units, common space terminal units and a 24/7 cooling requirements. The individual condo units have the option to be provided with energy meters "BTU" to monitor and track the condenser water (energy transfer rate) usage to translate the cost back to the condo tenants. • Heating hot water plant shall consist of modular high efficient condensing boilers, variable primary pumping configuration, chemical treatment, hot water specialties, distribution piping. Hot water system shall serve the heat pump loop. • The sub-level parking garage shall be provided with central exhaust and supply air make-up system conforming to code, the system shall be controlled through CO monitoring and alarm system to allow the fans to vary capacity based on the CO levels within the zones. • The retail and restaurant will be provided condensing water and allocated shaft space for ventilation/make-up air and kitchen exhaust, RGV assumes at this point the retail and the restaurant are under the tenant fit-up. • The building will be provided with Direct Digital Controls (DDC) for the central systems and tenant energy monitoring.

Electrical	The preliminary load estimate for the building will require multiple 480/277 Volt services. It is likely that the service will be separated into two to four services based on the building program and electrical loads. The building will require a diesel powered emergency/standby generator. As a minimum, the generator will provide emergency/standby power for egress lighting, fire alarm, fire pump, stairwell pressurization fans, and elevators. It is also conceivable that the building will be equipped with an atrium requiring emergency/standby power for the atrium smoke exhaust systems. The generator is anticipated to be located on the roof of the building.
Fire Protection	• The building's fire suppression system is a fully sprinkled building with dry sprinklers in un-heated areas such as parking garage and loading docks. Each floor will be zoned seperately by means of a sprinkler control valve station. The larger unheated areas, such as the garage and loading dock will require a dry pipe valve and distribution piping. • Fire pump to supplement the municipal water pressure is an electric type, 250 horse power. • Fire Standpipes and fire department valves located in egress stairs.
Plumbing	• Water service is a separate feed from the municipal main. • A domestic water booster with a hydro pneumatic tank will be supplied to supplement municipal water pressure. The building's height indicates that there will be 5 domestic water pressure zones: 1st and 2nd are street pressure and is Zone 1, 3rd thru 7th Levels is zone 2, 8th thru 11th Levels is zone 3, 12th thru 16th Levels is zone 4, and 17th thru Penthouse Levels is zone 5. Zones 2 thru 5 are boosted and will be fed from an express domestic cold water riser. • Low flow plumbing fixtures to meet the 1992 EPA guide lines. • Domestic hot water for the condominum will be by point of use electric storage water heaters located in each of the residential units. The Hotel domestic water heating will be supplied from the hot water heating plant. The hot water distribution for the hotel will be divided into pressure zones indentical to the domestic cold water system. The system will be fully cirulated. It it is proposed that the retail tenants' will provide their own domestic hot water equipment. • A sanitary building sewer, gravity system, will be provided. A single stack waste and vent system (trade name "SoVent") is proposed for the residential units and a convential drain system for the retail spaces. • Natural gas will be supplied for the boilers/heating system. Separate metering of natural gas will be provided for the retail and the base building systems. • Metering for domestic water will be provided at the main service entrances. • A non-potable water system for mechanical make-up; system to include reduced pressure backflow preventor, distribution piping and insulation. • A non-potable water system for irrigation will be provided; system to include reduced pressure backflow preventor. • Internal roof drain - storm water collection system. Part of this rainwater will be diverted back to a soil recharge system. • A garage waste drainage system will be provided; this will include a gasoline & sand trap and an ejector station
References	HVAC heating and cooling load estimate work sheet Electrical demand load estimate work sheet

Block "L1" - Corporate Office - Retail	
Building General Description	
The building complex consists 21 stories, Office occupies 17 levels at 442,000 SF, Retail podium occupies 3 levels at 130,000 SF, one Penhouse level and three sub-levels of parking.	
System	**Baseline System Description**
HVAC	• The system concept is based on floor by floor DX self-contained variable volume air handler units, hot water high efficiency condensing boiler plant, remote mounted cooling towers, condenser water distribution system, dedicated central energy recovery air handler unit - provides 100% outdoor air to the floor by floor units and exhaust from the space/toilets, and controls. The packaged DX air handler units reject the heat from the compressors into the central condenser water loop and in return rejects the heat from the water to the air through the cooling tower process. • Heating hot water plant shall consist of modular high efficient condensing boilers, variable primary pumping configuration, chemical treatment, hot water specialties, distribution piping. Hot water system shall serve the offices tower, health club and retail. All tenants hot water connections shall be provided with energy meters "BTU" for monitoring and transferring the cost back to the tenant. • The condenser water system shall consists of roof mounted induced draft cooling towers, plate and frame heat exchangers to decouple the tower water from the building side clean condenser water, pump assemblies for the tower side and building side with variable frequency drives, tower filtration assembly, chemical treatment for the open tower system or no chemical system "Dolphin System" and closed building side system, and distribution piping. The system shall provide condenser water to the individual floor level packaged DX units and a 24/7 cooling requirements. The individual tenants will be provided with energy meters "BTU" to monitor and track the condenser water (energy transfer rate) usage to translate the cost back to the tenants. • Central located 100% outside supply and exhaust air fans will provide air transfer to the individual air handler mechanical room at each floor level. The system is configured with main supply fans with filter section located at the roof level or penthouse delivering the outside air to a vertical common ductwork shafts. The air distribiution shall consists of vertical supply and exhaust risers serving the individual floors mechaincal rooms, floor level branch take-offs to the indidivudal mechanical rooms through VAV boxes providing code required pre-conditioned ventilation air. Exhaust riser shall incorporate sub-duct fittings to avoid the fire/smoke damper assemblies, the exhaust from the comon floor level return air plenum shall be ducted back to the floor level exhaust bos and up through the vertical exhaust risers to the exhaust fans and then discharged to the atmophare. Vanderweil Engineers has developed recommended engineering system improvements over the baseline system as illustrated within the sustainable matrices recommendations worksheet. Under this case the recommended sustainable alternate is central energy recovery unit with total energy wheel in place of the central supply and exhaust fan assemblies. • Air handling units with supply fans, premium efficient motors, variable frequency drives, airflow measuring, face and bypass cooling and heating coils, airside economizers, pre-filters and MERV 13 final filters. Estimated quantities and sizes for each building are (2) at 50,000 cfm. • Air distribution- The floor level packaged DX air handler units conditioned is shall be distributed through a med pressure supply air duct loop within the interior zone. Brach take-offs to VAV boxes serving the interior zones and fan powered boxes with hot water reheat on the exterior zones. Fan powered boxes will be provided with variable speed ECM motors. •The retail zones will be provided with the base minimum ventilation air per code from central air handler units or energy recovery units. The air shall be distributed to the space through med pressure ductwork connected to zone level VAV boxes controlled from the central DDC system. Metered condenser water and hot water (to be reviewed) shall be provided to each tenant to connect to the tenant provided heat pumps. RGV to review the loads to determine if electric supplemental heat (provided by tenant) with the heat humps is more cost effective vs. the hot water distribution system. Restaurant and kitchens HVAC system will be based on heat pumps, base building supplied condenser water and minimum code supplied ventilation air through energy recovery units, kitchen make-up/grease exhaust ductwork shafts will be provided and space allocation for kitchen hood make-up air handler unit supplied by tenant.

	• The sub-level parking garage shall be provided with central exhaust and supply air make-up system conforming to code, the system shall be controlled through CO monitoring and alarm system to allow the fans to vary capacity based on the CO levels within the zones. The exhaust rate shall modulate between 1.5 CFM/SF to 0.5 CFM/SF. • Demand controlled ventilation (CO2) control for high occupancy spaces. • Toilet and misc. exhaust air systems. • Hot water radiant floor heating system for Lobby spaces. • The building will be provided with Direct Digital Controls (DDC) for the central systems and tenant energy monitoring.
Electrical	The preliminary load estimate for the building will require multiple 480/277 Volt services. It is likely that the service will be separated into at least two services based on the building program and electrical loads. The building will require a diesel powered emergency/standby generator. As a minimum, the generator will provide emergency/standby power for egress lighting, fire alarm, fire pump, stairwell pressurization fans, and elevators. The generator is anticipated to be located on the roof of the building.
Fire Protection	• The building's fire suppression system is a fully sprinkled building. Dry sprinklers will be provided in un-heated areas such as parking garage and loading docks. Each floor will be zoned separately by means of a sprinkler control valve station. The larger unheated areas, such as the garage and loading dock will require a dry pipe valve and distribution piping. • Fire pump to supplement the municipal water pressure is an electric type, 250 horse power. • Fire Standpipes and fire department valves located in egress stairs.
Plumbing	• Water service is a separate feed from the municipal main. • A domestic water booster with a hydro pneumatic tank will be supplied to supplement municipal water pressure. The building's height indicates that there will be 4 domestic water pressure zones: 1st, 2nd and 3rd Levels street pressure and is Zone 1, 4th thru 8th Levels is zone 2, 9th thru 14th Levels is zone 3, 15th thru Penthouse Levels is zone 4. Zones 2 thru 4 are boosted and will be fed from an express domestic cold water riser. • Low flow plumbing fixtures to meet the 1992 EPA guide lines. • Domestic hot water will be point-of-use electric storage water heaters located in the core areas. There will be one heater to serve three floors. Each heater will be equipped with a circulation pump to maintain hot water at each fixture. It is proposed that the retail tenants' will provide their own domestic hot water equipment. • A sanitary building sewer, gravity system, will be provided. • Natural gas will be supplied for the boilers/heating system. Separate metering of natural gas will be provided for the retail and the base building systems. • Metering for domestic water will be provided at the main service entrances. • A non-potable water system for mechanical make-up; system to include reduced pressure backflow preventor, distribution piping and insulation. • A non-potable water system for irrigation will be provided; system to include reduced pressure backflow preventor. • Internal roof drain - storm water collection system. Part of this rainwater will be diverted back to a soil recharge system. • A garage waste drainage system will be provided; this will include a gasoline & sand trap and an ejector station
References	HVAC heating and cooling load estimate work sheet Electrical demand load estimate work sheet

Block "L2" - Corporate Office - Retail	
Building General Description	
The building complex consists 21 stories, Office occupies 17 levels at 442,000 SF, Retail podium occupies 3 levels at 130,000 SF, one Penhouse level and three sub-levels of parking.	
System	**Baseline System Description**
HVAC	• The system concept is based on floor by floor DX self-contained variable volume air handler units, hot water high efficiency condensing boiler plant, remote mounted cooling towers, condenser water distribution system, dedicated central energy recovery air handler unit - provides 100% outdoor air to the floor by floor units and exhaust from the space/toilets, and controls. The packaged DX air handler units reject the heat from the compressors into the central condenser water loop and in return rejects the heat from the water to the air through the cooling tower process. • Heating hot water plant shall consist of modular high efficient condensing boilers, variable primary pumping configuration, chemical treatment, hot water specialties, distribution piping. Hot water system shall serve the offices tower, health club and retail. All tenants hot water connections shall be provided with energy meters "BTU" for monitoring and transferring the cost back to the tenant. • The condenser water system shall consists of roof mounted induced draft cooling towers, plate and frame heat exchangers to decouple the tower water from the building side clean condenser water, pump assemblies for the tower side and building side with variable frequency drives, tower filtration assembly, chemical treatment for the open tower system or no chemical system "Dolphin System" and closed building side system, and distribution piping. The system shall provide condenser water to the individual floor level packaged DX units and a 24/7 cooling requirements. The individual tenants will be provided with energy meters "BTU" to monitor and track the condenser water (energy transfer rate) usage to translate the cost back to the tenants. • Central located 100% outside supply and exhaust air fans will provide air transfer to the individual air handler mechanical room at each floor level. The system is configured with main supply fans with filter section located at the roof level or penthouse delivering the outside air to a vertical common ductwork shafts. The air distribiution shall consists of vertical supply and exhaust risers serving the individual floors mechaincal rooms, floor level branch take-offs to the indidivudal mechanical rooms through VAV boxes providing code required pre-conditioned ventilation air. Exhaust riser shall incorporate sub-duct fittings to avoid the fire/smoke damper assemblies, the exhaust from the comon floor level return air plenum shall be ducted back to the floor level exhaust bos and up through the vertical exhaust risers to the exhaust fans and then discharged to the atmophare. Vanderweil Engineers has developed recommended engineering system improvements over the baseline system as illustrated within the sustainable matrices recommendations worksheet. Under this case the recommended sustainable alternate is central energy recovery unit with total energy wheel in place of the central supply and exhaust fan assemblies. • Self-contained air handling units with double walled construction, compressors, supply fans, premium efficient motors, variable frequency drives, airflow measuring, cooling and heating coils, pre-filters and MERV 13 final filters. • Air distribution- The floor level packaged DX air handler units conditioned is shall be distributed through a med pressure supply air duct loop within the interior zone. Brach take-offs to VAV boxes serving the interior zones and fan powered boxes with hot water reheat on the exterior zones. Fan powered boxes will be provided with variable speed ECM motors. • The retail zones will be provided with the base minimum ventilation air per code from central air handler units or energy recovery units. The air shall be distributed to the space through med pressure ductwork connected to zone level VAV boxes controlled from the central DDC system. Metered condenser water and hot water (to be reviewed) shall be provided to each tenant to connect to the tenant provided heat pumps. RGV to review the loads to determine if electric supplemental heat (provided by tenant) with the heat humps is more cost effective vs. the hot water distribution system. Restaurant and kitchens HVAC system will be based on heat pumps, base building supplied condenser water and minimum code supplied ventilation air through energy recovery units, kitchen make-up/grease exhaust ductwork shafts will be provided and space allocation for kitchen hood make-up air handler unit supplied by tenant.

	• The sub-level parking garage shall be provided with central exhaust and supply air make-up system conforming to code, the system shall be controlled through CO monitoring and alarm system to allow the fans to vary capacity based on the CO levels within the zones. The exhaust rate shall modulate between 1.5 CFM/SF to 0.5 CFM/SF. • Demand controlled ventilation (CO2) control for high occupancy spaces. • Toilet and misc. exhaust air systems. • Hot water radiant floor heating system for Lobby spaces. • The building will be provided with Direct Digital Controls (DDC) for the central systems and tenant energy monitoring.
Electrical	The preliminary load estimate for the building will require multiple 480/277 Volt services. It is likely that the service will be separated into at least two services based on the building program and electrical loads. The building will require a diesel powered emergency/standby generator. As a minimum, the generator will provide emergency/standby power for egress lighting, fire alarm, fire pump, stairwell pressurization fans, and elevators. The generator is anticipated to be located on the roof of the building.
Fire Protection	• The building's fire suppression system is a fully sprinkled building. Dry sprinklers will be provided in un-heated areas such as parking garage and loading docks. Each floor will be zoned separately by means of a sprinkler control valve station. The larger unheated areas, such as the garage and loading dock will require a dry pipe valve and distribution piping. • Fire pump to supplement the municipal water pressure is an electric type, 250 horse power. • Fire Standpipes and fire department valves located in egress stairs.
Plumbing	• Water service is a separate feed from the municipal main. • A domestic water booster with a hydro pneumatic tank will be supplied to supplement municipal water pressure. The building's height indicates that there will be 4 domestic water pressure zones: 1st, 2nd and 3rd Levels street pressure and is Zone 1, 4th thru 8th Levels is zone 2, 9th thru 14th Levels is zone 3, 15th thru Penthouse Levels is zone 4. Zones 2 thru 4 are boosted and will be fed from an express domestic cold water riser. • Low flow plumbing fixtures to meet the 1992 EPA guide lines. • Domestic hot water will be point-of-use electric storage water heaters located in the core areas. There will be one heater to serve three floors. Each heater will be equipped with a circulation pump to maintain hot water at each fixture. It is proposed that the retail tenants' will provide their own domestic hot water equipment. • A sanitary building sewer, gravity system, will be provided. • Natural gas will be supplied for the boilers/heating system. Separate metering of natural gas will be provided for the retail and the base building systems. • Metering for domestic water will be provided at the main service entrances. • A non-potable water system for mechanical make-up; system to include reduced pressure backflow preventor, distribution piping and insulation. • A non-potable water system for irrigation will be provided; system to include reduced pressure backflow preventor. • Internal roof drain - storm water collection system. Part of this rainwater will be diverted back to a soil recharge system. • A garage waste drainage system will be provided; this will include a gasoline & sand trap and an ejector station
References	HVAC heating and cooling load estimate work sheet Electrical demand load estimate work sheet

Block "L3" - Tower Residential - Retail/Restaurant	
Building General Description	
The building complex consists 18 stories, 252 residential apartment units totaling 252,000 SF occupying 16 stories, One level Penthouse, retail/restaurant totaling 42,000 SF occupying 2 levels	
System	**Base System Description**
	The base system shall consists of water cooled heat pump terminals, remote mounted induced draft cooling tower, condenser water distribution system, central energy recovery air handler units and central temperature control systems. • The apartment units will be provided with water cooled 410 refrigerant heat pump units with high efficient ECM motors and MERV 8 to MERV 13 filtration. The unit level controls shall be stand alone type wall mounted LCD thermostats with 24/7 programming capabilities. The program is not defined to the point where the kitchen exhaust system is described, if kitchen hoods are required the system shall be a centralized type with roof mounted exhaust fans, common vertical exhaust risers (sub-duct systems) and individual hood controls to allow efficient sizing of the common system, • Central located 100% outside supply air and exhaust air fans will provide air to the individual apartment units and corridors heat pumps. The system is configured with main supply fans with filter section located at the roof level or penthouse delivering the outside air to a vertical common ductwork shafts, individual floor level branch take-offs to the heat pumps at the code minimum ventilation rate. The heat pumps shall be sized to handle the room load and the ventilation load. Vanderweil Engineers has developed recommended engineering system improvements over the baseline system as illustrated within the sustainable matrices recommendations worksheet. Under this case the recommended sustainable alternate is central energy recovery unit with total energy wheel in place of the central supply fan assembly. • The condenser water system shall consists of roof mounted induced draft cooling towers, plate and frame heat exchangers to decouple the tower water from the building side clean condenser water, pump assemblies for the tower side and building side with variable frequency drives, tower filtration assembly, chemical treatment for the open tower system and closed building side system, and distribution piping. The system shall provide condenser water to the individual condo units, common space terminal units and a 24/7 cooling requirements. The individual apartment units have the option to be provided with energy meters "BTU" to monitor and track the condenser water (energy transfer rate) usage to translate the cost back to the condo tenants. Heating hot water plant shall consist of modular high efficient condensing boilers, variable primary pumping configuration, chemical treatment, hot water specialties, distribution piping. Hot water system shall serve the heat pump loop. • The sub-level parking garage shall be provided with central exhaust and supply air make-up system conforming to code, the system shall be controlled through CO monitoring and alarm system to allow the fans to vary capacity based on the CO levels within the zones. The retail and restaurant will be provided condensing water and allocated shaft space for ventilation/make-up air and kitchen exhaust, RGV assumes at this point the retail and the restaurant are under the tenant fit-up. • Demand controlled ventilation (CO2) control for high occupancy spaces. • Toilet and misc. exhaust air systems. • The building will be provided with Direct Digital Controls (DDC) for the central systems and tenant energy monitoring.
Electrical	The preliminary load estimate for the building will require multiple 480/277 Volt services. It is possible that the service will be separated into two services based on the building program and electrical loads. The actual configuration of the service will be determined as the design progresses. The building will require a diesel powered emergency/standby generator. As a minimum, the generator will provide emergency/standby power for egress lighting, fire alarm, fire pump, stairwell pressurization fans, and elevators. It is also conceivable that the building will be equipped with an atrium requiring emergency/standby power for the atrium smoke exhaust systems. The generator is anticipated to be located on the roof of the building.

Fire Protection	• The building's fire suppression system is a fully sprinkled building with dry sprinklers in un-heated areas such as parking garage and loading docks. Each floor will be zoned seperately by means of a sprinkler control valve station. The larger unheated areas, such as the garage and loading dock will require a dry pipe valve and distribution piping. • Fire pump to supplement the municipal water pressure is an electric type, 250 horse power. • Fire Standpipes and fire department valves located in egress stairs.
Plumbing	• Water service is a separate feed from the municipal main. • A domestic water booster with a hydro pneumatic tank will be supplied to supplement municipal water pressure. The building's height indicates that there will be 4 domestic water pressure zones: 1st Level is street pressure and is Zone 1, 2nd thru 8th Levels is zone 2, 9th thru 15th Levels is zone 3, 16th thru Penthouse Levels is zone 4. Zones 2 thru 4 are boosted and will be fed from an express domestic cold water riser. • Low flow plumbing fixtures to meet the 1992 EPA guide lines. • Domestic hot water will be supplied from the hot water heating plant. The hot water distribution will be divided into pressure zones identical to the domestic cold water system. The system will be fully cirulated. It is proposed that the retail tenant's will provide their own domestic hot water equipment. • A sanitary building sewer, gravity system, will be provided. A single stack waste and vent system (trade name "SoVent") is proposed for the residential units and a convential drain system for the retail spaces. • Natural gas will be supplied for the boilers/heating system. Separate metering of natural gas will be provided for the retail and the base building systems. • Metering for domestic water will be provided at the main service entrances. • A non-potable water system for mechanical make-up; system to include reduced pressure backflow preventor, distribution piping and insulation. • A non-potable water system for irrigation will be provided; system to include reduced pressure backflow preventor. • Internal roof drain - storm water collection system. Part of this rainwater will be diverted back to a soil recharge system. • A garage waste drainage system will be provided; this will include a gasoline & sand trap and an ejector station
References	HVAC heating and cooling load estimate work sheet Electrical demand load estimate work sheet

Block "L4" - Tower Residential Apartments/Condo- Retail/Restaurant	
Building General Description	
The building complex consists 22 stories, 60 residential apartment units totaling 60,000 SF occupying 5 stories, 218 residential condo units totaling 240,000 SF occupying 20 stories, One level Penthouse, retail/restaurant totaling 42,000 SF occupying 2 levels and three levels of under ground parking	
System	**Base System Description**
HVAC	The base system shall consists of water cooled heat pump terminals, remote mounted induced draft cooling tower, condenser water distribution system, central energy recovery air handler units and central temperature control systems. • The apartment and Condo units will be provided with water cooled 410 refrigerant heat pump units with high efficient ECM motors and MERV 8 to MERV 13 filtration. The unit level controls shall be stand alone type wall mounted LCD thermostats with 24/7 programming capabilities. The program is not defined to the point where the kitchen exhaust system is described, if kitchen hoods are required the system shall be a centralized type with roof mounted exhaust fans, common vertical exhaust risers (sub-duct systems) and individual hood controls to allow efficient sizing of the common system, • Central located 100% outside supply air and exhaust air fans will provide air transfer to the individual apartments, condo units and corridor heat pumps. The system is configured with main supply fans with filter section located at the roof level or penthouse delivering the outside air to a vertical common ductwork shafts, individual floor level branch take-offs to the heat pumps at the code minimum ventilation rate. The heat pumps shall be sized to handle the room load and the ventilation load. Vanderweil Engineers has developed recommended engineering system improvements over the baseline system as illustrated within the sustainable matrices recommendations worksheet. Under this case the recommended sustainable alternate is central energy recovery unit with total energy wheel in place of the central supply fan assembly. • The condenser water system shall consists of roof mounted induced draft cooling towers, plate and frame heat exchangers to decouple the tower water from the building side clean condenser water, pump assemblies for the tower side and building side with variable frequency drives, tower filtration assembly, chemical treatment for the open tower system and closed building side system, and distribution piping. The system shall provide condenser water to the individual apartments, condo units, common space terminal units and a 24/7 cooling requirements. The individual apartment and Condo units have the option to be provided with energy meters "BTU" to monitor and track the condenser water (energy transfer rate) usage to translate the cost back to the condo tenants. Heating hot water plant shall consist of modular high efficient condensing boilers, variable primary pumping configuration, chemical treatment, hot water specialties, distribution piping. Hot water system shall serve the heat pump loop. • The sub-level parking garage shall be provided with central exhaust and supply air make-up system conforming to code, the system shall be controlled through CO monitoring and alarm system to allow the fans to vary capacity based on the CO levels within the zones. The retail and restaurant will be provided condensing water and allocated shaft space for ventilation/make-up air and kitchen exhaust, RGV assumes at this point the retail and the restaurant are under the tenant fit-up. • Demand controlled ventilation (CO2) control for high occupancy spaces. • Toilet and misc. exhaust air systems. • The building will be provided with Direct Digital Controls (DDC) for the central systems and tenant energy monitoring.

Electrical	The preliminary load estimate for the building will require multiple 480/277 Volt services. It is likely that the service will be separated into at least two services based on the building program and electrical loads. The building will require a diesel powered emergency/standby generator. As a minimum, the generator will provide emergency/standby power for egress lighting, fire alarm, fire pump, stairwell pressurization fans, and elevators. It is also conceivable that the building will be equipped with an atrium requiring emergency/standby power for the atrium smoke exhaust systems. The generator is anticipated to be located on the roof of the building.
Fire Protection	• The building's fire suppression system is a fully sprinkled building with dry sprinklers in un-heated areas such as parking garage and loading docks. Each floor will be zoned seperately by means of a sprinkler control valve station. The larger unheated areas, such as the garage and loading dock will require a dry pipe valve and distribution piping. • Fire pump to supplement the municipal water pressure is an electric type, 250 horse power. • Fire Standpipes and fire department valves located in egress stairs.
Plumbing	• Water service is a separate feed from the municipal main. • A domestic water booster with a hydro pneumatic tank will be supplied to supplement municipal water pressure. The building's height indicates that there will be 4 domestic water pressure zones: 1st, 2nd and 3rd Levels are street pressure and is Zone 1, 4rd thru 8th Levels is zone 2, 9th thru 15th Levels is zone 3, 16th thru Penthouse Levels is zone 4. Zones 2 thru 4 are boosted and will be fed from an express domestic cold water riser. • Low flow plumbing fixtures to meet the 1992 EPA guide lines. • Domestic hot water will be by point of use electric storage water heaters located in each of the residential units. I it is proposed that the retail tenants' will provide their own domestic hot water equipment. • A sanitary building sewer, gravity system, will be provided. A single stack waste and vent system (trade name "SoVent") is proposed for the residential units and a convential drain system for the retail spaces. • Natural gas will be supplied for the boilers/heating system. Separate metering of natural gas will be provided for the retail and the base building systems. • Metering for domestic water will be provided at the main service entrances. • A non-potable water system for mechanical make-up; system to include reduced pressure backflow preventor, distribution piping and insulation. • A non-potable water system for irrigation will be provided; system to include reduced pressure backflow preventor. • Internal roof drain - storm water collection system. Part of this rainwater will be diverted back to a soil recharge system. • A garage waste drainage system will be provided; this will include a gasoline & sand trap and an ejector station
References	HVAC heating and cooling load estimate work sheet Electrical demand load estimate work sheet

Block "L5" - Tower Residential Apartments/Condo- Retail/Restaurant	
Building General Description	
The building complex consists 24 stories, 96 residential apartment units totaling 96,000 SF occupying 8 stories, 240 residential condo units totaling 264,000 SF occupying 22 stories, One level Penthouse, retail/restaurant totaling 30,000 SF occupying 1 level, three levels of underground parking	
System	**Base System Description**
HVAC	The base system shall consists of water cooled heat pump terminals, remote mounted induced draft cooling tower, condenser water distribution system, central energy recovery air handler units and central temperature control systems. • The apartment and Condo units will be provided with water cooled 410 refrigerant heat pump units with high efficient ECM motors and MERV 8 to MERV 13 filtration. The unit level controls shall be stand alone type wall mounted LCD thermostats with 24/7 programming capabilities. The program is not defined to the point where the kitchen exhaust system is described, if kitchen hoods are required the system shall be a centralized type with roof mounted exhaust fans, common vertical exhaust risers (sub-duct systems) and individual hood controls to allow efficient sizing of the common system, • Central located 100% outside supply air and exhaust air fans will provide air transfer to the individual apartments, condo units and corridor heat pumps. The system is configured with main supply fans with filter section located at the roof level or penthouse delivering the outside air to a vertical common ductwork shafts, individual floor level branch take-offs to the heat pumps at the code minimum ventilation rate. The heat pumps shall be sized to handle the room load and the ventilation load. Vanderweil Engineers has developed recommended engineering system improvements over the baseline system as illustrated within the sustainable matrices recommendations worksheet. Under this case the recommended sustainable alternate is central energy recovery unit with total energy wheel in place of the central supply fan assembly. • The condenser water system shall consists of roof mounted induced draft cooling towers, plate and frame heat exchangers to decouple the tower water from the building side clean condenser water, pump assemblies for the tower side and building side with variable frequency drives, tower filtration assembly, chemical treatment for the open tower system and closed building side system, and distribution piping. The system shall provide condenser water to the individual condo units, common space terminal units and a 24/7 cooling requirements. The individual apartment and condo units have the option to be provided with energy meters "BTU" to monitor and track the condenser water (energy transfer rate) usage to translate the cost back to the condo tenants. Heating hot water plant shall consist of modular high efficient condensing boilers, variable primary pumping configuration, chemical treatment, hot water specialties, distribution piping. Hot water system shall serve the heat pump loop. • The sub-level parking garage shall be provided with central exhaust and supply air make-up system conforming to code, the system shall be controlled through CO monitoring and alarm system to allow the fans to vary capacity based on the CO levels within the zones. The retail and restaurant will be provided condensing water and allocated shaft space for ventilation/make-up air and kitchen exhaust, RGV assumes at this point the retail and the restaurant are under the tenant fit-up. • Demand controlled ventilation (CO2) control for high occupancy spaces. • Toilet and misc. exhaust air systems. • The building will be provided with Direct Digital Controls (DDC) for the central systems and tenant energy monitoring.

Electrical	The preliminary load estimate for the building will require multiple 480/277 Volt services. It is likely that the service will be separated into two to four services based on the building program and electrical loads. The building will require a diesel powered emergency/standby generator. As a minimum, the generator will provide emergency/standby power for egress lighting, fire alarm, fire pump, stairwell pressurization fans, and elevators. It is also conceivable that the building will be equipped with an atrium requiring emergency/standby power for the atrium smoke exhaust systems. The generator is anticipated to be located on the roof of the building.
Fire Protection	• The building's fire suppression system is a fully sprinkled building with dry sprinklers in un-heated areas such as parking garage and loading docks. Each floor will be zoned seperately by means of a sprinkler control valve station. The larger unheated areas, such as the garage and loading dock will require a dry pipe valve and distribution piping. • Fire pump to supplement the municipal water pressure is an electric type, 250 horse power. • Fire Standpipes and fire department valves located in egress stairs.
Plumbing	• Water service is a separate feed from the municipal main. • A domestic water booster with a hydro pneumatic tank will be supplied to supplement municipal water pressure. The building's height indicates that there will be 4 domestic water pressure zones: 1st, 2nd and 3rd Levels are street pressure and is Zone 1, 4rd thru 9th Levels is zone 2, 10th thru 17th Levels is zone 3, 18th thru Penthouse Levels is zone 4. Zones 2 thru 4 are boosted and will be fed from an express domestic cold water riser. • Low flow plumbing fixtures to meet the 1992 EPA guide lines. • Domestic hot water will be by point of use electric storage water heaters located in each of the residential units. I it is proposed that the retail tenants' will provide their own domestic hot water equipment. • A sanitary building sewer, gravity system, will be provided. A single stack waste and vent system (trade name "SoVent") is proposed for the residential units and a convential drain system for the retail spaces. • Natural gas will be supplied for the boilers/heating system. Separate metering of natural gas will be provided for the retail and the base building systems. • Metering for domestic water will be provided at the main service entrances. • A non-potable water system for mechanical make-up; system to include reduced pressure backflow preventor, distribution piping and insulation. • A non-potable water system for irrigation will be provided; system to include reduced pressure backflow preventor. • Internal roof drain - storm water collection system. Part of this rainwater will be diverted back to a soil recharge system. • A garage waste drainage system will be provided; this will include a gasoline & sand trap and an ejector station
References	HVAC heating and cooling load estimate work sheet Electrical demand load estimate work sheet

Block "L6" - Tower Residential Apartments - Retail/Restaurant	
Building General Description	
The building complex consists 19 stories, 276 residential apartment units totaling 276,000 SF occupying 17 stories, One level Penthouse, retail/restaurant totaling 22,000 SF occupying one level, and three levels of parking.	
System	**Base System Description**
HVAC	The base system shall consists of water cooled heat pump terminals, remote mounted induced draft cooling tower, condenser water distribution system, central energy recovery air handler units and central temperature control systems. • The apartment units will be provided with water cooled 410 refrigerant heat pump units with high efficient ECM motors and MERV 8 to MERV 13 filtration. The unit level controls shall be stand alone type wall mounted LCD thermostats with 24/7 programming capabilities. The program is not defined to the point where the kitchen exhaust system is described, if kitchen hoods are required the system shall be a centralized type with roof mounted exhaust fans, common vertical exhaust risers (sub-duct systems) and individual hood controls to allow efficient sizing of the common system, • Central located 100% outside supply air and exhaust air fans will provide air to the individual apartment units and corridors heat pumps. The system is configured with main supply fans with filter section located at the roof level or penthouse delivering the outside air to a vertical common ductwork shafts, individual floor level branch take-offs to the heat pumps at the code minimum ventilation rate. The heat pumps shall be sized to handle the room load and the ventilation load. Vanderweil Engineers has developed recommended engineering system improvements over the baseline system as illustrated within the sustainable matrices recommendations worksheet. Under this case the recommended sustainable alternate is central energy recovery unit with total energy wheel in place of the central supply fan assembly. • The condenser water system shall consists of roof mounted induced draft cooling towers, plate and frame heat exchangers to decouple the tower water from the building side clean condenser water, pump assemblies for the tower side and building side with variable frequency drives, tower filtration assembly, chemical treatment for the open tower system and closed building side system, and distribution piping. The system shall provide condenser water to the individual condo units, common space terminal units and a 24/7 cooling requirements. The individual apartment units have the option to be provided with energy meters "BTU" to monitor and track the condenser water (energy transfer rate) usage to translate the cost back to the condo tenants. Heating hot water plant shall consist of modular high efficient condensing boilers, variable primary pumping configuration, chemical treatment, hot water specialties, distribution piping. Hot water system shall serve the heat pump loop. • The sub-level parking garage shall be provided with central exhaust and supply air make-up system conforming to code, the system shall be controlled through CO monitoring and alarm system to allow the fans to vary capacity based on the CO levels within the zones. The retail and restaurant will be provided condensing water and allocated shaft space for ventilation/make-up air and kitchen exhaust, RGV assumes at this point the retail and the restaurant are under the tenant fit-up. • Demand controlled ventilation (CO2) control for high occupancy spaces. • Toilet and misc. exhaust air systems. • The building will be provided with Direct Digital Controls (DDC) for the central systems and tenant energy monitoring.

Electrical	The preliminary load estimate for the building will require multiple 480/277 Volt services. It is possible that the service will be separated into two services based on the building program and electrical loads. The actual configuration of the service will be determined as the design progresses. The building will require a diesel powered emergency/standby generator. As a minimum, the generator will provide emergency/standby power for egress lighting, fire alarm, fire pump, stairwell pressurization fans, and elevators. It is also conceivable that the building will be equipped with an atrium requiring emergency/standby power for the atrium smoke exhaust systems. The generator is anticipated to be located on the roof of the building.
Fire Protection	• The building's fire suppression system is a fully sprinkled building with dry sprinklers in un-heated areas such as parking garage and loading docks. Each floor will be zoned seperately by means of a sprinkler control valve station. The larger unheated areas, such as the garage and loading dock will require a dry pipe valve and distribution piping. • Fire pump to supplement the municipal water pressure is an electric type, 250 horse power. • Fire Standpipes and fire department valves located in egress stairs.
Plumbing	• Water service is a separate feed from the municipal main. • A domestic water booster with a hydro pneumatic tank will be supplied to supplement municipal water pressure. The building's height indicates that there will be 4 domestic water pressure zones: 1st Level is street pressure and is Zone 1, 2nd thru 8th Levels is zone 2, 9th thru 15th Levels is zone 3, 16th thru Penthouse Levels is zone 4. Zones 2 thru 4 are boosted and will be fed from an express domestic cold water riser. • Low flow plumbing fixtures to meet the 1992 EPA guide lines. • Domestic hot water will be supplied from the hot water heating plant. The hot water distribution will be divided into pressure zones identical to the domestic cold water system. The system will be fully cirulated. It is proposed that the retail tenant's will provide their own domestic hot water equipment. • A sanitary building sewer, gravity system, will be provided. A single stack waste and vent system (trade name "SoVent") is proposed for the residential units and a convential drain system for the retail spaces. • Natural gas will be supplied for the boilers/heating system. Separate metering of natural gas will be provided for the retail and the base building systems. • Metering for domestic water will be provided at the main service entrances. • A non-potable water system for mechanical make-up; system to include reduced pressure backflow preventor, distribution piping and insulation. • A non-potable water system for irrigation will be provided; system to include reduced pressure backflow preventor. • Internal roof drain - storm water collection system. Part of this rainwater will be diverted back to a soil recharge system. • A garage waste drainage system will be provided; this will include a gasoline & sand trap and an ejector station
References	HVAC heating and cooling load estimate work sheet Electrical demand load estimate work sheet

Block "M1" - Tower Residential Apartments - Retail/Restaurant	
Building General Description	
The building complex consists 22 stories, 60 residential apartment units totaling 60,000 SF occupying 5 stories, 196 residential condo units totaling 216,000 SF occupying 18 stories, One level Penthouse, retail/restaurant totaling 200,000 SF occupying three levels, and three levels of parking.	
System	**Base System Description**
HVAC	The base system shall consists of water cooled heat pump terminals, remote mounted induced draft cooling tower, condenser water distribution system, central energy recovery air handler units and central temperature control systems. • The apartment and condo units will be provided with water cooled 410 refrigerant heat pump units with high efficient ECM motors and MERV 8 to MERV 13 filtration. The unit level controls shall be stand alone type wall mounted LCD thermostats with 24/7 programming capabilities. The program is not defined to the point where the kitchen exhaust system is described, if kitchen hoods are required the system shall be a centralized type with roof mounted exhaust fans, common vertical exhaust risers (sub-duct systems) and individual hood controls to allow efficient sizing of the common system, • Central located 100% outside supply air and exhaust air fans will provide air transfer to the individual apartments, condo units and corridor heat pumps. The system is configured with main supply fans with filter section located at the roof level or penthouse delivering the outside air to a vertical common ductwork shafts, individual floor level branch take-offs to the heat pumps at the code minimum ventilation rate. The heat pumps shall be sized to handle the room load and the ventilation load. Vanderweil Engineers has developed recommended engineering system improvements over the baseline system as illustrated within the sustainable matrices recommendations worksheet. Under this case the recommended sustainable alternate is central energy recovery unit with total energy wheel in place of the central supply fan assembly. • The condenser water system shall consists of roof mounted induced draft cooling towers, plate and frame heat exchangers to decouple the tower water from the building side clean condenser water, pump assemblies for the tower side and building side with variable frequency drives, tower filtration assembly, chemical treatment for the open tower system and closed building side system, and distribution piping. The system shall provide condenser water to the individual condo units, common space terminal units and a 24/7 cooling requirements. The individual apartment units have the option to be provided with energy meters "BTU" to monitor and track the condenser water (energy transfer rate) usage to translate the cost back to the condo tenants. •Heating hot water plant shall consist of modular high efficient condensing boilers, variable primary pumping configuration, chemical treatment, hot water specialties, distribution piping. Hot water system shall serve the heat pump loop. • The sub-level parking garage shall be provided with central exhaust and supply air make-up system conforming to code, the system shall be controlled through CO monitoring and alarm system to allow the fans to vary capacity based on the CO levels within the zones. •The retail and restaurant will be provided condensing water and allocated shaft space for ventilation/make-up air and kitchen exhaust, RGV assumes at this point the retail and the restaurant are under the tenant fit-up. • Demand controlled ventilation (CO2) control for high occupancy spaces. • Toilet and misc. exhaust air systems. • The building will be provided with Direct Digital Controls (DDC) for the central systems and tenant energy monitoring.

Electrical	The preliminary load estimate for the building will require multiple 480/277 Volt services. It is likely that the service will be separated into two to four services based on the building program and electrical loads. The building will require a diesel powered emergency/standby generator. As a minimum, the generator will provide emergency/standby power for egress lighting, fire alarm, fire pump, stairwell pressurization fans, and elevators. It is also conceivable that the building will be equipped with an atrium requiring emergency/standby power for the atrium smoke exhaust systems. The generator is anticipated to be located on the roof of the building.
Fire Protection	• The building's fire suppression system is a fully sprinkled building with dry sprinklers in un-heated areas such as parking garage and loading docks. Each floor will be zoned seperately by means of a sprinkler control valve station. The larger unheated areas, such as the garage and loading dock will require a dry pipe valve and distribution piping. • Fire pump to supplement the municipal water pressure is an electric type, 250 horse power. • Fire Standpipes and fire department valves located in egress stairs.
Plumbing	• Water service is a separate feed from the municipal main. • A domestic water booster with a hydro pneumatic tank will be supplied to supplement municipal water pressure. The building's height indicates that there will be 4 domestic water pressure zones: 1st, 2nd and 3rd Levels are street pressure and is Zone 1, 4rd thru 10th Levels is zone 2, 11th thru 17th Levels is zone 3, 18th thru Penthouse Levels is zone 4. Zones 2 thru 4 are boosted and will be fed from an express domestic cold water riser. • Low flow plumbing fixtures to meet the 1992 EPA guide lines. • Domestic hot water will be by point of use electric storage water heaters located in each of the residential units. I it is proposed that the retail tenants' will provide their own domestic hot water equipment. • A sanitary building sewer, gravity system, will be provided. A single stack waste and vent system (trade name "SoVent") is proposed for the residential units and a convential drain system for the retail spaces. • Natural gas will be supplied for the boilers/heating system. Separate metering of natural gas will be provided for the retail and the base building systems. • Metering for domestic water will be provided at the main service entrances. • A non-potable water system for mechanical make-up; system to include reduced pressure backflow preventor, distribution piping and insulation. • A non-potable water system for irrigation will be provided; system to include reduced pressure backflow preventor. • Internal roof drain - storm water collection system. Part of this rainwater will be diverted back to a soil recharge system. • A garage waste drainage system will be provided; this will include a gasoline & sand trap and an ejector station
References	HVAC heating and cooling load estimate work sheet Electrical demand load estimate work sheet

Block "M2" - Tower Residential Apartments - Retail/Restaurant	
Building General Description	
The building complex consists 19 stories, 180 residential apartment units totaling 180,000 SF occupying 15 stories, One level Penthouse, retail/restaurant totaling 83,000 SF occupying three levels, and three levels of parking.	
System	**Base System Description**
HVAC	The base system shall consists of water cooled heat pump terminals, remote mounted induced draft cooling tower, condenser water distribution system, central energy recovery air handler units and central temperature control systems. • The apartment units will be provided with water cooled 410 refrigerant heat pump units with high efficient ECM motors and MERV 8 to MERV 13 filtration. The unit level controls shall be stand alone type wall mounted LCD thermostats with 24/7 programming capabilities. The program is not defined to the point where the kitchen exhaust system is described, if kitchen hoods are required the system shall be a centralized type with roof mounted exhaust fans, common vertical exhaust risers (sub-duct systems) and individual hood controls to allow efficient sizing of the common system, • Central located 100% outside supply air and exhaust air fans will provide air to the individual apartment units and corridors heat pumps. The system is configured with main supply fans with filter section located at the roof level or penthouse delivering the outside air to a vertical common ductwork shafts, individual floor level branch take-offs to the heat pumps at the code minimum ventilation rate. The heat pumps shall be sized to handle the room load and the ventilation load. Vanderweil Engineers has developed recommended engineering system improvements over the baseline system as illustrated within the sustainable matrices recommendations worksheet. Under this case the recommended sustainable alternate is central energy recovery unit with total energy wheel in place of the central supply fan assembly. • The condenser water system shall consists of roof mounted induced draft cooling towers, plate and frame heat exchangers to decouple the tower water from the building side clean condenser water, pump assemblies for the tower side and building side with variable frequency drives, tower filtration assembly, chemical treatment for the open tower system and closed building side system, and distribution piping. The system shall provide condenser water to the individual condo units, common space terminal units and a 24/7 cooling requirements. The individual apartment units have the option to be provided with energy meters "BTU" to monitor and track the condenser water (energy transfer rate) usage to translate the cost back to the condo tenants. Heating hot water plant shall consist of modular high efficient condensing boilers, variable primary pumping configuration, chemical treatment, hot water specialties, distribution piping. Hot water system shall serve the heat pump loop. • The sub-level parking garage shall be provided with central exhaust and supply air make-up system conforming to code, the system shall be controlled through CO monitoring and alarm system to allow the fans to vary capacity based on the CO levels within the zones. The retail and restaurant will be provided condensing water and allocated shaft space for ventilation/make-up air and kitchen exhaust, RGV assumes at this point the retail and the restaurant are under the tenant fit-up. • Demand controlled ventilation (CO2) control for high occupancy spaces. • Toilet and misc. exhaust air systems. • The building will be provided with Direct Digital Controls (DDC) for the central systems and tenant energy monitoring.

Electrical	The preliminary load estimate for the building will require multiple 480/277 Volt services. It is possible that the service will be separated into two services based on the building program and electrical loads. The actual configuration of the service will be determined as the design progresses. The building will require a diesel powered emergency/standby generator. As a minimum, the generator will provide emergency/standby power for egress lighting, fire alarm, fire pump, stairwell pressurization fans, and elevators. The generator is anticipated to be located on the roof of the building.
Fire Protection	• The building's fire suppression system is a fully sprinkled building with dry sprinklers in un-heated areas such as parking garage and loading docks. Each floor will be zoned seperately by means of a sprinkler control valve station. The larger unheated areas, such as the garage and loading dock will require a dry pipe valve and distribution piping. • Fire pump to supplement the municipal water pressure is an electric type, 250 horse power. • Fire Standpipes and fire department valves located in egress stairs.
Plumbing	• Water service is a separate feed from the municipal main. • A domestic water booster with a hydro pneumatic tank will be supplied to supplement municipal water pressure. The building's height indicates that there will be 3 domestic water pressure zones: 1st, 2nd and 3rd Levels are street pressure and is Zone 1, 4th thru 11th Levels is zone 2, 12th thru Penthouse Levels is zone 3, Zones 2 and 3 are boosted and will be fed from an express domestic cold water riser. • Low flow plumbing fixtures to meet the 1992 EPA guide lines. • Domestic hot water will be supplied from the hot water heating plant. The hot water distribution will be divided into pressure zones identical to the domestic cold water system. The system will be fully cirulated. It is proposed that the retail tenant's will provide their own domestic hot water equipment. • A sanitary building sewer, gravity system, will be provided. A single stack waste and vent system (trade name "SoVent") is proposed for the residential units and a convential drain system for the retail spaces. • Natural gas will be supplied for the boilers/heating system. Separate metering of natural gas will be provided for the retail and the base building systems. • Metering for domestic water will be provided at the main service entrances. • A non-potable water system for mechanical make-up; system to include reduced pressure backflow preventor, distribution piping and insulation. • A non-potable water system for irrigation will be provided; system to include reduced pressure backflow preventor. • Internal roof drain - storm water collection system. Part of this rainwater will be diverted back to a soil recharge system. • A garage waste drainage system will be provided; this will include a gasoline & sand trap and an ejector station
References	HVAC heating and cooling load estimate work sheet Electrical demand load estimate work sheet

Block "N" - Cultural Arts	
Building General Description	
The building complex consists 11 stories occupying 320,000 SF for Arts and cultural events, three levels of underground parking.	
System	**Base System Description**
HVAC	• The system is based on a central water cooled chiller plant and hot water plant, remote cooling towers, central floor by floor air handler units, displacment under floor system for the theaters and fan coil units for common areas, central energy recovery units providing pre-conditioned outside ventilation air, garage exhaust system and central direct digital control system. The chiller plant shall consist of two centrifugal water cooled chillers, chilled water variable primary pumping configuration, water specialties and distribution piping to serve the condo, common spaces and retail. Retail tenants will be required to provide energy meters for the chilled water system. The condenser water system shall be comprised of remote mounted cooling towers, plate and frame heat exchangers for condenser 24/7 loop/free cooling, constant flow pumps configured in parallel, chemical treatment, electronic "Dolphin system" or sand filter system, piping. Condenser loop services the chillers and the optional 24/7 equipment riser (optional). Heating hot water plant shall consist of modular high efficient condensing boilers, variable primary pumping configuration, chemical treatment, hot water specialties, distribution piping. Hot water system shall serve the air handler units, and fan coil units serving common spaces. • Central located 100% outside air energy recovery units will provided pre-conditioned air to the individual mechanical rooms housing the floor by floor air handler units and corridors. The unit will be comprised of intake hood, 30% efficient pre-filters, 85% final filters, hot water heating coil section, chilled cooling coil, total energy recovery wheel, supply and exhaust fans. Unit is assumed to be located within the building envelope. The air distribution shall consists of vertical supply and exhaust/return risers serving the individual floors, floor level branch take-offs to the individual mechanical rooms providing the code required pre-conditioned ventilation air and toilet exhaust. Exhaust riser shall incorporate sub-duct fittings to avoid the fire/smoke damper assemblies, the exhaust from the common corridor and mechanical rooms/return plenums shall be ducted back to the central energy recovery unit and then discharged to the atmosphere. • The air handler units serving the arts/cultural spaces shall consists of variable air volume and distribute the air to the spaces through low/med pressure duct work and connect to space level terminal VAV or fan powered boxes. The distribution system shall be sized based on the sound consultants recommendations. The air hander units shall be sized to match the program load, the units are comprised of mixing box section, pre-filter and final filter, hot water coil, chilled water coil, supply and exhaust fan assembly with variable frequency drives. • The sub-level parking garage shall be provided with central exhaust and supply air make-up system conforming to code, the system shall be controlled through CO monitoring and alarm system to allow the fans to vary capacity based on the CO levels within the zones. • Demand controlled ventilation (CO2) control for high occupancy spaces. • Toilet and misc. exhaust air systems. • Hot water radiant floor heating system for Lobby spaces. • Direct Digital Controls (DDC) w/ tie in to a campus Facility Management System (FMS). Includes additional monitoring and tie in of existing equipment.
Electrical	The preliminary load estimate for the building will require multiple 480/277 Volt services. It is possible that the service will be separated into two services based on the building program and electrical loads. The actual configuration of the service will be determined as the design progresses. The building will require a diesel powered emergency/standby generator. As a minimum, the generator will provide emergency/standby power for egress lighting, fire alarm, fire pump, stairwell pressurization fans, and elevators. The generator is anticipated to be located on the roof of the building.

Fire Protection	• The building's fire suppression system is a fully sprinkled building with dry sprinklers in un-heated areas such as parking garage and loading docks. Each floor will be zoned seperately by means of a sprinkler control valve station. The larger unheated areas, such as the garage and loading dock will require a dry pipe valve and distribution piping. • Fire pump to supplement the municipal water pressure is an electric type, 150 horse power. • Fire Standpipes and fire department valves located in egress stairs.
Plumbing	• Water service is a separate feed from the municipal main. • A domestic water booster with a hydro pneumatic tank will be supplied to supplement municipal water pressure. The building's height indicates that there will be 2 domestic water pressure zones: 1st, 2nd and 3rd Levels street pressure and is Zone 1, 4th thru 11th Levels is zone 2. Zones 2 is boosted.. • Low flow plumbing fixtures to meet the 1992 EPA guide lines. • Domestic hot water will be supplied from the hot water heating plant. The hot water distribution will be divided into pressure zones identical to the domestic cold water system. The system will be fully cirulated. • A sanitary building sewer, gravity system, will be provided. • Natural gas will be supplied for the boilers/heating system. • Metering for domestic water will be provided at the main service entrances. • A non-potable water system for mechanical make-up; system to include reduced pressure backflow preventor, distribution piping and insulation. • A non-potable water system for irrigation will be provided; system to include reduced pressure backflow preventor. • Internal roof drain - storm water collection system. Part of this rainwater will be diverted back to a soil recharge system. • A garage waste drainage system will be provided; this will include a gasoline & sand trap and an ejector station
References	HVAC heating and cooling load estimate work sheet Electrical demand load estimate work sheet

Block "P" - Hotel/School	
Building General Description	
The building complex consists 23 stories, 350 hotel units totaling 300,000 SF occupying 20 stories, college level schooling totaling 150,000 SF occupying two levels, one level Penthouse, three levels of underground parking.	
System	**Base System Description**
HVAC	• The system is based on a central water cooled chiller plant and hot water plant, remote cooling towers, central floor by floor air handler units, fan coil units for common areas, central energy recovery units providing pre-conditioned outside ventilation air, garage exhaust system and central direct digital control system The chiller plant shall consist of two centrifugal water cooled chillers, chilled water variable primary pumping configuration, water specialties and distribution piping to serve the condo, common spaces and retail. Retail tenants will be required to provide energy meters for the chilled water system. The condenser water system shall be comprised of remote mounted cooling towers, plate and frame heat exchangers for condenser 24/7 loop/free cooling, constant flow pumps configured in parallel, chemical treatment, electronic "Dolphin system" or sand filter system, piping. Condenser loop services the chillers and the optional 24/7 equipment riser (optional). Heating hot water plant shall consist of modular high efficient condensing boilers, variable primary pumping configuration, chemical treatment, hot water specialties, distribution piping. Hot water system shall serve the air handler units, and fan coil units serving common spaces. • Central located 100% outside air energy recovery units will provided pre-conditioned air to the individual mechanical rooms housing the floor by floor air handler units and corridors. The unit will be comprised of intake hood, 30% efficient pre-filters, 85% final filters, hot water heating coil section, chilled cooling coil, total energy recovery wheel, supply and exhaust fans. Unit is assumed to be located within the building envelope. The air distribution shall consists of vertical supply and exhaust/return risers serving the individual floors, floor level branch take-offs to the individual mechanical rooms providing the code required pre-conditioned ventilation air and toilet exhaust. Exhaust riser shall incorporate sub-duct fittings to avoid the fire/smoke damper assemblies, the exhaust from the common corridor and mechanical rooms/return plenums shall be ducted back to the central energy recovery unit and then discharged to the atmosphere. • The air handler units serving the arts/cultural spaces shall consists of variable air volume and distribute the air to the spaces through low/med pressure duct work and connect to space level terminal VAV or fan powered boxes. The distribution system shall be sized based on the sound consultants recommendations. The air hander units shall be sized to match the program load, the units are comprised of mixing box section, pre-filter and final filter, hot water coil, chilled water coil, supply and exhaust fan assembly with variable frequency drives. • The sub-level parking garage shall be provided with central exhaust and supply air make-up system conforming to code, the system shall be controlled through CO monitoring and alarm system to allow the fans to vary capacity based on the CO levels within the zones. • Demand controlled ventilation (CO2) control for high occupancy spaces. • Toilet and misc. exhaust air systems. • Hot water radiant floor heating system for Lobby spaces. • Direct Digital Controls (DDC) w/ tie in to a campus Facility Management System (FMS). Includes additional monitoring and tie in of existing equipment.
Electrical	The preliminary load estimate for the building will require multiple 480/277 Volt services. It is likely that the service will be separated into three or four services based on the building program and electrical loads. The building will require a diesel powered emergency/standby generator. The generator will provide emergency/standby power for egress lighting, fire alarm, fire pump, stairwell pressurization fans, and elevators. The generator is anticipated to be located on the roof of the building.

Fire Protection	• The building's fire suppression system is a fully sprinkled building with dry sprinklers in un-heated areas such as parking garage and loading docks. Each floor will be zoned seperately by means of a sprinkler control valve station. The larger unheated areas, such as the garage and loading dock will require a dry pipe valve and distribution piping. • Fire pump to supplement the municipal water pressure is an electric type, 250 horse power. • Fire Standpipes and fire department valves located in egress stairs.
Plumbing	• Water service is a separate feed from the municipal main. • A domestic water booster with a hydro pneumatic tank will be supplied to supplement municipal water pressure. The building's height indicates that there will be 4 domestic water pressure zones: 1st, 2nd and 3rd Levels street pressure and is Zone 1, 4th thru 10th Levels is zone 2, 11th thru 17th Levels is zone 3, and 18th thru Penthouse Levels is zone 4. • Low flow plumbing fixtures to meet the 1992 EPA guide lines. • Domestic hot water will be supplied from the hot water heating plant. The hot water distribution will be divided into pressure zones identical to the domestic cold water system. The system will be fully cirulated. • A sanitary building sewer, gravity system, will be provided. • Natural gas will be supplied for the boilers/heating system. • Metering for domestic water will be provided at the main service entrances. • A non-potable water system for mechanical make-up; system to include reduced pressure backflow preventor, distribution piping and insulation. • A non-potable water system for irrigation will be provided; system to include reduced pressure backflow preventor. • Internal roof drain - storm water collection system. Part of this rainwater will be diverted back to a soil recharge system. • A garage waste drainage system will be provided; this will include a gasoline & sand trap and an ejector station
References	HVAC heating and cooling load estimate work sheet Electrical demand load estimate work sheet

Block "Q" - Office - Retail	
Building General Description	
The building complex consists 7stories, Office occupies 5 levels at 120,000 SF, Retail podium occupies 2 levels at 32,000 SF and three sub-levels of parking.	
System	**Baseline System Description**
HVAC	• The system concept is based on floor by floor DX self-contained variable volume air handler units, hot water high efficiency condensing boiler plant, remote mounted cooling towers, condenser water distribution system, dedicated central energy recovery air handler unit - provides 100% outdoor air to the floor by floor units and exhaust from the space/toilets, and controls. The packaged DX air handler units reject the heat from the compressors into the central condenser water loop and in return rejects the heat from the water to the air through the cooling tower process. • Heating hot water plant shall consist of modular high efficient condensing boilers, variable primary pumping configuration, chemical treatment, hot water specialties, distribution piping. Hot water system shall serve the offices tower, health club and retail. All tenants hot water connections shall be provided with energy meters "BTU" for monitoring and transferring the cost back to the tenant. • The condenser water system shall consists of roof mounted induced draft cooling towers, plate and frame heat exchangers to decouple the tower water from the building side clean condenser water, pump assemblies for the tower side and building side with variable frequency drives, tower filtration assembly, chemical treatment for the open tower system or no chemical system "Dolphin System" and closed building side system, and distribution piping. The system shall provide condenser water to the individual floor level packaged DX units and a 24/7 cooling requirements. The individual tenants will be provided with energy meters "BTU" to monitor and track the condenser water (energy transfer rate) usage to translate the cost back to the tenants. • Central located 100% outside supply and exhaust air fans will provide air transfer to the individual air handler mechanical room at each floor level. The system is configured with main supply fans with filter section located at the roof level or penthouse delivering the outside air to a vertical common ductwork shafts. The air distribiution shall consists of vertical supply and exhaust risers serving the individual floors mechaincal rooms, floor level branch take-offs to the indidivudal mechanical rooms through VAV boxes providing code required pre-conditioned ventilation air. Exhaust riser shall incorporate sub-duct fittings to avoid the fire/smoke damper assemblies, the exhaust from the comon floor level return air plenum shall be ducted back to the floor level exhaust bos and up through the vertical exhaust risers to the exhaust fans and then discharged to the atmophare. Vanderweil Engineers has developed recommended engineering system improvements over the baseline system as illustrated within the sustainable matrices recommendations worksheet. Under this case the recommended sustainable alternate is central energy recovery unit with total energy wheel in place of the central supply and exhaust fan assemblies. • Self-contained air handling units with double walled construction, compressors, supply fans, premium efficient motors, variable frequency drives, airflow measuring, cooling and heating coils, pre-filters and MERV 13 final filters. • Air distribution- The floor level packaged DX air handler units conditioned is shall be distributed through a med pressure supply air duct loop within the interior zone. Brach take-offs to VAV boxes serving the interior zones and fan powered boxes with hot water reheat on the exterior zones. Fan powered boxes will be provided with variable speed ECM motors. The retail zones will be provided with the base minimum ventilation air per code from central air handler units or energy recovery units. The air shall be distributed to the space through med pressure ductwork connected to zone level VAV boxes controlled from the central DDC system. Metered condenser water and hot water (to be reviewed) shall be provided to each tenant to connect to the tenant provided heat pumps. RGV to review the loads to determine if electric supplemental heat (provided by tenant) with the heat humps is more cost effective vs. the hot water distribution system. Restaurant and kitchens HVAC system will be based on heat pumps, base building supplied condenser water and minimum code supplied ventilation air through energy recovery units, kitchen make-up/grease exhaust ductwork shafts will be provided and space allocation for kitchen hood make-up air handler unit supplied by tenant. • The sub-level parking garage shall be provided with central exhaust and supply air make-up system conforming to code, the system shall be controlled through CO monitoring and alarm system to allow the fans to vary capacity based on the CO levels within the zones. The exhaust rate shall modulate between 1.5 CFM/SF to 0.5 CFM/SF. • Demand controlled ventilation (CO2) control for high occupancy spaces. • Toilet and misc. exhaust air systems. • Hot water radiant floor heating system for Lobby spaces. • The building will be provided with Direct Digital Controls (DDC) for the central systems and tenant energy monitoring.

Electrical	The electric service to the building will most likely be a single service at 480/277 from an Nstar transformer vault. The building will require a diesel powered emergency/standby generator. As a minimum, the generator will provide emergency and standby power for egress lighting, fire alarm, fire pump, stairwell pressurization fans, and elevators. The generator is anticipated to be located on the roof of the building.
Fire Protection	• The building's fire suppression system is a fully sprinkled building. Dry sprinklers will be provided in un-heated areas such as parking garage and loading docks. Each floor will be zoned separately by means of a sprinkler control valve station. The larger unheated areas, such as the garage and loading dock will require a dry pipe valve and distribution piping. • Fire pump to supplement the municipal water pressure is an electric type, 75 horse power. • Fire Standpipes and fire department valves located in egress stairs.
Plumbing	• Water service is a separate feed from the municipal main. • A domestic water booster with a hydro pneumatic tank will be supplied to supplement municipal water pressure. The building's height indicates that there will be 2 domestic water pressure zones: 1st and 2nd Levels street pressure and is Zone 1, 3rd thru 10th Levels are Zone 2. • Low flow plumbing fixtures to meet the 1992 EPA guide lines. • Domestic hot water will be point-of-use electric storage water heaters located in the core areas. There will be one heater to serve three floors. Each heater will be equipped with a circulation pump to maintain hot water at each fixture. It is proposed that the retail tenants' will provide their own domestic hot water equipment. • A sanitary building sewer, gravity system, will be provided. • Natural gas will be supplied for the boilers/heating system. Separate metering of natural gas will be provided for the retail and the base building systems. • Metering for domestic water will be provided at the main service entrances. • A non-potable water system for mechanical make-up; system to include reduced pressure backflow preventor, distribution piping and insulation. • A non-potable water system for irrigation will be provided; system to include reduced pressure backflow preventor. • Internal roof drain - storm water collection system. Part of this rainwater will be diverted back to a soil recharge system. • A garage waste drainage system will be provided; this will include a gasoline & sand trap and an ejector station
References	HVAC heating and cooling load estimate work sheet Electrical demand load estimate work sheet

APPENDIX D2
Block Design Parameters

Building Summary
Internal load Summary
Model Input Summary

Seaport Square MEPA: Building Summary **5/8/2009**

VANDERWEIL

Bldg	Total Area	Functionality	Functional Area	System Type	Glazing
A	**92,000**	Retail	24,390	Heat Pump	40%
		Condo	62,080	Heat Pump	40%
		Cultural/Edu	2,000	Heat Pump	40%
B	**632,000**	Retail	124,320	Pkgd Water-Cooled VAV	50%
		Office	461,200	Pkgd Water-Cooled VAV	50%
C	**393,000**	Retail	217,640	Heat Pump	40%
		Apartment	392,000	Heat Pump	40%
D	**350,000**	Retail	71,540	Heat Pump	40%
		Cultural/Edu	5,000	Heat Pump	40%
		Apartment	397,260	Heat Pump	40%
G	**561,000**	Retail	132,690	4-Pipe Fan Coil - Water Cooled	40%
		Hotel	207,450	4-Pipe Fan Coil - Water Cooled	40%
		Condo	168,060	Heat Pump	50%
H	**25,000**	Church	25,000	Pkgd VAV	40%
J	**97,000**	Retail	23,120	Heat Pump	40%
		Apartment	65,600	Heat Pump	40%
K	**435,000**	Retail	94,420	Heat Pump	40%
		Hotel	116,210	Heat Pump	40%
		Condo	92,000	Heat Pump	40%
L1	**572,000**	Retail	80,880	Pkgd Water-Cooled VAV	40%
		Office	433,320	Pkgd Water-Cooled VAV	40%
L2	**572,000**	Retail	79,520	Pkgd Water-Cooled VAV	40%
		Office	352,520	Pkgd Water-Cooled VAV	40%
L3	**294,000**	Retail	32,670	Heat Pump	40%
		Apartment	139,440	Heat Pump	40%
L4	**342,000**	Retail	33,420	Heat Pump	40%
		Apartment	78,470	Heat Pump	40%
		Condo	187,000	Heat Pump	40%
L5	**390,000**	Retail	26,340	Heat Pump	40%
		Apartment	110,040	Heat Pump	40%
		Condo	233,640	Heat Pump	40%
L6	**298,000**	Retail	19,050	Heat Pump	40%
		Apartment	236,670	Heat Pump	40%
M1	**476,000**	Retail	234,790	Heat Pump	40%
		Condo	307,700	Heat Pump	40%
M2	**263,000**	Retail	90,840	Heat Pump	40%
		Apartment	362,000	Heat Pump	40%
N	**320,000**	School	391,000	Water Cooled VAV	45%
P	**550,000**	Performing Arts	213,360	4-Pipe Fan Coil - Water Cooled	40%
		Hotel	225,150	4-Pipe Fan Coil - Water Cooled	40%
Q	**152,000**	Retail	52,400	Pkgd Water-Cooled VAV	40%
		Office	108,120	Pkgd Water-Cooled VAV	40%
Parking	**2,943,600**	Parking	2,943,600	Unconditioned	N/A

VANDERWEIL

Functionality	Lighting (W/sf)	Equipment (W/sf)	62.1-2007 Space Type	Occupancy (sf/person)
Retail	1.5	1.0	Retail Sales	67
Condo	0.7	0.5	Hotel/Motel	411.1
Apartment	0.7	0.5	Hotel/Motel	411.1
Hotel	1.0	0.5	Hotel/Motel	375
Office	1.0	1.0	Office space	200
Performing Arts	1.6	0.75	Music/Theater/Dance	28.6
Church	1.3	1.0	Religious worship	8.3
School	1.2	0.3	Classrooms 9 plus	40
Parking Garage	0.3	0	N/A	N/A

VANDERWEIL

Model Element	Vanderweil Design	Code Model Attributes
The following apply to:		
All Systems		
Lighting Power Density	Code levels by Building Area	Code levels by Building Area
HW Boilers	90% Efficient Boilers	80% Efficient Boilers
Domestic Hot Water Boilers	90% Efficient Boilers	80% Efficient Boilers
Heat Recovery	Enthalpy Wheel (74% recovery)	None
Pump Motors	Premium Efficiency	High Efficiency
The following apply to:		
All Envelopes except for Church Building H (no envelope upgrade)		
Glass U-Value	0.28	0.35
Glass Shading Coefficient	0.322	0.46
Wall U-Value	0.0526	0.064
Roof U-Value	0.033	0.065
The following apply to:		
Heat Pump		
Cooling COP	4.3	3.8
Heating COP	4.7	4.2
Fan Power	0.000209 kW/cfm	0.000209 kW/cfm
The following apply to:		
Pkgd Water Cooled VAV		
Fan Power	0.00134 kW/cfm	0.00134 kW/cfm
The following applies to:		
4-Pipe Fan Coil - Water Cooled		
Chiller COP	7.0	6.1
The following applies to:		
Pkgd VAV (church)		
Heat Recovery	Enthalpy Wheel (74% recovery)	Sensible (50% recovery)
Fan Power	0.00134 kW/cfm	0.00134 kW/cfm
The following applies to:		
Water-Cooled VAV		
Chiller COP	7.0	6.1
Fan Power	0.00134 kW/cfm	0.00134 kW/cfm

APPENDIX D3
Tenant Manual Samples

Retail Fit-Out Design Guidelines

Tenant Handbook

Seaport Square

Retail Fit-Out Design Guidelines

66 Sleeper Street

SAMPLE

SEAPORT SQUARE
IN SOUTH BOSTON

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SAMPLE

SEAPORT SQUARE
IN SOUTH BOSTON

Seaport Square
Tenant Handbook

66 Sleeper Street

SAMPLE

Retail Spaces
Residential Common Areas

SEAPORT SQUARE
IN SOUTH BOSTON

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SAMPLE

SEAPORT SQUARE
IN SOUTH BOSTON

APPENDIX D4

Solar Thermal Hot Water Preliminary Evaluation

500 sf of Unshaded Roof

3,000 sf of Unshaded Roof

Seaport Square Solar Resource Analysis			Solar Thermal Utilizing 500sf of Collectors on unshaded roof.											
Parcel	Total Tower Rooftop Area	Estimated Domestic Hot Water (btu's/year)	Solar Thermal Resource - Proposed Siting area (ft2)	Solar Resource (% of total Tower Roof Area)	Solar Savings	Estimated (btu's/year) with savings applied	Estimated installation cost (w/out incentives)	Estimated ROI (w/out incentives)	Estimated installation cost (w/ government incentives)	Estimated ROI (with incentives)	Estimated Utility Incentives (1st year only)	Estimated installation cost (w/ government & utility incentives)	Estimated ROI (w/ government and utility incentives)	**Solar DHW**: Potential Usable BTU/yr Generated by **500 sf** of Collectors [XX BTU./yr.]
Parcel A	16,520	705,584,000	500	3%	33%	472,741,280	$100,000	18 years	$70,000	12 years	$10,663	$59,337	10 years	213,268,725
Parcel C	19,300	6,164,062,000	500	3%	7%	5,732,577,660	$100,000	18 years	$70,000	12 years	$10,663	$59,337	10 years	213,268,725
Parcel D	21,200	4,604,598,900	500	2%	6%	4,328,322,966	$100,000	18 years	$70,000	12 years	$10,663	$59,337	10 years	213,268,725
Parcel G	22,500	4,888,355,000	500	2%	6%	4,595,053,700	$100,000	18 years	$70,000	12 years	$10,663	$59,337	10 years	213,268,725
Parcel J	11,000	937,427,879	500	5%	21%	740,568,024	$100,000	18 years	$70,000	12 years	$10,663	$59,337	10 years	213,268,725
Parcel K	34,000	3,685,127,526	500	1%	7%	3,427,168,599	$100,000	18 years	$70,000	12 years	$10,663	$59,337	10 years	213,268,725
Parcel L3	8,200	2,071,656,506	500	6%	8%	1,905,923,986	$100,000	18 years	$70,000	12 years	$10,663	$59,337	10 years	213,268,725
Parcel L4	10,200	2,977,798,071	500	5%	7%	2,769,352,206	$100,000	18 years	$70,000	12 years	$10,663	$59,337	10 years	213,268,725
Parcel L5	10,600	3,669,927,442	500	5%	6%	3,449,731,795	$100,000	18 years	$70,000	12 years	$10,663	$59,337	10 years	213,268,725
Parcel L6	9,000	2,555,834,757	500	6%	7%	2,376,926,324	$100,000	18 years	$70,000	12 years	$10,663	$59,337	10 years	213,268,725
Parcel M1	18,100	5,545,019,605	500	3%	5%	5,267,768,625	$100,000	18 years	$70,000	12 years	$10,663	$59,337	10 years	213,268,725
Parcel M2	18,100	4,474,047,332	500	3%	8%	4,116,123,545	$100,000	18 years	$70,000	12 years	$10,663	$59,337	10 years	213,268,725
Parcel P	15,000	5,867,203,180	500	3%	9%	5,339,154,894	$100,000	18 years	$70,000	12 years	$10,663	$59,337	10 years	213,268,725
TOTALS	213,720		6,500											

Notes	1. The ROI is simple payback in terms of years, based on natural gas as the primary fuel source, manufacturer's material cost, and a labor factor of 1.5 times materials. 2. Government credits and deductions amount to approximately 30%. 3. Utility rebates are based on $5 per the first year of therms saved up to 50% of the cost of the job capped at $100,000. Rebate expiration date yet to be determined. Also It is assumed that each parcel will be treated on individual basis to maximize the utility rebate. 4. The square footage of 500 and 3000 refer to the horizontal footprint that the solar collectors will require, not the size of the array.

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Seaport Square Solar Resource Analysis			Solar Thermal Utilizing 3,000sf of Collectors on unshaded roof.											
Parcel	Total Tower Rooftop Area	Estimated Domestic Hot Water (btu's/year)	Solar Thermal Resource - Proposed Siting area (ft2)	Solar Resource (% of total Tower Roof Area @ 3,000sf)	Solar Savings (% of Domestic Hot water btu's/year)	Estimated (btu's/year) with savings applied	Estimated installation cost (w/out incentives)	Estimated Return on Investment (w/out incentives)	Estimated installation cost (with incentives)	Estimated Return on Investment (with incentives)	Estimated Utility Incentives (1st year only)	Estimated installation cost (w/ government & utility incentives)	Estimated ROI (w/ government and utility incentives)	**Solar DHW**: Potential BTU/yr Generated by 3,000 **sf** of Collectors [XX BTU/yr.]
Parcel A	16,520	705,584,000	3,000	18%	92%	56,446,720	$225,000	14 years	$155,000	10 years	$30,101	$124,899	8 years	602,025,454
Parcel C	19,300	6,164,062,000	3,000	16%	23%	4,499,765,260	$225,000	12 years	$155,000	8 years	$30,101	$124,899	7 years	602,025,454
Parcel D	21,200	4,604,598,900	3,000	14%	19%	3,729,725,109	$225,000	12 years	$155,000	8 years	$30,101	$124,899	7 years	602,025,454
Parcel G	22,500	4,888,355,000	3,000	13%	18%	4,008,451,100	$225,000	12 years	$155,000	8 years	$30,101	$124,899	7 years	602,025,454
Parcel J	11,000	937,427,879	3,000	27%	69%	290,602,642	$225,000	12 years	$155,000	8 years	$30,101	$124,899	7 years	602,025,454
Parcel K	34,000	3,685,127,526	3,000	9%	22%	3,021,804,571	$225,000	12 years	$155,000	8 years	$30,101	$124,899	7 years	602,025,454
Parcel L3	8,200	2,071,656,506	3,000	37%	26%	1,533,025,814	$225,000	12 years	$155,000	8 years	$30,101	$124,899	7 years	602,025,454
Parcel L4	10,200	2,977,798,071	3,000	29%	23%	2,292,904,515	$225,000	12 years	$155,000	8 years	$30,101	$124,899	7 years	602,025,454
Parcel L5	10,600	3,669,927,442	3,000	28%	20%	2,935,941,954	$225,000	12 years	$155,000	8 years	$30,101	$124,899	7 years	602,025,454
Parcel L6	9,000	2,555,834,757	3,000	33%	24%	1,942,434,415	$225,000	12 years	$155,000	8 years	$30,101	$124,899	7 years	602,025,454
Parcel M1	18,100	5,545,019,605	3,000	17%	16%	4,657,816,468	$225,000	12 years	$155,000	8 years	$30,101	$124,899	7 years	602,025,454
Parcel M2	18,100	4,474,047,332	3,000	17%	28%	3,221,314,079	$225,000	12 years	$155,000	8 years	$30,101	$124,899	7 years	602,025,454
Parcel P	15,000	5,867,203,180	3,000	20%	30%	4,107,042,226	$225,000	12 years	$155,000	8 years	$30,101	$124,899	7 years	602,025,454
TOTALS	213,720		39,000	18%										

Notes	1. The ROI is simple payback in terms of years based on natural gas as the primary fuel source, manufacturer's material cost, and a labor factor of 1.5 times materials. 2. Government credits and deductions amount to approximately 30%. 3. Utility rebates are based on $5 per the first year of therm saved up to 50% of the cost of the job capped at $100,000. Rebate expiration date yet to be determined. Also It is assumed that each parcel will be treated on individual basis to maximize the utility rebate. 4. The square footage of 500 and 3000 refer to the horizontal footprint that the solar collectors will require, not the size of the array.

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APPENDIX D5
Cogeneration Pre-Concept Study

SEAPORT SQUARE

Cogen Plant Feasibility Study – Phase I

July 25, 2008

Prepared for:

Gale International

One Post Office Square
Suite 31550
Boston, Massachusetts

Prepared by:

VANDERWEIL

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Energy Metering 2

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Combined Heat & Power Options 3

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Distribution System 5

Conclusion 5

Attachments

(Several drawings omitted from Appendix due to infeasibility of original proposed site location - plant split and relocated to general "North/South" arrangement as shown on M-201)

Included Drawings:
July 2008: M-201 - Site Plan for North/South Plant
July 2008: M-301c - South Plant Ideal Layout (Recip Engines)
July 2008: M-301d - South Plant Ideal Layout (Gas Turbines)
July 2008: M-301e - North Plant Layout (Recip Engines)
March 2009: M-301d - North Plant Revised Layout (Recip Engines)

Included Spreadsheets:
March 2009: Preliminary Load Calculation (revision 1)

Executive Summary

Vanderweil Engineers was retained by Gale International to evaluate the pre-concepts for a Central Energy Plant (CEP) with Combined Heat and Power (CHP) for the Seaport Square development in South Boston. A high level evaluation of central energy plant options including potential locations of plants was performed. Several plant locations have been test-fit and the two best possible locations are in Buildings G and building Q. The Combined Heat and Power option will be analyzed in the next study phase in more detail to develop the financial possibilities for this development.

The Seaport Square development will encompass 19 buildings and 6.5 million square feet of development. Sixteen (16) of the proposed nineteen (19) buildings are envisioned to be supplied heating, cooling, and possibly a portion of their electricity from the Central Energy Plant. Aggregating loads onto a Central Energy System offers the following advantages:

- **Reduced Energy Consumption:** Due to higher efficiency central equipment with higher loading factors and greater thermal cycle efficiency with Combined Heat and Power.
- **Reduced emissions:** Larger boilers capable of lower emissions; combined heat and power cycle reduces emissions when compared to utility source emission factors.
- **Reduced Maintenance and Staffing Costs:** Significantly fewer pieces of equipment to maintain when compared to individual building systems. Roughly 400 pieces of mechanical equipment (boilers, chillers, pumps) vs. 50 pieces for Central Energy Plant.
- **Reduced Space Take for Energy Infrastructure Equipment:** Fewer pieces of equipment take less space, frees up space for other uses.
- **Technology Integration:** Allows integration of other complementary technologies such as thermal storage, condensing boilers, fuel cells, etc.
- **Energy and Fuel Security:** Significant standby power available during electric utility outages. Duel fuel capability provides price stability and ability to operate during natural gas system outages.
- **Third Party Opportunities:** CEP system could potentially be spun to third party Owner operator, reducing required capital investment.

Plant Configuration

Site Distribution:

- Cooling: Chilled Water 40° – 56°
- Heating: Low Temperature Hot Water 220° – 140°
- Electrical: Medium Voltage 4,160 V to 13,800 V

Central Energy Plant

- Cooling: Electric Centrifugal Chillers
  Absorption or Steam Turbine Driven Chillers
  Centralized Variable Flow Pumping
- Heating: Water Tube or Fire Tube Boilers
  Centralized Variable Flow Pumping
  Duel Fuel Capability

- Combined Heat and Power:
  Gas Turbine or Reciprocating Engine
  Heat Recovery Boiler

Seaport Square Load Estimate

A preliminary calculation of building loads was completed to establish high level conceptual plant sizing. These estimates were required to develop the preliminary plant size to investigate potential locations. The preliminary estimate is based on engineering judgment of the required usage per square foot based on building type. Central energy plants are commonly downsized accounting for system diversity occurring due to non-coincent load peaks. We have presented diversified load calculations based on our experience with operating district systems. In the case of decentralized (individual building systems), the peak capacity must be installed in each building. The result is summarized in Table 1. The potential CHP plant capacity ranges were estimated based on engineering experience and the expected potential for waste heat utilization. The optimal cogeneration installed generating capacity for Seaport Square is expected to be from 5 to 9 MW. This sizing is "Thermal Following" to maximize cycle efficiency.

Table 1: Preliminary Load Estimate 2013

	Cooling		***Boiler***		***Power ****		***Projected CHP Capacity Ranges***
	Peak Tons	**Diversified Tons**	**Peak BHP**	**Diversified BHP**	**Peak MW**	**Diversified MW**	
Full Development	19,100	15,300	6,100	4,900	49.3	32.5	5 to 9 MW
South Plant South of MBTA Silver Line	12,300	9,850	4,050	3,250	31.2	20.6	4 to 6 MW
North Plant North of MBTA Siler Line	6,800	5,450	2,050	1,650	18.1	11.9	1 to 3 MW

* Includes all Electric Cooling

Energy Metering

An important aspect of a CEP and CHP is the management and transfer of energy in the form of chilled water, hot water, and electrical power. Chilled and hot water is piped through a distribution network. A calibrated energy meter at each building along with a contractual agreement will be required for billing. Billing is typically based on a BTU for heating and $/ton/hour for cooling.

In the same way hot and chilled water must be piped back to the CEP to be generated by the chillers and boilers, the aggregated site electrical load must originate at the CEP in order to allow Combined Heat and Power electrical generators to serve aggregated load. Therefore, a

CEP with cogeneration will require electrical paralleling with the local power utility NSTAR. An electrical distribution system from the CEP and maintained by the CEP entity will distribute power to the buildings with energy metering at each building with a contractual agreement. Billing with NSTAR would therefore be at the CEP only. There are a number of significant hurdles to be addressed, including feasibility of establishing distribution corridors which do not infringe on utilities franchise rights, availability of medium voltage utility service, and sub-metering.

Plant Space Estimate

Total decentralized plant space required for the Seaport Square development based on the 6,725,000 square foot mixed use development is summarized in Table 2. The required cogen central plant space square footages were calculated using the preliminary diversified loads in Table 1. The space requirements listed in the table do not include distribution system pipes or building HVAC equipment common to both options. Space savings by the central plant concept occurs in two ways. A central utility plant can be sized for a diversified load while the plant for each building must be sized for the peak load. Furthermore, the central plant can utilize larger individual pieces of equipment which is more space efficient then many smaller pieces of equipment. Our space take estimate is conservative, as floor plans in perspective buildings have not been developed. As floor plans become available and required equipment is placed in the buildings, we expect the space savings will increase.

Table 2: Preliminary Plant Equipment Areas

	Decentralized Utilities	**Centralized Utilities with Cogeneration**
Cooling plant equipment	108,800 sq ft	28,700 sq ft (North & South Plants) (49,000 sq ft with towers)
Boiler plant equipment	22,300 sq ft	15,000 sq ft
CHP equipment	N/A	23,000 sq ft
Total plant equipment	141,100 sq ft	87,000 sq ft

Combined Heat and Power Options

Four combined heat and power options were considered at a high level. Each option has its own pros and cons which are summarized below. Additionally a preliminary budgetary price range is provided for each option. Another more in depth evaluation is required to recommend which of the four options would be best for the Seaport Square development.

Table 3: CHP Option Summary Table

Case	***Pros***	***Cons***	***Preliminary Expected Cost Range***
Option #1 Central plant with gas turbines	-Good overall efficiency. -Less mechanical space required across the site.	-More complex permitting and energy transfer issues. -High pressure natural gas compressors required. -24 hour manned plant required.	$120,000,000
Option #2 Central plant with reciprocating engine	-Good overall efficiency. -Less mechanical space required across the site.	-More complex permitting and energy transfer issues. -24 hour manned plant required.	$115,000,000
Option #3 Central heating and cooling with micro-turbines	-Cogeneration potential without power distribution system and metering.	-Unconventional equipment. -Large array of small turbines required for larger power requirements. -High pressure gas required.	TBD
Option #4 Central plant with fuel cells	-Good emissions. -Good public relations selling point.	-Poor overall efficiency relative to conventional CHP alternatives. -System complexity -Cost	TBD

CEP Plant Locations

Potential locations of the CHP plant and/or central plant were investigated. Due to the possible issues of crossing the MBTA Silver Line Tunnel, two locations for cogen plants were investigated; one location for a plant south of the MBTA and a second plant to the north.

Initially, Building P was considered for the south plant. However this location was rejected because of the impact of the plant on the performing arts center. Vibration and noise are a significant concern in this location. Proper vibration and sound control would be extremely expensive. Additionally, the irregular plant room shape, and location of building may pose challenges for stack height and location. For reference, preliminary layouts for either a 3 MW gas turbine or a reciprocating engine cogen plant in building P are attached. See drawings M-301a, M-302a, M-301b, M-302b, and M-501. Building Q was chosen as a potential location for the south plant because of the building size, early construction in construction phasing, and central location to the buildings served by the plant. A preliminary layout for a 6 MW plant at this location is depicted on drawing M-301c attached.

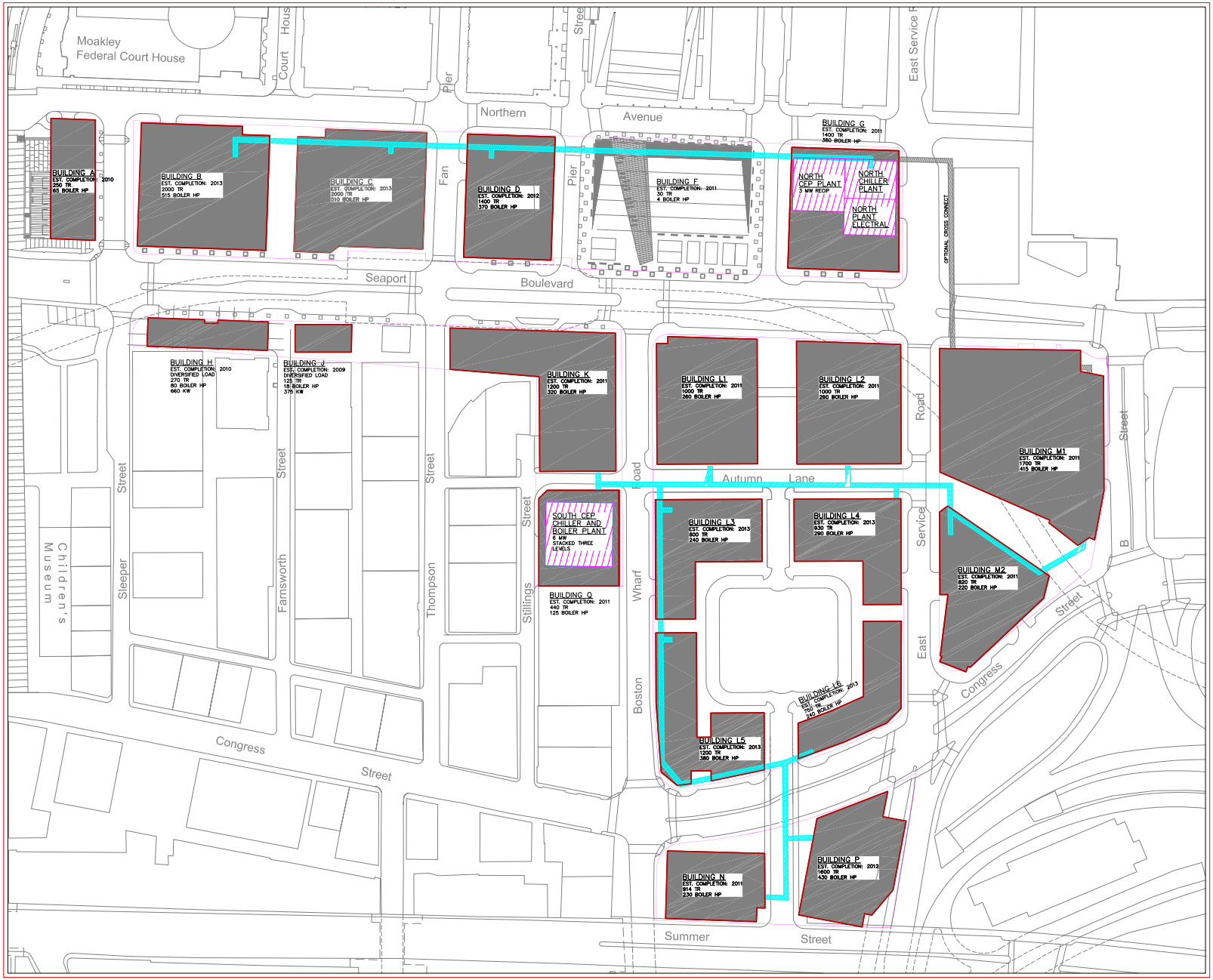
Building G was chosen as a potential location for the north plant because of the building size, availability for a potential plant, and early construction in construction phasing, and central location to the buildings served by the plant. A preliminary layout of a 3 MW plant for this location is depicted on drawing M-301d attached.

Distribution System

The CEP plant system will require a distribution system for chilled and hot water. If CHP is also in the CEP, an electrical distribution system will also be required. The routing of the distribution system will take coordination and planning to develop the most practical routes taking into consideration space, rights of way, maintenance, and cost. Maintenance and operation of the distribution system may be turned over to the third party operator of the CEP plant. The attached site plan drawing M-201 is a conceptual “first pass” at a distribution system routing. Some typical sections are included to illustrate the three dimensional space requirements through building and parking garage areas.

Conclusion

The Seaport Square development may benefit from the use of a Central Energy Plant with Combined Heat and Power. Two possible locations central plant(s) are in building G and building Q. The cogeneration options will be analyzed in the next study phase to develop the best cogeneration/central plant for this development.



SEAPORT SQUARE

SOUTH BOSTON

CONCEPTUAL
08/01/08

REV.	DATE	DESCRIPTION

R.G. Vanderweil Engineers, Inc.
274 Summer Street - Boston, MA 02210
(617) 428-7428

RGV Job No.	24763.00 Sheet of
Drawn by:	AJB
Checked by:	DR
Date of Original:	07-15-08
Scale:	1"=60'

Project

SEAPORT SQUARE
CEP STUDY

Title

PROPOSED CHILLED AND HOT WATER SITE PIPING

M-201

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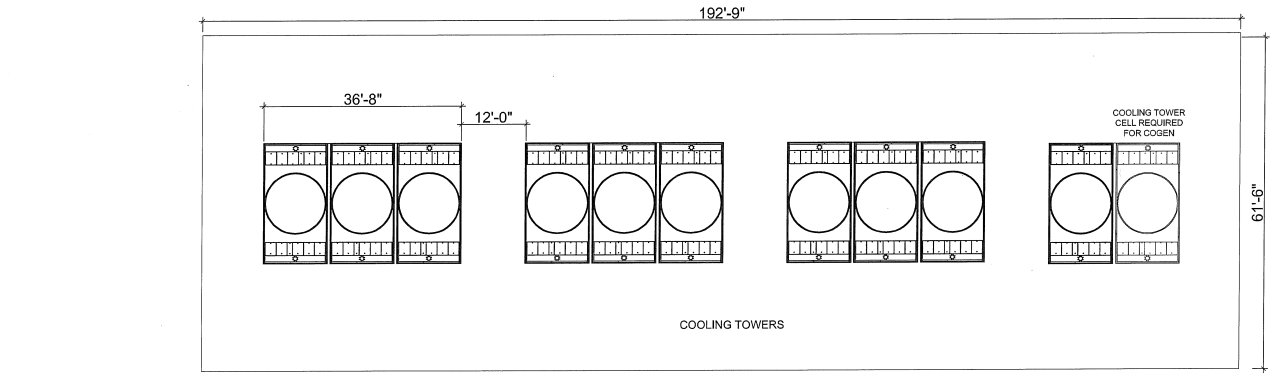

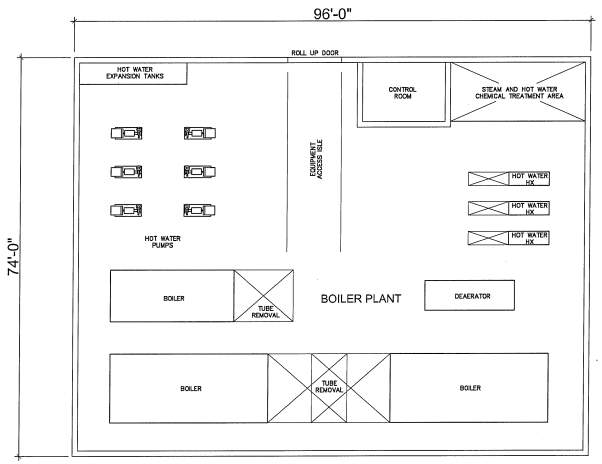

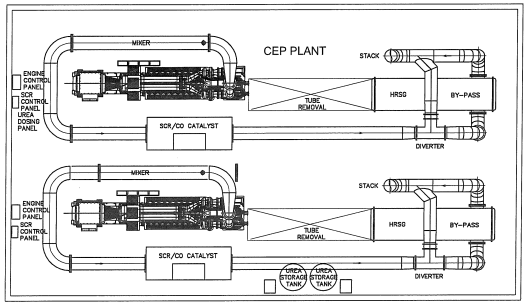

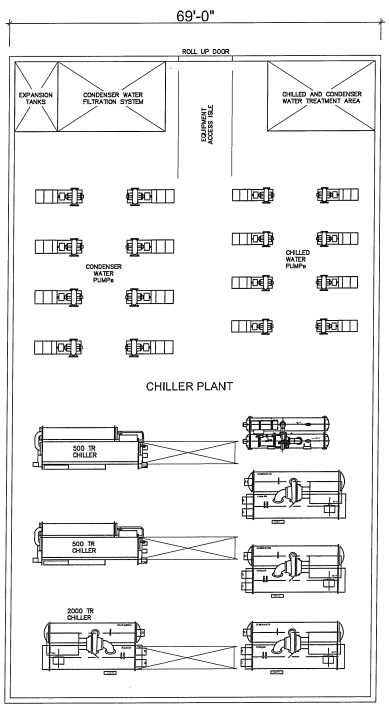

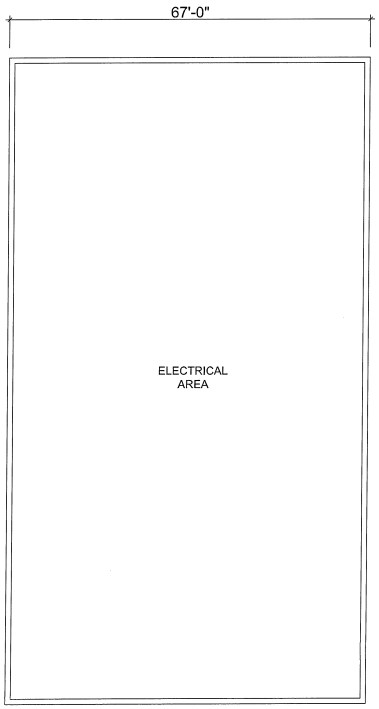

SEAPORT SQUARE

SOUTH BOSTON

CONCEPTUAL
08/01/08

R.G. Vanderweil Engineers, Inc.
274 Summer Street - Boston, MA 02210

Job Number: 22659.00	Sheet of
Drawn by: DKR	
Checked by:	
Date of Original:	
Revised:	
Scale: 1/8"=1'-0"	
Project	

IDEAL TEMPLATE
SOUTH CEP PLANT
RECIPS 6 MW

M-301c

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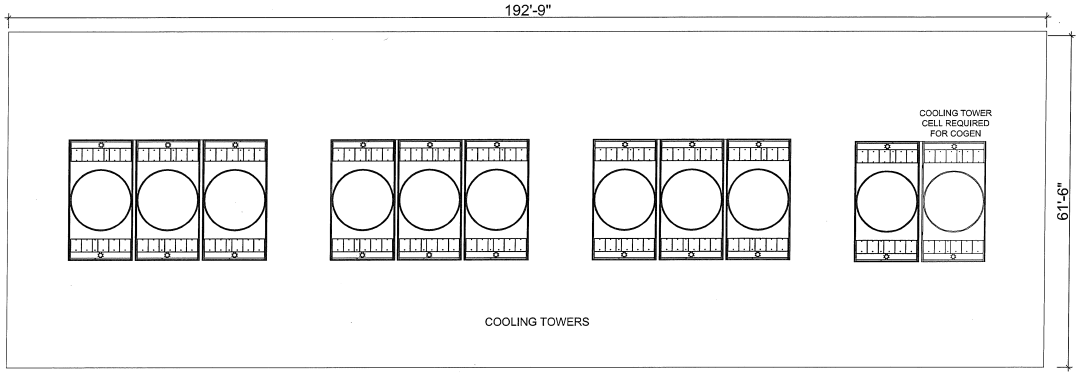

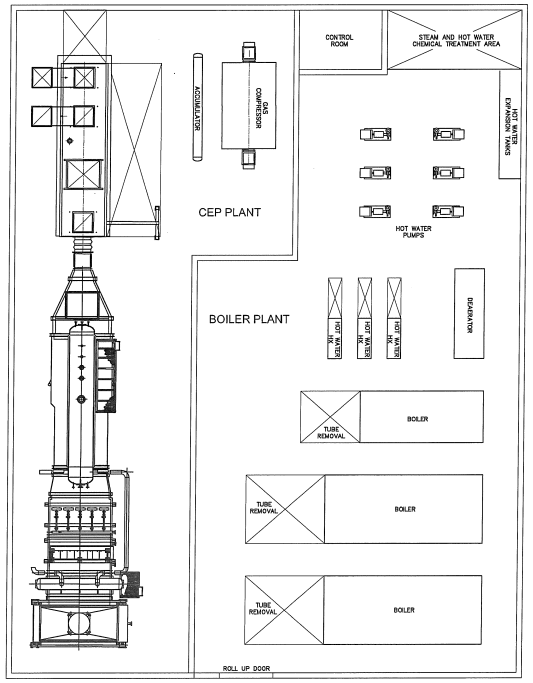

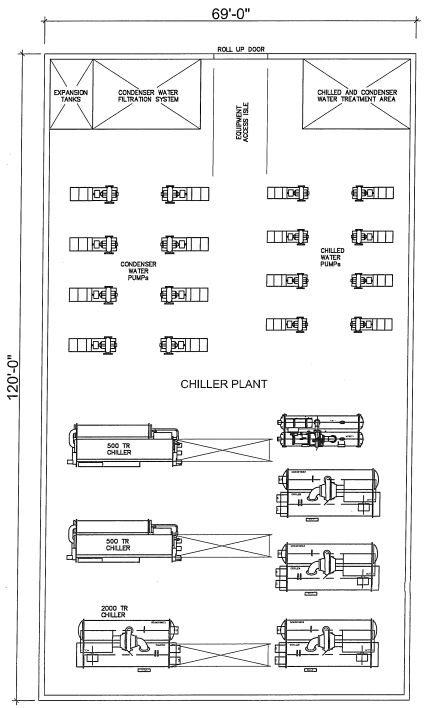

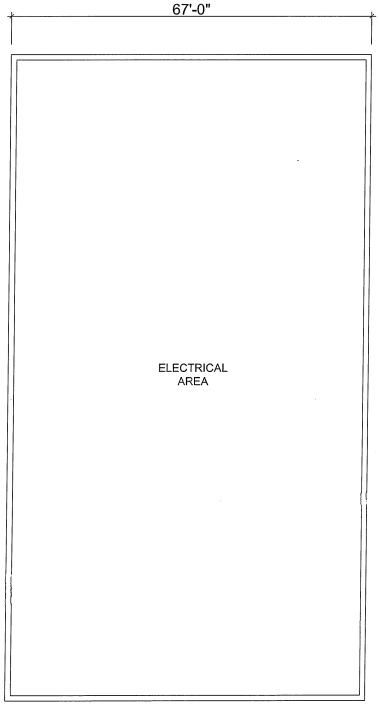

SEAPORT SQUARE

SOUTH BOSTON

CONCEPTUAL
08/01/08

R.G. Vanderweil Engineers, Inc.
274 Summer Street - Boston, MA 02210

Job Number: 22656.00	Sheet of
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Date of Original:	
Revised:	
Scale: 1/8"=1'-0"	
Project	

IDEAL TEMPLATE
SOUTH CEP PLANT
6 MW GAS TURBINE

M-301d

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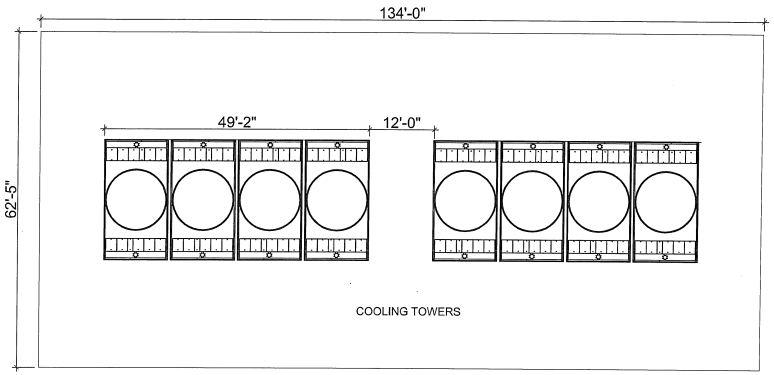

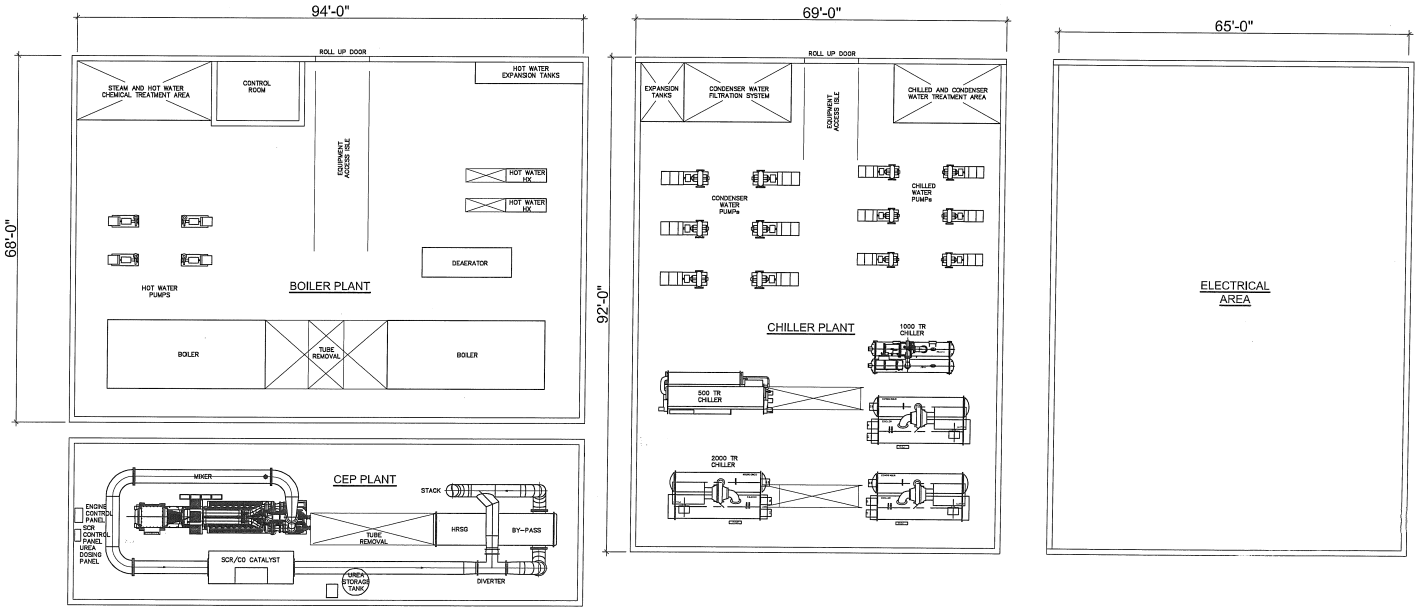

SEAPORT SQUARE

SOUTH BOSTON

CONCEPTUAL
08/01/08

R.G. Vanderweil Engineers, Inc.
274 Summer Street - Boston, MA 02210

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Date of Original:	
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IDEAL TEMPLATE
NORTH CEP PLANT
RECIPS 3 MW

M-301e

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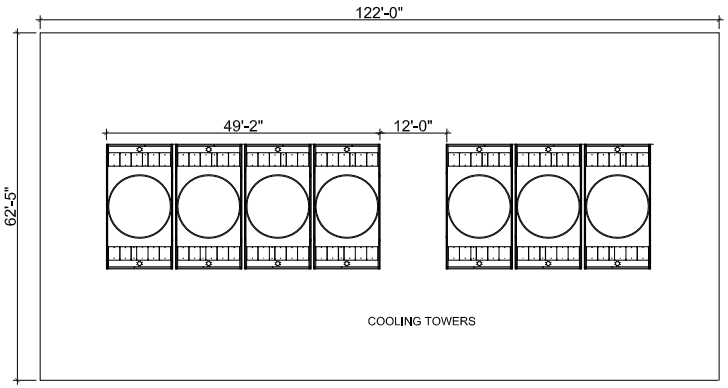
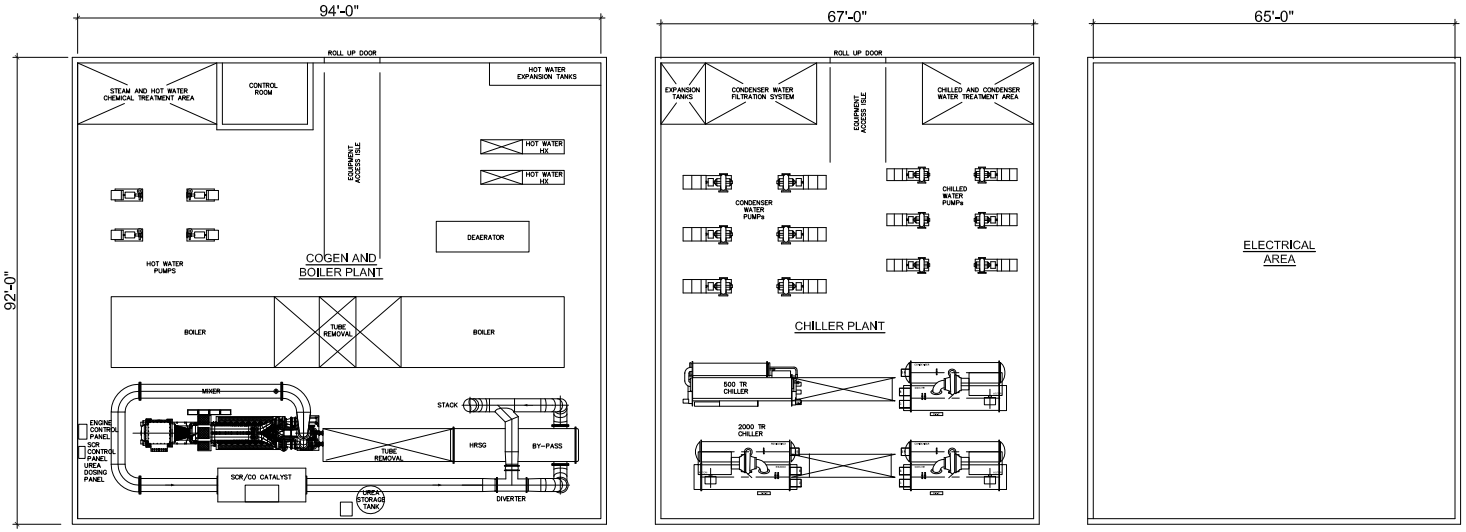


NORTH DEVELOPMENT ESTIMATED LOADS					
ELECTRICAL LOAD		COOLING LOAD		HEATING LOAD	
PEAK	DIVERSIFIED	PEAK	DIVERSIFIED	PEAK	DIVERSIFIED
MW	MW	TONS	TONS	BoilerHP	BoilerHP
15.2	10	5,900	4,700	1,740	1,400

NOTE 1: LOADS ARE BASED ON BLDG USEAGE AND AREAS LISTED IN THE STACKING DIAGRAM DATED 2-23-2009



SEAPORT SQUARE

SOUTH BOSTON

CONCEPTUAL
03/5/09

REV.	DATE	DESCRIPTION

VANDERWEIL POWER GROUP

ROV Job No. 24763.00	Sheet 1 of 1
Drawn by:	
Checked by:	
Date of Original:	
Scale: NTS	

Project

SEAPORT SQUARE

Title

NORTH COGEN PLANT

M-301d

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VANDERWEIL

Client: Gale International

Project: Seaport Square Cogeneration Study

Calc By:	Check By:	Job No.:	File Name:		Date:
DKR		24763	load est R1		3/9/2009

Topic: **Preliminary Load Calculation**

												2009				2010				2011				2012				2013				Full Build out				
	Phase	Est.	MBTA	Gross	Retail	Residential	Hotel	Office	School	Theater	Misc	Cooling	Heating	Domestic	Power	Cooling	Heating	Domestic	Power	Cooling	Heating	Domestic	Power	Cooling	Heating	Domestic	Power	Cooling	Heating	Domestic	Power	Cooling	Heating	Domestic	Power	
		Compl		Sq ft	Sq ft	Sq ft	Sq ft	Sq ft	Sq ft	Sq ft	Sq ft	Tons	MBH	MBH	kw	Tons	MBH	MBH	kw	Tons	MBH	MBH	kw	Tons	MBH	MBH	kw	Tons	MBH	MBH	kw	Tons	MBH	MBH	kw	
A	1	2010	North	92,000	23,400	61,200	-	-	-	-	7,400	-	-	-	-	269	2,501	426	669	-	-	-	-	-	-	-	-	-	-	-	-	269	2,501	426	669	A
B	2	2013	North	632,000	123,190	-	-	480,000	4,850	-	23,960	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,951	17,648	1,551	5,330	1,951	17,648	1,551	5,330	B
C	2	2013	North	393,000	197,880	183,330	-	-	-	-	11,790	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,286	9,772	1,749	3,187	1,286	9,772	1,749	3,187	C
D	2	2012	North	350,000	72,750	261,900	-	-	4,850	-	10,500	-	-	-	-	-	-	-	-	-	-	-	-	991	9,738	1,652	2,434	-	-	-	-	991	9,738	1,652	2,434	D
F (pavilion)	2	2011	North	7,000	6,790	-	-	-	-	-	210	-	-	-	-	-	-	-	-	28	141	28	70	-	-	-	-	-	-	-	-	28	141	28	70	F (pavilion)
G	2	2011	North	561,000	72,750	235,710	235,710	-	-	-	16,830	-	-	-	-	-	-	-	-	1,606	14,868	2,707	4,182	-	-	-	-	-	-	-	-	1,606	14,868	2,707	4,182	G
H (church)	1	2009	South	25,000	-	-	-	-	-	24,250	750	124	626	51	371	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	124	626	51	371	H
J	1	2010	South	97,000	19,400	74,690	-	-	-	-	2,910	-	-	-	-	273	2,706	461	669	-	-	-	-	-	-	-	-	-	-	-	-	273	2,706	461	669	J (church)
K	2	2011	South	417,000	85,000	218,000	114,000	-	-	-	-	-	-	-	-	-	-	-	-	1,211	11,090	2,000	3,070	-	-	-	-	-	-	-	-	1,211	11,090	2,000	3,070	K
L1	2	2011	South	336,000	115,000	221,000	-	-	-	-	-	-	-	-	-	-	-	-	-	1,013	8,930	1,565	2,476	-	-	-	-	-	-	-	-	1,013	8,930	1,565	2,476	L1
L2	2	2011	South	336,000	115,000	221,000	-	-	-	-	-	-	-	-	-	-	-	-	-	1,013	8,930	1,565	2,476	-	-	-	-	-	-	-	-	1,013	8,930	1,565	2,476	L2
L3	2	2013	South	294,000	42,000	252,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	798	8,400	1,428	1,932	798	8,400	1,428	1,932	L3
L4	2	2013	South	345,000	42,000	303,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	926	9,930	1,683	2,238	926	9,930	1,683	2,238	L4
L5	2	2013	South	443,000	30,000	413,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,153	12,990	2,185	2,778	1,153	12,990	2,185	2,778	L5
L6	2	2013	South	286,000	22,000	264,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	748	8,360	1,408	1,804	748	8,360	1,408	1,804	L6
M1	2	2011	South	544,000	200,000	344,000	-	-	-	-	-	-	-	-	-	-	-	-	-	1,660	14,320	2,520	4,064	-	-	-	-	-	-	-	-	1,660	14,320	2,520	4,064	M1
M2	2	2011	South	278,000	83,000	195,000	-	-	-	-	-	-	-	-	-	-	-	-	-	820	7,510	1,307	2,000	-	-	-	-	-	-	-	-	820	7,510	1,307	2,000	M2
N	2	2011	South	320,000	-	-	320,000	-	-	-	-	-	-	-	-	-	-	-	-	914	8,000	1,600	2,560	-	-	-	-	-	-	-	-	914	8,000	1,600	2,560	N
P	2	2011	South	550,000	-	-	300,000	-	200,000	50,000	-	-	-	-	-	-	-	-	-	1,620	14,750	2,200	4,750	-	-	-	-	-	-	-	-	1,620	14,750	2,200	4,750	P
Q	2	2011	South	154,000	34,000	120,000	-	-	-	-	-	-	-	-	-	-	-	-	-	436	4,280	736	1,060	-	-	-	-	-	-	-	-	436	4,280	736	1,060	Q
		Est. Comp.		Gross	Retail	Residential	Hotel	Office	School	Theater	Misc																					**Tons**	**Boiler HP**	**Boiler HP**	**kW**	
Total		2013		6,460,000	1,284,160	3,367,830	969,710	480,000	209,700	74,250	74,350	124	626	51	371	543	5,208	887	1,338	10,319	92,819	16,228	26,708	991	9,738	1,652	2,434	6,861	67,100	10,005	#####	**18,837**	**5,087**	**835**	**48,119**	Total

APPENDIX D6
Modeling Results by Block

Case 1 vs Case 2

Case 1 vs Case 3

Seaport Square MEPA: Preliminary Results **6/10/2009**

Code Model (Case 1) Vs Vanderweil (Case 3)

BUILDING A

End Use	Energy Type	Vanderweil (Case 3) Energy [kWh]/[Therm]		Code (Case 1) Energy [kWh]/[Therm]		Energy Savings [%]
Space Cooling	Electricity	102,163		137,269		26%
Cooling Tower (Heat Rejection)	Electricity	1,437		1,665		14%
Space Heating (Electric)	Electricity	58,936		66,702		12%
Space Heating (Gas)	Gas	9,176		19,032		52%
Domestic Hot Water	Gas	9,790		11,024		-
Solar Heated Hot Water Credit	Gas	(2,666)		-		-
Ventilation and Fans	Electricity	54,507		52,186		-4%
Pumps & Auxilary	Electricity	88,261		96,232		8%
Miscellaneous Equipment	Electricity	204,223		207,933		1.8%
Area Lighting	Electricity	279,209		279,209		0.0%
Total Site Consumption	**Electricity**	**788,736**		**841,196**		**6%**
	Gas	**16,300**		**30,056**		**46%**

Energy Use and Emissions by Fuel Type

Type	Proposed Use [kWh]/[Therm]	Proposed CO2 [lbs]	Budget Use [kWh]/[Therm]	Budget CO2 [lbs]	lbs CO2 Savings
Electricity	788,736	637,299	841,196	679,687	6%
Gas	16,300	189,727	30,056	349,852	46%
Total pounds CO2 emissions		827,026		1,029,538	19.7%

Emissions Factors

Electricity 0.808 lbs CO2/KWh
Gas 116.4 lbs CO2/Mbtu

Notes:

Solar hot water credit revised 6/24/09 for 13 bldgs to which it was applied

The results summarized here should not be considered as final. Since the design is fluid, there is potential for the savings to change.

Seaport Square MEPA: Preliminary Results **6/9/2009**

Code Model (Case 1) Vs Vanderweil (Case 3) **BUILDING B**

End Use	Energy Type	Vanderweil (Case 3) Energy [kWh]/[Therm]		Code (Case 1) Energy [kWh]/[Therm]		Energy Savings [%]
Space Cooling	Electricity	806,981		867,487		7%
Cooling Tower (Heat Rejection)	Electricity	73,130		75,768		3%
Space Heating	Gas	133,469		292,938		54%
Domestic Hot Water	Gas	25,365		28,586		11%
Solar Heated Hot Water Credit	Gas					-
Ventilation and Fans	Electricity	1,810,476		1,901,970		5%
Pumps & Auxilary	Electricity	283,735		289,578		2%
Miscellaneous Equipment	Electricity	1,757,450		1,757,450		0.0%
Area Lighting	Electricity	1,970,434		1,983,488		0.7%
Total Site Consumption	**Electricity**	**6,702,206**		**6,875,741**		**3%**
	Gas	**158,834**		**321,524**		**51%**

Energy Use and Emissions by Fuel Type

Type		Proposed Use [kWh]/[Therm]	Proposed CO2 [lbs]	Budget Use [kWh]/[Therm]	Budget CO2 [lbs]	lbs CO2 Savings
Electricity		6,702,206	5,415,382	6,875,741	5,555,598	3%
Gas		158,834	1,848,823	321,524	3,742,544	51%
Total pounds CO2 emissions			7,264,205		9,298,142	21.9%

Emissions Factors

Electricity	0.808 lbs CO2/KWh
Gas	116.4 lbs CO2/Mbtu

Notes:

The results summarized here should not be considered as final. Since the design is fluid, there is potential for the savings to change.

Seaport Square MEPA: Preliminary Results **6/10/2009**

Code Model (Case 1) Vs Vanderweil (Case 3)

BUILDING C

End Use	Energy Type	Vanderweil (Case 3) Energy [kWh]/[Therm]		Code (Case 1) Energy [kWh]/[Therm]		Energy Savings [%]
Space Cooling	Electricity	771,811		1,032,747		25%
Cooling Tower (Heat Rejection)	Electricity	10,811		12,525		14%
Space Heating (Electric)	Electricity	382,761		433,195		12%
Space Heating (Gas)	Gas	60,056		124,323		52%
Domestic Hot Water	Gas	71,658		80,696		-
Solar Heated Hot Water Credit	Gas	(2,666)		-		-
Ventilation and Fans	Electricity	378,154		359,609		-5%
Pumps & Auxilary	Electricity	628,475		685,238		8%
Miscellaneous Equipment	Electricity	1,516,243		1,539,670		1.5%
Area Lighting	Electricity	2,105,784		2,105,784		0.0%
Total Site Consumption	**Electricity**	**5,794,039**		**6,168,767**		**6%**
	Gas	**129,049**		**205,019**		**37%**

Energy Use and Emissions by Fuel Type

Type	Proposed Use [kWh]/[Therm]	Proposed CO2 [lbs]	Budget Use [kWh]/[Therm]	Budget CO2 [lbs]	lbs CO2 Savings
Electricity	5,794,039	4,681,584	6,168,767	4,984,364	6%
Gas	129,049	1,502,126	205,019	2,386,420	37%
Total pounds CO2 emissions		6,183,710		7,370,784	16.1%

Emissions Factors

Electricity	0.808	lbs CO2/KWh
Gas	116.4	lbs CO2/Mbtu

Notes:

The results summarized here should not be considered as final. Since the design is fluid, there is potential for the savings to change.

Seaport Square MEPA: Preliminary Results **6/10/2009**

Code Model (Case 1) Vs Vanderweil (Case 3)

BUILDING D

End Use	Energy Type	Vanderweil (Case 3) Energy [kWh]/[Therm]		Code (Case 1) Energy [kWh]/[Therm]		Energy Savings [%]
Space Cooling	Electricity	460,316		625,027		26%
Cooling Tower (Heat Rejection)	Electricity	6,543		7,580		14%
Space Heating (Electric)	Electricity	340,223		385,053		12%
Space Heating (Gas)	Gas	52,254		109,107		52%
Domestic Hot Water	Gas	48,990		55,168		-
Solar Heated Hot Water Credit	Gas	(2,666)		-		-
Ventilation and Fans	Electricity	287,294		279,481		-3%
Pumps & Auxilary	Electricity	444,193		484,312		8%
Miscellaneous Equipment	Electricity	969,442		993,183		2.4%
Area Lighting	Electricity	1,280,496		1,280,496		0.0%
Total Site Consumption	**Electricity**	**3,788,507**		**4,055,132**		**7%**
	Gas	**98,578**		**164,275**		**40%**

Energy Use and Emissions by Fuel Type

Type	Proposed Use [kWh]/[Therm]	Proposed CO2 [lbs]	Budget Use [kWh]/[Therm]	Budget CO2 [lbs]	lbs CO2 Savings
Electricity	3,788,507	3,061,114	4,055,132	3,276,547	7%
Gas	98,578	1,147,446	164,275	1,912,161	40%
Total pounds CO2 emissions		4,208,560		5,188,708	18.9%

Emissions Factors

Electricity	0.808	lbs CO2/KWh
Gas	116.4	lbs CO2/Mbtu

Notes:

The results summarized here should not be considered as final. Since the design is fluid, there is potential for the savings to change.

Seaport Square MEPA: Preliminary Results **6/10/2009**

Code Model (Case 1) Vs Vanderweil (Case 3)

BUILDING G

End Use	Energy Type	Vanderweil (Case 3) Energy [kWh]/[Therm]		Code (Case 1) Energy [kWh]/[Therm]		Energy Savings [%]
Space Cooling	Electricity	270,521		339,745		20%
Cooling Tower (Heat Rejection)	Electricity	37,970		40,626		7%
Space Heating (Electric)	Electricity	129,943		145,065		10%
Space Heating (Gas)	Gas	85,544		115,975		26%
Domestic Hot Water	Gas	52,997		59,682		-
Solar Heated Hot Water Credit	Gas	(2,666)		-		-
Ventilation and Fans	Electricity	654,769		666,687		2%
Pumps & Auxilary	Electricity	280,869		279,447		-1%
Miscellaneous Equipment	Electricity	1,016,228		1,031,227		1.5%
Area Lighting	Electricity	2,261,211		2,261,211		0.0%
Total Site Consumption	**Electricity**	**4,651,511**		**4,764,009**		**2%**
	Gas	**135,875**		**175,657**		**23%**

Energy Use and Emissions by Fuel Type

Type	Proposed Use [kWh]/[Therm]	Proposed CO2 [lbs]	Budget Use [kWh]/[Therm]	Budget CO2 [lbs]	lbs CO2 Savings
Electricity	4,651,511	3,758,421	4,764,009	3,849,319	2%
Gas	135,875	1,581,588	175,657	2,044,648	23%
Total pounds CO2 emissions		5,340,009		5,893,967	9.4%

Emissions Factors

Electricity	0.808	lbs CO2/KWh
Gas	116.4	lbs CO2/Mbtu

Notes:

The results summarized here should not be considered as final. Since the design is fluid, there is potential for the savings to change.

Seaport Square MEPA: Preliminary Results **6/10/2009**

Code Model (Case 1) Vs Vanderweil (Case 3)

BUILDING H

End Use	Energy Type	Vanderweil (Case 3) Energy [kWh]/[Therm]		Code (Case 1) Energy [kWh]/[Therm]		Energy Savings [%]
Space Cooling	Electricity	99,685		108,608		8%
Cooling Tower (Heat Rejection)	Electricity	-		-		0%
Space Heating (Electric)	Electricity	-		-		0%
Space Heating (Gas)	Gas	17,974		26,341		32%
Domestic Hot Water	Gas	-		-		-
Solar Heated Hot Water Credit	Gas	-		-		-
Ventilation and Fans	Electricity	150,221		151,433		1%
Pumps & Auxilary	Electricity	42,767		40,082		-7%
Miscellaneous Equipment	Electricity	89,596		89,596		0.0%
Area Lighting	Electricity	116,362		116,362		0.0%
Total Site Consumption	**Electricity**	**498,631**		**506,080**		**1%**
	Gas	**17,974**		**26,341**		**32%**

Energy Use and Emissions by Fuel Type

Type	Proposed Use [kWh]/[Therm]	Proposed CO2 [lbs]	Budget Use [kWh]/[Therm]	Budget CO2 [lbs]	lbs CO2 Savings
Electricity	498,631	402,894	506,080	408,912	1%
Gas	17,974	209,213	26,341	306,612	32%
Total pounds CO2 emissions		612,107		715,524	14.5%

Emissions Factors

Electricity	0.808	lbs CO2/KWh
Gas	116.4	lbs CO2/Mbtu

Notes:

The results summarized here should not be considered as final. Since the design is fluid, there is potential for the savings to change.

Seaport Square MEPA: Preliminary Results **6/10/2009**

Code Model (Case 1) Vs Vanderweil (Case 3)

BUILDING J

End Use	Energy Type	Vanderweil (Case 3) Energy [kWh]/[Therm]		Code (Case 1) Energy [kWh]/[Therm]		Energy Savings [%]
Space Cooling	Electricity	99,976		134,600		26%
Cooling Tower (Heat Rejection)	Electricity	1,409		1,632		14%
Space Heating (Electric)	Electricity	59,384		67,209		12%
Space Heating (Gas)	Gas	9,216		19,168		52%
Domestic Hot Water	Gas	9,872		11,117		-
Solar Heated Hot Water Credit	Gas	(2,666)		-		-
Ventilation and Fans	Electricity	54,423		52,333		-4%
Pumps & Auxilary	Electricity	87,498		95,401		8%
Miscellaneous Equipment	Electricity	202,458		206,378		1.9%
Area Lighting	Electricity	275,286		275,286		0.0%
Total Site Consumption	**Electricity**	**780,434**		**832,840**		**6%**
	Gas	**16,422**		**30,285**		**46%**

Energy Use and Emissions by Fuel Type

Type	Proposed Use [kWh]/[Therm]	Proposed CO2 [lbs]	Budget Use [kWh]/[Therm]	Budget CO2 [lbs]	lbs CO2 Savings
Electricity	780,434	630,591	832,840	672,935	6%
Gas	16,422	191,147	30,285	352,517	46%
Total pounds CO2 emissions		821,738		1,025,452	19.9%

Emissions Factors

Electricity	0.808	lbs CO2/KWh
Gas	116.4	lbs CO2/Mbtu

Notes:

The results summarized here should not be considered as final. Since the design is fluid, there is potential for the savings to change.

Seaport Square MEPA: Preliminary Results **6/10/2009**

Code Model (Case 1) Vs Vanderweil (Case 3)

BUILDING K

End Use	Energy Type	Vanderweil (Case 3) Energy [kWh]/[Therm]		Code (Case 1) Energy [kWh]/[Therm]		Energy Savings [%]
Space Cooling	Electricity	464,087		634,395		27%
Cooling Tower (Heat Rejection)	Electricity	6,641		7,694		14%
Space Heating (Electric)	Electricity	134,672		152,417		12%
Space Heating (Gas)	Gas	21,881		45,554		52%
Domestic Hot Water	Gas	28,930		32,579		-
Solar Heated Hot Water Credit	Gas	(2,666)		-		-
Ventilation and Fans	Electricity	182,645		178,513		-2%
Pumps & Auxilary	Electricity	327,975		357,597		8%
Miscellaneous Equipment	Electricity	701,823		716,736		2.1%
Area Lighting	Electricity	1,122,971		1,122,971		0.0%
Total Site Consumption	**Electricity**	**2,940,814**		**3,170,322**		**7%**
	Gas	**48,145**		**78,133**		**38%**

Energy Use and Emissions by Fuel Type

Type	Proposed Use [kWh]/[Therm]	Proposed CO2 [lbs]	Budget Use [kWh]/[Therm]	Budget CO2 [lbs]	lbs CO2 Savings
Electricity	2,940,814	2,376,178	3,170,322	2,561,620	7%
Gas	48,145	560,406	78,133	909,465	38%
Total pounds CO2 emissions		2,936,583		3,471,085	15.4%

Emissions Factors

Electricity	0.808	lbs CO2/KWh
Gas	116.4	lbs CO2/Mbtu

Notes:

The results summarized here should not be considered as final. Since the design is fluid, there is potential for the savings to change.

Seaport Square MEPA: Preliminary Results **6/9/2009**

Code Model (Case 1) Vs Vanderweil (Case 3)

BUILDING L1

End Use	Energy Type	Vanderweil (Case 3) Energy [kWh]/[Therm]		Code (Case 1) Energy [kWh]/[Therm]		Energy Savings [%]
Space Cooling	Electricity	692,193		744,092		7%
Cooling Tower (Heat Rejection)	Electricity	62,728		64,991		3%
Space Heating	Gas	118,908		260,979		54%
Domestic Hot Water	Gas	19,157		21,590		11%
Solar Heated Hot Water Credit	Gas					-
Ventilation and Fans	Electricity	1,575,066		1,670,298		6%
Pumps & Auxilary	Electricity	247,292		252,384		2%
Miscellaneous Equipment	Electricity	1,520,576		1,520,576		0.0%
Area Lighting	Electricity	1,655,367		1,667,631		0.7%
Total Site Consumption	**Electricity**	**5,753,221**		**5,919,973**		**3%**
	Gas	**138,065**		**282,569**		**51%**

Energy Use and Emissions by Fuel Type

Type		Proposed Use [kWh]/[Therm]	Proposed CO2 [lbs]	Budget Use [kWh]/[Therm]	Budget CO2 [lbs]	lbs CO2 Savings
Electricity		5,753,221	4,648,602	5,919,973	4,783,338	3%
Gas		138,065	1,607,075	282,569	3,289,105	51%
Total pounds CO2 emissions			6,255,677		8,072,443	22.5%

Emissions Factors

Electricity	0.808	lbs CO2/KWh
Gas	116.4	lbs CO2/Mbtu

Notes:

The results summarized here should not be considered as final. Since the design is fluid, there is potential for the savings to change.

Seaport Square MEPA: Preliminary Results **6/9/2009**

Code Model (Case 1) Vs Vanderweil (Case 3)

BUILDING L2

End Use	Energy Type	Vanderweil (Case 3) Energy [kWh]/[Therm]		Code (Case 1) Energy [kWh]/[Therm]		Energy Savings [%]
Space Cooling	Electricity	588,333		632,445		7%
Cooling Tower (Heat Rejection)	Electricity	53,316		55,239		3%
Space Heating	Gas	99,215		217,758		54%
Domestic Hot Water	Gas	17,370		19,576		11%
Solar Heated Hot Water Credit	Gas					-
Ventilation and Fans	Electricity	1,329,480		1,403,414		5%
Pumps & Auxilary	Electricity	208,548		212,843		2%
Miscellaneous Equipment	Electricity	1,286,934		1,286,934		0.0%
Area Lighting	Electricity	1,421,539		1,431,517		0.7%
Total Site Consumption	**Electricity**	**4,888,150**		**5,022,392**		**3%**
	Gas	**116,586**		**237,334**		**51%**

Energy Use and Emissions by Fuel Type

Type		Proposed Use [kWh]/[Therm]	Proposed CO2 [lbs]	Budget Use [kWh]/[Therm]	Budget CO2 [lbs]	lbs CO2 Savings
Electricity		4,888,150	3,949,625	5,022,392	4,058,092	3%
Gas		116,586	1,357,056	237,334	2,762,573	51%
Total pounds CO2 emissions			5,306,681		6,820,666	22.2%

Emissions Factors

Electricity	0.808	lbs CO2/KWh
Gas	116.4	lbs CO2/Mbtu

Notes:

The results summarized here should not be considered as final. Since the design is fluid, there is potential for the savings to change.

Seaport Square MEPA: Preliminary Results **6/10/2009**

Code Model (Case 1) Vs Vanderweil (Case 3)

BUILDING L3

End Use	Energy Type	Vanderweil (Case 3) Energy [kWh]/[Therm]		Code (Case 1) Energy [kWh]/[Therm]		Energy Savings [%]
Space Cooling	Electricity	176,365		238,763		26%
Cooling Tower (Heat Rejection)	Electricity	2,499		2,896		14%
Space Heating (Electric)	Electricity	120,444		136,314		12%
Space Heating (Gas)	Gas	18,555		38,716		52%
Domestic Hot Water	Gas	18,359		20,674		-
Solar Heated Hot Water Credit	Gas	(2,666)		-		-
Ventilation and Fans	Electricity	104,708		101,523		-3%
Pumps & Auxilary	Electricity	164,097		178,918		8%
Miscellaneous Equipment	Electricity	366,833		375,166		2.2%
Area Lighting	Electricity	489,649		489,649		0.0%
Total Site Consumption	**Electricity**	**1,424,594**		**1,523,228**		**6%**
	Gas	**34,248**		**59,390**		**42%**

Energy Use and Emissions by Fuel Type

Type	Proposed Use [kWh]/[Therm]	Proposed CO2 [lbs]	Budget Use [kWh]/[Therm]	Budget CO2 [lbs]	lbs CO2 Savings
Electricity	1,424,594	1,151,072	1,523,228	1,230,768	6%
Gas	34,248	398,643	59,390	691,296	42%
Total pounds CO2 emissions		1,549,715		1,922,064	19.4%

Emissions Factors

Electricity	0.808	lbs CO2/KWh
Gas	116.4	lbs CO2/Mbtu

Notes:

The results summarized here should not be considered as final. Since the design is fluid, there is potential for the savings to change.

Seaport Square MEPA: Preliminary Results **6/10/2009**

Code Model (Case 1) Vs Vanderweil (Case 3)

BUILDING L4

End Use	Energy Type	Vanderweil (Case 3) Energy [kWh]/[Therm]		Code (Case 1) Energy [kWh]/[Therm]		Energy Savings [%]
Space Cooling	Electricity	272,628		371,859		27%
Cooling Tower (Heat Rejection)	Electricity	3,893		4,510		14%
Space Heating (Electric)	Electricity	219,202		248,085		12%
Space Heating (Gas)	Gas	33,519		70,165		52%
Domestic Hot Water	Gas	30,366		34,196		-
Solar Heated Hot Water Credit	Gas	(2,666)		-		-
Ventilation and Fans	Electricity	180,176		176,307		-2%
Pumps & Auxilary	Electricity	274,172		298,935		8%
Miscellaneous Equipment	Electricity	587,438		603,303		2.6%
Area Lighting	Electricity	765,377		765,377		0.0%
Total Site Consumption	**Electricity**	**2,302,885**		**2,468,374**		**7%**
	Gas	**61,219**		**104,361**		**41%**

Energy Use and Emissions by Fuel Type

Type	Proposed Use [kWh]/[Therm]	Proposed CO2 [lbs]	Budget Use [kWh]/[Therm]	Budget CO2 [lbs]	lbs CO2 Savings
Electricity	2,302,885	1,860,731	2,468,374	1,994,446	7%
Gas	61,219	712,592	104,361	1,214,763	41%
Total pounds CO2 emissions		2,573,324		3,209,209	19.8%

Emissions Factors

Electricity	0.808	lbs CO2/KWh
Gas	116.4	lbs CO2/Mbtu

Notes:

The results summarized here should not be considered as final. Since the design is fluid, there is potential for the savings to change.

Seaport Square MEPA: Preliminary Results **6/10/2009**

Code Model (Case 1) Vs Vanderweil (Case 3)

BUILDING L5

End Use	Energy Type	Vanderweil (Case 3) Energy [kWh]/[Therm]		Code (Case 1) Energy [kWh]/[Therm]		Energy Savings [%]
Space Cooling	Electricity	315,811		432,769		27%
Cooling Tower (Heat Rejection)	Electricity	4,530		5,248		14%
Space Heating (Electric)	Electricity	277,839		314,448		12%
Space Heating (Gas)	Gas	42,332		88,753		52%
Domestic Hot Water	Gas	36,615		41,233		-
Solar Heated Hot Water Credit	Gas	(2,666)		-		-
Ventilation and Fans	Electricity	221,982		218,264		-2%
Pumps & Auxilary	Electricity	332,454		362,481		8%
Miscellaneous Equipment	Electricity	695,249		715,787		2.9%
Area Lighting	Electricity	892,742		892,742		0.0%
Total Site Consumption	**Electricity**	**2,740,608**		**2,941,740**		**7%**
	Gas	**76,281**		**129,986**		**41%**

Energy Use and Emissions by Fuel Type

Type	Proposed Use [kWh]/[Therm]	Proposed CO2 [lbs]	Budget Use [kWh]/[Therm]	Budget CO2 [lbs]	lbs CO2 Savings
Electricity	2,740,608	2,214,411	2,941,740	2,376,926	7%
Gas	76,281	887,911	129,986	1,513,036	41%
Total pounds CO2 emissions		3,102,322		3,889,962	20.2%

Emissions Factors

Electricity	0.808	lbs CO2/KWh
Gas	116.4	lbs CO2/Mbtu

Notes:

The results summarized here should not be considered as final. Since the design is fluid, there is potential for the savings to change.

Seaport Square MEPA: Preliminary Results **6/10/2009**

Code Model (Case 1) Vs Vanderweil (Case 3)

BUILDING L6

End Use	Energy Type	Vanderweil (Case 3) Energy [kWh]/[Therm]		Code (Case 1) Energy [kWh]/[Therm]		Energy Savings [%]
Space Cooling	Electricity	219,478		300,639		27%
Cooling Tower (Heat Rejection)	Electricity	3,147		3,646		14%
Space Heating (Electric)	Electricity	191,649		216,902		12%
Space Heating (Gas)	Gas	29,209		61,231		52%
Domestic Hot Water	Gas	25,360		28,558		-
Solar Heated Hot Water Credit	Gas	(2,666)		-		-
Ventilation and Fans	Electricity	153,472		150,842		-2%
Pumps & Auxilary	Electricity	230,151		250,938		8%
Miscellaneous Equipment	Electricity	482,286		496,430		2.8%
Area Lighting	Electricity	620,057		620,057		0.0%
Total Site Consumption	**Electricity**	**1,900,240**		**2,039,452**		**7%**
	Gas	**51,902**		**89,789**		**42%**

Energy Use and Emissions by Fuel Type

Type	Proposed Use [kWh]/[Therm]	Proposed CO2 [lbs]	Budget Use [kWh]/[Therm]	Budget CO2 [lbs]	lbs CO2 Savings
Electricity	1,900,240	1,535,394	2,039,452	1,647,878	7%
Gas	51,902	604,140	89,789	1,045,139	42%
Total pounds CO2 emissions		2,139,534		2,693,016	20.6%

Emissions Factors

Electricity	0.808	lbs CO2/KWh
Gas	116.4	lbs CO2/Mbtu

Notes:

The results summarized here should not be considered as final. Since the design is fluid, there is potential for the savings to change.

Seaport Square MEPA: Preliminary Results **6/10/2009**

Code Model (Case 1) Vs Vanderweil (Case 3)

BUILDING M1

End Use	Energy Type	Vanderweil (Case 3) Energy [kWh]/[Therm]		Code (Case 1) Energy [kWh]/[Therm]		Energy Savings [%]
Space Cooling	Electricity	746,151		994,449		25%
Cooling Tower (Heat Rejection)	Electricity	10,410		12,060		14%
Space Heating (Electric)	Electricity	322,900		365,447		12%
Space Heating (Gas)	Gas	51,154		105,460		51%
Domestic Hot Water	Gas	66,440		74,819		-
Solar Heated Hot Water Credit	Gas	(2,666)		-		-
Ventilation and Fans	Electricity	339,433		319,999		-6%
Pumps & Auxilary	Electricity	578,302		630,534		8%
Miscellaneous Equipment	Electricity	1,436,736		1,455,124		1.3%
Area Lighting	Electricity	2,023,682		2,023,682		0.0%
Total Site Consumption	**Electricity**	**5,457,613**		**5,801,296**		**6%**
	Gas	**114,928**		**180,279**		**36%**

Energy Use and Emissions by Fuel Type

Type	Proposed Use [kWh]/[Therm]	Proposed CO2 [lbs]	Budget Use [kWh]/[Therm]	Budget CO2 [lbs]	lbs CO2 Savings
Electricity	5,457,613	4,409,752	5,801,296	4,687,447	6%
Gas	114,928	1,337,766	180,279	2,098,443	36%
Total pounds CO2 emissions		5,747,517		6,785,890	15.3%

Emissions Factors

Electricity	0.808	lbs CO2/KWh
Gas	116.4	lbs CO2/Mbtu

Notes:

The results summarized here should not be considered as final. Since the design is fluid, there is potential for the savings to change.

Seaport Square MEPA: Preliminary Results **6/10/2009**

Code Model (Case 1) Vs Vanderweil (Case 3)

BUILDING M2

End Use	Energy Type	Vanderweil (Case 3) Energy [kWh]/[Therm]		Code (Case 1) Energy [kWh]/[Therm]		Energy Savings [%]
Space Cooling	Electricity	471,082		637,168		26%
Cooling Tower (Heat Rejection)	Electricity	6,670		7,727		14%
Space Heating (Electric)	Electricity	314,800		356,280		12%
Space Heating (Gas)	Gas	48,548		101,251		52%
Domestic Hot Water	Gas	48,622		54,754		-
Solar Heated Hot Water Credit	Gas	(2,666)		-		-
Ventilation and Fans	Electricity	275,845		267,117		-3%
Pumps & Auxilary	Electricity	434,018		473,218		8%
Miscellaneous Equipment	Electricity	975,564		997,198		2.2%
Area Lighting	Electricity	1,306,107		1,306,107		0.0%
Total Site Consumption	**Electricity**	**3,784,085**		**4,044,815**		**6%**
	Gas	**94,504**		**156,005**		**39%**

Energy Use and Emissions by Fuel Type

Type	Proposed Use [kWh]/[Therm]	Proposed CO2 [lbs]	Budget Use [kWh]/[Therm]	Budget CO2 [lbs]	lbs CO2 Savings
Electricity	3,784,085	3,057,541	4,044,815	3,268,210	6%
Gas	94,504	1,100,025	156,005	1,815,893	39%
Total pounds CO2 emissions		4,157,566		5,084,104	18.2%

Emissions Factors

Electricity	0.808	lbs CO2/KWh
Gas	116.4	lbs CO2/Mbtu

Notes:

The results summarized here should not be considered as final. Since the design is fluid, there is potential for the savings to change.

Seaport Square MEPA: Preliminary Results **6/10/2009**

Code Model (Case 1) Vs Vanderweil (Case 3) **BUILDING N**

End Use	Energy Type	Vanderweil (Case 3) Energy [kWh]/[Therm]		Code (Case 1) Energy [kWh]/[Therm]		Energy Savings [%]
Space Cooling	Electricity	302,149		371,042		19%
Cooling Tower (Heat Rejection)	Electricity	41,468		44,368		7%
Space Heating (Electric)	Electricity	-		-		0%
Space Heating (Gas)	Gas	165,312		224,955		27%
Domestic Hot Water	Gas	10,513		11,839		-
Solar Heated Hot Water Credit	Gas	-		-		-
Ventilation and Fans	Electricity	533,355		507,940		-5%
Pumps & Auxilary	Electricity	476,973		474,558		-1%
Miscellaneous Equipment	Electricity	514,705		514,705		0.0%
Area Lighting	Electricity	1,008,113		1,008,113		0.0%
Total Site Consumption	**Electricity**	**2,876,763**		**2,920,726**		**2%**
	Gas	**175,825**		**236,795**		**26%**

Energy Use and Emissions by Fuel Type

Type	Proposed Use [kWh]/[Therm]	Proposed CO2 [lbs]	Budget Use [kWh]/[Therm]	Budget CO2 [lbs]	lbs CO2 Savings
Electricity	2,876,763	2,324,425	2,920,726	2,359,947	2%
Gas	175,825	2,046,608	236,795	2,756,291	26%
Total pounds CO2 emissions		4,371,033		5,116,238	14.6%

Emissions Factors

Electricity	0.808	lbs CO2/KWh
Gas	116.4	lbs CO2/Mbtu

Notes:

The results summarized here should not be considered as final. Since the design is fluid, there is potential for the savings to change.

Seaport Square MEPA: Preliminary Results **6/10/2009**

Code Model (Case 1) Vs Vanderweil (Case 3)

BUILDING P

End Use	Energy Type	Vanderweil (Case 3) Energy [kWh]/[Therm]		Code (Case 1) Energy [kWh]/[Therm]		Energy Savings [%]
Space Cooling	Electricity	241,536		304,794		21%
Cooling Tower (Heat Rejection)	Electricity	34,064		36,447		7%
Space Heating (Electric)	Electricity	-		-		0%
Space Heating (Gas)	Gas	125,716		176,443		29%
Domestic Hot Water	Gas	17,254		19,430		-
Solar Heated Hot Water Credit	Gas	(2,666)		-		-
Ventilation and Fans	Electricity	549,023		569,659		4%
Pumps & Auxilary	Electricity	380,067		378,143		-1%
Miscellaneous Equipment	Electricity	590,173		606,452		2.7%
Area Lighting	Electricity	1,461,127		1,461,127		0.0%
Total Site Consumption	**Electricity**	**3,255,989**		**3,356,621**		**3%**
	Gas	**140,305**		**195,873**		**28%**

Energy Use and Emissions by Fuel Type

Type	Proposed Use [kWh]/[Therm]	Proposed CO2 [lbs]	Budget Use [kWh]/[Therm]	Budget CO2 [lbs]	lbs CO2 Savings
Electricity	3,255,989	2,630,839	3,356,621	2,712,150	3%
Gas	140,305	1,633,145	195,873	2,279,964	28%
Total pounds CO2 emissions		4,263,984		4,992,114	14.6%

Emissions Factors

Electricity	0.808	lbs CO2/KWh
Gas	116.4	lbs CO2/Mbtu

Notes:

The results summarized here should not be considered as final. Since the design is fluid, there is potential for the savings to change.

Seaport Square MEPA: Preliminary Results **6/10/2009**

Code Model (Case 1) Vs Vanderweil (Case 3)

BUILDING Q

End Use	Energy Type	Vanderweil (Case 3) Energy [kWh]/[Therm]		Code (Case 1) Energy [kWh]/[Therm]		Energy Savings [%]
Space Cooling	Electricity	436,651		475,732		8%
Cooling Tower (Heat Rejection)	Electricity	122,167		123,715		1%
Space Heating (Electric)	Electricity	-		-		0%
Space Heating (Gas)	Gas	48,436		70,986		32%
Domestic Hot Water	Gas	5,454		6,142		-
Solar Heated Hot Water Credit	Gas	-		-		-
Ventilation and Fans	Electricity	867,088		972,318		11%
Pumps & Auxilary	Electricity	154,382		144,687		-7%
Miscellaneous Equipment	Electricity	496,054		496,054		0.0%
Area Lighting	Electricity	588,249		591,290		0.5%
Total Site Consumption	**Electricity**	**2,664,590**		**2,803,797**		**5%**
	Gas	**53,890**		**77,128**		**30%**

Energy Use and Emissions by Fuel Type

Type	Proposed Use [kWh]/[Therm]	Proposed CO2 [lbs]	Budget Use [kWh]/[Therm]	Budget CO2 [lbs]	lbs CO2 Savings
Electricity	2,664,590	2,152,989	2,803,797	2,265,468	5%
Gas	53,890	627,284	77,128	897,767	30%
Total pounds CO2 emissions		2,780,272		3,163,235	12.1%

Emissions Factors

Electricity	0.808	lbs CO2/KWh
Gas	116.4	lbs CO2/Mbtu

Notes:

The results summarized here should not be considered as final. Since the design is fluid, there is potential for the savings to change.

APPENDIX D7
Case 3 Technology Summaries

Solar Thermal Hot Water
HVAC/Lighting Controls, High Performance Lighting & UFAD
Cogeneration
Cogeneration Estimate

Solar Thermal Hot Water

		Proposed (Case 2)	Potential Future (Case 3)	Case 2-->3 Differential
DIRECT (NATURAL GAS)		therms	therms	
Space Heating		1,193,071	1,193,071	0.0%
Domestic Hot Water		543,112	543,112	-5.7%
Solar Thermal Hot Water Credit		---	-30,805	
Cogen Plant Heating Credit		---		
Cogen Plant Fuel Input		---		
Total		1,736,183	1,705,378	-1.8%
INDIRECT (ELECTRICITY)		kWh	kWh	
Space Heating		2,552,753	2,552,753	0.0%
Space Cooling		7,650,963	7,650,963	0.0%
Cooling Tower (Heat Rejection)		482,830	482,830	0.0%
Ventilation and Fans		10,645,322	10,645,322	0.0%
Pumps & Auxilary		5,664,230	5,664,230	0.0%
Misc. Equipment		15,609,900	15,609,900	0.0%
Area Lighting		21,682,099	21,682,099	0.0%
Pkg garage lighting		7,735,781	7,735,781	0.0%
Water pumping/wastewater trtmt		385,440	385,440	0.0%
Cogen Plant Power Credit		---	---	
Total		72,409,318	72,409,318	0.0%
GHG EMISSIONS		tons/yr	tons/yr	
Direct	Gas-burning	10,105	9,925	-1.8%
Indirect	Imported Electricity	29,253	29,253	0.0%
	Total	39,358	39,179	-0.5%
			tons	-179

Case 3 Upgrades: (Refer to Section 4.6.1.3 for details)

1. 500 ft2 solar HW collector for each building

HVAC/Lighting Controls, High-performance Lighting & UFAD

	Proposed (Case 2)	Potential Future (Case 3)	Case 2-->3 Differential
DIRECT (NATURAL GAS)	therms	therms	
Space Heating	1,193,071	1,170,474	-1.9%
Domestic Hot Water	543,112	543,112	0.0%
Solar Hot Water Credit	---	0	
Cogen Plant Heating Credit	---		
Cogen Plant Fuel Input	---		
Total	1,736,183	1,713,586	-1.3%
INDIRECT (ELECTRICITY)	kWh	kWh	
Space Heating	2,552,753	2,552,753	0.0%
Space Cooling	7,650,963	7,537,918	-1.5%
Cooling Tower (Heat Rejection)	482,830	482,830	0.0%
Ventilation and Fans	10,645,322	9,702,115	-8.9%
Pumps & Auxilary	5,664,230	5,664,230	0.0%
Misc. Equipment	15,609,900	15,410,010	-1.3%
Area Lighting	21,682,099	21,643,761	-0.2%
Pkg garage lighting	7,735,781	7,735,781	0.0%
Water pumping/wastewater trtmt3	385,440	385,440	0.0%
Cogen Plant Power Credit	---	0	0.0%
Total	72,409,318	71,114,839	-1.8%
GHG EMISSIONS	tons/yr	tons/yr	
Direct Gas-burning	10,105	9,973	-1.3%
Indirect Imported Electricity	29,253	28,730	-1.8%
Total	39,358	38,703	-1.7%
		tons	-654

Case 3 Upgrades: (Refer to Section 4.6.1.3 for details)

2. Room setback control for hotels and condos
3. Lighting upgrade to office common areas
4. Underfloor air delivery for offices

Cogeneration

	Proposed (Case 2)	Potential Future (Case 3)	Case 1-->3 Differential
DIRECT (NATURAL GAS)	therms	therms	
Space Heating	1,193,071	1,193,071	0.0%
Domestic Hot Water	543,112	543,112	-8.9%
Solar Hot Water Credit	---	0	
Cogen Plant Heating Credit	---	-1,608,147	
Cogen Plant Fuel Input	---	3,578,548	
Total	1,736,183	3,706,584	113.5%
INDIRECT (ELECTRICITY)	kWh	kWh	
Space Heating	2,552,753	2,552,753	0.0%
Space Cooling	7,650,963	7,650,963	0.0%
Cooling Tower (Heat Rejection)	482,830	482,830	0.0%
Ventilation and Fans	10,645,322	10,645,322	0.0%
Pumps & Auxilary	5,664,230	5,664,230	0.0%
Misc. Equipment	15,609,900	15,609,900	0.0%
Area Lighting	21,682,099	21,682,099	0.0%
Pkg garage lighting	7,735,781	7,735,781	0.0%
Water pumping/wastewater trtmt3	385,440	385,440	0.0%
Cogen Plant Power Credit	---	-39,420,000	
Total	72,409,318	32,989,318	-54.4%

GHG EMISSIONS		tons/yr	tons/yr	
Direct	Gas-burning	10,105	21,572	113.5%
Indirect	Imported Electricity	29,253	13,328	-54.4%
	Total	39,358	34,900	-11.3%
			tons	-4,458

Case 3 Upgrades: (Refer to Section 4.6.1.3 for details)

5. 5 MW cogeneration plant, 90% utilization,75% heat rcovery

SEAPORT SQUARE Cogeneration Estimate

	Value	Units	
Site electricity	70,638,494	kWh	
Site heating req'd	1,150,180	therms	
Dom. hot water	543,112	therms	
Engine size	5,000	kWh	
Engine capacity factor	90%		
Heat rate	8,900	Btu/kWh	
Parasitic load	2%		
Waste heat	5,666	Btu/kWh	
Heat recovery efficiency	80%		
Heat recoverable	4,533	Btu/kWh	
Heat utilization factor	90%		
Heat utilization	4,080	Btu/kWh	
			Associated CO_2 Reduction (tpy)
Power generation	39,420,000	kWh	(15,926)
Fuel use	3,578,548	therms	20,827
Heating plant credit	1,608,147	therms	(9,359)
Net			(4,458)

	MMBtu/yr	
Fuel use	357,855	
as electricity	134,501	38%
utilized heat	160,815	45%
	Overall efficiency	83%

APPENDIX D8

Roof-top Photovoltaic Systems Preliminary Evaluation

500 sf of Unshaded Roof

3,000 sf of Unshaded Roof

R.G. Vanderweil Engineers, LLP

PROJECT NAME: Seaport Square
PROJECT NUMBER: 25080
CALCULATED BY: BAC DATE: 6/5/2009
CHECKED BY: PDK DATE: 6/5/2009

FILE NAME: H:\25080.00\ELEC\CALC\PV\[500sf.xls]Summary Sheet

Expected Output of Photovoltaic Systems

500 sf unshaded roof

DESCRIPTION:

This worksheet calculates the expected output of a photovoltaic array using solar irradiation data from the National Renewable Energy Laboratory's PVWatts software (see Attachment 1). It then makes use of the Massachusetts Technology Collaborative's financial calculator to estimate payback time for the array (Attachment 2).

FORMULAS:

Array Area = (Array Size in Watts) / (Panel Output in W/m2)
Yearly Array Output =((Panel Efficiency) x (Yearly Incident Sunlight in kWh/m2) x (Array Area in m2))/1000
Annual Net Capacity Factor = (Array First Year Output) / (Array Size*8760)

REFERENCES:

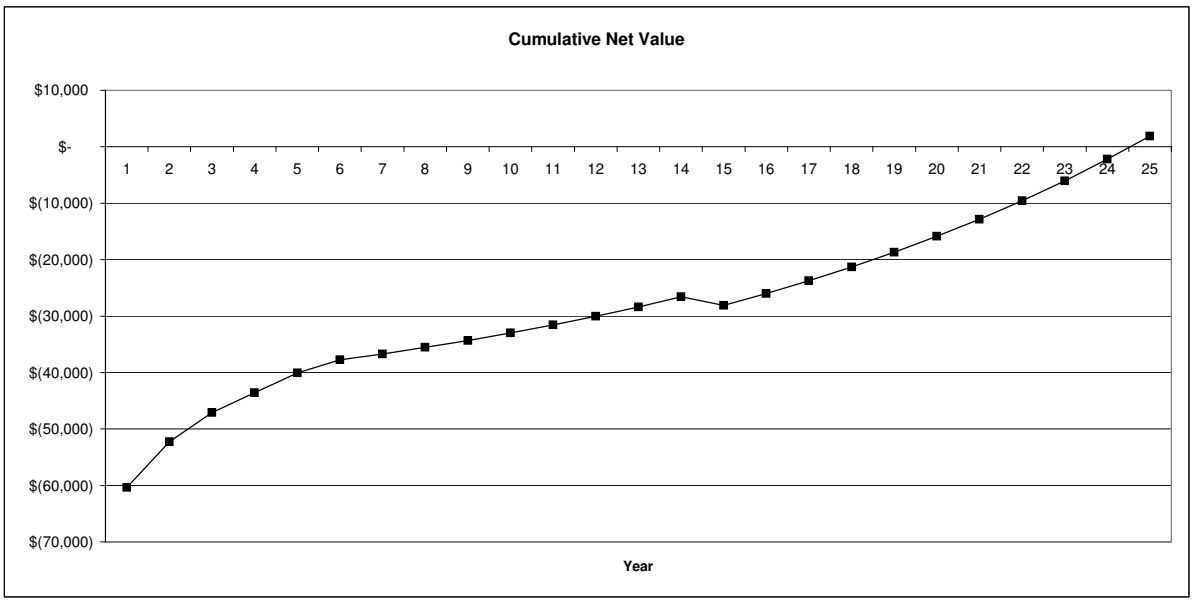
"PVWatts" software from the National Renewable Energy Laboratory	http://rredc.nrel.gov/solar/codes_algs/PVWATTS/
Massachusetts Technology Collaborative (MTC)	http://www.masstech.org/solar/

ASSUMPTIONS:

Panel Efficiency (Peak W/m2)	170	Assumed efficiency based on current averages
(Peak W/ft2)	15.79	
Maximum Available Roof Area (ft2):	500	
Maximum array size (AC kW) based on roof area	8	
Array tilt angle from horizontal	12	
Array angle of orientation (South = 180)	200	
Yearly Increase in Energy Costs	8%	
Array Lifetime (Years)	25	

SYSTEM SUMMARY:

Array Size (kw):	8	
Assumed Cost per Watt:	$4.70	Assumed cost based on current averages
Cost per Watt for Installation:	$3.50	Assumed cost for a typical standing-seam roof installation. Does not include significant structural modifications that may be necessary for other roofing types.
Total Cost	$65,600	
Up-front Cost	$65,600	See Attachment 2 for full financial calculations
Array First Year Output, kWh AC:	9,180	See Attachment 1 for calculations
Annual Net Capacity Factor:	13.1%	
Estimated Payback Term (Years):	24.5	See Attachment 2 and table below



Attachment 1

PV Watts Results

System Location

Latitude:	42.1 ˚N
Longitude:	70.9 ˚W

System Specifications

Array Type:	Fixed Tilt
Array Tilt:	12
Array Azimuth:	200

Solar Radiation Received

Month	Radiation (kWh/m2/day)
1	2.08
2	2.91
3	4.07
4	4.6
5	5.36
6	5.63
7	5.56
8	5.18
9	4.36
10	3.31
11	2.21
12	1.86
Year	3.93

Array Output Calculations

Total kWh/m2/Year Incident:	1434	
Total Array Area (m2):	47.06	See "Formulas" Section on Summary Sheet
(ft2):	506.54	
Array Yearly Output, kWh DC:	11476	See "Formulas" Section on Summary Sheet
DC to AC Derate Factor:	0.8	Based on assumed inverter efficiency
Array Yearly Output, kWh AC:	9180.48	

ATTACHMENT 2

Non-Residential Solar Photovoltaic Project Simple Financial Model (02/07/08)

Scenario Definitions

Scenario A: Non-Taxable Rebate - Assumes that the state rebate is non-taxable, but is subtracted from the cost basis for purposes of determining tax credits and accelerated depreciation.

Scenario B: Taxable Rebate - Assumes that the state rebate is taxable, but is not subtracted from the cost basis for purposes of determining tax credits and accelerated depreciation.

Both Scenarios assume that the project owner can use both federal and state tax benefits

Select Taxable or Non-Taxable Entity	Taxable	
Project and Customer Cost Assumptions		
Solar Photovoltaic System Size	8,000	Watts (DC STC)
Total System Cost/Watt	$8.20	$/Watt (DC STC)
Total System Cost	$ 65,600	
MTC Rebate Assumptions		
MTC Scenario A: Non-Taxable Rebate	$ -	$/Watt (DC STC)
Scenario A Rebate	$ -	
MTC Scenario B: Taxable Rebate	$ -	$/Watt (DC STC)
Scenario B Rebate	$ -	
Project Performance and Savings/ Cost Assumptions		
Annual Net Capacity Factor	13.1%	kW (DC STC) to kWh AC
Annual Production Degradation	0.50%	%
Project Life	25	Years
Electricity Revenue (Avoided Costs)	$ 0.15	$/kWh
Electricity Revenue (Avoided Costs) Annual Adjustor	8.0%	%
Renewable Energy Certificate (REC) Revenue	$0.00	$/kWh
REC Revenue Annual Adjustor	0.0%	%
REC Revenue Term	0	Years (must be equal to or less than project life)
Annual Operations and Maintenance Cost	$ 250	$/Year
Annual Operations and Maintenance Adjustor	5.0%	%
Future Inverter Replacement Cost	$ 0.75	$/Watt (DC STC)
Inverter Life, Replace Every X Years	15	Year (must be equal to or less than project life)

Tax Assumptions							
Federal Tax Rate	35%						
State Tax Rate	9%						
Effective Tax Rate	41%						
Federal Tax Credit	0%						
State Tax Deduction	0%						
5 Year Accelerated Depreciation Schedule (MACRS)	20.00%	32.00%	19.20%	11.52%	11.52%	5.76%	
Financing Assumptions							
% Financed w/ Cash	100%						
% Financed w/ Loan	0%						
Loan Interest Rate	8%						
Loan Period	20	Years (must be equal to or less than project life)					
Scenario A Net Cost	$ 65,600						
Scenario A Loan	$ -						
Scenario B Net Cost	$ 65,600						
Scenario B Loan	$ -						
Customer Discount Rate	8%						

Solar Project Financial Analysis Summary	
Scenario A: Net Present Value	**$ (32,790)**
Scenario A: Simple Payback (100% Cash only)	**Year 25**
Scenario A: Estimated Return on Equity	**#DIV/0!**
Scenario A: Guess Return on Equity	50%
Scenario B: Net Present Value	**$ (32,790)**
Scenario B: Simple Payback (100% Cash only)	**Year 25**
Scenario B: Estimated Return on Equity	**#DIV/0!**
Scenario B: Guess Return on Equity	50%

Disclaimer: This Unofficial Cash Flow Model is intended to provide non-residential entities that are considering the purchase and installation of solar energy equipment with a general understanding of possible financial implications of such purchase and installation. Those entities interested in learning more about the financial implications of the purchase and installation of solar energy equipment are urged to consult their own tax and financial experts. The information contained in the Unofficial Cash Flow Model may not be relied on by anyone for any purposes. Furthermore, the information contained in this model does not necessarily reflect the views of the Massachusetts Technology Collaborative or the Commonwealth of Massachusetts, and reference to any specific method does not constitute an implied or expressed recommendation or endorsement of it. Neither the Massachusetts Technology Collaborative nor the Commonwealth of Massachusetts make any warranties or representations, expressed or implied, as to the usefulness, completeness, or accuracy of any processes, methods or other information contained, described, disclosed, or referred to in this model.

Finally, neither the Massachusetts Technology Collaborative nor the Commonwealth of Massachusetts makes any representation that the use of any product, apparatus, process, method, or other information will not infringe privately owned property rights and assumes no liability of any kind or nature for any loss, injury, or damage directly or indirectly resulting from, or occurring in connection with, the use of information contained, described, disclosed, or referred to in this Unofficial Cash Flow Model.

R.G. Vanderweil Engineers, LLP

PROJECT NAME: Seaport Square
PROJECT NUMBER: 25080
CALCULATED BY: BAC DATE: 6/5/2009
CHECKED BY: PDK DATE: 6/5/2009

FILE NAME: H:\25080.00\ELEC\CALC\PV\[3000sf.xls]Summary Sheet

Expected Output of Photovoltaic Systems

3,000 sf unshaded roof

DESCRIPTION:

This worksheet calculates the expected output of a photovoltaic array using solar irradiation data from the National Renewable Energy Laboratory's PVWatts software (see Attachment 1). It then makes use of the Massachusetts Technology Collaborative's financial calculator to estimate payback time for the array (Attachment 2).

FORMULAS:

Array Area = (Array Size in Watts) / (Panel Output in W/m2)
Yearly Array Output =((Panel Efficiency) x (Yearly Incident Sunlight in kWh/m2) x (Array Area in m2))/1000
Annual Net Capacity Factor = (Array First Year Output) / (Array Size*8760)

REFERENCES:

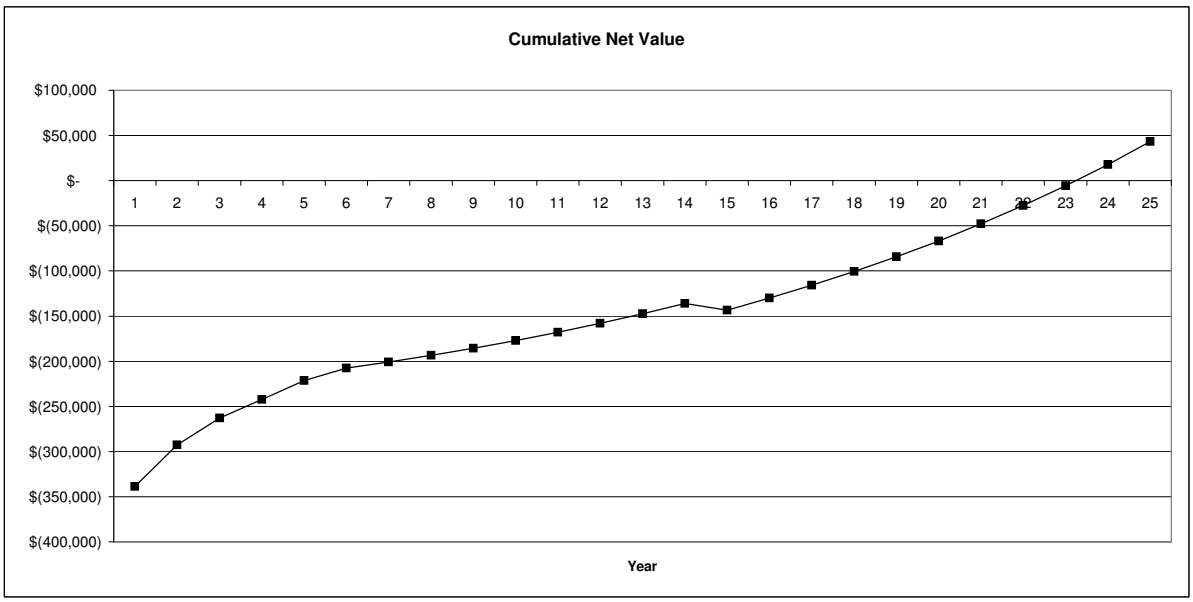
"PVWatts" software from the National Renewable Energy Laboratory	http://rredc.nrel.gov/solar/codes_algs/PVWATTS/
Massachusetts Technology Collaborative (MTC)	http://www.masstech.org/solar/

ASSUMPTIONS:

Panel Efficiency (Peak W/m2)	170	Assumed efficiency based on current averages
(Peak W/ft2)	15.79	
Maximum Available Roof Area (ft2):	3000	
Maximum array size (AC kW) based on roof area	47	
Array tilt angle from horizontal	12	
Array angle of orientation (South = 180)	200	
Yearly Increase in Energy Costs	8%	
Array Lifetime (Years)	25	

SYSTEM SUMMARY:

Array Size (kw):	45	
Assumed Cost per Watt:	$4.70	Assumed cost based on current averages
Cost per Watt for Installation:	$3.50	Assumed cost for a typical standing-seam roof installation. Does not include significant structural modifications that may be necessary for other roofing types.
Total Cost	$369,000	
Up-front Cost	$369,000	See Attachment 2 for full financial calculations
Array First Year Output, kWh AC:	51,640	See Attachment 1 for calculations
Annual Net Capacity Factor:	13.1%	
Estimated Payback Term (Years):	23.2	See Attachment 2 and table below



Attachment 1

PV Watts Results

System Location

Latitude:	42.1 ˚N
Longitude:	70.9 ˚W

System Specifications

Array Type:	Fixed Tilt
Array Tilt:	12
Array Azimuth:	200

Solar Radiation Received

Month	Radiation (kWh/m2/day)
1	2.08
2	2.91
3	4.07
4	4.6
5	5.36
6	5.63
7	5.56
8	5.18
9	4.36
10	3.31
11	2.21
12	1.86
Year	3.93

Array Output Calculations

Total kWh/m2/Year Incident:	1434	
Total Array Area (m2):	264.71	See "Formulas" Section on Summary Sheet
(ft2):	2849.29	
Array Yearly Output, kWh DC:	64550	See "Formulas" Section on Summary Sheet
DC to AC Derate Factor:	0.8	Based on assumed inverter efficiency
Array Yearly Output, kWh AC:	51640.2	

ATTACHMENT 2

Non-Residential Solar Photovoltaic Project Simple Financial Model (02/07/08)

Scenario Definitions

Scenario A: Non-Taxable Rebate - Assumes that the state rebate is non-taxable, but is subtracted from the cost basis for purposes of determining tax credits and accelerated depreciation.

Scenario B: Taxable Rebate - Assumes that the state rebate is taxable, but is not subtracted from the cost basis for purposes of determining tax credits and accelerated depreciation.

Both Scenarios assume that the project owner can use both federal and state tax benefits

Select Taxable or Non-Taxable Entity	Taxable	
Project and Customer Cost Assumptions		
Solar Photovoltaic System Size	45,000	Watts (DC STC)
Total System Cost/Watt	$8.20	$/Watt (DC STC)
Total System Cost	$ 369,000	
MTC Rebate Assumptions		
MTC Scenario A: Non-Taxable Rebate	$ -	$/Watt (DC STC)
Scenario A Rebate	$ -	
MTC Scenario B: Taxable Rebate	$ -	$/Watt (DC STC)
Scenario B Rebate	$ -	
Project Performance and Savings/ Cost Assumptions		
Annual Net Capacity Factor	13.1%	kW (DC STC) to kWh AC
Annual Production Degradation	0.50%	%
Project Life	25	Years
Electricity Revenue (Avoided Costs)	$ 0.15	$/kWh
Electricity Revenue (Avoided Costs) Annual Adjustor	8.0%	%
Renewable Energy Certificate (REC) Revenue	$0.00	$/kWh
REC Revenue Annual Adjustor	0.0%	%
REC Revenue Term	0	Years (must be equal to or less than project life)
Annual Operations and Maintenance Cost	$ 250	$/Year
Annual Operations and Maintenance Adjustor	5.0%	%
Future Inverter Replacement Cost	$ 0.75	$/Watt (DC STC)
Inverter Life, Replace Every X Years	15	Year (must be equal to or less than project life)

Tax Assumptions							
Federal Tax Rate	35%						
State Tax Rate	9%						
Effective Tax Rate	41%						
Federal Tax Credit	0%						
State Tax Deduction	0%						
5 Year Accelerated Depreciation Schedule (MACRS)	20.00%	32.00%	19.20%	11.52%	11.52%	5.76%	
Financing Assumptions							
% Financed w/ Cash	100%						
% Financed w/ Loan	0%						
Loan Interest Rate	8%						
Loan Period	20	Years (must be equal to or less than project life)					
Scenario A Net Cost	$ 369,000						
Scenario A Loan	$ -						
Scenario B Net Cost	$ 369,000						
Scenario B Loan	$ -						
Customer Discount Rate	8%						

Solar Project Financial Analysis Summary	
Scenario A: Net Present Value	**$ (172,939)**
Scenario A: Simple Payback (100% Cash only)	**Year 24**
Scenario A: Estimated Return on Equity	**#DIV/0!**
Scenario A: Guess Return on Equity	50%
Scenario B: Net Present Value	**$ (172,939)**
Scenario B: Simple Payback (100% Cash only)	**Year 24**
Scenario B: Estimated Return on Equity	**#DIV/0!**
Scenario B: Guess Return on Equity	50%

Disclaimer: This Unofficial Cash Flow Model is intended to provide non-residential entities that are considering the purchase and installation of solar energy equipment with a general understanding of possible financial implications of such purchase and installation. Those entities interested in learning more about the financial implications of the purchase and installation of solar energy equipment are urged to consult their own tax and financial experts. The information contained in the Unofficial Cash Flow Model may not be relied on by anyone for any purposes. Furthermore, the information contained in this model does not necessarily reflect the views of the Massachusetts Technology Collaborative or the Commonwealth of Massachusetts, and reference to any specific method does not constitute an implied or expressed recommendation or endorsement of it. Neither the Massachusetts Technology Collaborative nor the Commonwealth of Massachusetts make any warranties or representations, expressed or implied, as to the usefulness, completeness, or accuracy of any processes, methods or other information contained, described, disclosed, or referred to in this model.

Finally, neither the Massachusetts Technology Collaborative nor the Commonwealth of Massachusetts makes any representation that the use of any product, apparatus, process, method, or other information will not infringe privately owned property rights and assumes no liability of any kind or nature for any loss, injury, or damage directly or indirectly resulting from, or occurring in connection with, the use of information contained, described, disclosed, or referred to in this Unofficial Cash Flow Model.

R.G. Vanderweil Engineers, LLP

PROJECT NAME: Seaport Square
PROJECT NUMBER: 25080
CALCULATED BY: BAC DATE: 6/5/2009
CHECKED BY: PDK DATE: 6/5/2009

FILE NAME: H:\25080.00\ELEC\CALC\PV\[500sf_Rebates.xls]Attachment 3

Expected Output of Photovoltaic Systems With Current Rebates

PURPOSE:

This worksheet calculates the expected output of a photovoltaic array using solar irradiation data from the National Renewable Energy Laboratory's PVWatts software (see Attachment 1). It then makes use of the Massachusetts Technology Collaborative's financial calculator to estimate payback time for the array (Attachment 2).

FORMULAS:

Array Area = (Array Size in Watts) / (Panel Output in W/m2)
Yearly Array Output =((Panel Efficiency) x (Yearly Incident Sunlight in kWh/m2) x (Array Area in m2))/1000
Annual Net Capacity Factor = (Array First Year Output) / (Array Size*8760)

REFERENCES:

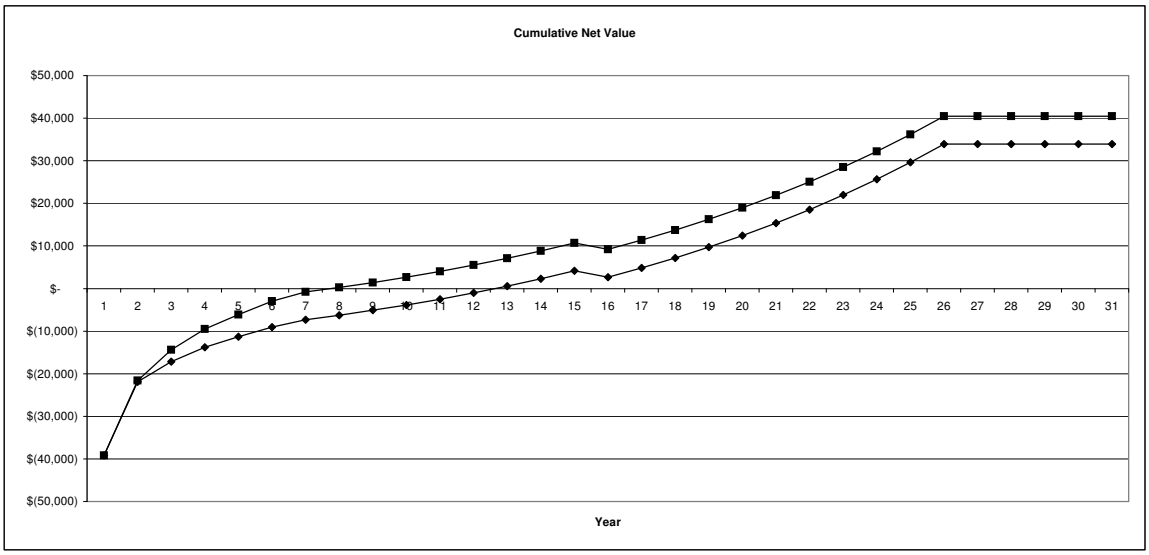
"PVWatts" software from the National Renewable Energy Laboratory	http://rredc.nrel.gov/solar/codes_algs/PVWATTS/
Database of State Incentives for Renewables & Efficiency (DSIRE)	http://www.dsireusa.org/
Massachusetts Technology Collaborative (MTC)	http://www.masstech.org/solar/

ASSUMPTIONS:

Panel Efficiency (Peak W/m2)	170	
(Peak W/ft2)	15.79	
Maximum Available Roof Area (ft2):	500	Equal to 70% of total roof square footage
Maximum array size (AC kW) based on roof area	8	
Array tilt angle from horizontal	12	
Array angle of orientation (South = 180)	200	
Solar Renewable Energy Certificate (REC) Rate	$0.05	Based on current purchase price in MA
REC Term (Years)	4	
Yearly Increase in Energy Costs	8%	
Array Lifetime (Years)	25	
Federal Tax Credit	30%	Tax credit applies to all PV systems that are in service on or before December 31, 2016

SYSTEM SUMMARY:

Array Size (kw):	8	
Assumed Cost per Watt:	$4.70	
Cost per Watt for Installation:	$3.50	Assumed cost for a typical standing-seam roof installation. Does not include significant structural modifications that may be necessary for other roofing types.
Total Cost	$65,600	
MTC Rebate Amount	$26,400	Based on 2009 rebates offered by the MTC, see Attachment 2
Bottom Line Cost, Scenario A	$1,158	See Attachment 3 for full financial calculations
Bottom Line Cost, Scenario B	$6,455	See Attachment 3 for full financial calculations
Array First Year Output, kWh AC:	9,180	See Attachment 1 for calculations
Annual Net Capacity Factor:	13.1%	
Estimated Payback Term (Years), Scenario A:	12.50	See Attachment 3 and chart below
Estimated Payback Term (Years), Scenario B:	7.60	See Attachment 3 and chart below



Attachment 1

PV Watts Results

System Location

Latitude:	42.1 ˚N
Longitude:	70.9 ˚W

System Specifications

Array Type:	Fixed Tilt
Array Tilt:	12
Array Azimuth:	200

Solar Radiation Received

Month	Radiation (kWh/m2/day)
1	2.08
2	2.91
3	4.07
4	4.6
5	5.36
6	5.63
7	5.56
8	5.18
9	4.36
10	3.31
11	2.21
12	1.86
Year	3.93

Array Output Calculations

Total kWh/m2/Year Incident:	1434	
Total Array Area (m2):	47.06	See "Formulas" Section on Summary Sheet
(ft2):	506.54	
Array Yearly Output, kWh DC:	11476	See "Formulas" Section on Summary Sheet
DC to AC Derate Factor:	0.8	Based on assumed inverter efficiency
Array Yearly Output, kWh AC:	9180.48	

Attachment 2

Non-Residential: Commonwealth Solar Rebate Matrix ($/watt dc)				
Incremental Capacity	**1 to 25 kW** (1,000 to 25,000 watts)	**> 25 to 100 kW**	**> 100 kW to 200 kW**	**> 200 kW to 500 kW**
Base Incentive ($/watt dc)	$3.15	$3.00	$2.00	$1.40
PLUS: Additions to Base				
MA-Manufactured Components	$0.15	$0.15	$0.15	$0.15
Public Building Adder	$1.00	$1.00	$1.00	$1.00

Non-Residential: Commonwealth Solar Rebate Calculator		
Total PV Project Size (watts dc)		**8,000**
Total PV Project Size for Rebate Calculation (500 kW cap)		**8,000**
MA-manufactured components		YES
Public Building Adder		NO
Rebate ($)	**$**	**26,400.00**
Rebate ($/watt dc) based on total project size	**$**	**3.30000**

ATTACHMENT 3

Non-Residential Solar Photovoltaic Project Simple Financial Model (02/07/08)

Scenario Definitions

Scenario A: Non-Taxable Rebate - Assumes that the state rebate is non-taxable, but is subtracted from the cost basis for purposes of determining tax credits and accelerated depreciation.

Scenario B: Taxable Rebate - Assumes that the state rebate is taxable, but is not subtracted from the cost basis for purposes of determining tax credits and accelerated depreciation.

Both Scenarios assume that the project owner can use both federal and state tax benefits

Select Taxable or Non-Taxable Entity	Taxable	
Project and Customer Cost Assumptions		
Solar Photovoltaic System Size	8,000	Watts (DC STC)
Total System Cost/Watt	$8.20	$/Watt (DC STC)
Total System Cost	$ 65,600	
MTC Rebate Assumptions		
MTC Scenario A: Non-Taxable Rebate	$ 3.300	$/Watt (DC STC)
Scenario A Rebate	$ 26,400	
MTC Scenario B: Taxable Rebate	$ 3.300	$/Watt (DC STC)
Scenario B Rebate	$ 26,400	
Project Performance and Savings/ Cost Assumptions		
Annual Net Capacity Factor	13.1%	kW (DC STC) to kWh AC
Annual Production Degradation	0.50%	%
Project Life	25	Years
Electricity Revenue (Avoided Costs)	$ 0.15	$/kWh
Electricity Revenue (Avoided Costs) Annual Adjustor	8.0%	%
Renewable Energy Certificate (REC) Revenue	$0.05	$/kWh
REC Revenue Annual Adjustor	7.0%	%
REC Revenue Term	4	Years (must be equal to or less than project life)
Annual Operations and Maintenance Cost	$ 250	$/Year
Annual Operations and Maintenance Adjustor	3.0%	%
Future Inverter Replacement Cost	$ 0.75	$/Watt (DC STC)
Inverter Life, Replace Every X Years	15	Year (must be equal to or less than project life)

Tax Assumptions							
Federal Tax Rate	35%						
State Tax Rate	9%						
Effective Tax Rate	41%						
Federal Tax Credit	30%						
State Tax Deduction	100%						
5 Year Accelerated Depreciation Schedule (MACRS)	20.00%	32.00%	19.20%	11.52%	11.52%	5.76%	
Financing Assumptions							
% Financed w/ Cash	100%						
% Financed w/ Loan	0%						
Loan Interest Rate	8%						
Loan Period	10	Years (must be equal to or less than project life)					
Scenario A Net Cost	$ 39,200						
Scenario A Loan	$ -						
Scenario B Net Cost	$ 39,200						
Scenario B Loan	$ -						
Customer Discount Rate	7%						

Solar Project Financial Analysis Summary	
Scenario A: Net Present Value	**$ 1,158**
Scenario A: Simple Payback (100% Cash only)	**Year 12**
Scenario A: Estimated Return on Equity	**7.5%**
Scenario A: Guess Return on Equity	50%
Scenario B: Net Present Value	**$ 6,455**
Scenario B: Simple Payback (100% Cash only)	**Year 7**
Scenario B: Estimated Return on Equity	**10.0%**
Scenario B: Guess Return on Equity	50%

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R.G. Vanderweil Engineers, LLP

PROJECT NAME: Seaport Square
PROJECT NUMBER: 25080
CALCULATED BY: BAC DATE: 6/5/2009
CHECKED BY: PDK DATE: 6/5/2009

FILE NAME: H:\25080.00\ELEC\CALC\PV\[3000sf_Rebates.xls]Summary Sheet

Expected Output of Photovoltaic Systems With Current Rebates

PURPOSE:

This worksheet calculates the expected output of a photovoltaic array using solar irradiation data from the National Renewable Energy Laboratory's PVWatts software (see Attachment 1). It then makes use of the Massachusetts Technology Collaborative's financial calculator to estimate payback time for the array (Attachment 2).

FORMULAS:

Array Area = (Array Size in Watts) / (Panel Output in W/m2)
Yearly Array Output =((Panel Efficiency) x (Yearly Incident Sunlight in kWh/m2) x (Array Area in m2))/1000
Annual Net Capacity Factor = (Array First Year Output) / (Array Size*8760)

REFERENCES:

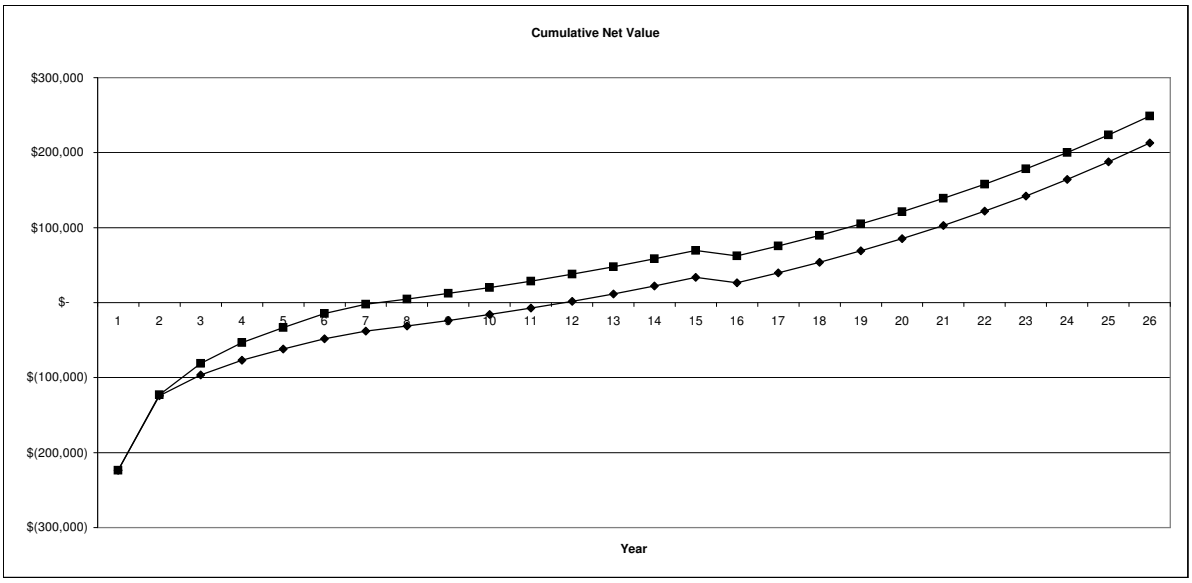
"PVWatts" software from the National Renewable Energy Laboratory	http://rredc.nrel.gov/solar/codes_algs/PVWATTS/
Database of State Incentives for Renewables & Efficiency (DSIRE)	http://www.dsireusa.org/
Massachusetts Technology Collaborative (MTC)	http://www.masstech.org/solar/

ASSUMPTIONS:

Panel Efficiency (Peak W/m2)	170	
(Peak W/ft2)	15.79	
Maximum Available Roof Area (ft2):	3000	
Maximum array size (AC kW) based on roof area	47	
Array tilt angle from horizontal	12	
Array angle of orientation (South = 180)	200	
Solar Renewable Energy Certificate (REC) Rate	$0.05	Based on current purchase price in MA
REC Term (Years)	4	
Yearly Increase in Energy Costs	8%	
Array Lifetime (Years)	25	
Federal Tax Credit	30%	Tax credit applies to all PV systems that are in service on or before December 31, 2016

SYSTEM SUMMARY:

Array Size (kw):	45	
Assumed Cost per Watt:	$4.70	
Cost per Watt for Installation:	$3.50	Assumed cost for a typical standing-seam roof installation. Does not include significant structural modifications that may be necessary for other roofing types.
Total Cost	$369,000	
MTC Rebate Amount	$145,500	Based on 2009 rebates offered by the MTC, see Attachment 2
Bottom Line Cost, Scenario A	$15,233	See Attachment 3 for full financial calculations
Bottom Line Cost, Scenario B	$44,428	See Attachment 3 for full financial calculations
Array First Year Output, kWh AC:	51,640	See Attachment 1 for calculations
Annual Net Capacity Factor:	13.1%	
Estimated Payback Term (Years), Scenario A:	11.50	See Attachment 3 and chart below
Estimated Payback Term (Years), Scenario B:	7.30	See Attachment 3 and chart below



Attachment 1

PV Watts Results

System Location

Latitude:	42.1 ˚N
Longitude:	70.9 ˚W

System Specifications

Array Type:	Fixed Tilt
Array Tilt:	12
Array Azimuth:	200

Solar Radiation Received

Month	Radiation (kWh/m2/day)
1	2.08
2	2.91
3	4.07
4	4.6
5	5.36
6	5.63
7	5.56
8	5.18
9	4.36
10	3.31
11	2.21
12	1.86
Year	3.93

Array Output Calculations

Total kWh/m2/Year Incident:	1434	
Total Array Area (m2):	264.71	See "Formulas" Section on Summary Sheet
(ft2):	2849.29	
Array Yearly Output, kWh DC:	64550	See "Formulas" Section on Summary Sheet
DC to AC Derate Factor:	0.8	Based on assumed inverter efficiency
Array Yearly Output, kWh AC:	51640.2	

Attachment 2

Non-Residential: Commonwealth Solar Rebate Matrix ($/watt dc)				
Incremental Capacity	**1 to 25 kW** (1,000 to 25,000 watts)	**> 25 to 100 kW**	**> 100 kW to 200 kW**	**> 200 kW to 500 kW**
Base Incentive ($/watt dc)	$3.15	$3.00	$2.00	$1.40
PLUS: Additions to Base				
MA-Manufactured Components	$0.15	$0.15	$0.15	$0.15
Public Building Adder	$1.00	$1.00	$1.00	$1.00

Non-Residential: Commonwealth Solar Rebate Calculator	
Total PV Project Size (watts dc)	**45,000**
Total PV Project Size for Rebate Calculation (500 kW cap)	**45,000**
MA-manufactured components	YES
Public Building Adder	NO
Rebate ($)	**$ 145,500.00**
Rebate ($/watt dc) based on total project size	**$ 3.23333**

ATTACHMENT 3

Non-Residential Solar Photovoltaic Project Simple Financial Model (02/07/08)

Scenario Definitions

Scenario A: Non-Taxable Rebate - Assumes that the state rebate is non-taxable, but is subtracted from the cost basis for purposes of determining tax credits and accelerated depreciation.

Scenario B: Taxable Rebate - Assumes that the state rebate is taxable, but is not subtracted from the cost basis for purposes of determining tax credits and accelerated depreciation.

Both Scenarios assume that the project owner can use both federal and state tax benefits

Select Taxable or Non-Taxable Entity	Taxable	
Project and Customer Cost Assumptions		
Solar Photovoltaic System Size	45,000	Watts (DC STC)
Total System Cost/Watt	$ 4.70	$/Watt (DC STC)
Total System Cost	$ 211,500	
MTC Rebate Assumptions		
MTC Scenario A: Non-Taxable Rebate	$ 3.233	$/Watt (DC STC)
Scenario A Rebate	$ 145,500	
MTC Scenario B: Taxable Rebate	$ 3.233	$/Watt (DC STC)
Scenario B Rebate	$ 145,500	
Project Performance and Savings/ Cost Assumptions		
Annual Net Capacity Factor	13.1%	kW (DC STC) to kWh AC
Annual Production Degradation	0.50%	%
Project Life	25	Years
Electricity Revenue (Avoided Costs)	$ 0.15	$/kWh
Electricity Revenue (Avoided Costs) Annual Adjustor	8.0%	%
Renewable Energy Certificate (REC) Revenue	$0.05	$/kWh
REC Revenue Annual Adjustor	7.0%	%
REC Revenue Term	4	Years (must be equal to or less than project life)
Annual Operations and Maintenance Cost	$ 250	$/Year
Annual Operations and Maintenance Adjustor	5.0%	%
Future Inverter Replacement Cost	$ 0.75	$/Watt (DC STC)
Inverter Life, Replace Every X Years	15	Year (must be equal to or less than project life)

Tax Assumptions							
Federal Tax Rate	35%						
State Tax Rate	9%						
Effective Tax Rate	41%						
Federal Tax Credit	30%						
State Tax Deduction	100%						
5 Year Accelerated Depreciation Schedule (MACRS)	20.00%	32.00%	19.20%	11.52%	11.52%	5.76%	
Financing Assumptions							
% Financed w/ Cash	100%						
% Financed w/ Loan	0%						
Loan Interest Rate	8%						
Loan Period	10	Years (must be equal to or less than project life)					
Scenario A Net Cost	$ 66,000						
Scenario A Loan	$ -						
Scenario B Net Cost	$ 66,000						
Scenario B Loan	$ -						
Customer Discount Rate	7%						

Solar Project Financial Analysis Summary	
Scenario A: Net Present Value	**$ 81,000**
Scenario A: Simple Payback (100% Cash only)	**Year 4**
Scenario A: Estimated Return on Equity	**20.9%**
Scenario A: Guess Return on Equity	50%
Scenario B: Net Present Value	**$ 110,195**
Scenario B: Simple Payback (100% Cash only)	**Year 3**
Scenario B: Estimated Return on Equity	**31.1%**
Scenario B: Guess Return on Equity	50%

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Appendix C

Air Quality

APPENDIX C AIR QUALITY

Introduction

The Air Quality Appendix C to the Seaport Square DPIR/DEIR provides modeling assumptions and backup for results presented in Section 4.6 of the report. Included within this documentation is a brief description of the methodology employed along with modeling outputs for the EPA MOBILE6 emission model and EPA AERMOD model.

Motor Vehicle Emissions

The EPA MOBILE6.2 computer program generated motor vehicle emissions used in the garage analysis along with the CAL3QHC modeling. The model input parameters were provided by MassDEP via e-mail from Marc Bennett on May 4, 2009. Emission rates were derived for 2009 and 2015 for speed limits of 2.5, 10, 15, and 30 mph for use in the mesoscale and microscale analyses. The 10 mph rate was used to estimate parking garage emissions.

CAL3QHC

For the intersections studied, the CAL3QHC model was applied to calculate CO concentrations at sensitive receptor locations using emission rates derived in MOBILE6.2. The intersection's queue links and free flow links were input to the model along with sensitive receptors at all locations nearby each intersection. The meteorological assumptions input into the model were a 1.0 meter per second wind speed, Pasquill-Gifford Class D stability combined with a mixing height of 1000 meters. For each direction, the full range of wind directions at 10 degree intervals was examined. In addition, a surface roughness (z_0) of 321 cm was used. Idle emission rates for queue links were based on 2.5 mph emission rates derived in MOBILE6.2 and converted from grams per mile to grams per hour. Emission rates for speeds of 10, 15, and 30 mph were used for free flow links and turn movements.

AERMOD

The EPA AERMOD model was used to calculate air quality impacts due to the parking garage vents, heating combustion boilers, emergency generators, and cooling towers. For non-combustion sources, ambient temperature releases were assumed; otherwise temperatures from the exhaust gas were used. Urban dispersion coefficients were used. Building downwash was accounted for in the modeling based on the building heights and projected widths of the buildings. The maximum modeled impacts from the garage vents and the stack sources were conservatively added to monitored background values for comparison to the NAAQS.

Emissions

Emissions for the heating combustion units were calculated using the latest DEP emission limits for boilers based on the Boiler Environmental Results Program (ERP). Emissions for the emergency generator were obtained from vendor information for a similar size unit. The resulting hourly emission rate in pounds per hour were converted to grams per second and input to the AERMOD model. For the NAAQS analysis, a similar approach was conducted for SO_2, NOx, PM-10, and PM-2.5. The emergency generator emissions were calculated based on a g/bhp-hr emission factor provided by vendor information for typical size units.

Boiler, Cooling Tower, Emergency Generator and Garage Exhaust Vent Emissions Calculations

Seaport Square - Calculation of Modeling Emission Rates

Heating Boilers										
Block Name	A	B	C	D	F(Park)	G	H	J	K	L1
Phase	1	1	1	1	1	1	1	1	2	2
Model	"C"	"B"	"B"	"A"	N/A	"B"	"C"	"C"	"A"	"B"
Qty.	2	8	6	6	0	6	1	2	5	7
Heat Input (MMBTU/hr) (ea)	1.5	3.0	3.0	2.0	0.0	3.0	1.5	1.5	2.0	3.0
Boiler Emission Rates										
NOx (g/s ea.)	0.0066	0.0132	0.0132	0.0088	0.0000	0.0132	0.0066	0.0066	0.0088	0.0132
CO (g/s ea.)	0.0151	0.0302	0.0302	0.0202	0.0000	0.0302	0.0151	0.0151	0.0202	0.0302
VOC (g/s ea.)	0.0057	0.0113	0.0113	0.0076	0.0000	0.0113	0.0057	0.0057	0.0076	0.0113
PM-10/PM-2.5 (g/s ea.)	0.0019	0.0038	0.0038	0.0025	0.0000	0.0038	0.0019	0.0019	0.0025	0.0038
SO2 (g/s ea.)	0.0001	0.0002	0.0002	0.0002	0.0000	0.0002	0.0001	0.0001	0.0002	0.0002
CO2 (g/s ea.)	21.8072	43.6144	43.6144	29.0763	0.0000	43.6144	21.8072	21.8072	29.0763	43.6144
Stack Parameters (each unit)										
Gas Exit Temp (°F)	170	170	170	170	0	170	170	170	170	170
Exhaust air (CFM)	743.22	1486.44	1486.44	990.96	0	1486.44	743.22	743.22	990.96	1486.44
Gas Exit Velocity (fps)	63.09	45.42	45.42	47.31	0	45.42	63.09	63.09	47.31	45.42
Primary Building Height (ft)	75.00	250.00	250.00	250.00	0	250.00	102.00	42.00	150.00	250.00
Stack Height (ft) (10' above roofline)	85.00	260.00	260.00	260.00	10.00	260.00	112.00	52.00	160.00	260.00
Stack Diameter (in.)	6	10	10	8	0	10	6	6	8	10

Cooling Towers										
Project "Block"	A	B	C	D	F(Park)	G	H	J	K	L1
Project Phase	1	1	1	1	1	1	1	1	2	2
# of CTs	1	2	2	1	0	2	1	1	2	2
CT Designation	"C"	"A"	"B"	"A"	N/A	"A"	"C"	"C"	"B"	"B"
Model	NC8405NAN1	NC8412VLN1	NC8409ULN1	NC8412VLN1	N/A	NC8412VLN1	NC8405NAN1	NC8405NAN1	NC8409ULN1	NC8409ULN1
Cooling Tower Specs (per tower)										
Cooling Tower Exhaust Flow (cfm)	87280	266100	194800	266100	0	266100	87280	87280	194800	194800
Cooling Tower Exhaust Flow (kg/s)	45.9	140.0	102.5	140.0	0	140.0	45.9	45.9	102.5	102.5
Cooling Tower Exhaust Temp (°F)	88.14	89.73	88.68	89.73	0	89.73	88.14	88.14	88.68	88.68
Cooling Tower Stack Diameter (ft)	9	12	12	12	0	12	9	9	12	12
Cooling Tower Stack Velocity (fps)	22.87	39.21	28.71	39.21	0	39.21	22.87	22.87	28.71	28.71
Tower Overall Dimensions (width, length, height of stack exit) (ft)	19.917W x9.896L x 11.979H	22.42W x13.90L x 18.82H	22.42W x13.90L x 12.00H	22.42W x13.90L x 18.82H	N/A	22.42W x13.90L x 18.82H	19.917W x9.896L x 11.979H	19.917W x9.896L x 11.979H	22.42W x13.90L x 12.00H	22.42W x13.90L x 12.00H
CT Stack Height (ft) (above roofline)	11.979	18.82	12	18.82	0	18.82	11.979	11.979	12	12
Primary Building Height (ft)	75.00	250.00	250.00	250.00	0	250.00	102.00	42.00	150.00	250.00
CT Stack Height (ft)	86.98	268.82	262.00	268.82	0.00	268.82	113.98	53.98	162.00	262.00
Number of cells	1	1	1	1	0	1	1	1	1	1
Cooling Tower Drift										
Drift Rate (% of circ water)	0.001	0.001	0.001	0.001	0	0.001	0.001	0.001	0.001	0.001
Circulating Water Rate (gph)	49,500	177,300	117,000	177,300	0	177,300	49,500	49,500	117,000	117,000
Circulating Water Rate (gpm)	825	2,955	1,950	2,955	0	2,955	825	825	1,950	1,950
TDS+TSS concentration in drift (mg/L)	1,500	1,500	1,500	1,500	0	1,500	1,500	1,500	1,500	1,500
PM emission rate in drift (lb/hr)	0.006	0.022	0.015	0.022	0	0.022	0.006	0.006	0.015	0.015
PM emission rate in drift (g/s)	0.00078	0.00280	0.00185	0.00280	0	0.00280	0.00078	0.00078	0.00185	0.00185

Seaport Square - Calculation of Modeling

Heating Boilers

Block Name	L2	L3	L4	L5	L6	M1	M2	N	P	Q		
Phase	2	2	2	2	2	2	2	2	2	2		
Model	"B"	"A"	"A"	"A"	"A"	"B"	"B"	"B"	"B"	"A"		
Qty.	6	3	4	5	3	6	4	4	6	3		
Heat Input (MMBTU/hr) (ea)	3.0	2.0	2.0	2.0	2.0	3.0	3.0	3.0	3.0	2.0	Emission rates	
Boiler Emission Rates											lb/MMBTU	
NOx (g/s ea.)	0.0132	0.0088	0.0088	0.0088	0.0088	0.0132	0.0132	0.0132	0.0132	0.0088	0.035	ERP limits
CO (g/s ea.)	0.0302	0.0202	0.0202	0.0202	0.0202	0.0302	0.0302	0.0302	0.0302	0.0202	0.080	ERP limits
VOC (g/s ea.)	0.0113	0.0076	0.0076	0.0076	0.0076	0.0113	0.0113	0.0113	0.0113	0.0076	0.030	ERP limits
PM-10/PM-2.5 (g/s ea.)	0.0038	0.0025	0.0025	0.0025	0.0025	0.0038	0.0038	0.0038	0.0038	0.0025	0.010	ERP limits Assume PM10=PM
SO2 (g/s ea.)	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0006	AP42 Table 1.4-2
CO2 (g/s ea.)	43.6144	29.0763	29.0763	29.0763	29.0763	43.6144	43.6144	43.6144	43.6144	29.0763	115.385	AP42 Table 1.4-2
Stack Parameters (each unit)												
Gas Exit Temp (°F)	170	170	170	170	170	170	170	170	170	170		
Exhaust air (CFM)	1486.44	990.96	990.96	990.96	990.96	1486.44	1486.44	1486.44	1486.44	990.96		
Gas Exit Velocity (fps)	45.42	47.31	47.31	47.31	47.31	45.42	45.42	45.42	45.42	47.31		
Primary Building Height (ft)	250.00	150.00	200.00	250.00	250.00	250.00	250.00	250.00	250.00	102.00		
Stack Height (ft) (10' above roofline)	260.00	160.00	210.00	260.00	260.00	260.00	260.00	260.00	260.00	112.00		
Stack Diameter (in.)	10	8	8	8	8	10	10	10	10	8		

Cooling Towers

Project "Block"	L2	L3	L4	L5	L6	M1	M2	N	P	Q
Project Phase	2	2	2	2	2	2	2	2	2	2
# of CTs	2	1	1	2	1	2	1	1	2	1
CT Designation	"B"	"A"	"A"	"B"	"A"	"A"	"A"	"A"	"A"	"B"
Model	NC8409ULN1	NC8412VLN1	NC8412VLN1	NC8409ULN1	NC8412VLN1	NC8412VLN1	NC8412VLN1	NC8412VLN1	NC8412VLN1	NC8409ULN1
Cooling Tower Specs (per tower)										
Cooling Tower Exhaust Flow (cfm)	194800	266100	266100	194800	266100	266100	266100	266100	266100	194800
Cooling Tower Exhaust Flow (kg/s)	102.5	140.0	140.0	102.5	140.0	140.0	140.0	140.0	140.0	102.5
Cooling Tower Exhaust Temp (°F)	88.68	89.73	89.73	88.68	89.73	89.73	89.73	89.73	89.73	88.68
Cooling Tower Stack Diameter (ft)	12	12	12	12	12	12	12	12	12	12
Cooling Tower Stack Velocity (fps)	28.71	39.21	39.21	28.71	39.21	39.21	39.21	39.21	39.21	28.71
Tower Overall Dimensions (width, length, height of stack exit) (ft)	22.42W x13.90L x 12.00H	22.42W x13.90L x 18.82H	22.42W x13.90L x 18.82H	22.42W x13.90L x 12.00H	22.42W x13.90L x 18.82H	22.42W x13.90L x 18.82H	22.42W x13.90L x 18.82H	22.42W x13.90L x 18.82H	22.42W x13.90L x 18.82H	22.42W x13.90L x 12.00H
CT Stack Height (ft) (above roofline)	12	18.82	18.82	12	18.82	18.82	18.82	18.82	18.82	12
Primary Building Height (ft)	250.00	150.00	200.00	250.00	180.00	250.00	250.00	238.00	270.00	102.00
CT Stack Height (ft)	262.00	168.82	218.82	262.00	198.82	268.82	268.82	256.82	288.82	114.00
Number of cells	1	1	1	1	1	1	1	1	1	1
Cooling Tower Drift										
Drift Rate (% of circ water)	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Circulating Water Rate (gph)	117,000	177,300	177,300	117,000	177,300	177,300	177,300	177,300	177,300	117,000
Circulating Water Rate (gpm)	1,950	2,955	2,955	1,950	2,955	2,955	2,955	2,955	2,955	1,950
TDS+TSS concentration in drift (mg/L)	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500
PM emission rate in drift (lb/hr)	0.015	0.022	0.022	0.015	0.022	0.022	0.022	0.022	0.022	0.015
PM emission rate in drift (g/s)	0.00185	0.00280	0.00280	0.00185	0.00280	0.00280	0.00280	0.00280	0.00280	0.00185

Emergency Engines										
Project "Block"	A	B	C	D	F(Park)	G	H	J	K	L1
Project Phase	1	1	1	1	1	1	1	1	2	2
Generator Designation	GS-2	GS-6	GS-8	GS-5	N/A	GS-7	GS-1	GS-4	GS-5	GS-5
Generator Size (kW)	400	750	1000	700	0	900	150	600	700	700
100% load fuel consumption (gph)	31.9	53.5	74.3	50.3	0	66.5	11.8	42.7	50.3	50.3
Heat Input (MMBTU/hr)	4.3703	7.3295	10.1791	6.8911	0	9.1105	1.6166	5.8499	6.8911	6.8911
Emission Factors										
NOx (g/BHP-hr)	3.49	5.32	4.82	5.33	0	4.74	3	5.84	5.33	5.33
CO (g/BHP-hr)	0.35	0.24	0.19	0.28	0	0.17	2.6	0.48	0.28	0.28
VOC (g/BHP-hr)	0.04	0.03	0.01	0.03	0	0.02	1	0.01	0.03	0.03
PM10/PM2.5 (g/BHP-hr)	0.034	0.022	0.023	0.025	0	0.022	0.15	0.035	0.025	0.025
SO2 (lb/mmBTU)	0.29	0.29	0.29	0.29	0	0.29	0.29	0.29	0.29	0.29
HAPs (lb/mmBTU)	0.004	0.004	0.004	0.004	0	0.004	0.004	0.004	0.004	0.004
CO2 (lb/mmBTU)	164	164	164	164	0	164	164	164	164	164
Emission Rates										
Short Term										
NOx (g/s)	1.666	4.260	5.360	4.013	0	4.718	0.530	3.732	4.013	4.013
CO (g/s)	0.167	0.192	0.211	0.211	0	0.169	0.459	0.307	0.211	0.211
VOC (g/s)	0.019	0.024	0.011	0.023	0	0.020	0.177	0.006	0.023	0.023
PM10/PM2.5 (g/s)	0.016	0.018	0.026	0.019	0	0.022	0.026	0.022	0.019	0.019
SO2 (g/s)	0.160	0.268	0.372	0.252	0	0.333	0.059	0.214	0.252	0.252
HAPs (g/s)	0.002	0.004	0.005	0.003	0	0.004	0.001	0.003	0.003	0.003
CO2 (g/s)	90.306	151.453	210.336	142.395	0	188.255	33.405	120.880	142.395	142.395
Long Term (300 hr/yr)										
NOx (g/s)	0.05707	0.14589	0.18357	0.13743	0	0.16158	0.01815	0.12782	0.13743	0.13743
CO (g/s)	0.00572	0.00658	0.00724	0.00722	0	0.00579	0.01573	0.01051	0.00722	0.00722
VOC (g/s)	0.00065	0.00082	0.00038	0.00077	0	0.00068	0.00605	0.00022	0.00077	0.00077
PM10/PM2.5 (g/s)	0.00056	0.00060	0.00088	0.00064	0	0.00075	0.00091	0.00077	0.00064	0.00064
SO2 (g/s)	0.00547	0.00917	0.01274	0.00862	0	0.01140	0.00202	0.00732	0.00862	0.00862
HAPs (g/s)	0.00007	0.00012	0.00017	0.00011	0	0.00015	0.00003	0.00010	0.00011	0.00011
CO2 (g/s)	3.09267	5.18676	7.20330	4.87653	0	6.44710	1.14400	4.13971	4.87653	4.87653
Stack Parameters										
Exhaust Temperature (°F)	909.9	949.8	964.9	964.6	0	912.9	853.9	994.3	964.6	964.6
Exhaust Flow (ACFM)	3655.1	5646.8	8387.2	5283.1	0	7589.1	1,112.0	4781.6	5283.1	5283.1
Flange Diameter (in)	6	8	8	8	0	8	N/A	8	8	8
Maximum Backpressure (in. H2O)	27.3	40.2	40.2	40.2	0	40.2	59.8	40.2	40.2	40.2
Maximum velocity (fpm)	16415.94	20208.39	20316.33	20314.19	0	19942.17	23794.23	20524.85	20314.19	20314.19
Flow area required (sq ft)	0.22	0.28	0.41	0.26	0	0.38	0.05	0.23	0.26	0.26
Selected silencer diameter (in)	10	12	14	12	0	14	6	12	12	12
Actual silencer opening area (sq ft)	0.545	0.785	1.069	0.785	0	1.069	0.196	0.785	0.785	0.785
Actual velocity (fpm)	6701.498	7189.729	7845.733	6726.652	0	7099.158	5663.369	6088.122	6726.652	6726.652
Actual velocity (fps)	111.692	119.829	130.762	112.111	0	118.319	94.389	101.469	112.111	112.111
Primary Building Height (ft)	75.00	250.00	250.00	250.00	0	250.00	102.00	42.00	150.00	250.00
Stack Height (ft) (10' above roofline)	85.00	260.00	260.00	260.00	10.00	260.00	112.00	52.00	160.00	260.00

Emergency Engines										
Project "Block"	L2	L3	L4	L5	L6	M1	M2	N	P	Q
Project Phase	2	2	2	2	2	2	2	2	2	2
Generator Designation	GS-5	GS-8	GS-6	GS-6	GS-6	GS-8	GS-5	GS-3	GS-7	GS-2
Generator Size (kW)	700	1000	750	750	750	800	700	500	900	400
100% load fuel consumption (gph)	50.3	74.3	53.5	53.5	53.5	57.2	50.3	36.6	66.5	31.9
Heat Input (MMBTU/hr)	6.8911	10.1791	7.3295	7.3295	7.3295	7.8364	6.8911	5.0142	9.1105	4.3703
Emission Factors										
NOx (g/BHP-hr)	5.33	4.82	5.32	5.32	5.32	5.26	5.33	5.74	4.74	3.49
CO (g/BHP-hr)	0.28	0.19	0.24	0.24	0.24	0.23	0.28	0.4	0.17	0.35
VOC (g/BHP-hr)	0.03	0.01	0.03	0.03	0.03	0.03	0.03	0.01	0.02	0.04
PM10/PM2.5 (g/BHP-hr)	0.025	0.023	0.022	0.022	0.022	0.024	0.025	0.018	0.022	0.034
SO2 (lb/mmBTU)	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29
HAPs (lb/mmBTU)	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004
CO2 (lb/mmBTU)	164	164	164	164	164	164	164	164	164	164
Emission Rates										
Short Term										
NOx (g/s)	4.013	5.360	4.260	4.260	4.260	4.503	4.013	3.144	4.718	1.666
CO (g/s)	0.211	0.211	0.192	0.192	0.192	0.197	0.211	0.219	0.169	0.167
VOC (g/s)	0.023	0.011	0.024	0.024	0.024	0.026	0.023	0.005	0.020	0.019
PM10/PM2.5 (g/s)	0.019	0.026	0.018	0.018	0.018	0.021	0.019	0.010	0.022	0.016
SO2 (g/s)	0.252	0.372	0.268	0.268	0.268	0.286	0.252	0.183	0.333	0.160
HAPs (g/s)	0.003	0.005	0.004	0.004	0.004	0.004	0.003	0.002	0.004	0.002
CO2 (g/s)	142.395	210.336	151.453	151.453	151.453	161.928	142.395	103.611	188.255	90.306
Long Term (300 hr/yr)										
NOx (g/s)	0.13743	0.18357	0.14589	0.14589	0.14589	0.15423	0.13743	0.10769	0.16158	0.05707
CO (g/s)	0.00722	0.00724	0.00658	0.00658	0.00658	0.00674	0.00722	0.00750	0.00579	0.00572
VOC (g/s)	0.00077	0.00038	0.00082	0.00082	0.00082	0.00088	0.00077	0.00019	0.00068	0.00065
PM10/PM2.5 (g/s)	0.00064	0.00088	0.00060	0.00060	0.00060	0.00070	0.00064	0.00034	0.00075	0.00056
SO2 (g/s)	0.00862	0.01274	0.00917	0.00917	0.00917	0.00981	0.00862	0.00627	0.01140	0.00547
HAPs (g/s)	0.00011	0.00017	0.00012	0.00012	0.00012	0.00013	0.00011	0.00008	0.00015	0.00007
CO2 (g/s)	4.87653	7.20330	5.18676	5.18676	5.18676	5.54547	4.87653	3.54833	6.44710	3.09267
Stack Parameters										
Exhaust Temperature (°F)	964.6	964.9	949.8	949.8	949.8	955	964.6	942.1	912.9	909.9
Exhaust Flow (ACFM)	5283.1	8387.2	5646.8	5646.8	5646.8	6045.9	5283.1	3842.2	7589.1	3655.1
Flange Diameter (in)	8	8	8	8	8	8	8	6	8	6
Maximum Backpressure (in. H2O)	40.2	40.2	40.2	40.2	40.2	40.2	40.2	27.3	40.2	27.3
Maximum velocity (fpm)	20314.19	20316.33	20208.39	20208.39	20208.39	20245.62	20314.19	16607.75	19942.17	16415.94
Flow area required (sq ft)	0.26	0.41	0.28	0.28	0.28	0.30	0.26	0.23	0.38	0.22
Selected silencer diameter (in)	12	14	12	12	12	14	12	10	14	10
Actual silencer opening area (sq ft)	0.785	1.069	0.785	0.785	0.785	1.069	0.785	0.545	1.069	0.545
Actual velocity (fpm)	6726.652	7845.733	7189.729	7189.729	7189.729	5655.585	6726.652	7044.539	7099.158	6701.498
Actual velocity (fps)	112.111	130.762	119.829	119.829	119.829	94.260	112.111	117.409	118.319	111.692
Primary Building Height (ft)	250.00	150.00	200.00	250.00	180.00	250.00	250.00	238.00	270.00	102.00
Stack Height (ft) (10' above roofline)	260.00	160.00	210.00	260.00	190.00	260.00	260.00	248.00	280.00	112.00

Garage Exhaust Vents

	Garage B	Garage K	Garage L	Garage M	Garage N	Garage A	
	2387 spaces, 4 levels, under Parcels B-G	451 spaces, 3 levels, under Parcels K&Q	2700 spaces, 5 levels, 3 under Parcels L1-L6, 2 at or above ground	579 spaces, 3 levels, under Parcels M1 & M2	355 spaces, 2 levels, under Parcels N&P	28 spaces, 1 level, under Parcel A	total project spaces
total spaces	2387	451	2700	579	355	28	**6500**
Residential spaces	835	90	880	358	0	11	
Hotel spaces	88	44	0	0	88	0	
Retail/commercial spaces	1464	317	1820	221	267	17	
# vehicles entering garage/hr	1714	357	2049	314	300	20	
Levels	4	3	3	3	2	1	
Footprint of garage (sq ft)	300500	73000	316000	125500	82800	17000	
Ungerground total area (sq ft)	1074300	203000	881200	261000	159600	14000	from Parking Summary 5/7/09
Number of vents	22	4	18	6	3	1	
Stack Exhaust Flow (acfm)	1611450	304500	1321800	391500	239400	21000	
Stack Exhaust Temperature (°F)	70	70	70	70	70	70	
outlet area per vent (sqft)	100	100	100	100	100	30	
effective diameter (ft)	11.28	11.28	11.28	11.28	11.28	6.18	
Stack Velocity (fps)	12.2	12.7	12.2	10.9	13.3	11.7	
Stack Velocity (fpm)	732.5	761.3	734.3	652.5	798.0	700.0	should be approx 700fpm for each louver Email 5/19/09
Stack height (ft)	10	10	10	10	10	10	email 5/20/09 louvers along vertical face of building - horizontal release
X-length (ft)	1350	420	725	450	375	100	
Y-length (ft)	220	135	440	275	160	270	
Per Level Distance Traveled (ft)	1570	555	1165	725	535	370	
Hourly garage mileage (VMT)	2038.621	112.577	1356.298	129.347	60.795	1.402	

Total Emissions			Per Vent Emission Rates (2015)					2015 Emission Factors M6.2 g/mile
Composite VOC (g/s):	0.01065	0.00323	0.00866	0.00248	0.00233	0.00016	Composite VOC (g/mile):	0.414
Composite CO (g/s):	0.31166	0.09466	0.25343	0.07251	0.06816	0.00471	Composite CO (g/mile):	12.108
Composite NOX (g/s):	0.00832	0.00253	0.00677	0.00194	0.00182	0.00013	Composite NOX (g/mile):	0.323
Composite CO2 (g/s):	11.14760	3.38576	9.06463	2.59341	2.43791	0.16860	Composite CO2 (g/mile):	433.082
Total PM2.5 (g/s):	0.00029	0.00009	0.00024	0.00007	0.00006	0.000004	Total PM2.5 (g/mile):	0.011
Total PM10 (g/s):	0.00064	0.00019	0.00052	0.00015	0.00014	0.00001	Total PM10 (g/mile):	0.025
SO2 (g/s):	0.00020	0.00006	0.00016	0.00005	0.00004	0.000003	SO2 (g/mile):	0.008

Example Emissions Assumption.

The 2387-space garage is a 4 levels underground. The largest footprint is approximately 1350 feet by 220 feet. Total number of cars broken down into residential, hotel and commercial and assumed 26% of residential, 37% of hotel, and 100% of commercial/retail enter the garage in an hour. Assuming the cars entering and exiting each level of the garage travel approximately 1570 feet, a total trip of 458.5 miles is traveled on each floor (1570 feet x 1542 cars / 5,280 feet per mile). Therefore, if all of these spaces are either filled or vacated during the a.m. or p.m. peak hour, approximately 2038 miles will be driven in the garage during that peak hour.

Emission factor is assumed to be weighted average of 10 mph LDGV, LDGT<6000gvw, LDDV, and MC. Higher of summer/winter values.

Parking Garage Emission Factor Calculations

summer 2015 10 mph

Vehicle Type:	LDGV	LDGT12	LDGT34	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
GVWR:		<6000	>6000	(All)						
VMT Distribution:	0.2837	0.4219	0.1659		0.0367	0.0004	0.0016	0.0861	0.0037	1
Fuel Economy (mpg):	24.1	18.5	14.2	17.1	9.9	32.4	18.3	7.3	50	16.1
Composite Emission	Factors (g/ mi):									
Composite VOC :	0.421	0.365	0.435	0.385	0.654	0.539	0.33	0.602	5.39	0.442
Composite CO :	4.89	4.69	4.97	4.77	14.16	2.109	0.891	1.706	36.49	4.996
Composite NOX :	0.327	0.278	0.397	0.312	0.497	0.628	0.285	3.522	1	0.602
Composite CO2 :	368	479.2	624.2	520.1	894	314.1	555.3	1397.6	177.4	564.97
Total PM:	0.0113	0.0113	0.0113	0.0113	0.0222	0.0523	0.0296	0.065	0.0207	0.0164
Total PM:	0.0248	0.0248	0.0248	0.0248	0.0372	0.0694	0.0447	0.0953	0.0372	0.0314
SO2:	0.0066	0.0087	0.0115	0.0095	0.0163	0.0029	0.0052	0.013	0.0033	0.0092

Winter 2015 10 mph

Vehicle Type:	LDGV	LDGT12	LDGT34	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
GVWR:		<6000	>6000	(All)						
VMT Distribution:	0.2873	0.4202	0.165		0.0363	0.0004	0.0016	0.0856	0.0037	1
Fuel Economy (mpg):	24.1	18.5	14.2	17.1	9.9	32.4	18.3	7.3	50	16.2
Composite Emission	Factors (g/ mi):									
Composite VOC :	0.368	0.348	0.46	0.38	0.692	0.53	0.342	0.611	4.82	0.424
Composite CO :	12.87	11.41	11.37	11.4	18.23	2.077	0.906	1.813	33.28	11.31
Composite NOX :	0.311	0.322	0.47	0.364	0.583	0.624	0.303	3.795	1.38	0.654
Composite CO2 :	368	479.2	624.2	520.1	894	314.1	555.5	1398.5	177.4	563.82
Total PM:	0.0113	0.0113	0.0113	0.0113	0.0229	0.0523	0.0308	0.068	0.0207	0.0167
Total PM:	0.0248	0.0248	0.0248	0.0248	0.038	0.0694	0.046	0.0987	0.0372	0.0317
SO2:	0.0066	0.0087	0.0115	0.0095	0.0163	0.0029	0.0052	0.013	0.0033	0.0092

Summer garage vehicles :	LDGV	LDGT12	LDDV	MC	SUM
actual fraction	0.2837	0.4219	0.0004	0.0037	0.7097
garage fraction	0.3997	0.5945	0.0006	0.0052	1
					Composite EF
Composite VOC :	0.421	0.365	0.539	5.39	0.414
Composite CO :	4.89	4.69	2.109	36.49	4.934
Composite NOX :	0.327	0.278	0.628	1	0.302
Composite CO2 :	368	479.2	314.1	177.4	433.082
Total PM2.5:	0.0113	0.0113	0.0523	0.0207	0.011
Total PM10:	0.0248	0.0248	0.0694	0.0372	0.025
SO2:	0.0066	0.0087	0.0029	0.0033	0.008

Winter garage vehicles :	LDGV	LDGT12	LDDV	MC	SUM
actual fraction	0.2873	0.4202	0.0004	0.0037	0.7116
garage fraction	0.4037	0.5905	0.0006	0.0052	1
					Composite EF
Composite VOC :	0.368	0.348	0.53	4.82	0.379
Composite CO :	12.87	11.41	2.077	33.28	12.108
Composite NOX :	0.311	0.322	0.624	1.38	0.323
Composite CO2 :	368	479.2	314.1	177.4	432.642
Total PM2.5:	0.0113	0.0113	0.0523	0.0207	0.011
Total PM10:	0.0248	0.0248	0.0694	0.0372	0.025
SO2:	0.0066	0.0087	0.0029	0.0033	0.008

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*************************************************************************
* MOBILE6.2.03 (24-Sep-2003)                                            *
* Input file: MA15_ALL.INP (file 1, run 1).                             *
*************************************************************************
* *** Summer 2015 ***

* Reading Registration Distributions from the following external
* data file: 2005_REG.D
  M 49 Warning:
                1.00     MYR sum not = 1. (will normalize)
  M 49 Warning:
               0.998     MYR sum not = 1. (will normalize)
  M 49 Warning:
               0.998     MYR sum not = 1. (will normalize)
  M 49 Warning:
               0.998     MYR sum not = 1. (will normalize)
  M 49 Warning:
                1.00     MYR sum not = 1. (will normalize)
  M 49 Warning:
                1.00     MYR sum not = 1. (will normalize)
  M 49 Warning:
               0.999     MYR sum not = 1. (will normalize)
  M 49 Warning:
               0.998     MYR sum not = 1. (will normalize)
  M 49 Warning:
                1.00     MYR sum not = 1. (will normalize)
  M 49 Warning:
               0.999     MYR sum not = 1. (will normalize)
  M 49 Warning:
                1.00     MYR sum not = 1. (will normalize)
  M 49 Warning:
                1.00     MYR sum not = 1. (will normalize)
  M 49 Warning:
                1.00     MYR sum not = 1. (will normalize)
  M 49 Warning:
                1.00     MYR sum not = 1. (will normalize)

* Reading I/M program description records from the following external
* data file: 09NEWIM.D
* 15 Year Exemption Age
* New Annual OBD Exhaust I/M program for Light Duty MY 1996 through 2007 vehicles <=8,500 lb GVWR
* New Annual OBD Exhaust I/M program for Light Duty and Medium duty MY 2008 and later <=14,000 lb GVWR
* New Annual OBD Evap I/M program for Light Duty MY 1996 through 2007 vehicles <=8,500 lb GVWR
* New Annual OBD Evap I/M program for for Light Duty and Medium duty MY 2008 and later <=14,000 lb GVWR
  M601 Comment:
               User has enabled STAGE II REFUELING.


* Reading 94+ LEV IMPLEMENTATION SCHEDULE from the following external
* data file: MA_LEV2.D

  Reading User Supplied Tier2 Exhaust bin phase-in fractions

     Data read from file: LEV2EXH.D


  Reading User Supplied Tier2 EVAP phase-in fractions

     Data read from file: LEV2EVAP.D


  Reading User Supplied Tier2 50K certification standards

     Data read from file: LEV2CERT.D

  M616 Comment:
               User has supplied post-1999 sulfur levels.
  M614 Comment:
               User supplied diesel sale fractions.

* # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # #
* 2015 DEFAULT SPEED - Summer, with PM2.5
* File 1, Run 1, Scenario 1.
* # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # #

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
*** I/M credits for Tech1&2 vehicles were read from the following external
    data file: TECH12.D
  M 48 Warning:
              there are no sales for vehicle class HDGV8b
 HDDV DEFEAT DEVICE EFFECTS ARE PRESENT. THE REBUILD FRACTION IS 0.10.

* Reading Ammonia (NH3) Basic Emissiion Rates
* from the external data file PMNH3BER.D

* Reading Ammonia (NH3) Sulfur Deterioration Rates
* from the external data file PMNH3SDR.D

 LEV phase-in data read from file MA_LEV2.D
                    Calendar Year:  2015
                            Month:  July
                         Altitude:  Low
               Minimum Temperature:  70.4 (F)
               Maximum Temperature:  93.7 (F)
                 Absolute Humidity:   75. grains/lb
               Fuel Sulfur Content:   30. ppm
```

```
            Exhaust I/M Program:  Yes
               Evap I/M Program:  Yes
                    ATP Program:  No
               Reformulated Gas:  Yes

      Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.2837    0.4219    0.1659              0.0367    0.0004    0.0016    0.0861    0.0037    1.0000
Fuel Economy (mpg):      24.1      18.5      14.2      17.1       9.9      32.4      18.3       7.3      50.0      16.1
 ---------------------------------------------------------------------------------------------------------------------
Composite Emission Factors (g/mi):
    Composite VOC :      0.273     0.233     0.278     0.246     0.329     0.334     0.195     0.282      3.65     0.272
    Composite CO  :      4.12      4.03      4.28      4.10      5.74     1.197     0.471     0.684     17.10     3.914
    Composite NOX :      0.214     0.202     0.290     0.227     0.631     0.520     0.235     3.026      1.26     0.483
    Composite CO2 :    368.1     479.2     624.3     520.2     894.0     314.1     555.4    1397.7     177.4    565.01
 ---------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* 2015 Idle Scenario - Summer (multiply g/mi by 2.5 mph to get g/hr), with PM2.5
* File 1, Run 1, Scenario 2.
* # # # # # # # # # # # # # # # # # # # # # # # #

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M583 Warning:
            The user supplied arterial average speed of  2.5
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.
  M 48 Warning:
              there are no sales for vehicle class HDGV8b

 LEV phase-in data read from file MA_LEV2.D
                      Calendar Year:  2015
                              Month:  July
                           Altitude:  Low
                Minimum Temperature:  70.4 (F)
                Maximum Temperature:  93.7 (F)
                  Absolute Humidity:   75. grains/lb
                Fuel Sulfur Content:   30. ppm

                Exhaust I/M Program:  Yes
                   Evap I/M Program:  Yes
                        ATP Program:  No
                   Reformulated Gas:  Yes

      Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.2837    0.4219    0.1659              0.0367    0.0004    0.0016    0.0861    0.0037    1.0000
Fuel Economy (mpg):      24.1      18.5      14.2      17.1       9.9      32.4      18.3       7.3      50.0      16.1
 ---------------------------------------------------------------------------------------------------------------------
Composite Emission Factors (g/mi):
    Composite VOC :      1.983     1.544     1.689     1.585     2.320     0.712     0.444     0.873     11.94     1.700
    Composite CO  :     11.97     10.07     10.69     10.25     26.63     3.291     1.434     3.032    120.29    11.109
    Composite NOX :      0.505     0.395     0.564     0.443     0.461     0.831     0.378     4.636      1.12     0.825
    Composite CO2 :    368.0     479.2     624.2     520.1     894.0     314.1     555.3    1397.6     177.4    564.97
 ---------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* 2015 10 mph Scenario - Summer, with PM2.5
* File 1, Run 1, Scenario 3.
* # # # # # # # # # # # # # # # # # # # # # # # #

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M583 Warning:
            The user supplied arterial average speed of 10.0
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.
  M 48 Warning:
              there are no sales for vehicle class HDGV8b

 LEV phase-in data read from file MA_LEV2.D
                      Calendar Year:  2015
                              Month:  July
                           Altitude:  Low
                Minimum Temperature:  70.4 (F)
                Maximum Temperature:  93.7 (F)
```

```
              Absolute Humidity:   75. grains/lb
            Fuel Sulfur Content:   30. ppm

            Exhaust I/M Program:  Yes
               Evap I/M Program:  Yes
                    ATP Program:  No
              Reformulated Gas:  Yes

      Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                <6000     >6000     (All)
                    ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.2837    0.4219    0.1659              0.0367    0.0004    0.0016    0.0861    0.0037    1.0000
Fuel Economy (mpg):      24.1      18.5      14.2      17.1       9.9      32.4      18.3       7.3      50.0      16.1
 ---------------------------------------------------------------------------------------------------------------------
Composite Emission Factors (g/mi):
    Composite VOC :      0.421     0.365     0.435     0.385     0.654    0.539     0.330     0.602      5.39     0.442
    Composite CO  :      4.89      4.69      4.97      4.77     14.16     2.109     0.891     1.706     36.49     4.996
    Composite NOX :      0.327     0.278     0.397     0.312     0.497    0.628     0.285     3.522      1.00     0.602
    Composite CO2 :    368.0     479.2     624.2     520.1     894.0    314.1     555.3    1397.6      177.4    564.97
 ---------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* 2015 15 mph Scenario - Summer, with PM2.5
* File 1, Run 1, Scenario 4.
* # # # # # # # # # # # # # # # # # # # # # # # #

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
 M583 Warning:
           The user supplied arterial average speed of 15.0
           will be used for all hours of the day.  100% of VMT
           has been assigned to the arterial/collector roadway
           type for all hours of the day and all vehicle types.
 M 48 Warning:
             there are no sales for vehicle class HDGV8b

LEV phase-in data read from file MA_LEV2.D
                    Calendar Year:  2015
                            Month:  July
                         Altitude:  Low
              Minimum Temperature:  70.4 (F)
              Maximum Temperature:  93.7 (F)
                Absolute Humidity:   75. grains/lb
              Fuel Sulfur Content:   30. ppm

              Exhaust I/M Program:  Yes
                 Evap I/M Program:  Yes
                      ATP Program:  No
                Reformulated Gas:  Yes

      Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                <6000     >6000     (All)
                    ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.2837    0.4219    0.1659              0.0367    0.0004    0.0016    0.0861    0.0037    1.0000
Fuel Economy (mpg):      24.1      18.5      14.2      17.1       9.9      32.4      18.3       7.3      50.0      16.1
 ---------------------------------------------------------------------------------------------------------------------
Composite Emission Factors (g/mi):
    Composite VOC :      0.342     0.294     0.350     0.310     0.500    0.463     0.280     0.483      4.42     0.356
    Composite CO  :      4.23      4.10      4.36      4.17      9.95     1.685     0.696     1.231     25.25     4.221
    Composite NOX :      0.268     0.237     0.340     0.266     0.521    0.545     0.247     3.063      1.01     0.520
    Composite CO2 :    368.0     479.2     624.2     520.1     894.0    314.1     555.3    1397.6      177.4    564.97
 ---------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* 2015 30 mph Scenario - Summer, with PM2.5
* File 1, Run 1, Scenario 5.
* # # # # # # # # # # # # # # # # # # # # # # # #

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
 M583 Warning:
           The user supplied arterial average speed of 30.0
           will be used for all hours of the day.  100% of VMT
           has been assigned to the arterial/collector roadway
           type for all hours of the day and all vehicle types.
 M 48 Warning:
             there are no sales for vehicle class HDGV8b

LEV phase-in data read from file MA_LEV2.D
                    Calendar Year:  2015
                            Month:  July
                         Altitude:  Low
```

```
             Minimum Temperature:  70.4 (F)
             Maximum Temperature:  93.7 (F)
               Absolute Humidity:   75. grains/lb
             Fuel Sulfur Content:   30. ppm

             Exhaust I/M Program:  Yes
                Evap I/M Program:  Yes
                    ATP Program:  No
                Reformulated Gas:  Yes

      Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                <6000     >6000     (All)
                     ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.2837    0.4219    0.1659                0.0367    0.0004    0.0016    0.0861    0.0037    1.0000
Fuel Economy (mpg):      24.1      18.5      14.2      17.1       9.9      32.4      18.3       7.3      50.0      16.1
 ---------------------------------------------------------------------------------------------------------------------
Composite Emission Factors (g/mi):
    Composite VOC :      0.259     0.219     0.263     0.231     0.311    0.336     0.196     0.285      3.49     0.259
    Composite CO  :       3.61      3.55      3.78      3.62      4.81    1.129     0.440     0.608     14.61     3.436
    Composite NOX :      0.206     0.194     0.281     0.219     0.593    0.436     0.197     2.462      1.17     0.426
    Composite CO2 :      368.0     479.2     624.2     520.1     894.0    314.1     555.3    1397.6     177.4    564.97
 ---------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* 2015 Idle Scenario - Summer (multiply g/mi by 2.5 mph to get g/hr), with PM10
* File 1, Run 1, Scenario 6.
* # # # # # # # # # # # # # # # # # # # # # # # #

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M583 Warning:
            The user supplied arterial average speed of  2.5
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.
  M 48 Warning:
            there are no sales for vehicle class HDGV8b

 LEV phase-in data read from file MA_LEV2.D
                   Calendar Year:  2015
                           Month:  July
                        Altitude:  Low
             Minimum Temperature:  70.4 (F)
             Maximum Temperature:  93.7 (F)
               Absolute Humidity:   75. grains/lb
             Fuel Sulfur Content:   30. ppm

             Exhaust I/M Program:  Yes
                Evap I/M Program:  Yes
                    ATP Program:  No
                Reformulated Gas:  Yes

      Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                <6000     >6000     (All)
                     ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.2837    0.4219    0.1659                0.0367    0.0004    0.0016    0.0861    0.0037    1.0000
Fuel Economy (mpg):      24.1      18.5      14.2      17.1       9.9      32.4      18.3       7.3      50.0      16.1
 ---------------------------------------------------------------------------------------------------------------------
Composite Emission Factors (g/mi):
    Composite VOC :      1.983     1.544     1.689     1.585     2.320    0.712     0.444     0.873     11.94     1.700
    Composite CO  :      11.97     10.07     10.69     10.25     26.63    3.291     1.434     3.032    120.29    11.109
    Composite NOX :      0.505     0.395     0.564     0.443     0.461    0.831     0.378     4.636      1.12     0.825
    Composite CO2 :      368.0     479.2     624.2     520.1     894.0    314.1     555.3    1397.6     177.4    564.97
 ---------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* 2015 10 mph Scenario - Summer, with PM10
* File 1, Run 1, Scenario 7.
* # # # # # # # # # # # # # # # # # # # # # # # #

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M583 Warning:
            The user supplied arterial average speed of 10.0
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.
  M 48 Warning:
            there are no sales for vehicle class HDGV8b

 LEV phase-in data read from file MA_LEV2.D
                   Calendar Year:  2015
```

```
                     Month:  July
                  Altitude:  Low
          Minimum Temperature:  70.4 (F)
          Maximum Temperature:  93.7 (F)
            Absolute Humidity:   75. grains/lb
          Fuel Sulfur Content:   30. ppm

          Exhaust I/M Program:  Yes
             Evap I/M Program:  Yes
                  ATP Program:  No
             Reformulated Gas:  Yes
```

Vehicle Type: / GVWR:	LDGV	LDGT12 <6000	LDGT34 >6000	LDGT (All)	HDGV	LDDV	LDDT	HDDV	MC	All Veh
VMT Distribution:	0.2837	0.4219	0.1659		0.0367	0.0004	0.0016	0.0861	0.0037	1.0000
Fuel Economy (mpg):	24.1	18.5	14.2	17.1	9.9	32.4	18.3	7.3	50.0	16.1
Composite Emission Factors (g/mi):										
Composite VOC :	0.421	0.365	0.435	0.385	0.654	0.539	0.330	0.602	5.39	0.442
Composite CO :	4.89	4.69	4.97	4.77	14.16	2.109	0.891	1.706	36.49	4.996
Composite NOX :	0.327	0.278	0.397	0.312	0.497	0.628	0.285	3.522	1.00	0.602
Composite CO2 :	368.0	479.2	624.2	520.1	894.0	314.1	555.3	1397.6	177.4	564.97

```
* # # # # # # # # # # # # # # # # # # # # # # # #
* 2015 15 mph Scenario - Summer, with PM10
* File 1, Run 1, Scenario 8.
* # # # # # # # # # # # # # # # # # # # # # # # #

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M583 Warning:
            The user supplied arterial average speed of 15.0
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.
  M 48 Warning:
             there are no sales for vehicle class HDGV8b

 LEV phase-in data read from file MA_LEV2.D
                   Calendar Year:  2015
                         Month:  July
                      Altitude:  Low
              Minimum Temperature:  70.4 (F)
              Maximum Temperature:  93.7 (F)
                Absolute Humidity:   75. grains/lb
              Fuel Sulfur Content:   30. ppm

              Exhaust I/M Program:  Yes
                 Evap I/M Program:  Yes
                      ATP Program:  No
                 Reformulated Gas:  Yes
```

Vehicle Type: / GVWR:	LDGV	LDGT12 <6000	LDGT34 >6000	LDGT (All)	HDGV	LDDV	LDDT	HDDV	MC	All Veh
VMT Distribution:	0.2837	0.4219	0.1659		0.0367	0.0004	0.0016	0.0861	0.0037	1.0000
Fuel Economy (mpg):	24.1	18.5	14.2	17.1	9.9	32.4	18.3	7.3	50.0	16.1
Composite Emission Factors (g/mi):										
Composite VOC :	0.342	0.294	0.350	0.310	0.500	0.463	0.280	0.483	4.42	0.356
Composite CO :	4.23	4.10	4.36	4.17	9.95	1.685	0.696	1.231	25.25	4.221
Composite NOX :	0.268	0.237	0.340	0.266	0.521	0.545	0.247	3.063	1.01	0.520
Composite CO2 :	368.0	479.2	624.2	520.1	894.0	314.1	555.3	1397.6	177.4	564.97

```
* # # # # # # # # # # # # # # # # # # # # # # # #
* 2015 30 mph Scenario - Summer, with PM10
* File 1, Run 1, Scenario 9.
* # # # # # # # # # # # # # # # # # # # # # # # #

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M583 Warning:
            The user supplied arterial average speed of 30.0
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.
  M 48 Warning:
             there are no sales for vehicle class HDGV8b
```

```
 LEV phase-in data read from file MA_LEV2.D
                    Calendar Year:  2015
                            Month:  July
                         Altitude:  Low
              Minimum Temperature:  70.4 (F)
              Maximum Temperature:  93.7 (F)
                Absolute Humidity:   75. grains/lb
              Fuel Sulfur Content:   30. ppm

              Exhaust I/M Program:  Yes
                 Evap I/M Program:  Yes
                      ATP Program:  No
                Reformulated Gas:  Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
               GVWR:                <6000     >6000     (All)
                     ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
   VMT Distribution:    0.2837    0.4219    0.1659              0.0367    0.0004    0.0016    0.0861    0.0037    1.0000
 Fuel Economy (mpg):      24.1      18.5      14.2      17.1       9.9      32.4      18.3       7.3      50.0      16.1
  ---------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite VOC :      0.259     0.219     0.263     0.231     0.311    0.336     0.196     0.285      3.49     0.259
     Composite CO  :      3.61      3.55      3.78      3.62      4.81     1.129     0.440     0.608     14.61     3.436
     Composite NOX :      0.206     0.194     0.281     0.219     0.593    0.436     0.197     2.462      1.17     0.426
     Composite CO2 :    368.0     479.2     624.2     520.1     894.0    314.1     555.3    1397.6      177.4    564.97
  ---------------------------------------------------------------------------------------------------------------------
*************************************************************************
* MOBILE6.2.03 (24-Sep-2003)                                            *
* Input file: MA15_ALL.INP (file 1, run 2).                             *
*************************************************************************
* *** Winter 2015 ***

* Reading Registration Distributions from the following external
* data file: 2005_REG.D
  M 49 Warning:
                1.00     MYR sum not = 1. (will normalize)
  M 49 Warning:
               0.998     MYR sum not = 1. (will normalize)
  M 49 Warning:
               0.998     MYR sum not = 1. (will normalize)
  M 49 Warning:
               0.998     MYR sum not = 1. (will normalize)
  M 49 Warning:
                1.00     MYR sum not = 1. (will normalize)
  M 49 Warning:
                1.00     MYR sum not = 1. (will normalize)
  M 49 Warning:
               0.999     MYR sum not = 1. (will normalize)
  M 49 Warning:
               0.998     MYR sum not = 1. (will normalize)
  M 49 Warning:
                1.00     MYR sum not = 1. (will normalize)
  M 49 Warning:
               0.999     MYR sum not = 1. (will normalize)
  M 49 Warning:
                1.00     MYR sum not = 1. (will normalize)
  M 49 Warning:
                1.00     MYR sum not = 1. (will normalize)
  M 49 Warning:
                1.00     MYR sum not = 1. (will normalize)
  M 49 Warning:
                1.00     MYR sum not = 1. (will normalize)

* Reading I/M program description records from the following external
* data file: 09NEWIM.D
* 15 Year Exemption Age
* New Annual OBD Exhaust I/M program for Light Duty MY 1996 through 2007 vehicles <=8,500 lb GVWR
* New Annual OBD Exhaust I/M program for Light Duty and Medium duty MY 2008 and later <=14,000 lb GVWR
* New Annual OBD Evap I/M program for Light Duty MY 1996 through 2007 vehicles <=8,500 lb GVWR
* New Annual OBD Evap I/M program for for Light Duty and Medium duty MY 2008 and later <=14,000 lb GVWR
  M601 Comment:
               User has enabled STAGE II REFUELING.


* Reading 94+ LEV IMPLEMENTATION SCHEDULE from the following external
* data file: MA_LEV2.D

  Reading User Supplied Tier2 Exhaust bin phase-in fractions

     Data read from file: LEV2EXH.D


  Reading User Supplied Tier2 EVAP phase-in fractions

     Data read from file: LEV2EVAP.D


  Reading User Supplied Tier2 50K certification standards

     Data read from file: LEV2CERT.D

  M616 Comment:
               User has supplied post-1999 sulfur levels.
  M614 Comment:
               User supplied diesel sale fractions.

* # # # # # # # # # # # # # # # # # # # # # # # # # # #
* 2015 DEFAULT SPEED - Winter, with PM2.5
* File 1, Run 2, Scenario 1.
* # # # # # # # # # # # # # # # # # # # # # # # # # # #

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV
```

```
* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M112 Warning:
              Wintertime Reformulated Gasoline Rules Apply
*** I/M credits for Tech1&2 vehicles were read from the following external
    data file: TECH12.D
  M 48 Warning:
             there are no sales for vehicle class HDGV8b
 HDDV DEFEAT DEVICE EFFECTS ARE PRESENT. THE REBUILD FRACTION IS 0.10.

 LEV phase-in data read from file MA_LEV2.D
                    Calendar Year:  2015
                            Month:  Jan.
                         Altitude:  Low
               Minimum Temperature:  22.8 (F)
               Maximum Temperature:  38.3 (F)
                 Absolute Humidity:   75. grains/lb
               Fuel Sulfur Content:   30. ppm

               Exhaust I/M Program:  Yes
                  Evap I/M Program:  Yes
                       ATP Program:  No
                  Reformulated Gas:  Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
               GVWR:                <6000     >6000     (All)
                     ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
   VMT Distribution:    0.2873    0.4202    0.1650              0.0363    0.0004    0.0016    0.0856    0.0037    1.0000
 Fuel Economy (mpg):      24.1      18.5      14.2      17.1       9.9      32.4      18.3       7.3      50.0      16.2
  ---------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite VOC :      0.239     0.236     0.312     0.258     0.283     0.327     0.202     0.286      3.14     0.266
     Composite CO  :     11.87     10.52     10.40     10.48      7.39     1.172     0.479     0.726     16.82     9.940
     Composite NOX :      0.231     0.243     0.356     0.275     0.739     0.516     0.250     3.263      1.76     0.540
     Composite CO2 :    368.1     479.2     624.2     520.1     894.0    314.1     555.5    1398.6      177.4    563.87
  ---------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # #
* 2015 Idle Scenario - Winter (multiply g/mi by 2.5 mph to get g/hr), with PM2.5
* File 1, Run 2, Scenario 2.
* # # # # # # # # # # # # # # # # # # # # # # # # #

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M583 Warning:
            The user supplied arterial average speed of  2.5
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.
  M112 Warning:
              Wintertime Reformulated Gasoline Rules Apply
  M 48 Warning:
             there are no sales for vehicle class HDGV8b

 LEV phase-in data read from file MA_LEV2.D
                    Calendar Year:  2015
                            Month:  Jan.
                         Altitude:  Low
               Minimum Temperature:  22.8 (F)
               Maximum Temperature:  38.3 (F)
                 Absolute Humidity:   75. grains/lb
               Fuel Sulfur Content:   30. ppm

               Exhaust I/M Program:  Yes
                  Evap I/M Program:  Yes
                       ATP Program:  No
                  Reformulated Gas:  Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
               GVWR:                <6000     >6000     (All)
                     ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
   VMT Distribution:    0.2873    0.4202    0.1650              0.0363    0.0004    0.0016    0.0856    0.0037    1.0000
 Fuel Economy (mpg):      24.1      18.5      14.2      17.1       9.9      32.4      18.3       7.3      50.0      16.2
  ---------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite VOC :      1.806     1.448     1.661     1.508     2.356     0.701     0.461     0.886     11.13     1.605
     Composite CO  :     22.78     20.15     20.77     20.33     34.30     3.248     1.460     3.221    104.23    20.347
     Composite NOX :      0.429     0.443     0.648     0.501     0.541     0.826     0.402     4.994      1.56     0.870
     Composite CO2 :    368.0     479.2     624.2     520.1     894.0    314.1     555.5    1398.5      177.4    563.82
  ---------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # #
* 2015 10 mph Scenario - Winter, with PM2.5
* File 1, Run 2, Scenario 3.
* # # # # # # # # # # # # # # # # # # # # # # # # #

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
```

```
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M583 Warning:
            The user supplied arterial average speed of 10.0
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.
  M112 Warning:
             Wintertime Reformulated Gasoline Rules Apply
  M 48 Warning:
            there are no sales for vehicle class HDGV8b

 LEV phase-in data read from file MA_LEV2.D
                   Calendar Year:  2015
                           Month:  Jan.
                        Altitude:  Low
              Minimum Temperature:  22.8 (F)
              Maximum Temperature:  38.3 (F)
                Absolute Humidity:   75. grains/lb
              Fuel Sulfur Content:   30. ppm

              Exhaust I/M Program:  Yes
                 Evap I/M Program:  Yes
                      ATP Program:  No
                 Reformulated Gas:  Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
                GVWR:             <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
   VMT Distribution:    0.2873    0.4202    0.1650              0.0363    0.0004    0.0016    0.0856    0.0037    1.0000
 Fuel Economy (mpg):      24.1      18.5      14.2      17.1       9.9      32.4      18.3       7.3      50.0      16.2
 ---------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite VOC :      0.368     0.348     0.460     0.380     0.692     0.530     0.342     0.611     4.82     0.424
     Composite CO  :      12.87     11.41     11.37     11.40     18.23     2.077     0.906     1.813     33.28    11.310
     Composite NOX :      0.311     0.322     0.470     0.364     0.583     0.624     0.303     3.795     1.38     0.654
     Composite CO2 :      368.0     479.2     624.2     520.1     894.0     314.1     555.5     1398.5    177.4    563.82
  ---------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* 2015 15 mph Scenario - Winter, with PM2.5
* File 1, Run 2, Scenario 4.
* # # # # # # # # # # # # # # # # # # # # # # # #

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M583 Warning:
            The user supplied arterial average speed of 15.0
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.
  M112 Warning:
             Wintertime Reformulated Gasoline Rules Apply
  M 48 Warning:
            there are no sales for vehicle class HDGV8b

 LEV phase-in data read from file MA_LEV2.D
                   Calendar Year:  2015
                           Month:  Jan.
                        Altitude:  Low
              Minimum Temperature:  22.8 (F)
              Maximum Temperature:  38.3 (F)
                Absolute Humidity:   75. grains/lb
              Fuel Sulfur Content:   30. ppm

              Exhaust I/M Program:  Yes
                 Evap I/M Program:  Yes
                      ATP Program:  No
                 Reformulated Gas:  Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
                GVWR:             <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
   VMT Distribution:    0.2873    0.4202    0.1650              0.0363    0.0004    0.0016    0.0856    0.0037    1.0000
 Fuel Economy (mpg):      24.1      18.5      14.2      17.1       9.9      32.4      18.3       7.3      50.0      16.2
 ---------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite VOC :      0.295     0.284     0.376     0.310     0.497     0.455     0.290     0.490     3.89     0.341
     Composite CO  :      11.94     10.55     10.45     10.52     12.82     1.657     0.708     1.308     23.77    10.253
     Composite NOX :      0.266     0.278     0.407     0.314     0.611     0.541     0.263     3.302     1.40     0.571
     Composite CO2 :      368.0     479.2     624.2     520.1     894.0     314.1     555.5     1398.5    177.4    563.82
  ---------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* 2015 30 mph Scenario - Winter, with PM2.5
* File 1, Run 2, Scenario 5.
* # # # # # # # # # # # # # # # # # # # # # # # #

* Reading PM Gas Carbon ZML Levels
```

```
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M583 Warning:
            The user supplied arterial average speed of 30.0
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.
  M112 Warning:
              Wintertime Reformulated Gasoline Rules Apply
  M 48 Warning:
              there are no sales for vehicle class HDGV8b

 LEV phase-in data read from file MA_LEV2.D
                      Calendar Year:  2015
                              Month:  Jan.
                           Altitude:  Low
                 Minimum Temperature:  22.8 (F)
                 Maximum Temperature:  38.3 (F)
                   Absolute Humidity:   75. grains/lb
                 Fuel Sulfur Content:   30. ppm

                 Exhaust I/M Program:  Yes
                    Evap I/M Program:  Yes
                         ATP Program:  No
                    Reformulated Gas:  Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
                GVWR:                <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
   VMT Distribution:    0.2873    0.4202    0.1650                0.0363    0.0004    0.0016    0.0856    0.0037    1.0000
 Fuel Economy (mpg):      24.1      18.5      14.2      17.1       9.9      32.4      18.3       7.3      50.0      16.2
  ---------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite VOC :      0.224     0.221     0.295     0.242     0.259    0.329     0.203     0.289      2.99     0.251
     Composite CO  :     11.14      9.80      9.65      9.76      6.19     1.105     0.447     0.646     14.76     9.250
     Composite NOX :      0.220     0.233     0.344     0.264     0.695    0.432     0.209     2.655      1.64     0.477
     Composite CO2 :    368.0     479.2     624.2     520.1     894.0    314.1     555.5    1398.5      177.4    563.82
  ---------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # # # # #
* 2015 Idle Scenario - Winter (multiply g/mi by 2.5 mph to get g/hr), with PM10
* File 1, Run 2, Scenario 6.
* # # # # # # # # # # # # # # # # # # # # # # # # # # # #

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M583 Warning:
            The user supplied arterial average speed of  2.5
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.
  M112 Warning:
              Wintertime Reformulated Gasoline Rules Apply
  M 48 Warning:
              there are no sales for vehicle class HDGV8b

 LEV phase-in data read from file MA_LEV2.D
                      Calendar Year:  2015
                              Month:  Jan.
                           Altitude:  Low
                 Minimum Temperature:  22.8 (F)
                 Maximum Temperature:  38.3 (F)
                   Absolute Humidity:   75. grains/lb
                 Fuel Sulfur Content:   30. ppm

                 Exhaust I/M Program:  Yes
                    Evap I/M Program:  Yes
                         ATP Program:  No
                    Reformulated Gas:  Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
                GVWR:                <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
   VMT Distribution:    0.2873    0.4202    0.1650                0.0363    0.0004    0.0016    0.0856    0.0037    1.0000
 Fuel Economy (mpg):      24.1      18.5      14.2      17.1       9.9      32.4      18.3       7.3      50.0      16.2
  ---------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite VOC :      1.806     1.448     1.661     1.508     2.356    0.701     0.461     0.886     11.13     1.605
     Composite CO  :     22.78     20.15     20.77     20.33     34.30     3.248     1.460     3.221    104.23    20.347
     Composite NOX :      0.429     0.443     0.648     0.501     0.541    0.826     0.402     4.994      1.56     0.870
     Composite CO2 :    368.0     479.2     624.2     520.1     894.0    314.1     555.5    1398.5      177.4    563.82
  ---------------------------------------------------------------------------------------------------------------------
```

```
* # # # # # # # # # # # # # # # # # # # # # # # # #
* 2015 10 mph Scenario - Winter, with PM10
* File 1, Run 2, Scenario 7.
* # # # # # # # # # # # # # # # # # # # # # # # # #

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M583 Warning:
            The user supplied arterial average speed of 10.0
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.
  M112 Warning:
              Wintertime Reformulated Gasoline Rules Apply
  M 48 Warning:
              there are no sales for vehicle class HDGV8b

 LEV phase-in data read from file MA_LEV2.D
                     Calendar Year:  2015
                             Month:  Jan.
                          Altitude:  Low
               Minimum Temperature:  22.8 (F)
               Maximum Temperature:  38.3 (F)
                 Absolute Humidity:   75. grains/lb
               Fuel Sulfur Content:   30. ppm

               Exhaust I/M Program:  Yes
                  Evap I/M Program:  Yes
                       ATP Program:  No
                  Reformulated Gas:  Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
   VMT Distribution:    0.2873    0.4202    0.1650              0.0363    0.0004    0.0016    0.0856    0.0037    1.0000
 Fuel Economy (mpg):      24.1      18.5      14.2      17.1       9.9      32.4      18.3       7.3      50.0      16.2
  ---------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite VOC :      0.368     0.348     0.460     0.380     0.692     0.530     0.342     0.611      4.82     0.424
     Composite CO  :     12.87     11.41     11.37     11.40     18.23     2.077     0.906     1.813     33.28    11.310
     Composite NOX :      0.311     0.322     0.470     0.364     0.583     0.624     0.303     3.795      1.38     0.654
     Composite CO2 :    368.0     479.2     624.2     520.1     894.0     314.1     555.5    1398.5     177.4    563.82
  ---------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # #
* 2015 15 mph Scenario - Winter, with PM10
* File 1, Run 2, Scenario 8.
* # # # # # # # # # # # # # # # # # # # # # # # # #

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M583 Warning:
            The user supplied arterial average speed of 15.0
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.
  M112 Warning:
              Wintertime Reformulated Gasoline Rules Apply
  M 48 Warning:
              there are no sales for vehicle class HDGV8b

 LEV phase-in data read from file MA_LEV2.D
                     Calendar Year:  2015
                             Month:  Jan.
                          Altitude:  Low
               Minimum Temperature:  22.8 (F)
               Maximum Temperature:  38.3 (F)
                 Absolute Humidity:   75. grains/lb
               Fuel Sulfur Content:   30. ppm

               Exhaust I/M Program:  Yes
                  Evap I/M Program:  Yes
                       ATP Program:  No
                  Reformulated Gas:  Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
   VMT Distribution:    0.2873    0.4202    0.1650              0.0363    0.0004    0.0016    0.0856    0.0037    1.0000
 Fuel Economy (mpg):      24.1      18.5      14.2      17.1       9.9      32.4      18.3       7.3      50.0      16.2
  ---------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
```

Composite VOC :	0.295	0.284	0.376	0.310	0.497	0.455	0.290	0.490	3.89	0.341
Composite CO :	11.94	10.55	10.45	10.52	12.82	1.657	0.708	1.308	23.77	10.253
Composite NOX :	0.266	0.278	0.407	0.314	0.611	0.541	0.263	3.302	1.40	0.571
Composite CO2 :	368.0	479.2	624.2	520.1	894.0	314.1	555.5	1398.5	177.4	563.82

```
* # # # # # # # # # # # # # # # # # # # # # # # #
* 2015 30 mph Scenario - Winter, with PM10
* File 1, Run 2, Scenario 9.
* # # # # # # # # # # # # # # # # # # # # # # # #

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M583 Warning:
            The user supplied arterial average speed of 30.0
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.
  M112 Warning:
                Wintertime Reformulated Gasoline Rules Apply
  M 48 Warning:
               there are no sales for vehicle class HDGV8b

 LEV phase-in data read from file MA_LEV2.D
                     Calendar Year:  2015
                             Month:  Jan.
                          Altitude:  Low
               Minimum Temperature:  22.8 (F)
               Maximum Temperature:  38.3 (F)
                 Absolute Humidity:   75. grains/lb
               Fuel Sulfur Content:   30. ppm

               Exhaust I/M Program:  Yes
                  Evap I/M Program:  Yes
                       ATP Program:  No
                  Reformulated Gas:  Yes
```

Vehicle Type:	LDGV	LDGT12	LDGT34	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
GVWR:		<6000	>6000	(All)						
VMT Distribution:	0.2873	0.4202	0.1650		0.0363	0.0004	0.0016	0.0856	0.0037	1.0000
Fuel Economy (mpg):	24.1	18.5	14.2	17.1	9.9	32.4	18.3	7.3	50.0	16.2

Composite Emission Factors (g/mi):

Composite VOC :	0.224	0.221	0.295	0.242	0.259	0.329	0.203	0.289	2.99	0.251
Composite CO :	11.14	9.80	9.65	9.76	6.19	1.105	0.447	0.646	14.76	9.250
Composite NOX :	0.220	0.233	0.344	0.264	0.695	0.432	0.209	2.655	1.64	0.477
Composite CO2 :	368.0	479.2	624.2	520.1	894.0	314.1	555.5	1398.5	177.4	563.82

```
*************************************************************************
* MOBILE6.2.03 (24-Sep-2003)                                            *
* Input file: MA09_ALL.INP (file 1, run 1).                             *
*************************************************************************

* # # # # # # # # # # # # # # # # # # # # # # # #
* 2009 DEFAULT SPEED - Summer, with PM2.5
* File 1, Run 1, Scenario 1.
* # # # # # # # # # # # # # # # # # # # # # # # #

                            Calendar Year:  2009
                                    Month:  July
                Gasoline Fuel Sulfur Content:   30. ppm
                  Diesel Fuel Sulfur Content:   15. ppm
                        Particle Size Cutoff:  2.50 Microns
                            Reformulated Gas:  Yes

      Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
            GVWR:                 <6000     >6000     (All)
                     ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.3386    0.3823    0.1504              0.0368    0.0004    0.0014    0.0862    0.0039    1.0000
 -------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
              Lead:    0.0000    0.0000    0.0000    0.0000    0.0000    ------    ------    ------    0.0000    0.0000
             GASPM:    0.0037    0.0036    0.0036    0.0036    0.0322    ------    ------    ------    0.0142    0.0044
           ECARBON:    ------    ------    ------    ------    ------    0.0960    0.0211    0.1060    ------    0.0092
           OCARBON:    ------    ------    ------    ------    ------    0.0271    0.0304    0.0530    ------    0.0046
               SO4:    0.0003    0.0005    0.0005    0.0005    0.0016    0.0002    0.0003    0.0009    0.0001    0.0005
  Total Exhaust PM:    0.0040    0.0041    0.0041    0.0041    0.0338    0.1233    0.0518    0.1599    0.0143    0.0188
             Brake:    0.0053    0.0053    0.0053    0.0053    0.0053    0.0053    0.0053    0.0053    0.0053    0.0053
              Tire:    0.0020    0.0020    0.0020    0.0020    0.0021    0.0020    0.0020    0.0062    0.0010    0.0024
          Total PM:    0.0114    0.0114    0.0114    0.0114    0.0413    0.1306    0.0592    0.1714    0.0206    0.0265
               SO2:    0.0068    0.0088    0.0115    0.0095    0.0163    0.0030    0.0052    0.0131    0.0033    0.0091
               NH3:    0.1014    0.1016    0.1016    0.1016    0.0451    0.0068    0.0068    0.0270    0.0113    0.0925
 -------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* 2009 Idle Scenario - Summer (multiply g/mi by 2.5 mph to get g/hr), with PM2.5
* File 1, Run 1, Scenario 2.
* # # # # # # # # # # # # # # # # # # # # # # # #

                            Calendar Year:  2009
                                    Month:  July
                Gasoline Fuel Sulfur Content:   30. ppm
                  Diesel Fuel Sulfur Content:   15. ppm
                        Particle Size Cutoff:  2.50 Microns
                            Reformulated Gas:  Yes

      Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
            GVWR:                 <6000     >6000     (All)
                     ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.3386    0.3823    0.1504              0.0368    0.0004    0.0014    0.0862    0.0039    1.0000
 -------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
              Lead:    0.0000    0.0000    0.0000    0.0000    0.0000    ------    ------    ------    0.0000    0.0000
             GASPM:    0.0036    0.0036    0.0035    0.0036    0.0324    ------    ------    ------    0.0142    0.0044
           ECARBON:    ------    ------    ------    ------    ------    0.0960    0.0211    0.1060    ------    0.0092
           OCARBON:    ------    ------    ------    ------    ------    0.0271    0.0304    0.0530    ------    0.0046
               SO4:    0.0005    0.0006    0.0006    0.0006    0.0012    0.0002    0.0003    0.0009    0.0002    0.0006
  Total Exhaust PM:    0.0041    0.0042    0.0041    0.0042    0.0336    0.1233    0.0518    0.1599    0.0144    0.0188
             Brake:    0.0053    0.0053    0.0053    0.0053    0.0053    0.0053    0.0053    0.0053    0.0053    0.0053
              Tire:    0.0020    0.0020    0.0020    0.0020    0.0021    0.0020    0.0020    0.0062    0.0010    0.0024
          Total PM:    0.0115    0.0115    0.0115    0.0115    0.0411    0.1306    0.0592    0.1714    0.0207    0.0265
               SO2:    0.0067    0.0087    0.0115    0.0095    0.0164    0.0030    0.0052    0.0131    0.0033    0.0091
               NH3:    0.1014    0.1015    0.1016    0.1016    0.0451    0.0068    0.0068    0.0270    0.0113    0.0925
 -------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* 2009 10 mph Scenario - Summer, with PM2.5
* File 1, Run 1, Scenario 3.
* # # # # # # # # # # # # # # # # # # # # # # # #

                            Calendar Year:  2009
                                    Month:  July
                Gasoline Fuel Sulfur Content:   30. ppm
                  Diesel Fuel Sulfur Content:   15. ppm
                        Particle Size Cutoff:  2.50 Microns
                            Reformulated Gas:  Yes

      Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
            GVWR:                 <6000     >6000     (All)
                     ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.3386    0.3823    0.1504              0.0368    0.0004    0.0014    0.0862    0.0039    1.0000
 -------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
              Lead:    0.0000    0.0000    0.0000    0.0000    0.0000    ------    ------    ------    0.0000    0.0000
             GASPM:    0.0036    0.0036    0.0035    0.0036    0.0324    ------    ------    ------    0.0142    0.0044
           ECARBON:    ------    ------    ------    ------    ------    0.0960    0.0211    0.1060    ------    0.0092
           OCARBON:    ------    ------    ------    ------    ------    0.0271    0.0304    0.0530    ------    0.0046
               SO4:    0.0005    0.0006    0.0006    0.0006    0.0012    0.0002    0.0003    0.0009    0.0002    0.0006
  Total Exhaust PM:    0.0041    0.0042    0.0041    0.0042    0.0336    0.1233    0.0518    0.1599    0.0144    0.0188
             Brake:    0.0053    0.0053    0.0053    0.0053    0.0053    0.0053    0.0053    0.0053    0.0053    0.0053
              Tire:    0.0020    0.0020    0.0020    0.0020    0.0021    0.0020    0.0020    0.0062    0.0010    0.0024
          Total PM:    0.0115    0.0115    0.0115    0.0115    0.0411    0.1306    0.0592    0.1714    0.0207    0.0265
               SO2:    0.0067    0.0087    0.0115    0.0095    0.0164    0.0030    0.0052    0.0131    0.0033    0.0091
               NH3:    0.1014    0.1015    0.1016    0.1016    0.0451    0.0068    0.0068    0.0270    0.0113    0.0925
 -------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* 2009 15 mph Scenario - Summer, with PM2.5
```

* File 1, Run 1, Scenario 4.
* #

Calendar Year: 2009
Month: July
Gasoline Fuel Sulfur Content: 30. ppm
Diesel Fuel Sulfur Content: 15. ppm
Particle Size Cutoff: 2.50 Microns
Reformulated Gas: Yes

Vehicle Type:	LDGV	LDGT12	LDGT34	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
GVWR:		<6000	>6000	(All)						
VMT Distribution:	0.3386	0.3823	0.1504		0.0368	0.0004	0.0014	0.0862	0.0039	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0036	0.0036	0.0035	0.0036	0.0324	------	------	------	0.0142	0.0044
ECARBON:	------	------	------	------	------	0.0960	0.0211	0.1060	------	0.0092
OCARBON:	------	------	------	------	------	0.0271	0.0304	0.0530	------	0.0046
SO4:	0.0005	0.0006	0.0006	0.0006	0.0012	0.0002	0.0003	0.0009	0.0002	0.0006
Total Exhaust PM:	0.0041	0.0042	0.0041	0.0042	0.0336	0.1233	0.0518	0.1599	0.0144	0.0188
Brake:	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053
Tire:	0.0020	0.0020	0.0020	0.0020	0.0021	0.0020	0.0020	0.0062	0.0010	0.0024
Total PM:	0.0115	0.0115	0.0115	0.0115	0.0411	0.1306	0.0592	0.1714	0.0207	0.0265
SO2:	0.0067	0.0087	0.0115	0.0095	0.0164	0.0030	0.0052	0.0131	0.0033	0.0091
NH3:	0.1014	0.1015	0.1016	0.1016	0.0451	0.0068	0.0068	0.0270	0.0113	0.0925

* #
* 2009 30 mph Scenario - Summer, with PM2.5
* File 1, Run 1, Scenario 5.
* #

Calendar Year: 2009
Month: July
Gasoline Fuel Sulfur Content: 30. ppm
Diesel Fuel Sulfur Content: 15. ppm
Particle Size Cutoff: 2.50 Microns
Reformulated Gas: Yes

Vehicle Type:	LDGV	LDGT12	LDGT34	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
GVWR:		<6000	>6000	(All)						
VMT Distribution:	0.3386	0.3823	0.1504		0.0368	0.0004	0.0014	0.0862	0.0039	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0037	0.0036	0.0036	0.0036	0.0322	------	------	------	0.0142	0.0044
ECARBON:	------	------	------	------	------	0.0960	0.0211	0.1060	------	0.0092
OCARBON:	------	------	------	------	------	0.0271	0.0304	0.0530	------	0.0046
SO4:	0.0003	0.0005	0.0005	0.0005	0.0016	0.0002	0.0003	0.0009	0.0001	0.0005
Total Exhaust PM:	0.0040	0.0041	0.0041	0.0041	0.0338	0.1233	0.0518	0.1599	0.0143	0.0188
Brake:	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053
Tire:	0.0020	0.0020	0.0020	0.0020	0.0021	0.0020	0.0020	0.0062	0.0010	0.0024
Total PM:	0.0114	0.0114	0.0114	0.0114	0.0413	0.1306	0.0592	0.1714	0.0206	0.0265
SO2:	0.0067	0.0088	0.0115	0.0095	0.0163	0.0030	0.0052	0.0131	0.0033	0.0091
NH3:	0.1014	0.1015	0.1016	0.1016	0.0451	0.0068	0.0068	0.0270	0.0113	0.0925

* #
* 2009 Idle Scenario - Summer (multiply g/mi by 2.5 mph to get g/hr), with PM10
* File 1, Run 1, Scenario 6.
* #

Calendar Year: 2009
Month: July
Gasoline Fuel Sulfur Content: 30. ppm
Diesel Fuel Sulfur Content: 15. ppm
Particle Size Cutoff: 10.00 Microns
Reformulated Gas: Yes

Vehicle Type:	LDGV	LDGT12	LDGT34	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
GVWR:		<6000	>6000	(All)						
VMT Distribution:	0.3386	0.3823	0.1504		0.0368	0.0004	0.0014	0.0862	0.0039	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0039	0.0039	0.0038	0.0039	0.0362	------	------	------	0.0205	0.0048
ECARBON:	------	------	------	------	------	0.1044	0.0230	0.1152	------	0.0100
OCARBON:	------	------	------	------	------	0.0294	0.0331	0.0576	------	0.0050
SO4:	0.0005	0.0006	0.0006	0.0006	0.0012	0.0002	0.0003	0.0009	0.0002	0.0006
Total Exhaust PM:	0.0044	0.0045	0.0045	0.0045	0.0374	0.1340	0.0563	0.1737	0.0207	0.0205
Brake:	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125
Tire:	0.0080	0.0080	0.0080	0.0080	0.0085	0.0080	0.0080	0.0248	0.0040	0.0094
Total PM:	0.0250	0.0250	0.0250	0.0250	0.0585	0.1545	0.0769	0.2110	0.0372	0.0425
SO2:	0.0067	0.0087	0.0115	0.0095	0.0164	0.0030	0.0052	0.0131	0.0033	0.0091
NH3:	0.1014	0.1015	0.1016	0.1016	0.0451	0.0068	0.0068	0.0270	0.0113	0.0925

* #
* 2009 10 mph Scenario - Summer, with PM10
* File 1, Run 1, Scenario 7.
* #

Calendar Year: 2009
Month: July
Gasoline Fuel Sulfur Content: 30. ppm
Diesel Fuel Sulfur Content: 15. ppm

Particle Size Cutoff: 10.00 Microns
Reformulated Gas: Yes

Vehicle Type: / GVWR:	LDGV	LDGT12 <6000	LDGT34 >6000	LDGT (All)	HDGV	LDDV	LDDT	HDDV	MC	All Veh
VMT Distribution:	0.3386	0.3823	0.1504		0.0368	0.0004	0.0014	0.0862	0.0039	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0039	0.0039	0.0038	0.0039	0.0362	------	------	------	0.0205	0.0048
ECARBON:	------	------	------	------	------	0.1044	0.0230	0.1152	------	0.0100
OCARBON:	------	------	------	------	------	0.0294	0.0331	0.0576	------	0.0050
SO4:	0.0005	0.0006	0.0006	0.0006	0.0012	0.0002	0.0003	0.0009	0.0002	0.0006
Total Exhaust PM:	0.0044	0.0045	0.0045	0.0045	0.0374	0.1340	0.0563	0.1737	0.0207	0.0205
Brake:	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125
Tire:	0.0080	0.0080	0.0080	0.0080	0.0085	0.0080	0.0080	0.0248	0.0040	0.0094
Total PM:	0.0250	0.0250	0.0250	0.0250	0.0585	0.1545	0.0769	0.2110	0.0372	0.0425
SO2:	0.0067	0.0087	0.0115	0.0095	0.0164	0.0030	0.0052	0.0131	0.0033	0.0091
NH3:	0.1014	0.1015	0.1016	0.1016	0.0451	0.0068	0.0068	0.0270	0.0113	0.0925

* #
* 2009 15 mph Scenario - Summer, with PM10
* File 1, Run 1, Scenario 8.
* #

Calendar Year: 2009
Month: July
Gasoline Fuel Sulfur Content: 30. ppm
Diesel Fuel Sulfur Content: 15. ppm
Particle Size Cutoff: 10.00 Microns
Reformulated Gas: Yes

Vehicle Type: / GVWR:	LDGV	LDGT12 <6000	LDGT34 >6000	LDGT (All)	HDGV	LDDV	LDDT	HDDV	MC	All Veh
VMT Distribution:	0.3386	0.3823	0.1504		0.0368	0.0004	0.0014	0.0862	0.0039	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0039	0.0039	0.0038	0.0039	0.0362	------	------	------	0.0205	0.0048
ECARBON:	------	------	------	------	------	0.1044	0.0230	0.1152	------	0.0100
OCARBON:	------	------	------	------	------	0.0294	0.0331	0.0576	------	0.0050
SO4:	0.0005	0.0006	0.0006	0.0006	0.0012	0.0002	0.0003	0.0009	0.0002	0.0006
Total Exhaust PM:	0.0044	0.0045	0.0045	0.0045	0.0374	0.1340	0.0563	0.1737	0.0207	0.0205
Brake:	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125
Tire:	0.0080	0.0080	0.0080	0.0080	0.0085	0.0080	0.0080	0.0248	0.0040	0.0094
Total PM:	0.0250	0.0250	0.0250	0.0250	0.0585	0.1545	0.0769	0.2110	0.0372	0.0425
SO2:	0.0067	0.0087	0.0115	0.0095	0.0164	0.0030	0.0052	0.0131	0.0033	0.0091
NH3:	0.1014	0.1015	0.1016	0.1016	0.0451	0.0068	0.0068	0.0270	0.0113	0.0925

* #
* 2009 30 mph Scenario - Summer, with PM10
* File 1, Run 1, Scenario 9.
* #

Calendar Year: 2009
Month: July
Gasoline Fuel Sulfur Content: 30. ppm
Diesel Fuel Sulfur Content: 15. ppm
Particle Size Cutoff: 10.00 Microns
Reformulated Gas: Yes

Vehicle Type: / GVWR:	LDGV	LDGT12 <6000	LDGT34 >6000	LDGT (All)	HDGV	LDDV	LDDT	HDDV	MC	All Veh
VMT Distribution:	0.3386	0.3823	0.1504		0.0368	0.0004	0.0014	0.0862	0.0039	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0040	0.0039	0.0039	0.0039	0.0359	------	------	------	0.0205	0.0049
ECARBON:	------	------	------	------	------	0.1044	0.0230	0.1152	------	0.0100
OCARBON:	------	------	------	------	------	0.0294	0.0331	0.0576	------	0.0050
SO4:	0.0003	0.0005	0.0005	0.0005	0.0016	0.0002	0.0003	0.0009	0.0001	0.0005
Total Exhaust PM:	0.0044	0.0044	0.0044	0.0044	0.0376	0.1340	0.0563	0.1737	0.0206	0.0204
Brake:	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125
Tire:	0.0080	0.0080	0.0080	0.0080	0.0085	0.0080	0.0080	0.0248	0.0040	0.0094
Total PM:	0.0249	0.0250	0.0250	0.0250	0.0586	0.1545	0.0769	0.2110	0.0371	0.0424
SO2:	0.0067	0.0088	0.0115	0.0095	0.0163	0.0030	0.0052	0.0131	0.0033	0.0091
NH3:	0.1014	0.1015	0.1016	0.1016	0.0451	0.0068	0.0068	0.0270	0.0113	0.0925

****
* MOBILE6.2.03 (24-Sep-2003) *
* Input file: MA09_ALL.INP (file 1, run 2). *
****

* #
* 2009 DEFAULT SPEED - Winter, with PM2.5
* File 1, Run 2, Scenario 1.
* #

Calendar Year: 2009
Month: Jan.
Gasoline Fuel Sulfur Content: 30. ppm
Diesel Fuel Sulfur Content: 15. ppm
Particle Size Cutoff: 2.50 Microns
Reformulated Gas: Yes

Vehicle Type:	LDGV	LDGT12	LDGT34	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
GVWR:		<6000	>6000	(All)						
VMT Distribution:	0.3454	0.3784	0.1486		0.0363	0.0005	0.0014	0.0856	0.0039	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0037	0.0036	0.0036	0.0036	0.0354	------	------	------	0.0142	0.0045
ECARBON:	------	------	------	------	------	0.0960	0.0227	0.1148	------	0.0099
OCARBON:	------	------	------	------	------	0.0271	0.0327	0.0575	------	0.0050
SO4:	0.0003	0.0005	0.0005	0.0005	0.0016	0.0002	0.0003	0.0009	0.0001	0.0005
Total Exhaust PM:	0.0040	0.0041	0.0041	0.0041	0.0371	0.1233	0.0556	0.1732	0.0143	0.0199
Brake:	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053
Tire:	0.0020	0.0020	0.0020	0.0020	0.0021	0.0020	0.0020	0.0062	0.0010	0.0024
Total PM:	0.0114	0.0115	0.0115	0.0115	0.0445	0.1306	0.0630	0.1848	0.0206	0.0276
SO2:	0.0068	0.0088	0.0115	0.0095	0.0163	0.0030	0.0052	0.0131	0.0033	0.0091
NH3:	0.1014	0.1016	0.1016	0.1016	0.0451	0.0068	0.0068	0.0270	0.0113	0.0926

* #
* 2009 Idle Scenario - Winter (multiply g/mi by 2.5 mph to get g/hr), with PM2.5
* File 1, Run 2, Scenario 2.
* #

Calendar Year: 2009
Month: Jan.
Gasoline Fuel Sulfur Content: 30. ppm
Diesel Fuel Sulfur Content: 15. ppm
Particle Size Cutoff: 2.50 Microns
Reformulated Gas: Yes

Vehicle Type:	LDGV	LDGT12	LDGT34	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
GVWR:		<6000	>6000	(All)						
VMT Distribution:	0.3454	0.3784	0.1486		0.0363	0.0005	0.0014	0.0856	0.0039	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0036	0.0036	0.0036	0.0036	0.0356	------	------	------	0.0142	0.0045
ECARBON:	------	------	------	------	------	0.0960	0.0227	0.1148	------	0.0099
OCARBON:	------	------	------	------	------	0.0271	0.0327	0.0575	------	0.0050
SO4:	0.0005	0.0006	0.0006	0.0006	0.0012	0.0002	0.0003	0.0009	0.0002	0.0006
Total Exhaust PM:	0.0041	0.0042	0.0042	0.0042	0.0368	0.1233	0.0556	0.1732	0.0144	0.0200
Brake:	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053
Tire:	0.0020	0.0020	0.0020	0.0020	0.0021	0.0020	0.0020	0.0062	0.0010	0.0024
Total PM:	0.0115	0.0115	0.0115	0.0115	0.0443	0.1306	0.0630	0.1848	0.0207	0.0277
SO2:	0.0067	0.0087	0.0115	0.0095	0.0164	0.0030	0.0052	0.0131	0.0033	0.0091
NH3:	0.1014	0.1015	0.1016	0.1016	0.0451	0.0068	0.0068	0.0270	0.0113	0.0925

* #
* 2009 10 mph Scenario - Winter, with PM2.5
* File 1, Run 2, Scenario 3.
* #

Calendar Year: 2009
Month: Jan.
Gasoline Fuel Sulfur Content: 30. ppm
Diesel Fuel Sulfur Content: 15. ppm
Particle Size Cutoff: 2.50 Microns
Reformulated Gas: Yes

Vehicle Type:	LDGV	LDGT12	LDGT34	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
GVWR:		<6000	>6000	(All)						
VMT Distribution:	0.3454	0.3784	0.1486		0.0363	0.0005	0.0014	0.0856	0.0039	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0036	0.0036	0.0036	0.0036	0.0356	------	------	------	0.0142	0.0045
ECARBON:	------	------	------	------	------	0.0960	0.0227	0.1148	------	0.0099
OCARBON:	------	------	------	------	------	0.0271	0.0327	0.0575	------	0.0050
SO4:	0.0005	0.0006	0.0006	0.0006	0.0012	0.0002	0.0003	0.0009	0.0002	0.0006
Total Exhaust PM:	0.0041	0.0042	0.0042	0.0042	0.0368	0.1233	0.0556	0.1732	0.0144	0.0200
Brake:	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053
Tire:	0.0020	0.0020	0.0020	0.0020	0.0021	0.0020	0.0020	0.0062	0.0010	0.0024
Total PM:	0.0115	0.0115	0.0115	0.0115	0.0443	0.1306	0.0630	0.1848	0.0207	0.0277
SO2:	0.0067	0.0087	0.0115	0.0095	0.0164	0.0030	0.0052	0.0131	0.0033	0.0091
NH3:	0.1014	0.1015	0.1016	0.1016	0.0451	0.0068	0.0068	0.0270	0.0113	0.0925

* #
* 2009 15 mph Scenario - Winter, with PM2.5
* File 1, Run 2, Scenario 4.
* #

Calendar Year: 2009
Month: Jan.
Gasoline Fuel Sulfur Content: 30. ppm
Diesel Fuel Sulfur Content: 15. ppm
Particle Size Cutoff: 2.50 Microns
Reformulated Gas: Yes

Vehicle Type:	LDGV	LDGT12	LDGT34	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
GVWR:		<6000	>6000	(All)						
VMT Distribution:	0.3454	0.3784	0.1486		0.0363	0.0005	0.0014	0.0856	0.0039	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000

GASPM:	0.0036	0.0036	0.0036	0.0036	0.0356	------	------	------	0.0142	0.0045
ECARBON:	------	------	------	------	------	0.0960	0.0227	0.1148	------	0.0099
OCARBON:	------	------	------	------	------	0.0271	0.0327	0.0575	------	0.0050
SO4:	0.0005	0.0006	0.0006	0.0006	0.0012	0.0002	0.0003	0.0009	0.0002	0.0006
Total Exhaust PM:	0.0041	0.0042	0.0042	0.0042	0.0368	0.1233	0.0556	0.1732	0.0144	0.0200
Brake:	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053
Tire:	0.0020	0.0020	0.0020	0.0020	0.0021	0.0020	0.0020	0.0062	0.0010	0.0024
Total PM:	0.0115	0.0115	0.0115	0.0115	0.0443	0.1306	0.0630	0.1848	0.0207	0.0277
SO2:	0.0067	0.0087	0.0115	0.0095	0.0164	0.0030	0.0052	0.0131	0.0033	0.0091
NH3:	0.1014	0.1015	0.1016	0.1016	0.0451	0.0068	0.0068	0.0270	0.0113	0.0925

```
* # # # # # # # # # # # # # # # # # # # # # # # #
* 2009 30 mph Scenario - Winter, with PM2.5
* File 1, Run 2, Scenario 5.
* # # # # # # # # # # # # # # # # # # # # # # # #

                          Calendar Year:  2009
                                  Month:  Jan.
                Gasoline Fuel Sulfur Content:   30. ppm
                  Diesel Fuel Sulfur Content:   15. ppm
                        Particle Size Cutoff:  2.50 Microns
                            Reformulated Gas:  Yes
```

Vehicle Type:	LDGV	LDGT12	LDGT34	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
GVWR:		<6000	>6000	(All)						
VMT Distribution:	0.3454	0.3784	0.1486		0.0363	0.0005	0.0014	0.0856	0.0039	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0037	0.0036	0.0036	0.0036	0.0354	------	------	------	0.0142	0.0045
ECARBON:	------	------	------	------	------	0.0960	0.0227	0.1148	------	0.0099
OCARBON:	------	------	------	------	------	0.0271	0.0327	0.0575	------	0.0050
SO4:	0.0003	0.0005	0.0005	0.0005	0.0016	0.0002	0.0003	0.0009	0.0001	0.0005
Total Exhaust PM:	0.0040	0.0041	0.0041	0.0041	0.0370	0.1233	0.0556	0.1732	0.0143	0.0199
Brake:	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053
Tire:	0.0020	0.0020	0.0020	0.0020	0.0021	0.0020	0.0020	0.0062	0.0010	0.0024
Total PM:	0.0114	0.0115	0.0115	0.0115	0.0445	0.1306	0.0630	0.1848	0.0206	0.0276
SO2:	0.0068	0.0088	0.0115	0.0095	0.0163	0.0030	0.0052	0.0131	0.0033	0.0091
NH3:	0.1014	0.1015	0.1016	0.1016	0.0451	0.0068	0.0068	0.0270	0.0113	0.0925

```
* # # # # # # # # # # # # # # # # # # # # # # # #
* 2009 Idle Scenario - Winter (multiply g/mi by 2.5 mph to get g/hr), with PM10
* File 1, Run 2, Scenario 6.
* # # # # # # # # # # # # # # # # # # # # # # # #

                          Calendar Year:  2009
                                  Month:  Jan.
                Gasoline Fuel Sulfur Content:   30. ppm
                  Diesel Fuel Sulfur Content:   15. ppm
                        Particle Size Cutoff: 10.00 Microns
                            Reformulated Gas:  Yes
```

Vehicle Type:	LDGV	LDGT12	LDGT34	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
GVWR:		<6000	>6000	(All)						
VMT Distribution:	0.3454	0.3784	0.1486		0.0363	0.0005	0.0014	0.0856	0.0039	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0039	0.0039	0.0039	0.0039	0.0397	------	------	------	0.0205	0.0049
ECARBON:	------	------	------	------	------	0.1044	0.0247	0.1248	------	0.0108
OCARBON:	------	------	------	------	------	0.0294	0.0355	0.0625	------	0.0054
SO4:	0.0005	0.0006	0.0006	0.0006	0.0012	0.0002	0.0003	0.0009	0.0002	0.0006
Total Exhaust PM:	0.0045	0.0045	0.0045	0.0045	0.0409	0.1340	0.0604	0.1882	0.0207	0.0217
Brake:	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125
Tire:	0.0080	0.0080	0.0080	0.0080	0.0085	0.0080	0.0080	0.0248	0.0040	0.0094
Total PM:	0.0250	0.0250	0.0250	0.0250	0.0620	0.1545	0.0810	0.2256	0.0372	0.0437
SO2:	0.0067	0.0087	0.0115	0.0095	0.0164	0.0030	0.0052	0.0131	0.0033	0.0091
NH3:	0.1014	0.1015	0.1016	0.1016	0.0451	0.0068	0.0068	0.0270	0.0113	0.0925

```
* # # # # # # # # # # # # # # # # # # # # # # # #
* 2009 10 mph Scenario - Winter, with PM10
* File 1, Run 2, Scenario 7.
* # # # # # # # # # # # # # # # # # # # # # # # #

                          Calendar Year:  2009
                                  Month:  Jan.
                Gasoline Fuel Sulfur Content:   30. ppm
                  Diesel Fuel Sulfur Content:   15. ppm
                        Particle Size Cutoff: 10.00 Microns
                            Reformulated Gas:  Yes
```

Vehicle Type:	LDGV	LDGT12	LDGT34	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
GVWR:		<6000	>6000	(All)						
VMT Distribution:	0.3454	0.3784	0.1486		0.0363	0.0005	0.0014	0.0856	0.0039	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0039	0.0039	0.0039	0.0039	0.0397	------	------	------	0.0205	0.0049
ECARBON:	------	------	------	------	------	0.1044	0.0247	0.1248	------	0.0108
OCARBON:	------	------	------	------	------	0.0294	0.0355	0.0625	------	0.0054
SO4:	0.0005	0.0006	0.0006	0.0006	0.0012	0.0002	0.0003	0.0009	0.0002	0.0006
Total Exhaust PM:	0.0045	0.0045	0.0045	0.0045	0.0409	0.1340	0.0604	0.1882	0.0207	0.0217
Brake:	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125
Tire:	0.0080	0.0080	0.0080	0.0080	0.0085	0.0080	0.0080	0.0248	0.0040	0.0094

Total PM:	0.0250	0.0250	0.0250	0.0250	0.0620	0.1545	0.0810	0.2256	0.0372	0.0437
SO2:	0.0067	0.0087	0.0115	0.0095	0.0164	0.0030	0.0052	0.0131	0.0033	0.0091
NH3:	0.1014	0.1015	0.1016	0.1016	0.0451	0.0068	0.0068	0.0270	0.0113	0.0925

```
* # # # # # # # # # # # # # # # # # # # # # # # #
* 2009 15 mph Scenario - Winter, with PM10
* File 1, Run 2, Scenario 8.
* # # # # # # # # # # # # # # # # # # # # # # # #

                           Calendar Year:  2009
                                   Month:  Jan.
                Gasoline Fuel Sulfur Content:   30. ppm
                  Diesel Fuel Sulfur Content:   15. ppm
                        Particle Size Cutoff: 10.00 Microns
                            Reformulated Gas:  Yes
```

Vehicle Type:	LDGV	LDGT12	LDGT34	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
GVWR:		<6000	>6000	(All)						
VMT Distribution:	0.3454	0.3784	0.1486		0.0363	0.0005	0.0014	0.0856	0.0039	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0039	0.0039	0.0039	0.0039	0.0397	------	------	------	0.0205	0.0049
ECARBON:	------	------	------	------	------	0.1044	0.0247	0.1248	------	0.0108
OCARBON:	------	------	------	------	------	0.0294	0.0355	0.0625	------	0.0054
SO4:	0.0005	0.0006	0.0006	0.0006	0.0012	0.0002	0.0003	0.0009	0.0002	0.0006
Total Exhaust PM:	0.0045	0.0045	0.0045	0.0045	0.0409	0.1340	0.0604	0.1882	0.0207	0.0217
Brake:	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125
Tire:	0.0080	0.0080	0.0080	0.0080	0.0085	0.0080	0.0080	0.0248	0.0040	0.0094
Total PM:	0.0250	0.0250	0.0250	0.0250	0.0620	0.1545	0.0810	0.2256	0.0372	0.0437
SO2:	0.0067	0.0087	0.0115	0.0095	0.0164	0.0030	0.0052	0.0131	0.0033	0.0091
NH3:	0.1014	0.1015	0.1016	0.1016	0.0451	0.0068	0.0068	0.0270	0.0113	0.0925

```
* # # # # # # # # # # # # # # # # # # # # # # # #
* 2009 30 mph Scenario - Winter, with PM10
* File 1, Run 2, Scenario 9.
* # # # # # # # # # # # # # # # # # # # # # # # #

                           Calendar Year:  2009
                                   Month:  Jan.
                Gasoline Fuel Sulfur Content:   30. ppm
                  Diesel Fuel Sulfur Content:   15. ppm
                        Particle Size Cutoff: 10.00 Microns
                            Reformulated Gas:  Yes
```

Vehicle Type:	LDGV	LDGT12	LDGT34	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
GVWR:		<6000	>6000	(All)						
VMT Distribution:	0.3454	0.3784	0.1486		0.0363	0.0005	0.0014	0.0856	0.0039	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0040	0.0040	0.0039	0.0040	0.0396	------	------	------	0.0205	0.0050
ECARBON:	------	------	------	------	------	0.1044	0.0247	0.1248	------	0.0108
OCARBON:	------	------	------	------	------	0.0294	0.0355	0.0625	------	0.0054
SO4:	0.0003	0.0005	0.0005	0.0005	0.0016	0.0002	0.0003	0.0009	0.0001	0.0005
Total Exhaust PM:	0.0044	0.0044	0.0044	0.0044	0.0411	0.1340	0.0604	0.1882	0.0206	0.0217
Brake:	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125
Tire:	0.0080	0.0080	0.0080	0.0080	0.0085	0.0080	0.0080	0.0248	0.0040	0.0094
Total PM:	0.0249	0.0250	0.0250	0.0250	0.0622	0.1545	0.0810	0.2256	0.0371	0.0437
SO2:	0.0068	0.0088	0.0115	0.0095	0.0163	0.0030	0.0052	0.0131	0.0033	0.0091
NH3:	0.1014	0.1015	0.1016	0.1016	0.0451	0.0068	0.0068	0.0270	0.0113	0.0925

```
*****************************************************************************
* MOBILE6.2.03 (24-Sep-2003)                                                *
* Input file: MA09_ALL.INP (file 1, run 1).                                 *
*****************************************************************************
* *** Summer 2009 ***

* Reading Registration Distributions from the following external
* data file: 2005_REG.D
  M 49 Warning:
                1.00     MYR sum not = 1. (will normalize)
  M 49 Warning:
               0.998     MYR sum not = 1. (will normalize)
  M 49 Warning:
               0.998     MYR sum not = 1. (will normalize)
  M 49 Warning:
               0.998     MYR sum not = 1. (will normalize)
  M 49 Warning:
                1.00     MYR sum not = 1. (will normalize)
  M 49 Warning:
                1.00     MYR sum not = 1. (will normalize)
  M 49 Warning:
               0.999     MYR sum not = 1. (will normalize)
  M 49 Warning:
               0.998     MYR sum not = 1. (will normalize)
  M 49 Warning:
                1.00     MYR sum not = 1. (will normalize)
  M 49 Warning:
               0.999     MYR sum not = 1. (will normalize)
  M 49 Warning:
                1.00     MYR sum not = 1. (will normalize)
  M 49 Warning:
                1.00     MYR sum not = 1. (will normalize)
  M 49 Warning:
                1.00     MYR sum not = 1. (will normalize)
  M 49 Warning:
                1.00     MYR sum not = 1. (will normalize)

* Reading I/M program description records from the following external
* data file: 09NEWIM.D
* 15 Year Exemption Age
* New Annual OBD Exhaust I/M program for Light Duty MY 1996 through 2007 vehicles <=8,500 lb GVWR
* New Annual OBD Exhaust I/M program for Light Duty and Medium duty MY 2008 and later <=14,000 lb GVWR
* New Annual OBD Evap I/M program for Light Duty MY 1996 through 2007 vehicles <=8,500 lb GVWR
* New Annual OBD Evap I/M program for for Light Duty and Medium duty MY 2008 and later <=14,000 lb GVWR
  M601 Comment:
               User has enabled STAGE II REFUELING.


* Reading 94+ LEV IMPLEMENTATION SCHEDULE from the following external
* data file: MA_LEV2.D

  Reading User Supplied Tier2 Exhaust bin phase-in fractions

     Data read from file: LEV2EXH.D


  Reading User Supplied Tier2 EVAP phase-in fractions

     Data read from file: LEV2EVAP.D


  Reading User Supplied Tier2 50K certification standards

     Data read from file: LEV2CERT.D

  M616 Comment:
               User has supplied post-1999 sulfur levels.
  M614 Comment:
               User supplied diesel sale fractions.

* # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # #
* 2009 DEFAULT SPEED - Summer, with PM2.5
* File 1, Run 1, Scenario 1.
* # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # #

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
*** I/M credits for Tech1&2 vehicles were read from the following external
    data file: TECH12.D
  M 48 Warning:
              there are no sales for vehicle class HDGV8b
 HDDV DEFEAT DEVICE EFFECTS ARE PRESENT. THE REBUILD FRACTION IS 0.10.

* Reading Ammonia (NH3) Basic Emissiion Rates
* from the external data file PMNH3BER.D

* Reading Ammonia (NH3) Sulfur Deterioration Rates
* from the external data file PMNH3SDR.D

 LEV phase-in data read from file MA_LEV2.D
                    Calendar Year:  2009
                            Month:  July
                         Altitude:  Low
               Minimum Temperature:  70.4 (F)
               Maximum Temperature:  93.7 (F)
                 Absolute Humidity:   75. grains/lb
               Fuel Sulfur Content:   30. ppm
```

```
            Exhaust I/M Program:  Yes
               Evap I/M Program:  Yes
                    ATP Program:  No
               Reformulated Gas:  Yes

      Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.3386    0.3823    0.1504              0.0368    0.0004    0.0014    0.0862    0.0039    1.0000
Fuel Economy (mpg):      24.1      18.6      14.2      17.1       9.9      31.5      18.3       7.3      50.0      16.4
 ---------------------------------------------------------------------------------------------------------------------
Composite Emission Factors (g/mi):
    Composite VOC :      0.527     0.387     0.465     0.409     0.542     0.409     0.328     0.404      3.79     0.467
    Composite CO  :       5.77      5.35      6.14      5.57      7.02     1.527     0.655     1.906     17.10     5.414
    Composite NOX :      0.442     0.466     0.717     0.537     1.982     0.772     0.549     7.752      1.26     1.183
    Composite CO2 :      368.2     478.1     623.0     519.0     896.3     323.2     554.7    1403.4     177.4    556.70
 ---------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* 2009 Idle Scenario - Summer (multiply g/mi by 2.5 mph to get g/hr), with PM2.5
* File 1, Run 1, Scenario 2.
* # # # # # # # # # # # # # # # # # # # # # # # #

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M583 Warning:
            The user supplied arterial average speed of  2.5
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.
  M 48 Warning:
              there are no sales for vehicle class HDGV8b

 LEV phase-in data read from file MA_LEV2.D
                     Calendar Year:  2009
                             Month:  July
                          Altitude:  Low
               Minimum Temperature:  70.4 (F)
               Maximum Temperature:  93.7 (F)
                 Absolute Humidity:   75. grains/lb
               Fuel Sulfur Content:   30. ppm

               Exhaust I/M Program:  Yes
                  Evap I/M Program:  Yes
                       ATP Program:  No
                  Reformulated Gas:  Yes

      Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.3386    0.3823    0.1504              0.0368    0.0004    0.0014    0.0862    0.0039    1.0000
Fuel Economy (mpg):      24.1      18.6      14.2      17.1       9.9      31.5      18.3       7.3      50.0      16.4
 ---------------------------------------------------------------------------------------------------------------------
Composite Emission Factors (g/mi):
    Composite VOC :      3.914     2.571     2.788     2.632     3.912     0.888     0.776     1.250     12.19     3.028
    Composite CO  :      16.94     12.98     15.27     13.63     32.53     4.327     2.018     8.453    120.29    15.395
    Composite NOX :      1.006     0.911     1.380     1.044     1.450     1.240     0.887    12.077      1.12     1.998
    Composite CO2 :      368.2     478.0     622.9     518.9     896.2     323.2     554.6    1403.2     177.4    556.65
 ---------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* 2009 10 mph Scenario - Summer, with PM2.5
* File 1, Run 1, Scenario 3.
* # # # # # # # # # # # # # # # # # # # # # # # #

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M583 Warning:
            The user supplied arterial average speed of 10.0
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.
  M 48 Warning:
              there are no sales for vehicle class HDGV8b

 LEV phase-in data read from file MA_LEV2.D
                     Calendar Year:  2009
                             Month:  July
                          Altitude:  Low
               Minimum Temperature:  70.4 (F)
               Maximum Temperature:  93.7 (F)
```

```
              Absolute Humidity:   75. grains/lb
             Fuel Sulfur Content:   30. ppm

             Exhaust I/M Program:  Yes
                Evap I/M Program:  Yes
                     ATP Program:  No
                Reformulated Gas:  Yes

      Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.3386    0.3823    0.1504              0.0368    0.0004    0.0014    0.0862    0.0039    1.0000
Fuel Economy (mpg):      24.1      18.6      14.2      17.1       9.9      31.5      18.3       7.3      50.0      16.4
 ---------------------------------------------------------------------------------------------------------------------
Composite Emission Factors (g/mi):
    Composite VOC :      0.801     0.592     0.726     0.630     1.156    0.668     0.571     0.862      5.55     0.746
    Composite CO  :       6.69      5.91      6.85      6.18     17.29    2.747     1.249     4.758     36.49     6.748
    Composite NOX :      0.663     0.642     0.974     0.736     1.563    0.935     0.667     9.109      1.00     1.464
    Composite CO2 :      368.2     478.0     622.9     518.9     896.2    323.2     554.6    1403.2     177.4    556.65
 ---------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* 2009 15 mph Scenario - Summer, with PM2.5
* File 1, Run 1, Scenario 4.
* # # # # # # # # # # # # # # # # # # # # # # # #

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
 M583 Warning:
           The user supplied arterial average speed of 15.0
           will be used for all hours of the day.  100% of VMT
           has been assigned to the arterial/collector roadway
           type for all hours of the day and all vehicle types.
 M 48 Warning:
             there are no sales for vehicle class HDGV8b

 LEV phase-in data read from file MA_LEV2.D
                    Calendar Year:  2009
                            Month:  July
                         Altitude:  Low
              Minimum Temperature:  70.4 (F)
              Maximum Temperature:  93.7 (F)
                Absolute Humidity:   75. grains/lb
              Fuel Sulfur Content:   30. ppm

              Exhaust I/M Program:  Yes
                 Evap I/M Program:  Yes
                      ATP Program:  No
                 Reformulated Gas:  Yes

      Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.3386    0.3823    0.1504              0.0368    0.0004    0.0014    0.0862    0.0039    1.0000
Fuel Economy (mpg):      24.1      18.6      14.2      17.1       9.9      31.5      18.3       7.3      50.0      16.4
 ---------------------------------------------------------------------------------------------------------------------
Composite Emission Factors (g/mi):
    Composite VOC :      0.652     0.479     0.584     0.509     0.864    0.572     0.480     0.692      4.58     0.602
    Composite CO  :       5.81      5.24      6.07      5.47     12.15    2.181     0.973     3.433     25.25     5.727
    Composite NOX :      0.548     0.546     0.836     0.628     1.638    0.810     0.576     7.888      1.01     1.266
    Composite CO2 :      368.2     478.0     622.9     518.9     896.2    323.2     554.6    1403.2     177.4    556.65
 ---------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* 2009 30 mph Scenario - Summer, with PM2.5
* File 1, Run 1, Scenario 5.
* # # # # # # # # # # # # # # # # # # # # # # # #

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
 M583 Warning:
           The user supplied arterial average speed of 30.0
           will be used for all hours of the day.  100% of VMT
           has been assigned to the arterial/collector roadway
           type for all hours of the day and all vehicle types.
 M 48 Warning:
             there are no sales for vehicle class HDGV8b

 LEV phase-in data read from file MA_LEV2.D
                    Calendar Year:  2009
                            Month:  July
                         Altitude:  Low
```

```
             Minimum Temperature:  70.4 (F)
             Maximum Temperature:  93.7 (F)
               Absolute Humidity:   75. grains/lb
             Fuel Sulfur Content:   30. ppm

             Exhaust I/M Program:  Yes
                Evap I/M Program:  Yes
                     ATP Program:  No
                Reformulated Gas:  Yes

      Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                <6000     >6000     (All)
                    ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.3386    0.3823    0.1504                0.0368    0.0004    0.0014    0.0862    0.0039    1.0000
Fuel Economy (mpg):      24.1      18.6      14.2      17.1       9.9      31.5      18.3       7.3      50.0      16.4
 ---------------------------------------------------------------------------------------------------------------------
Composite Emission Factors (g/mi):
    Composite VOC :      0.499     0.364     0.442     0.386     0.507    0.411     0.330     0.408      3.64     0.443
    Composite CO  :       5.06      4.72      5.44      4.92      5.87     1.437     0.611     1.695     14.61     4.755
    Composite NOX :      0.428     0.448     0.694     0.517     1.865    0.646     0.458     6.288      1.17     1.037
    Composite CO2 :      368.2     478.0     622.9     518.9     896.2    323.2     554.6    1403.2     177.4    556.65
 ---------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* 2009 Idle Scenario - Summer (multiply g/mi by 2.5 mph to get g/hr), with PM10
* File 1, Run 1, Scenario 6.
* # # # # # # # # # # # # # # # # # # # # # # # #

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M583 Warning:
            The user supplied arterial average speed of  2.5
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.
  M 48 Warning:
            there are no sales for vehicle class HDGV8b

 LEV phase-in data read from file MA_LEV2.D
                   Calendar Year:  2009
                           Month:  July
                        Altitude:  Low
             Minimum Temperature:  70.4 (F)
             Maximum Temperature:  93.7 (F)
               Absolute Humidity:   75. grains/lb
             Fuel Sulfur Content:   30. ppm

             Exhaust I/M Program:  Yes
                Evap I/M Program:  Yes
                     ATP Program:  No
                Reformulated Gas:  Yes

      Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                <6000     >6000     (All)
                    ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.3386    0.3823    0.1504                0.0368    0.0004    0.0014    0.0862    0.0039    1.0000
Fuel Economy (mpg):      24.1      18.6      14.2      17.1       9.9      31.5      18.3       7.3      50.0      16.4
 ---------------------------------------------------------------------------------------------------------------------
Composite Emission Factors (g/mi):
    Composite VOC :      3.914     2.571     2.788     2.632     3.912    0.888     0.776     1.250     12.19     3.028
    Composite CO  :      16.94     12.98     15.27     13.63     32.53    4.327     2.018     8.453     120.29    15.395
    Composite NOX :      1.006     0.911     1.380     1.044     1.450    1.240     0.887     12.077     1.12     1.998
    Composite CO2 :      368.2     478.0     622.9     518.9     896.2    323.2     554.6    1403.2     177.4    556.65
 ---------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* 2009 10 mph Scenario - Summer, with PM10
* File 1, Run 1, Scenario 7.
* # # # # # # # # # # # # # # # # # # # # # # # #

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M583 Warning:
            The user supplied arterial average speed of 10.0
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.
  M 48 Warning:
            there are no sales for vehicle class HDGV8b

 LEV phase-in data read from file MA_LEV2.D
                   Calendar Year:  2009
```

```
                        Month:  July
                     Altitude:  Low
           Minimum Temperature:  70.4 (F)
           Maximum Temperature:  93.7 (F)
             Absolute Humidity:   75. grains/lb
           Fuel Sulfur Content:   30. ppm

           Exhaust I/M Program:  Yes
              Evap I/M Program:  Yes
                   ATP Program:  No
              Reformulated Gas:  Yes
```

Vehicle Type: / GVWR:	LDGV	LDGT12 <6000	LDGT34 >6000	LDGT (All)	HDGV	LDDV	LDDT	HDDV	MC	All Veh
VMT Distribution:	0.3386	0.3823	0.1504		0.0368	0.0004	0.0014	0.0862	0.0039	1.0000
Fuel Economy (mpg):	24.1	18.6	14.2	17.1	9.9	31.5	18.3	7.3	50.0	16.4
Composite Emission Factors (g/mi):										
Composite VOC :	0.801	0.592	0.726	0.630	1.156	0.668	0.571	0.862	5.55	0.746
Composite CO :	6.69	5.91	6.85	6.18	17.29	2.747	1.249	4.758	36.49	6.748
Composite NOX :	0.663	0.642	0.974	0.736	1.563	0.935	0.667	9.109	1.00	1.464
Composite CO2 :	368.2	478.0	622.9	518.9	896.2	323.2	554.6	1403.2	177.4	556.65

```
* # # # # # # # # # # # # # # # # # # # # # # # #
* 2009 15 mph Scenario - Summer, with PM10
* File 1, Run 1, Scenario 8.
* # # # # # # # # # # # # # # # # # # # # # # # #

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M583 Warning:
            The user supplied arterial average speed of 15.0
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.
  M 48 Warning:
             there are no sales for vehicle class HDGV8b

 LEV phase-in data read from file MA_LEV2.D
                    Calendar Year:  2009
                          Month:  July
                       Altitude:  Low
             Minimum Temperature:  70.4 (F)
             Maximum Temperature:  93.7 (F)
               Absolute Humidity:   75. grains/lb
             Fuel Sulfur Content:   30. ppm

             Exhaust I/M Program:  Yes
                Evap I/M Program:  Yes
                     ATP Program:  No
                Reformulated Gas:  Yes
```

Vehicle Type: / GVWR:	LDGV	LDGT12 <6000	LDGT34 >6000	LDGT (All)	HDGV	LDDV	LDDT	HDDV	MC	All Veh
VMT Distribution:	0.3386	0.3823	0.1504		0.0368	0.0004	0.0014	0.0862	0.0039	1.0000
Fuel Economy (mpg):	24.1	18.6	14.2	17.1	9.9	31.5	18.3	7.3	50.0	16.4
Composite Emission Factors (g/mi):										
Composite VOC :	0.652	0.479	0.584	0.509	0.864	0.572	0.480	0.692	4.58	0.602
Composite CO :	5.81	5.24	6.07	5.47	12.15	2.181	0.973	3.433	25.25	5.727
Composite NOX :	0.548	0.546	0.836	0.628	1.638	0.810	0.576	7.888	1.01	1.266
Composite CO2 :	368.2	478.0	622.9	518.9	896.2	323.2	554.6	1403.2	177.4	556.65

```
* # # # # # # # # # # # # # # # # # # # # # # # #
* 2009 30 mph Scenario - Summer, with PM10
* File 1, Run 1, Scenario 9.
* # # # # # # # # # # # # # # # # # # # # # # # #

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M583 Warning:
            The user supplied arterial average speed of 30.0
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.
  M 48 Warning:
             there are no sales for vehicle class HDGV8b
```

```
 LEV phase-in data read from file MA_LEV2.D
                    Calendar Year:  2009
                            Month:  July
                         Altitude:  Low
              Minimum Temperature:  70.4 (F)
              Maximum Temperature:  93.7 (F)
                Absolute Humidity:   75. grains/lb
              Fuel Sulfur Content:   30. ppm

              Exhaust I/M Program:  Yes
                 Evap I/M Program:  Yes
                      ATP Program:  No
                Reformulated Gas:  Yes

      Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                <6000     >6000     (All)
                     ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
   VMT Distribution:    0.3386    0.3823    0.1504              0.0368    0.0004    0.0014    0.0862    0.0039    1.0000
 Fuel Economy (mpg):      24.1      18.6      14.2      17.1       9.9      31.5      18.3       7.3      50.0      16.4
  ---------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite VOC :      0.499     0.364     0.442     0.386     0.507    0.411     0.330     0.408      3.64     0.443
     Composite CO  :      5.06      4.72      5.44      4.92      5.87     1.437     0.611     1.695     14.61     4.755
     Composite NOX :      0.428     0.448     0.694     0.517     1.865    0.646     0.458     6.288      1.17     1.037
     Composite CO2 :    368.2     478.0     622.9     518.9     896.2    323.2     554.6    1403.2      177.4    556.65
  ---------------------------------------------------------------------------------------------------------------------
**********************************************************************
* MOBILE6.2.03 (24-Sep-2003)                                         *
* Input file: MA09_ALL.INP (file 1, run 2).                          *
**********************************************************************
* *** Winter 2009 ***

* Reading Registration Distributions from the following external
* data file: 2005_REG.D
  M 49 Warning:
                1.00     MYR sum not = 1. (will normalize)
  M 49 Warning:
               0.998     MYR sum not = 1. (will normalize)
  M 49 Warning:
               0.998     MYR sum not = 1. (will normalize)
  M 49 Warning:
               0.998     MYR sum not = 1. (will normalize)
  M 49 Warning:
                1.00     MYR sum not = 1. (will normalize)
  M 49 Warning:
                1.00     MYR sum not = 1. (will normalize)
  M 49 Warning:
               0.999     MYR sum not = 1. (will normalize)
  M 49 Warning:
               0.998     MYR sum not = 1. (will normalize)
  M 49 Warning:
                1.00     MYR sum not = 1. (will normalize)
  M 49 Warning:
               0.999     MYR sum not = 1. (will normalize)
  M 49 Warning:
                1.00     MYR sum not = 1. (will normalize)
  M 49 Warning:
                1.00     MYR sum not = 1. (will normalize)
  M 49 Warning:
                1.00     MYR sum not = 1. (will normalize)
  M 49 Warning:
                1.00     MYR sum not = 1. (will normalize)

* Reading I/M program description records from the following external
* data file: 09NEWIM.D
* 15 Year Exemption Age
* New Annual OBD Exhaust I/M program for Light Duty MY 1996 through 2007 vehicles <=8,500 lb GVWR
* New Annual OBD Exhaust I/M program for Light Duty and Medium duty MY 2008 and later <=14,000 lb GVWR
* New Annual OBD Evap I/M program for Light Duty MY 1996 through 2007 vehicles <=8,500 lb GVWR
* New Annual OBD Evap I/M program for for Light Duty and Medium duty MY 2008 and later <=14,000 lb GVWR
  M601 Comment:
               User has enabled STAGE II REFUELING.


* Reading 94+ LEV IMPLEMENTATION SCHEDULE from the following external
* data file: MA_LEV2.D

  Reading User Supplied Tier2 Exhaust bin phase-in fractions

     Data read from file: LEV2EXH.D


  Reading User Supplied Tier2 EVAP phase-in fractions

     Data read from file: LEV2EVAP.D


  Reading User Supplied Tier2 50K certification standards

     Data read from file: LEV2CERT.D

  M616 Comment:
               User has supplied post-1999 sulfur levels.
  M614 Comment:
               User supplied diesel sale fractions.

* # # # # # # # # # # # # # # # # # # # # # # # # # # #
* 2009 DEFAULT SPEED - Winter, with PM2.5
* File 1, Run 2, Scenario 1.
* # # # # # # # # # # # # # # # # # # # # # # # # # # #

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV
```

```
* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M112 Warning:
              Wintertime Reformulated Gasoline Rules Apply
*** I/M credits for Tech1&2 vehicles were read from the following external
    data file: TECH12.D
  M 48 Warning:
             there are no sales for vehicle class HDGV8b
 HDDV DEFEAT DEVICE EFFECTS ARE PRESENT. THE REBUILD FRACTION IS 0.10.

 LEV phase-in data read from file MA_LEV2.D
                    Calendar Year:  2009
                            Month:  Jan.
                         Altitude:  Low
               Minimum Temperature:  22.8 (F)
               Maximum Temperature:  38.3 (F)
                 Absolute Humidity:   75. grains/lb
               Fuel Sulfur Content:   30. ppm

               Exhaust I/M Program:  Yes
                  Evap I/M Program:  Yes
                       ATP Program:  No
                  Reformulated Gas:  Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                      ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
   VMT Distribution:    0.3454    0.3784    0.1486              0.0363    0.0005    0.0014    0.0856    0.0039    1.0000
 Fuel Economy (mpg):      24.1      18.6      14.2      17.1       9.9      31.5      18.3       7.2      50.0      16.4
  ---------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite VOC :      0.564     0.518     0.700     0.569     0.521    0.399     0.341     0.417     3.28     0.563
     Composite CO  :     16.26     15.94     16.72     16.16      9.21    1.496     0.673     2.052     16.82    14.710
     Composite NOX :      0.606     0.715     1.063     0.813     2.362    0.765     0.586     8.197     1.76     1.433
     Composite CO2 :    368.2     478.0     622.8     518.8     896.6    323.2     554.8    1404.7     177.4    555.00
  ---------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # #
* 2009 Idle Scenario - Winter (multiply g/mi by 2.5 mph to get g/hr), with PM2.5
* File 1, Run 2, Scenario 2.
* # # # # # # # # # # # # # # # # # # # # # # # # #

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M583 Warning:
            The user supplied arterial average speed of  2.5
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.
  M112 Warning:
              Wintertime Reformulated Gasoline Rules Apply
  M 48 Warning:
             there are no sales for vehicle class HDGV8b

 LEV phase-in data read from file MA_LEV2.D
                    Calendar Year:  2009
                            Month:  Jan.
                         Altitude:  Low
               Minimum Temperature:  22.8 (F)
               Maximum Temperature:  38.3 (F)
                 Absolute Humidity:   75. grains/lb
               Fuel Sulfur Content:   30. ppm

               Exhaust I/M Program:  Yes
                  Evap I/M Program:  Yes
                       ATP Program:  No
                  Reformulated Gas:  Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                      ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
   VMT Distribution:    0.3454    0.3784    0.1486              0.0363    0.0005    0.0014    0.0856    0.0039    1.0000
 Fuel Economy (mpg):      24.1      18.6      14.2      17.1       9.9      31.5      18.3       7.2      50.0      16.4
  ---------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite VOC :      3.876     2.890     3.412     3.037     4.165    0.873     0.811     1.291     11.37     3.246
     Composite CO  :     38.34     35.13     39.29     36.30     42.71    4.268     2.084     9.100     104.23    35.111
     Composite NOX :      1.116     1.311     1.935     1.487     1.728    1.229     0.947    12.747     1.56     2.331
     Composite CO2 :    368.2     477.9     622.8     518.8     896.5    323.2     554.7    1404.6     177.4    554.95
  ---------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # #
* 2009 10 mph Scenario - Winter, with PM2.5
* File 1, Run 2, Scenario 3.
* # # # # # # # # # # # # # # # # # # # # # # # # #

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
```

```
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M583 Warning:
            The user supplied arterial average speed of 10.0
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.
  M112 Warning:
             Wintertime Reformulated Gasoline Rules Apply
  M 48 Warning:
            there are no sales for vehicle class HDGV8b

 LEV phase-in data read from file MA_LEV2.D
                    Calendar Year:  2009
                            Month:  Jan.
                         Altitude:  Low
               Minimum Temperature:  22.8 (F)
               Maximum Temperature:  38.3 (F)
                 Absolute Humidity:   75. grains/lb
               Fuel Sulfur Content:   30. ppm

               Exhaust I/M Program:  Yes
                  Evap I/M Program:  Yes
                       ATP Program:  No
                  Reformulated Gas:  Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
                GVWR:               <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
   VMT Distribution:    0.3454    0.3784    0.1486              0.0363    0.0005    0.0014    0.0856    0.0039    1.0000
 Fuel Economy (mpg):      24.1      18.6      14.2      17.1       9.9      31.5      18.3       7.2      50.0      16.4
 ---------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite VOC :      0.878     0.785     1.072     0.866     1.361     0.656     0.595     0.891     4.98     0.906
     Composite CO  :      18.59     18.06     19.20     18.38     22.71     2.703     1.288     5.122     33.28    17.500
     Composite NOX :      0.808     0.949     1.396     1.075     1.863     0.927     0.712     9.619     1.38     1.744
     Composite CO2 :      368.2     477.9     622.8     518.8     896.5     323.2     554.7    1404.6     177.4    554.95
  ---------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # #
* 2009 15 mph Scenario - Winter, with PM2.5
* File 1, Run 2, Scenario 4.
* # # # # # # # # # # # # # # # # # # # # # # # # #

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M583 Warning:
            The user supplied arterial average speed of 15.0
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.
  M112 Warning:
             Wintertime Reformulated Gasoline Rules Apply
  M 48 Warning:
            there are no sales for vehicle class HDGV8b

 LEV phase-in data read from file MA_LEV2.D
                    Calendar Year:  2009
                            Month:  Jan.
                         Altitude:  Low
               Minimum Temperature:  22.8 (F)
               Maximum Temperature:  38.3 (F)
                 Absolute Humidity:   75. grains/lb
               Fuel Sulfur Content:   30. ppm

               Exhaust I/M Program:  Yes
                  Evap I/M Program:  Yes
                       ATP Program:  No
                  Reformulated Gas:  Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
                GVWR:               <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
   VMT Distribution:    0.3454    0.3784    0.1486              0.0363    0.0005    0.0014    0.0856    0.0039    1.0000
 Fuel Economy (mpg):      24.1      18.6      14.2      17.1       9.9      31.5      18.3       7.2      50.0      16.4
 ---------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite VOC :      0.705     0.638     0.871     0.704     0.964     0.561     0.501     0.715     4.03     0.727
     Composite CO  :      16.73     16.33     17.21     16.58     15.96     2.142     1.003     3.696     23.77    15.504
     Composite NOX :      0.695     0.818     1.213     0.930     1.953     0.803     0.615     8.331     1.40     1.521
     Composite CO2 :      368.2     477.9     622.8     518.8     896.5     323.2     554.7    1404.6     177.4    554.95
  ---------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # #
* 2009 30 mph Scenario - Winter, with PM2.5
* File 1, Run 2, Scenario 5.
* # # # # # # # # # # # # # # # # # # # # # # # # #

* Reading PM Gas Carbon ZML Levels
```

```
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M583 Warning:
            The user supplied arterial average speed of 30.0
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.
  M112 Warning:
              Wintertime Reformulated Gasoline Rules Apply
  M 48 Warning:
              there are no sales for vehicle class HDGV8b

 LEV phase-in data read from file MA_LEV2.D
                      Calendar Year:  2009
                              Month:  Jan.
                           Altitude:  Low
                 Minimum Temperature:  22.8 (F)
                 Maximum Temperature:  38.3 (F)
                   Absolute Humidity:   75. grains/lb
                 Fuel Sulfur Content:   30. ppm

                 Exhaust I/M Program:  Yes
                    Evap I/M Program:  Yes
                         ATP Program:  No
                    Reformulated Gas:  Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
                GVWR:             <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
   VMT Distribution:    0.3454    0.3784    0.1486              0.0363    0.0005    0.0014    0.0856    0.0039    1.0000
 Fuel Economy (mpg):      24.1      18.6      14.2      17.1       9.9      31.5      18.3       7.2      50.0      16.4
  ---------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite VOC :      0.537     0.495     0.679     0.547     0.475    0.402     0.343     0.422     3.13     0.540
     Composite CO  :     15.08     14.80     15.46     14.99      7.71    1.407     0.628     1.825    14.76    13.601
     Composite NOX :      0.581     0.688     1.029     0.784     2.223    0.640     0.488     6.644     1.64    1.271
     Composite CO2 :    368.2     477.9     622.8     518.8     896.5    323.2     554.7    1404.6     177.4    554.95
  ---------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # # # # #
* 2009 Idle Scenario - Winter (multiply g/mi by 2.5 mph to get g/hr), with PM10
* File 1, Run 2, Scenario 6.
* # # # # # # # # # # # # # # # # # # # # # # # # # # # #

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M583 Warning:
            The user supplied arterial average speed of  2.5
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.
  M112 Warning:
              Wintertime Reformulated Gasoline Rules Apply
  M 48 Warning:
              there are no sales for vehicle class HDGV8b

 LEV phase-in data read from file MA_LEV2.D
                      Calendar Year:  2009
                              Month:  Jan.
                           Altitude:  Low
                 Minimum Temperature:  22.8 (F)
                 Maximum Temperature:  38.3 (F)
                   Absolute Humidity:   75. grains/lb
                 Fuel Sulfur Content:   30. ppm

                 Exhaust I/M Program:  Yes
                    Evap I/M Program:  Yes
                         ATP Program:  No
                    Reformulated Gas:  Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
                GVWR:             <6000     >6000     (All)
                       ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
   VMT Distribution:    0.3454    0.3784    0.1486              0.0363    0.0005    0.0014    0.0856    0.0039    1.0000
 Fuel Economy (mpg):      24.1      18.6      14.2      17.1       9.9      31.5      18.3       7.2      50.0      16.4
  ---------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite VOC :      3.876     2.890     3.412     3.037     4.165    0.873     0.811     1.291     11.37     3.246
     Composite CO  :     38.34     35.13     39.29     36.30     42.71    4.268     2.084     9.100    104.23    35.111
     Composite NOX :      1.116     1.311     1.935     1.487     1.728    1.229     0.947    12.747     1.56     2.331
     Composite CO2 :    368.2     477.9     622.8     518.8     896.5    323.2     554.7    1404.6     177.4    554.95
  ---------------------------------------------------------------------------------------------------------------------
```

```
* # # # # # # # # # # # # # # # # # # # # # # # # #
* 2009 10 mph Scenario - Winter, with PM10
* File 1, Run 2, Scenario 7.
* # # # # # # # # # # # # # # # # # # # # # # # # #

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M583 Warning:
            The user supplied arterial average speed of 10.0
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.
  M112 Warning:
              Wintertime Reformulated Gasoline Rules Apply
  M 48 Warning:
              there are no sales for vehicle class HDGV8b

 LEV phase-in data read from file MA_LEV2.D
                     Calendar Year:  2009
                             Month:  Jan.
                          Altitude:  Low
               Minimum Temperature:  22.8 (F)
               Maximum Temperature:  38.3 (F)
                 Absolute Humidity:   75. grains/lb
               Fuel Sulfur Content:   30. ppm

               Exhaust I/M Program:  Yes
                  Evap I/M Program:  Yes
                       ATP Program:  No
                  Reformulated Gas:  Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                      ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
   VMT Distribution:    0.3454    0.3784    0.1486              0.0363    0.0005    0.0014    0.0856    0.0039    1.0000
 Fuel Economy (mpg):      24.1      18.6      14.2      17.1       9.9      31.5      18.3       7.2      50.0      16.4
  ---------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite VOC :      0.878     0.785     1.072     0.866     1.361    0.656     0.595     0.891     4.98     0.906
     Composite CO  :     18.59     18.06     19.20     18.38     22.71     2.703     1.288     5.122     33.28    17.500
     Composite NOX :      0.808     0.949     1.396     1.075     1.863    0.927     0.712     9.619     1.38     1.744
     Composite CO2 :    368.2     477.9     622.8     518.8     896.5    323.2     554.7    1404.6     177.4    554.95
  ---------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # #
* 2009 15 mph Scenario - Winter, with PM10
* File 1, Run 2, Scenario 8.
* # # # # # # # # # # # # # # # # # # # # # # # # #

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M583 Warning:
            The user supplied arterial average speed of 15.0
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.
  M112 Warning:
              Wintertime Reformulated Gasoline Rules Apply
  M 48 Warning:
              there are no sales for vehicle class HDGV8b

 LEV phase-in data read from file MA_LEV2.D
                     Calendar Year:  2009
                             Month:  Jan.
                          Altitude:  Low
               Minimum Temperature:  22.8 (F)
               Maximum Temperature:  38.3 (F)
                 Absolute Humidity:   75. grains/lb
               Fuel Sulfur Content:   30. ppm

               Exhaust I/M Program:  Yes
                  Evap I/M Program:  Yes
                       ATP Program:  No
                  Reformulated Gas:  Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                 <6000     >6000     (All)
                      ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
   VMT Distribution:    0.3454    0.3784    0.1486              0.0363    0.0005    0.0014    0.0856    0.0039    1.0000
 Fuel Economy (mpg):      24.1      18.6      14.2      17.1       9.9      31.5      18.3       7.2      50.0      16.4
  ---------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
```

Composite VOC :	0.705	0.638	0.871	0.704	0.964	0.561	0.501	0.715	4.03	0.727
Composite CO :	16.73	16.33	17.21	16.58	15.96	2.142	1.003	3.696	23.77	15.504
Composite NOX :	0.695	0.818	1.213	0.930	1.953	0.803	0.615	8.331	1.40	1.521
Composite CO2 :	368.2	477.9	622.8	518.8	896.5	323.2	554.7	1404.6	177.4	554.95

```
* # # # # # # # # # # # # # # # # # # # # # # # #
* 2009 30 mph Scenario - Winter, with PM10
* File 1, Run 2, Scenario 9.
* # # # # # # # # # # # # # # # # # # # # # # # #

* Reading PM Gas Carbon ZML Levels
* from the external data file PMGZML.CSV

* Reading PM Gas Carbon DR1 Levels
* from the external data file PMGDR1.CSV

* Reading PM Gas Carbon DR2 Levels
* from the external data file PMGDR2.CSV

* Reading PM Diesel Zero Mile Levels
* from the external data file PMDZML.CSV

* Reading the First PM Deterioration Rates
* from the external data file PMDDR1.CSV

* Reading the Second PM Deterioration Rates
* from the external data file PMDDR2.CSV
  M583 Warning:
            The user supplied arterial average speed of 30.0
            will be used for all hours of the day.  100% of VMT
            has been assigned to the arterial/collector roadway
            type for all hours of the day and all vehicle types.
  M112 Warning:
                Wintertime Reformulated Gasoline Rules Apply
  M 48 Warning:
               there are no sales for vehicle class HDGV8b

 LEV phase-in data read from file MA_LEV2.D
                     Calendar Year:  2009
                             Month:  Jan.
                          Altitude:  Low
               Minimum Temperature:  22.8 (F)
               Maximum Temperature:  38.3 (F)
                 Absolute Humidity:   75. grains/lb
               Fuel Sulfur Content:   30. ppm

               Exhaust I/M Program:  Yes
                  Evap I/M Program:  Yes
                       ATP Program:  No
                  Reformulated Gas:  Yes
```

Vehicle Type:	LDGV	LDGT12	LDGT34	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
GVWR:		<6000	>6000	(All)						
VMT Distribution:	0.3454	0.3784	0.1486		0.0363	0.0005	0.0014	0.0856	0.0039	1.0000
Fuel Economy (mpg):	24.1	18.6	14.2	17.1	9.9	31.5	18.3	7.2	50.0	16.4

Composite Emission Factors (g/mi):

Composite VOC :	0.537	0.495	0.679	0.547	0.475	0.402	0.343	0.422	3.13	0.540
Composite CO :	15.08	14.80	15.46	14.99	7.71	1.407	0.628	1.825	14.76	13.601
Composite NOX :	0.581	0.688	1.029	0.784	2.223	0.640	0.488	6.644	1.64	1.271
Composite CO2 :	368.2	477.9	622.8	518.8	896.5	323.2	554.7	1404.6	177.4	554.95

```
************************************************************************
* MOBILE6.2.03 (24-Sep-2003)                                           *
* Input file: MA15_ALL.INP (file 1, run 1).                            *
************************************************************************

* # # # # # # # # # # # # # # # # # # # # # # # #
* 2015 DEFAULT SPEED - Summer, with PM2.5
* File 1, Run 1, Scenario 1.
* # # # # # # # # # # # # # # # # # # # # # # # #

                            Calendar Year:  2015
                                    Month:  July
                Gasoline Fuel Sulfur Content:   30. ppm
                  Diesel Fuel Sulfur Content:   15. ppm
                         Particle Size Cutoff:  2.50 Microns
                             Reformulated Gas:  Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
                GVWR:                <6000     >6000     (All)
                      ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
   VMT Distribution:    0.2837    0.4219    0.1659              0.0367    0.0004    0.0016    0.0861    0.0037    1.0000
 -------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
                Lead:    0.0000    0.0000    0.0000    0.0000    0.0000    ------    ------    ------    0.0000    0.0000
               GASPM:    0.0036    0.0035    0.0035    0.0035    0.0130    ------    ------    ------    0.0142    0.0036
             ECARBON:    ------    ------    ------    ------    ------    0.0350    0.0090    0.0348    ------    0.0030
             OCARBON:    ------    ------    ------    ------    ------    0.0099    0.0130    0.0177    ------    0.0015
                 SO4:    0.0003    0.0005    0.0005    0.0005    0.0018    0.0002    0.0003    0.0009    0.0001    0.0005
   Total Exhaust PM:    0.0039    0.0039    0.0039    0.0039    0.0149    0.0450    0.0222    0.0534    0.0143    0.0087
               Brake:    0.0053    0.0053    0.0053    0.0053    0.0053    0.0053    0.0053    0.0053    0.0053    0.0053
                Tire:    0.0020    0.0020    0.0020    0.0020    0.0021    0.0020    0.0020    0.0062    0.0010    0.0024
            Total PM:    0.0113    0.0113    0.0113    0.0113    0.0223    0.0523    0.0296    0.0650    0.0206    0.0164
                 SO2:    0.0067    0.0088    0.0115    0.0096    0.0162    0.0029    0.0052    0.0130    0.0033    0.0092
                 NH3:    0.1008    0.1015    0.1017    0.1015    0.0451    0.0068    0.0068    0.0270    0.0113    0.0923
 -------------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* 2015 Idle Scenario - Summer (multiply g/mi by 2.5 mph to get g/hr), with PM2.5
* File 1, Run 1, Scenario 2.
* # # # # # # # # # # # # # # # # # # # # # # # #

                            Calendar Year:  2015
                                    Month:  July
                Gasoline Fuel Sulfur Content:   30. ppm
                  Diesel Fuel Sulfur Content:   15. ppm
                         Particle Size Cutoff:  2.50 Microns
                             Reformulated Gas:  Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
                GVWR:                <6000     >6000     (All)
                      ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
   VMT Distribution:    0.2837    0.4219    0.1659              0.0367    0.0004    0.0016    0.0861    0.0037    1.0000
 -------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
                Lead:    0.0000    0.0000    0.0000    0.0000    0.0000    ------    ------    ------    0.0000    0.0000
               GASPM:    0.0035    0.0034    0.0033    0.0034    0.0134    ------    ------    ------    0.0142    0.0035
             ECARBON:    ------    ------    ------    ------    ------    0.0350    0.0090    0.0348    ------    0.0030
             OCARBON:    ------    ------    ------    ------    ------    0.0099    0.0130    0.0177    ------    0.0015
                 SO4:    0.0005    0.0006    0.0006    0.0006    0.0013    0.0002    0.0003    0.0009    0.0002    0.0006
   Total Exhaust PM:    0.0040    0.0040    0.0040    0.0040    0.0148    0.0450    0.0222    0.0534    0.0144    0.0087
               Brake:    0.0053    0.0053    0.0053    0.0053    0.0053    0.0053    0.0053    0.0053    0.0053    0.0053
                Tire:    0.0020    0.0020    0.0020    0.0020    0.0021    0.0020    0.0020    0.0062    0.0010    0.0024
            Total PM:    0.0113    0.0113    0.0113    0.0113    0.0222    0.0523    0.0296    0.0650    0.0207    0.0164
                 SO2:    0.0066    0.0087    0.0115    0.0095    0.0163    0.0029    0.0052    0.0130    0.0033    0.0092
                 NH3:    0.1008    0.1015    0.1017    0.1015    0.0451    0.0068    0.0068    0.0270    0.0113    0.0923
 -------------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* 2015 10 mph Scenario - Summer, with PM2.5
* File 1, Run 1, Scenario 3.
* # # # # # # # # # # # # # # # # # # # # # # # #

                            Calendar Year:  2015
                                    Month:  July
                Gasoline Fuel Sulfur Content:   30. ppm
                  Diesel Fuel Sulfur Content:   15. ppm
                         Particle Size Cutoff:  2.50 Microns
                             Reformulated Gas:  Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
                GVWR:                <6000     >6000     (All)
                      ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
   VMT Distribution:    0.2837    0.4219    0.1659              0.0367    0.0004    0.0016    0.0861    0.0037    1.0000
 -------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
                Lead:    0.0000    0.0000    0.0000    0.0000    0.0000    ------    ------    ------    0.0000    0.0000
               GASPM:    0.0035    0.0034    0.0033    0.0034    0.0134    ------    ------    ------    0.0142    0.0035
             ECARBON:    ------    ------    ------    ------    ------    0.0350    0.0090    0.0348    ------    0.0030
             OCARBON:    ------    ------    ------    ------    ------    0.0099    0.0130    0.0177    ------    0.0015
                 SO4:    0.0005    0.0006    0.0006    0.0006    0.0013    0.0002    0.0003    0.0009    0.0002    0.0006
   Total Exhaust PM:    0.0040    0.0040    0.0040    0.0040    0.0148    0.0450    0.0222    0.0534    0.0144    0.0087
               Brake:    0.0053    0.0053    0.0053    0.0053    0.0053    0.0053    0.0053    0.0053    0.0053    0.0053
                Tire:    0.0020    0.0020    0.0020    0.0020    0.0021    0.0020    0.0020    0.0062    0.0010    0.0024
            Total PM:    0.0113    0.0113    0.0113    0.0113    0.0222    0.0523    0.0296    0.0650    0.0207    0.0164
                 SO2:    0.0066    0.0087    0.0115    0.0095    0.0163    0.0029    0.0052    0.0130    0.0033    0.0092
                 NH3:    0.1008    0.1015    0.1017    0.1015    0.0451    0.0068    0.0068    0.0270    0.0113    0.0923
 -------------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # #
* 2015 15 mph Scenario - Summer, with PM2.5
```

* File 1, Run 1, Scenario 4.
* #

Calendar Year: 2015
Month: July
Gasoline Fuel Sulfur Content: 30. ppm
Diesel Fuel Sulfur Content: 15. ppm
Particle Size Cutoff: 2.50 Microns
Reformulated Gas: Yes

Vehicle Type: / GVWR:	LDGV	LDGT12 <6000	LDGT34 >6000	LDGT (All)	HDGV	LDDV	LDDT	HDDV	MC	All Veh
VMT Distribution:	0.2837	0.4219	0.1659		0.0367	0.0004	0.0016	0.0861	0.0037	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0035	0.0034	0.0033	0.0034	0.0134	------	------	------	0.0142	0.0035
ECARBON:	------	------	------	------	------	0.0350	0.0090	0.0348	------	0.0030
OCARBON:	------	------	------	------	------	0.0099	0.0130	0.0177	------	0.0015
SO4:	0.0005	0.0006	0.0006	0.0006	0.0013	0.0002	0.0003	0.0009	0.0002	0.0006
Total Exhaust PM:	0.0040	0.0040	0.0040	0.0040	0.0148	0.0450	0.0222	0.0534	0.0144	0.0087
Brake:	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053
Tire:	0.0020	0.0020	0.0020	0.0020	0.0021	0.0020	0.0020	0.0062	0.0010	0.0024
Total PM:	0.0113	0.0113	0.0113	0.0113	0.0222	0.0523	0.0296	0.0650	0.0207	0.0164
SO2:	0.0066	0.0087	0.0115	0.0095	0.0163	0.0029	0.0052	0.0130	0.0033	0.0092
NH3:	0.1008	0.1015	0.1017	0.1015	0.0451	0.0068	0.0068	0.0270	0.0113	0.0923

* #
* 2015 30 mph Scenario - Summer, with PM2.5
* File 1, Run 1, Scenario 5.
* #

Calendar Year: 2015
Month: July
Gasoline Fuel Sulfur Content: 30. ppm
Diesel Fuel Sulfur Content: 15. ppm
Particle Size Cutoff: 2.50 Microns
Reformulated Gas: Yes

Vehicle Type: / GVWR:	LDGV	LDGT12 <6000	LDGT34 >6000	LDGT (All)	HDGV	LDDV	LDDT	HDDV	MC	All Veh
VMT Distribution:	0.2837	0.4219	0.1659		0.0367	0.0004	0.0016	0.0861	0.0037	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0036	0.0035	0.0034	0.0034	0.0131	------	------	------	0.0142	0.0036
ECARBON:	------	------	------	------	------	0.0350	0.0090	0.0348	------	0.0030
OCARBON:	------	------	------	------	------	0.0099	0.0130	0.0177	------	0.0015
SO4:	0.0003	0.0005	0.0005	0.0005	0.0018	0.0002	0.0003	0.0009	0.0001	0.0005
Total Exhaust PM:	0.0039	0.0039	0.0039	0.0039	0.0149	0.0450	0.0222	0.0534	0.0143	0.0087
Brake:	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053
Tire:	0.0020	0.0020	0.0020	0.0020	0.0021	0.0020	0.0020	0.0062	0.0010	0.0024
Total PM:	0.0113	0.0113	0.0113	0.0113	0.0223	0.0523	0.0296	0.0650	0.0206	0.0164
SO2:	0.0067	0.0088	0.0115	0.0096	0.0162	0.0029	0.0052	0.0130	0.0033	0.0092
NH3:	0.1008	0.1015	0.1017	0.1015	0.0451	0.0068	0.0068	0.0270	0.0113	0.0923

* #
* 2015 Idle Scenario - Summer (multiply g/mi by 2.5 mph to get g/hr), with PM10
* File 1, Run 1, Scenario 6.
* #

Calendar Year: 2015
Month: July
Gasoline Fuel Sulfur Content: 30. ppm
Diesel Fuel Sulfur Content: 15. ppm
Particle Size Cutoff: 10.00 Microns
Reformulated Gas: Yes

Vehicle Type: / GVWR:	LDGV	LDGT12 <6000	LDGT34 >6000	LDGT (All)	HDGV	LDDV	LDDT	HDDV	MC	All Veh
VMT Distribution:	0.2837	0.4219	0.1659		0.0367	0.0004	0.0016	0.0861	0.0037	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0038	0.0036	0.0036	0.0036	0.0148	------	------	------	0.0205	0.0038
ECARBON:	------	------	------	------	------	0.0380	0.0098	0.0379	------	0.0033
OCARBON:	------	------	------	------	------	0.0107	0.0141	0.0192	------	0.0017
SO4:	0.0005	0.0006	0.0006	0.0006	0.0013	0.0002	0.0003	0.0009	0.0002	0.0006
Total Exhaust PM:	0.0042	0.0042	0.0042	0.0042	0.0162	0.0489	0.0241	0.0580	0.0207	0.0094
Brake:	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125
Tire:	0.0080	0.0080	0.0080	0.0080	0.0085	0.0080	0.0080	0.0248	0.0040	0.0094
Total PM:	0.0248	0.0248	0.0248	0.0248	0.0372	0.0694	0.0447	0.0953	0.0372	0.0314
SO2:	0.0066	0.0087	0.0115	0.0095	0.0163	0.0029	0.0052	0.0130	0.0033	0.0092
NH3:	0.1008	0.1015	0.1017	0.1015	0.0451	0.0068	0.0068	0.0270	0.0113	0.0923

* #
* 2015 10 mph Scenario - Summer, with PM10
* File 1, Run 1, Scenario 7.
* #

Calendar Year: 2015
Month: July
Gasoline Fuel Sulfur Content: 30. ppm
Diesel Fuel Sulfur Content: 15. ppm

Particle Size Cutoff: 10.00 Microns
Reformulated Gas: Yes

Vehicle Type: / GVWR:	LDGV	LDGT12 <6000	LDGT34 >6000	LDGT (All)	HDGV	LDDV	LDDT	HDDV	MC	All Veh
VMT Distribution:	0.2837	0.4219	0.1659		0.0367	0.0004	0.0016	0.0861	0.0037	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0038	0.0036	0.0036	0.0036	0.0148	------	------	------	0.0205	0.0038
ECARBON:	------	------	------	------	------	0.0380	0.0098	0.0379	------	0.0033
OCARBON:	------	------	------	------	------	0.0107	0.0141	0.0192	------	0.0017
SO4:	0.0005	0.0006	0.0006	0.0006	0.0013	0.0002	0.0003	0.0009	0.0002	0.0006
Total Exhaust PM:	0.0042	0.0042	0.0042	0.0042	0.0162	0.0489	0.0241	0.0580	0.0207	0.0094
Brake:	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125
Tire:	0.0080	0.0080	0.0080	0.0080	0.0085	0.0080	0.0080	0.0248	0.0040	0.0094
Total PM:	0.0248	0.0248	0.0248	0.0248	0.0372	0.0694	0.0447	0.0953	0.0372	0.0314
SO2:	0.0066	0.0087	0.0115	0.0095	0.0163	0.0029	0.0052	0.0130	0.0033	0.0092
NH3:	0.1008	0.1015	0.1017	0.1015	0.0451	0.0068	0.0068	0.0270	0.0113	0.0923

* #
* 2015 15 mph Scenario - Summer, with PM10
* File 1, Run 1, Scenario 8.
* #

Calendar Year: 2015
Month: July
Gasoline Fuel Sulfur Content: 30. ppm
Diesel Fuel Sulfur Content: 15. ppm
Particle Size Cutoff: 10.00 Microns
Reformulated Gas: Yes

Vehicle Type: / GVWR:	LDGV	LDGT12 <6000	LDGT34 >6000	LDGT (All)	HDGV	LDDV	LDDT	HDDV	MC	All Veh
VMT Distribution:	0.2837	0.4219	0.1659		0.0367	0.0004	0.0016	0.0861	0.0037	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0038	0.0036	0.0036	0.0036	0.0148	------	------	------	0.0205	0.0038
ECARBON:	------	------	------	------	------	0.0380	0.0098	0.0379	------	0.0033
OCARBON:	------	------	------	------	------	0.0107	0.0141	0.0192	------	0.0017
SO4:	0.0005	0.0006	0.0006	0.0006	0.0013	0.0002	0.0003	0.0009	0.0002	0.0006
Total Exhaust PM:	0.0042	0.0042	0.0042	0.0042	0.0162	0.0489	0.0241	0.0580	0.0207	0.0094
Brake:	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125
Tire:	0.0080	0.0080	0.0080	0.0080	0.0085	0.0080	0.0080	0.0248	0.0040	0.0094
Total PM:	0.0248	0.0248	0.0248	0.0248	0.0372	0.0694	0.0447	0.0953	0.0372	0.0314
SO2:	0.0066	0.0087	0.0115	0.0095	0.0163	0.0029	0.0052	0.0130	0.0033	0.0092
NH3:	0.1008	0.1015	0.1017	0.1015	0.0451	0.0068	0.0068	0.0270	0.0113	0.0923

* #
* 2015 30 mph Scenario - Summer, with PM10
* File 1, Run 1, Scenario 9.
* #

Calendar Year: 2015
Month: July
Gasoline Fuel Sulfur Content: 30. ppm
Diesel Fuel Sulfur Content: 15. ppm
Particle Size Cutoff: 10.00 Microns
Reformulated Gas: Yes

Vehicle Type: / GVWR:	LDGV	LDGT12 <6000	LDGT34 >6000	LDGT (All)	HDGV	LDDV	LDDT	HDDV	MC	All Veh
VMT Distribution:	0.2837	0.4219	0.1659		0.0367	0.0004	0.0016	0.0861	0.0037	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0039	0.0037	0.0037	0.0037	0.0144	------	------	------	0.0205	0.0039
ECARBON:	------	------	------	------	------	0.0380	0.0098	0.0379	------	0.0033
OCARBON:	------	------	------	------	------	0.0107	0.0141	0.0192	------	0.0017
SO4:	0.0003	0.0005	0.0005	0.0005	0.0018	0.0002	0.0003	0.0009	0.0001	0.0005
Total Exhaust PM:	0.0042	0.0042	0.0042	0.0042	0.0162	0.0489	0.0241	0.0580	0.0206	0.0094
Brake:	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125
Tire:	0.0080	0.0080	0.0080	0.0080	0.0085	0.0080	0.0080	0.0248	0.0040	0.0094
Total PM:	0.0248	0.0248	0.0248	0.0248	0.0373	0.0694	0.0447	0.0953	0.0371	0.0314
SO2:	0.0067	0.0088	0.0115	0.0096	0.0162	0.0029	0.0052	0.0130	0.0033	0.0092
NH3:	0.1008	0.1015	0.1017	0.1015	0.0451	0.0068	0.0068	0.0270	0.0113	0.0923

****
* MOBILE6.2.03 (24-Sep-2003) *
* Input file: MA15_ALL.INP (file 1, run 2). *
****

* #
* 2015 DEFAULT SPEED - Winter, with PM2.5
* File 1, Run 2, Scenario 1.
* #

Calendar Year: 2015
Month: Jan.
Gasoline Fuel Sulfur Content: 30. ppm
Diesel Fuel Sulfur Content: 15. ppm
Particle Size Cutoff: 2.50 Microns
Reformulated Gas: Yes

Vehicle Type:	LDGV	LDGT12	LDGT34	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
GVWR:		<6000	>6000	(All)						
VMT Distribution:	0.2873	0.4202	0.1650		0.0363	0.0004	0.0016	0.0856	0.0037	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0036	0.0035	0.0035	0.0035	0.0137	------	------	------	0.0142	0.0036
ECARBON:	------	------	------	------	------	0.0350	0.0095	0.0369	------	0.0032
OCARBON:	------	------	------	------	------	0.0099	0.0137	0.0187	------	0.0016
SO4:	0.0003	0.0005	0.0005	0.0005	0.0018	0.0002	0.0003	0.0009	0.0001	0.0005
Total Exhaust PM:	0.0039	0.0039	0.0039	0.0039	0.0156	0.0450	0.0234	0.0565	0.0143	0.0089
Brake:	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053
Tire:	0.0020	0.0020	0.0020	0.0020	0.0021	0.0020	0.0020	0.0062	0.0010	0.0024
Total PM:	0.0113	0.0113	0.0113	0.0113	0.0231	0.0523	0.0308	0.0680	0.0206	0.0166
SO2:	0.0067	0.0088	0.0115	0.0096	0.0162	0.0029	0.0052	0.0130	0.0033	0.0092
NH3:	0.1008	0.1015	0.1017	0.1016	0.0451	0.0068	0.0068	0.0270	0.0113	0.0924

* #
* 2015 Idle Scenario - Winter (multiply g/mi by 2.5 mph to get g/hr), with PM2.5
* File 1, Run 2, Scenario 2.
* #

Calendar Year: 2015
Month: Jan.
Gasoline Fuel Sulfur Content: 30. ppm
Diesel Fuel Sulfur Content: 15. ppm
Particle Size Cutoff: 2.50 Microns
Reformulated Gas: Yes

Vehicle Type:	LDGV	LDGT12	LDGT34	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
GVWR:		<6000	>6000	(All)						
VMT Distribution:	0.2873	0.4202	0.1650		0.0363	0.0004	0.0016	0.0856	0.0037	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0035	0.0034	0.0033	0.0034	0.0142	------	------	------	0.0142	0.0035
ECARBON:	------	------	------	------	------	0.0350	0.0095	0.0369	------	0.0032
OCARBON:	------	------	------	------	------	0.0099	0.0137	0.0187	------	0.0016
SO4:	0.0005	0.0006	0.0006	0.0006	0.0013	0.0002	0.0003	0.0009	0.0002	0.0006
Total Exhaust PM:	0.0040	0.0040	0.0040	0.0040	0.0155	0.0450	0.0234	0.0565	0.0144	0.0090
Brake:	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053
Tire:	0.0020	0.0020	0.0020	0.0020	0.0021	0.0020	0.0020	0.0062	0.0010	0.0024
Total PM:	0.0113	0.0113	0.0113	0.0113	0.0229	0.0523	0.0308	0.0680	0.0207	0.0167
SO2:	0.0066	0.0087	0.0115	0.0095	0.0163	0.0029	0.0052	0.0130	0.0033	0.0092
NH3:	0.1008	0.1015	0.1017	0.1016	0.0451	0.0068	0.0068	0.0270	0.0113	0.0924

* #
* 2015 10 mph Scenario - Winter, with PM2.5
* File 1, Run 2, Scenario 3.
* #

Calendar Year: 2015
Month: Jan.
Gasoline Fuel Sulfur Content: 30. ppm
Diesel Fuel Sulfur Content: 15. ppm
Particle Size Cutoff: 2.50 Microns
Reformulated Gas: Yes

Vehicle Type:	LDGV	LDGT12	LDGT34	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
GVWR:		<6000	>6000	(All)						
VMT Distribution:	0.2873	0.4202	0.1650		0.0363	0.0004	0.0016	0.0856	0.0037	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0035	0.0034	0.0033	0.0034	0.0142	------	------	------	0.0142	0.0035
ECARBON:	------	------	------	------	------	0.0350	0.0095	0.0369	------	0.0032
OCARBON:	------	------	------	------	------	0.0099	0.0137	0.0187	------	0.0016
SO4:	0.0005	0.0006	0.0006	0.0006	0.0013	0.0002	0.0003	0.0009	0.0002	0.0006
Total Exhaust PM:	0.0040	0.0040	0.0040	0.0040	0.0155	0.0450	0.0234	0.0565	0.0144	0.0090
Brake:	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053
Tire:	0.0020	0.0020	0.0020	0.0020	0.0021	0.0020	0.0020	0.0062	0.0010	0.0024
Total PM:	0.0113	0.0113	0.0113	0.0113	0.0229	0.0523	0.0308	0.0680	0.0207	0.0167
SO2:	0.0066	0.0087	0.0115	0.0095	0.0163	0.0029	0.0052	0.0130	0.0033	0.0092
NH3:	0.1008	0.1015	0.1017	0.1016	0.0451	0.0068	0.0068	0.0270	0.0113	0.0924

* #
* 2015 15 mph Scenario - Winter, with PM2.5
* File 1, Run 2, Scenario 4.
* #

Calendar Year: 2015
Month: Jan.
Gasoline Fuel Sulfur Content: 30. ppm
Diesel Fuel Sulfur Content: 15. ppm
Particle Size Cutoff: 2.50 Microns
Reformulated Gas: Yes

Vehicle Type:	LDGV	LDGT12	LDGT34	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
GVWR:		<6000	>6000	(All)						
VMT Distribution:	0.2873	0.4202	0.1650		0.0363	0.0004	0.0016	0.0856	0.0037	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000

GASPM:	0.0035	0.0034	0.0033	0.0034	0.0142	------	------	------	0.0142	0.0035
ECARBON:	------	------	------	------	------	0.0350	0.0095	0.0369	------	0.0032
OCARBON:	------	------	------	------	------	0.0099	0.0137	0.0187	------	0.0016
SO4:	0.0005	0.0006	0.0006	0.0006	0.0013	0.0002	0.0003	0.0009	0.0002	0.0006
Total Exhaust PM:	0.0040	0.0040	0.0040	0.0040	0.0155	0.0450	0.0234	0.0565	0.0144	0.0090
Brake:	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053
Tire:	0.0020	0.0020	0.0020	0.0020	0.0021	0.0020	0.0020	0.0062	0.0010	0.0024
Total PM:	0.0113	0.0113	0.0113	0.0113	0.0229	0.0523	0.0308	0.0680	0.0207	0.0167
SO2:	0.0066	0.0087	0.0115	0.0095	0.0163	0.0029	0.0052	0.0130	0.0033	0.0092
NH3:	0.1008	0.1015	0.1017	0.1016	0.0451	0.0068	0.0068	0.0270	0.0113	0.0924

* #
* 2015 30 mph Scenario - Winter, with PM2.5
* File 1, Run 2, Scenario 5.
* #

Calendar Year: 2015
Month: Jan.
Gasoline Fuel Sulfur Content: 30. ppm
Diesel Fuel Sulfur Content: 15. ppm
Particle Size Cutoff: 2.50 Microns
Reformulated Gas: Yes

Vehicle Type: / GVWR:	LDGV	LDGT12 <6000	LDGT34 >6000	LDGT (All)	HDGV	LDDV	LDDT	HDDV	MC	All Veh
VMT Distribution:	0.2873	0.4202	0.1650		0.0363	0.0004	0.0016	0.0856	0.0037	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0036	0.0035	0.0034	0.0035	0.0138	------	------	------	0.0142	0.0036
ECARBON:	------	------	------	------	------	0.0350	0.0095	0.0369	------	0.0032
OCARBON:	------	------	------	------	------	0.0099	0.0137	0.0187	------	0.0016
SO4:	0.0003	0.0005	0.0005	0.0005	0.0018	0.0002	0.0003	0.0009	0.0001	0.0005
Total Exhaust PM:	0.0039	0.0039	0.0039	0.0039	0.0156	0.0450	0.0234	0.0565	0.0143	0.0089
Brake:	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053
Tire:	0.0020	0.0020	0.0020	0.0020	0.0021	0.0020	0.0020	0.0062	0.0010	0.0024
Total PM:	0.0113	0.0113	0.0113	0.0113	0.0230	0.0523	0.0308	0.0680	0.0206	0.0166
SO2:	0.0067	0.0088	0.0115	0.0096	0.0162	0.0029	0.0052	0.0130	0.0033	0.0092
NH3:	0.1008	0.1015	0.1017	0.1016	0.0451	0.0068	0.0068	0.0270	0.0113	0.0924

* #
* 2015 Idle Scenario - Winter (multiply g/mi by 2.5 mph to get g/hr), with PM10
* File 1, Run 2, Scenario 6.
* #

Calendar Year: 2015
Month: Jan.
Gasoline Fuel Sulfur Content: 30. ppm
Diesel Fuel Sulfur Content: 15. ppm
Particle Size Cutoff: 10.00 Microns
Reformulated Gas: Yes

Vehicle Type: / GVWR:	LDGV	LDGT12 <6000	LDGT34 >6000	LDGT (All)	HDGV	LDDV	LDDT	HDDV	MC	All Veh
VMT Distribution:	0.2873	0.4202	0.1650		0.0363	0.0004	0.0016	0.0856	0.0037	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0038	0.0036	0.0036	0.0036	0.0156	------	------	------	0.0205	0.0038
ECARBON:	------	------	------	------	------	0.0380	0.0103	0.0401	------	0.0035
OCARBON:	------	------	------	------	------	0.0107	0.0149	0.0204	------	0.0018
SO4:	0.0005	0.0006	0.0006	0.0006	0.0013	0.0002	0.0003	0.0009	0.0002	0.0006
Total Exhaust PM:	0.0043	0.0042	0.0042	0.0042	0.0170	0.0489	0.0254	0.0613	0.0207	0.0097
Brake:	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125
Tire:	0.0080	0.0080	0.0080	0.0080	0.0085	0.0080	0.0080	0.0248	0.0040	0.0094
Total PM:	0.0248	0.0248	0.0248	0.0248	0.0380	0.0694	0.0460	0.0987	0.0372	0.0317
SO2:	0.0066	0.0087	0.0115	0.0095	0.0163	0.0029	0.0052	0.0130	0.0033	0.0092
NH3:	0.1008	0.1015	0.1017	0.1016	0.0451	0.0068	0.0068	0.0270	0.0113	0.0924

* #
* 2015 10 mph Scenario - Winter, with PM10
* File 1, Run 2, Scenario 7.
* #

Calendar Year: 2015
Month: Jan.
Gasoline Fuel Sulfur Content: 30. ppm
Diesel Fuel Sulfur Content: 15. ppm
Particle Size Cutoff: 10.00 Microns
Reformulated Gas: Yes

Vehicle Type: / GVWR:	LDGV	LDGT12 <6000	LDGT34 >6000	LDGT (All)	HDGV	LDDV	LDDT	HDDV	MC	All Veh
VMT Distribution:	0.2873	0.4202	0.1650		0.0363	0.0004	0.0016	0.0856	0.0037	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0038	0.0036	0.0036	0.0036	0.0156	------	------	------	0.0205	0.0038
ECARBON:	------	------	------	------	------	0.0380	0.0103	0.0401	------	0.0035
OCARBON:	------	------	------	------	------	0.0107	0.0149	0.0204	------	0.0018
SO4:	0.0005	0.0006	0.0006	0.0006	0.0013	0.0002	0.0003	0.0009	0.0002	0.0006
Total Exhaust PM:	0.0043	0.0042	0.0042	0.0042	0.0170	0.0489	0.0254	0.0613	0.0207	0.0097
Brake:	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125
Tire:	0.0080	0.0080	0.0080	0.0080	0.0085	0.0080	0.0080	0.0248	0.0040	0.0094

Total PM:	0.0248	0.0248	0.0248	0.0248	0.0380	0.0694	0.0460	0.0987	0.0372	0.0317
SO2:	0.0066	0.0087	0.0115	0.0095	0.0163	0.0029	0.0052	0.0130	0.0033	0.0092
NH3:	0.1008	0.1015	0.1017	0.1016	0.0451	0.0068	0.0068	0.0270	0.0113	0.0924

```
* # # # # # # # # # # # # # # # # # # # # # # # #
* 2015 15 mph Scenario - Winter, with PM10
* File 1, Run 2, Scenario 8.
* # # # # # # # # # # # # # # # # # # # # # # # #

                            Calendar Year:  2015
                                    Month:  Jan.
                Gasoline Fuel Sulfur Content:   30. ppm
                  Diesel Fuel Sulfur Content:   15. ppm
                        Particle Size Cutoff: 10.00 Microns
                            Reformulated Gas:  Yes
```

Vehicle Type:	LDGV	LDGT12	LDGT34	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
GVWR:		<6000	>6000	(All)						
VMT Distribution:	0.2873	0.4202	0.1650		0.0363	0.0004	0.0016	0.0856	0.0037	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0038	0.0036	0.0036	0.0036	0.0156	------	------	------	0.0205	0.0038
ECARBON:	------	------	------	------	------	0.0380	0.0103	0.0401	------	0.0035
OCARBON:	------	------	------	------	------	0.0107	0.0149	0.0204	------	0.0018
SO4:	0.0005	0.0006	0.0006	0.0006	0.0013	0.0002	0.0003	0.0009	0.0002	0.0006
Total Exhaust PM:	0.0043	0.0042	0.0042	0.0042	0.0170	0.0489	0.0254	0.0613	0.0207	0.0097
Brake:	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125
Tire:	0.0080	0.0080	0.0080	0.0080	0.0085	0.0080	0.0080	0.0248	0.0040	0.0094
Total PM:	0.0248	0.0248	0.0248	0.0248	0.0380	0.0694	0.0460	0.0987	0.0372	0.0317
SO2:	0.0066	0.0087	0.0115	0.0095	0.0163	0.0029	0.0052	0.0130	0.0033	0.0092
NH3:	0.1008	0.1015	0.1017	0.1016	0.0451	0.0068	0.0068	0.0270	0.0113	0.0924

```
* # # # # # # # # # # # # # # # # # # # # # # # #
* 2015 30 mph Scenario - Winter, with PM10
* File 1, Run 2, Scenario 9.
* # # # # # # # # # # # # # # # # # # # # # # # #

                            Calendar Year:  2015
                                    Month:  Jan.
                Gasoline Fuel Sulfur Content:   30. ppm
                  Diesel Fuel Sulfur Content:   15. ppm
                        Particle Size Cutoff: 10.00 Microns
                            Reformulated Gas:  Yes
```

Vehicle Type:	LDGV	LDGT12	LDGT34	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
GVWR:		<6000	>6000	(All)						
VMT Distribution:	0.2873	0.4202	0.1650		0.0363	0.0004	0.0016	0.0856	0.0037	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0039	0.0037	0.0037	0.0037	0.0152	------	------	------	0.0205	0.0039
ECARBON:	------	------	------	------	------	0.0380	0.0103	0.0401	------	0.0035
OCARBON:	------	------	------	------	------	0.0107	0.0149	0.0204	------	0.0018
SO4:	0.0003	0.0005	0.0005	0.0005	0.0018	0.0002	0.0003	0.0009	0.0001	0.0005
Total Exhaust PM:	0.0042	0.0042	0.0042	0.0042	0.0170	0.0489	0.0254	0.0613	0.0206	0.0097
Brake:	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125
Tire:	0.0080	0.0080	0.0080	0.0080	0.0085	0.0080	0.0080	0.0248	0.0040	0.0094
Total PM:	0.0248	0.0248	0.0248	0.0248	0.0381	0.0694	0.0460	0.0987	0.0371	0.0317
SO2:	0.0067	0.0088	0.0115	0.0096	0.0162	0.0029	0.0052	0.0130	0.0033	0.0092
NH3:	0.1008	0.1015	0.1017	0.1016	0.0451	0.0068	0.0068	0.0270	0.0113	0.0924

Roads

	VOC lbs/day	VOC tons/yr	NOx lbs/day	NOx tons/yr	CO2 lbs/day	CO2 tons/yr
2009 Existing	160.6	29	378.0	69	165535.5	30210.2
2015 No-Build	98.8	18	181.9	33	215444.0	39318.5
delta	6.0	1	11.1	2	13096.7	2390.2
2015 Build	104.8	19	193.0	35	228540.8	41708.7
delta	0.0	0	0.0	0	0.0	0.0
2015 Build with Mitigation	104.8	19	193.0	35	228540.8	41708.7

Intersections

	VOC lbs/day	VOC tons/yr	NOx lbs/day	NOx tons/yr	CO2 lbs/day	CO2 tons/yr
2009 Existing	83.6	15	211.0	39	14336.1	2616.3
2015 No-Build	93.9	17	48.1	9	31214.7	5696.7
delta	14.3	3	7.3	1	4743.5	865.7
2015 Build	108.2	20	55.4	10	35958.1	6562.4
delta	-24.8	-5	-12.7	-2	-8226.4	-1501.3
2015 Build with Mitigation	83.4	15	42.7	8	27731.7	5061.0

Total

Pollutant	VOC lbs/day	VOC tons/yr	NOx lbs/day	NOx tons/yr	CO2 lbs/day	CO2 tons/yr
2009 Existing	244.2	45	589.0	107	179871.6	32827
2015 No-Build	192.7	35	230.0	42	246658.7	45015
2015 Build	213.0	39	248.3	45	264498.9	48271
2015 Build minus No-Build	20.3	4	18.4	3	17840.2	3256
Difference (%)	11%	11%	8%	8%	7%	7%
2015 Build with Mitigation	188.2	34	235.7	43	256272.4	46770
2015 Build with Mitigation minus No Build	-4.5	-1	5.7	1	9613.8	1755
Difference (%)	-2%	-2%	2%	2%	4%	4%

	2009 AM Peak			2009 PM Peak		
Intersection	LOS	Delay (Sec)	Traffic Volume	LOS	Delay (Sec)	Traffic Volume
Seaport Boulevard/Atlantic Avenue	D	45.5	2568	E	62.9	2813
Seaport Boulevard/Sleeper Street	C	21.7	1800	B	16.1	1732
Seaport Boulevard/Boston Wharf Road	B	14.2	1452	C	22.9	1421
Seaport Boulevard/East Service Road/Old Northern Avenue	C	32.8	1861	C	26.9	1590
Seaport Boulevard/B Street	F	80.0	1561	C	29.3	1604
Seaport Boulevard/Northern Avenue/D Street (southbound)/Fish Pier Street	B	10.9	1025	C	22.9	1299
Northern Avenue/D Street (northbound)	C	20.2	863	B	15.7	865
Congress Street/Dorchester Avenue	C	20.4	964	C	23.9	1061
Congress Street/A Street/Thomson Place	C	26.3	1129	B	19.4	1136
Congress Street/West Service Road/Boston Wharf Road	C	31.6	1113	D	41.0	1217
Congress Street/Off-Ramp C/Off-Ramp I/East Service Road	E	77.7	1837	D	37.9	1056
Congress Street/On-Ramp D/Off-Ramp F/B Street	E	64.4	1997	C	34.5	2028
Congress Street/D Street	D	51.4	1441	D	47.0	1750
D Street/Silver Line Way	A	7.6	1073	A	6.7	1408
Summer Street/Dorchester Avenue	C	34.0	1576	C	31.7	1900
Summer Street/Melcher Street	B	19.1	1448	C	20.1	1513
Summer Street/World Trade Center Avenue/Convention Center Drive	A	9.6	1176	B	16.2	1285
Summer Street/D Street	D	37.9	2044	C	26.3	1977
Summer Street/Dry Dock Avenue/Pappas Way	C	28.8	1898	E	76.2	1936
Dorchester Avenue/West Broadway	D	36.4	2051	D	44.1	2046
Dorchester Avenue/West Fourth Street	B	19.6	1957	B	13.6	1840
Dorchester Avenue/A Street	B	10.3	1799	B	15.0	1827
Dorchester Avenue/Old Colony Avenue	B	16.4	1949	B	12.2	1995
A Street/West Broadway	C	24.5	1404	C	24.1	1500
A Street/West Second Street	B	18.8	1036	B	17.0	1182
West Broadway/D Street	C	27.0	1304	C	32.8	1341
West Broadway/East Broadway/Dorchester Street	F	80.0	1508	F	80.0	1632
Summer Street/East First Street	E	58.2	1782	C	22.3	1709
L Street/East Broadway	E	72.0	1721	F	80.0	1752
A Street/Melcher Street	—	7.2	864	—	11.2	949
Seaport Blvd/Thomson St.	—	—	—	—	—	—
L Street/William J. Day Boulevard	—	5.9	1108	—	6.9	1151

	Mid-Term (2015) No-Build AM Peak			Mid-Term (2015) No-Build PM Peak		
Intersection	LOS	Delay (Sec)	Traffic Volume	LOS	Delay (Sec)	Traffic Volume
Seaport Boulevard/Atlantic Avenue	E	62.8	3099	F	80.0	3503
Seaport Boulevard/Sleeper Street	F	80.0	2326	C	27.0	2441
Seaport Boulevard/Boston Wharf Road	A	4.7	1737	A	4.9	1541
Seaport Boulevard/East Service Road/Old Northern Avenue	E	59.0	2616	D	50.0	2282
Seaport Boulevard/B Street	F	80.0	2092	E	58.7	2203
Seaport Boulevard/Northern Avenue/D Street (southbound)/Fish Pier Street	C	23.1	1835	C	32.5	1726
Northern Avenue/D Street (northbound)	C	34.3	1229	C	25.6	1163
Congress Street/Dorchester Avenue	F	80.0	1295	D	45.4	1421
Congress Street/A Street/Thomson Place	D	38.3	1666	F	80.0	1832
Congress Street/West Service Road/Boston Wharf Road	F	80.0	1802	E	74.2	2122
Congress Street/Off-Ramp C/Off-Ramp I/East Service Road	F	80.0	2709	D	44.2	1932
Congress Street/On-Ramp D/Off-Ramp F/B Street	F	80.0	2913	E	74.8	3302
Congress Street/D Street	E	59.5	2116	F	80.0	2713
D Street/Silver Line Way	A	8.2	1379	A	8.2	1839
Summer Street/Dorchester Avenue	F	80.0	2509	F	80.0	2300
Summer Street/Melcher Street	F	80.0	2120	F	80.0	2310
Summer Street/World Trade Center Avenue/Convention Center Drive	B	12.7	1766	C	22.1	2121
Summer Street/D Street	E	57.4	2830	E	65.1	2948
Summer Street/Dry Dock Avenue/Pappas Way	E	73.8	2363	E	72.0	2495
Dorchester Avenue/West Broadway	D	35.9	2327	E	63.6	2218
Dorchester Avenue/West Fourth Street	C	23.8	2089	C	23.4	2057
Dorchester Avenue/A Street	B	14.2	2125	B	17.7	2240
Dorchester Avenue/Old Colony Avenue	C	25.3	2323	B	19.5	2432
A Street/West Broadway	E	72.1	1834	F	80.0	2158
A Street/West Second Street	B	16.3	1618	B	11.9	1926
West Broadway/D Street	C	33.9	1446	D	50.8	1467
West Broadway/East Broadway/Dorchester Street	E	61.6	1470	F	80.0	1701
Summer Street/East First Street	D	52.5	2141	D	46.6	2156
L Street/East Broadway	E	75.2	1961	F	80.0	2067
A Street/Melcher Street	E	75.7	1469	F	80	1697
Seaport Blvd/Thomson St.	A	9.5	1741	B	19.9	1616
L Street/William J. Day Boulevard	—	6.1	1156	—	7.8	1217

	(2015) Build AM Peak				(2015) Build PM Peak			
Intersection	LOS	Delay (Sec)	Traffic Volume	No-Build to Build Volume % Increase	LOS	Delay (Sec)	Traffic Volume	No-Build to Build Volume % Increase
Seaport Boulevard/Atlantic Avenue	E	68.8	3155	2%	F	80.0	3623	3%
Seaport Boulevard/Sleeper Street	D	36.6	2457	6%	C	30.3	2646	8%
Seaport Boulevard/Boston Wharf Road	A	7.5	2036	17%	A	9.3	1988	29%
Seaport Boulevard/East Service Road/Old Northern Avenue	F	80.0	2905	11%	F	80.0	2767	21%
Seaport Boulevard/B Street	F	80.0	2269	8%	F	80.0	2474	12%
Seaport Boulevard/Northern Avenue/D Street (southbound)/Fish Pier Street	E	73.0	2093	14%	E	72.8	1915	11%
Northern Avenue/D Street (northbound)	F	80.0	1350	10%	F	80.0	1381	19%
Congress Street/Dorchester Avenue	F	80.0	1292	0%	C	28.2	1412	-1%
Congress Street/A Street/Thomson Place	E	69.8	1817	9%	F	80.0	2264	24%
Congress Street/West Service Road/Boston Wharf Road	F	80.0	2059	14%	F	80.0	2524	19%
Congress Street/Off-Ramp C/Off-Ramp I/East Service Road	F	80.0	2737	1%	D	43.3	2479	28%
Congress Street/On-Ramp D/Off-Ramp F/B Street	F	80.0	3033	4%	F	80.0	3658	11%
Congress Street/D Street	E	76.4	2296	9%	F	80.0	3099	14%
D Street/Silver Line Way	A	8.0	1450	5%	A	8.5	2028	10%
Summer Street/Dorchester Avenue	F	80.0	2242	-11%	F	80.0	1772	-23%
Summer Street/Melcher Street	F	80.0	2168	2%	F	80.0	2433	5%
Summer Street/World Trade Center Avenue/Convention Center Drive	B	13.0	1769	0%	C	22.2	2126	0%
Summer Street/D Street	E	61.5	2889	2%	E	69.7	3384	15%
Summer Street/Dry Dock Avenue/Pappas Way	E	62.3	2356	0%	E	76.4	2530	1%
Dorchester Avenue/West Broadway	D	38.3	2366	2%	E	76.3	2307	4%
Dorchester Avenue/West Fourth Street	C	21.3	2102	1%	C	22.5	2084	1%
Dorchester Avenue/A Street	B	14.6	2150	1%	B	17.1	2289	2%
Dorchester Avenue/Old Colony Avenue	C	25.0	2344	1%	B	19.8	2479	2%
A Street/West Broadway	E	75.5	1877	2%	F	80.0	2253	4%
A Street/West Second Street	B	16.2	1662	3%	B	11.8	2020	5%
West Broadway/D Street	C	28.4	1321	-9%	D	48.6	1453	-1%
West Broadway/East Broadway/Dorchester Street	E	61.6	1568	7%	F	80.0	1680	-1%
Summer Street/East First Street	D	49.3	2133	0%	E	60.4	2193	2%
L Street/East Broadway	E	58.7	1952	0%	F	80.0	2093	1%
A Street/Melcher Street	F	80.0	1541	5%	F	80.0	1856	9%
Seaport Blvd/Thomson St.	B	15.9	2044	N/A	C	20.6	2006	N/A
L Street/William J. Day Boulevard	—	6.1	1150	-1%	—	7.6	1235	1%

	(2015) Build W/MIT AM Peak				(2015) Build W/MIT PM Peak			
Intersection	LOS	Delay (Sec)	Traffic Volume	No-Build to Build Volume % Increase	LOS	Delay (Sec)	Traffic Volume	No-Build to Build Volume % Increase
Seaport Boulevard/Atlantic Avenue	E	67..2	3155	2%	F	80.0	3623	3%
Seaport Boulevard/Sleeper Street	C	33.1	2457	6%	C	27.9	2646	8%
Seaport Boulevard/Boston Wharf Road	A	8.0	2036	17%	A	10.0	1988	29%
Seaport Boulevard/East Service Road/Old Northern Avenue	C	26.4	2905	11%	C	27.4	2767	21%
Seaport Boulevard/B Street	C	22.8	2269	8%	D	36.9	2474	12%
Seaport Boulevard/Northern Avenue/D Street (southbound)/Fish Pier Street	C	21.7	2093	14%	C	23.7	1915	11%
Northern Avenue/D Street (northbound)	D	38.1	1350	10%	D	42.0	1381	19%
Congress Street/Dorchester Avenue	C	32.0	1292	0%	B	18.9	1412	-1%
Congress Street/A Street/Thomson Place	D	41.6	1817	9%	E	77.0	2264	24%
Congress Street/West Service Road/Boston Wharf Road	C	33.2	2059	14%	D	44.5	2524	19%
Congress Street/Off-Ramp C/Off-Ramp I/East Service Road	D	41.8	2737	1%	C	27.6	2479	28%
Congress Street/On-Ramp D/Off-Ramp F/B Street	F	80.0	3033	4%	F	80.0	3658	11%
Congress Street/D Street	C	31.2	2296	9%	E	78.1	3099	14%
D Street/Silver Line Way	A	8.4	1450	5%	A	8.8	2028	10%
Summer Street/Dorchester Avenue	F	80.0	2242	-11%	F	80.0	1772	-23%
Summer Street/Melcher Street	D	44.5	2168	2%	F	80.0	2433	5%
Summer Street/World Trade Center Avenue/Convention Center Drive	B	15.4	1769	0%	B	12.9	2126	0%
Summer Street/D Street	E	68.2	2889	2%	E	66.8	3384	15%
Summer Street/Dry Dock Avenue/Pappas Way	E	55.4	2356	0%	D	44.2	2530	1%
Dorchester Avenue/West Broadway	D	46.3	2366	2%	D	43.8	2307	4%
Dorchester Avenue/West Fourth Street	B	18.9	2102	1%	B	16.1	2084	1%
Dorchester Avenue/A Street	A	8.8	2150	1%	C	23.0	2289	2%
Dorchester Avenue/Old Colony Avenue	C	25.8	2344	1%	B	17.9	2479	2%
A Street/West Broadway	C	25.0	1877	2%	F	80.0	2253	4%
A Street/West Second Street	B	15.6	1662	3%	B	12.0	2020	5%
West Broadway/D Street	C	31.1	1321	-9%	D	48.6	1453	-1%
West Broadway/East Broadway/Dorchester Street	E	59.7	1568	7%	F	80.0	1680	-1%
Summer Street/East First Street	E	58.3	2133	0%	D	37.0	2193	2%
L Street/East Broadway	E	58.7	1952	0%	F	80.0	2093	1%
A Street/Melcher Street	F	80.0	1541	5%	F	80.0	1856	9%
Seaport Blvd/Thomson St.	B	16.4	2044	N/A	C	25.2	2006	N/A
L Street/William J. Day Boulevard	—	6.1	1150	-1%	—	7.6	1235	1%

K Factor 10%

Intersection	Average Delay time (s)	Traffic Volume (adt)	Idle MOBILE6 VOC (g/hr)	VOC (lb/day)	VOC (tpy)	Idle MOBILE6 NOX (g/hr)	NOX (lb/day)	NOX (tpy)	Idle MOBILE6 CO2 (g/hr)	CO2 (lb/day)	CO2 (tpy)
Seaport Boulevard/Atlantic Avenue	54.2	28130	8.115	7.58	1.38	5.828	5.44	0.993	1391.625	1299.35	237.131
Seaport Boulevard/Sleeper Street	18.9	18000	8.115	1.69	0.31	6.828	1.42	0.260	1391.625	289.93	52.912
Seaport Boulevard/Boston Wharf Road	18.55	14520	8.115	1.34	0.24	7.828	1.29	0.236	1391.625	229.54	41.892
Seaport Boulevard/East Service Road/Old Northern Avenue	29.85	18610	8.115	2.76	0.50	8.828	3.00	0.548	1391.625	473.42	86.399
Seaport Boulevard/B Street	54.65	16040	8.115	4.36	0.80	9.828	5.28	0.963	1391.625	747.05	136.337
Seaport Boulevard/Northern Avenue/D Street (southbound)/Fish Pier Street	16.9	12990	8.115	1.09	0.20	10.828	1.46	0.266	1391.625	187.09	34.144
Northern Avenue/D Street (northbound)	17.95	8650	8.115	0.77	0.14	11.828	1.12	0.205	1391.625	132.32	24.149
Congress Street/Dorchester Avenue	22.15	10610	8.115	1.17	0.21	12.828	1.85	0.337	1391.625	200.28	36.552
Congress Street/A Street/Thomson Place	22.85	11360	8.115	1.29	0.24	13.828	2.20	0.401	1391.625	221.22	40.372
Congress Street/West Service Road/Boston Wharf Road	36.3	12170	8.115	2.20	0.40	14.828	4.01	0.732	1391.625	376.49	68.709
Congress Street/Off-Ramp C/Off-Ramp I/East Service Road	57.8	18370	8.115	5.28	0.96	15.828	10.29	1.878	1391.625	904.88	165.141
Congress Street/On-Ramp D/Off-Ramp F/B Street	49.45	20280	8.115	4.98	0.91	16.828	10.33	1.886	1391.625	854.65	155.974
Congress Street/D Street	49.2	17500	8.115	4.28	0.78	17.828	9.40	1.715	1391.625	733.77	133.913
D Street/Silver Line Way	7.15	14080	8.115	0.50	0.09	18.828	1.16	0.212	1391.625	85.80	15.658
Summer Street/Dorchester Avenue	32.85	19000	8.115	3.10	0.57	19.828	7.58	1.383	1391.625	531.92	97.075
Summer Street/Melcher Street	19.6	15130	8.115	1.47	0.27	20.828	3.78	0.690	1391.625	252.73	46.123
Summer Street/World Trade Center Avenue/Convention Center Drive	12.9	12850	8.115	0.82	0.15	21.828	2.22	0.404	1391.625	141.27	25.782
Summer Street/D Street	32.1	20440	8.115	3.26	0.60	22.828	9.17	1.674	1391.625	559.17	102.048
Summer Street/Dry Dock Avenue/Pappas Way	52.5	19360	8.115	5.05	0.92	23.828	14.83	2.707	1391.625	866.21	158.082
Dorchester Avenue/West Broadway	40.25	20510	8.115	4.10	0.75	24.828	12.55	2.291	1391.625	703.54	128.396
Dorchester Avenue/West Fourth Street	16.6	19570	8.115	1.61	0.29	25.828	5.14	0.938	1391.625	276.86	50.526
Dorchester Avenue/A Street	12.65	18270	8.115	1.15	0.21	26.828	3.80	0.693	1391.625	196.96	35.946
Dorchester Avenue/Old Colony Avenue	14.3	19950	8.115	1.42	0.26	27.828	4.86	0.887	1391.625	243.13	44.371
A Street/West Broadway	24.3	15000	8.115	1.81	0.33	28.828	6.43	1.174	1391.625	310.64	56.691
A Street/West Second Street	17.9	11820	8.115	1.05	0.19	29.828	3.86	0.705	1391.625	180.31	32.907
West Broadway/D Street	29.9	13410	8.115	1.99	0.36	30.828	7.57	1.381	1391.625	341.71	62.362
West Broadway/East Broadway/Dorchester Street	80	16320	8.115	6.49	1.18	31.828	25.45	4.644	1391.625	1112.67	203.062
Summer Street/East First Street	40.25	17820	8.115	3.56	0.65	32.828	14.42	2.632	1391.625	611.27	111.556
L Street/East Broadway	76	17520	8.115	6.62	1.21	33.828	27.58	5.034	1391.625	1134.76	207.094
A Street/Melcher Street	9.2	9490	8.115	0.43	0.08	34.828	1.86	0.340	1391.625	74.41	13.579
Seaport Blvd/Thomson St.	0	0	8.115	0.00	0.00	35.828	0.00	0.000	1391.625	0.00	0.000
L Street/William J. Day Boulevard	6.4	11510	8.115	0.37	0.07	36.828	1.66	0.303	1391.625	62.78	11.457
Totals hrs		4672.752		83.60	15.26		211.03	38.51		14336.12	2616.34

K Factor 10%

Intersection	Average Delay time (s)	Traffic Volume (adt)	Idle MOBILE6 VOC (g/hr)	VOC (lb/day)	VOC (tpy)	Idle MOBILE6 NOX (g/hr)	NOX (lb/day)	NOX (tpy)	Idle MOBILE6 CO2 (g/hr)	CO2 (lb/day)	CO2 (tpy)
Seaport Boulevard/Atlantic Avenue	71.4	35030	4.25	6.51	1.19	2.175	3.33	0.608	1412.425	2163.40	394.821
Seaport Boulevard/Sleeper Street	53.5	24410	4.25	3.40	0.62	2.175	1.74	0.317	1412.425	1129.59	206.150
Seaport Boulevard/Boston Wharf Road	4.8	17370	4.25	0.22	0.04	2.175	0.11	0.020	1412.425	72.12	13.161
Seaport Boulevard/East Service Road/Old Northern Avenue	54.5	26160	4.25	3.71	0.68	2.175	1.90	0.347	1412.425	1233.20	225.059
Seaport Boulevard/B Street	69.35	22030	4.25	3.98	0.73	2.175	2.03	0.371	1412.425	1321.48	241.170
Seaport Boulevard/Northern Avenue/D Street (southbound)/Fish Pier Street	27.8	18350	4.25	1.33	0.24	2.175	0.68	0.124	1412.425	441.25	80.527
Northern Avenue/D Street (northbound)	29.95	12290	4.25	0.96	0.17	2.175	0.49	0.089	1412.425	318.38	58.105
Congress Street/Dorchester Avenue	62.7	14210	4.25	2.32	0.42	2.175	1.19	0.217	1412.425	770.66	140.645
Congress Street/A Street/Thomson Place	59.15	18320	4.25	2.82	0.51	2.175	1.44	0.263	1412.425	937.30	171.058
Congress Street/West Service Road/Boston Wharf Road	77.1	21220	4.25	4.26	0.78	2.175	2.18	0.398	1412.425	1415.14	258.263
Congress Street/Off-Ramp C/Off-Ramp I/East Service Road	62.1	27090	4.25	4.38	0.80	2.175	2.24	0.409	1412.425	1455.12	265.560
Congress Street/On-Ramp D/Off-Ramp F/B Street	77.4	33020	4.25	6.65	1.21	2.175	3.40	0.621	1412.425	2210.64	403.441
Congress Street/D Street	69.75	27130	4.25	4.93	0.90	2.175	2.52	0.460	1412.425	1636.79	298.714
D Street/Silver Line Way	8.2	18390	4.25	0.39	0.07	2.175	0.20	0.037	1412.425	130.44	23.804
Summer Street/Dorchester Avenue	80	25090	4.25	5.22	0.95	2.175	2.67	0.488	1412.425	1736.16	316.849
Summer Street/Melcher Street	80	23100	4.25	4.81	0.88	2.175	2.46	0.449	1412.425	1598.46	291.719
Summer Street/World Trade Center Avenue/Convention Center Drive	17.4	21210	4.25	0.96	0.18	2.175	0.49	0.090	1412.425	319.22	58.258
Summer Street/D Street	61.25	29480	4.25	4.70	0.86	2.175	2.41	0.439	1412.425	1561.83	285.033
Summer Street/Dry Dock Avenue/Pappas Way	72.9	24950	4.25	4.73	0.86	2.175	2.42	0.442	1412.425	1573.25	287.118
Dorchester Avenue/West Broadway	49.75	23270	4.25	3.01	0.55	2.175	1.54	0.281	1412.425	1001.36	182.748
Dorchester Avenue/West Fourth Street	23.6	20890	4.25	1.28	0.23	2.175	0.66	0.120	1412.425	426.43	77.824
Dorchester Avenue/A Street	15.95	22400	4.25	0.93	0.17	2.175	0.48	0.087	1412.425	309.04	56.399
Dorchester Avenue/Old Colony Avenue	22.4	24320	4.25	1.42	0.26	2.175	0.73	0.132	1412.425	471.21	85.995
A Street/West Broadway	76.05	21580	4.25	4.27	0.78	2.175	2.19	0.399	1412.425	1419.55	259.068
A Street/West Second Street	14.1	19260	4.25	0.71	0.13	2.175	0.36	0.066	1412.425	234.90	42.868
West Broadway/D Street	42.35	14670	4.25	1.62	0.30	2.175	0.83	0.151	1412.425	537.38	98.072
West Broadway/East Broadway/Dorchester Street	70.8	17010	4.25	3.13	0.57	2.175	1.60	0.293	1412.425	1041.69	190.108
Summer Street/East First Street	49.55	21560	4.25	2.78	0.51	2.175	1.42	0.260	1412.425	924.04	168.638
L Street/East Broadway	77.6	20670	4.25	4.17	0.76	2.175	2.14	0.390	1412.425	1387.40	253.200
A Street/Melcher Street	77.85	16970	4.25	3.44	0.63	2.175	1.76	0.321	1412.425	1142.72	208.546
Seaport Blvd/Thomson St.	14.7	17410	4.25	0.67	0.12	2.175	0.34	0.062	1412.425	221.37	40.400
L Street/William J. Day Boulevard	6.95	12170	4.25	0.22	0.04	2.175	0.11	0.021	1412.425	73.16	13.352
Totals	hrs	10024.36		93.93	17.14		48.07	8.77		31214.65	5696.67

K Factor 10%

Intersection	Average Delay time (s)	Traffic Volume (adt)	Idle MOBILE6 VOC (g/hr)	VOC (lb/day)	VOC (tpy)	Idle MOBILE6 NOX (g/hr)	NOX (lb/day)	NOX (tpy)	Idle MOBILE6 CO2 (g/hr)	CO2 (lb/day)	CO2 (tpy)
Seaport Boulevard/Atlantic Avenue	74.4	36230	4.25	7.02	1.28	2.175	3.59	0.655	1412.425	2331.53	425.504
Seaport Boulevard/Sleeper Street	33.45	26460	4.25	2.30	0.42	2.175	1.18	0.215	1412.425	765.57	139.717
Seaport Boulevard/Boston Wharf Road	8.4	20360	4.25	0.45	0.08	2.175	0.23	0.042	1412.425	147.93	26.997
Seaport Boulevard/East Service Road/Old Northern Avenue	80	29050	4.25	6.05	1.10	2.175	3.10	0.565	1412.425	2010.18	366.858
Seaport Boulevard/B Street	80	24740	4.25	5.15	0.94	2.175	2.64	0.481	1412.425	1711.94	312.429
Seaport Boulevard/Northern Avenue/D Street (southbound)/Fish Pier Street	72.9	20930	4.25	3.97	0.72	2.175	2.03	0.371	1412.425	1319.76	240.857
Northern Avenue/D Street (northbound)	80	13810	4.25	2.88	0.52	2.175	1.47	0.269	1412.425	955.62	174.400
Congress Street/Dorchester Avenue	54.1	14120	4.25	1.99	0.36	2.175	1.02	0.186	1412.425	660.74	120.585
Congress Street/A Street/Thomson Place	74.9	22640	4.25	4.41	0.81	2.175	2.26	0.412	1412.425	1466.76	267.683
Congress Street/West Service Road/Boston Wharf Road	80	25240	4.25	5.26	0.96	2.175	2.69	0.491	1412.425	1746.54	318.744
Congress Street/Off-Ramp C/Off-Ramp I/East Service Road	61.65	27370	4.25	4.39	0.80	2.175	2.25	0.410	1412.425	1459.51	266.361
Congress Street/On-Ramp D/Off-Ramp F/B Street	80	36580	4.25	7.62	1.39	2.175	3.90	0.711	1412.425	2531.24	461.951
Congress Street/D Street	78.2	30990	4.25	6.31	1.15	2.175	3.23	0.589	1412.425	2096.18	382.552
D Street/Silver Line Way	8.25	20280	4.25	0.44	0.08	2.175	0.22	0.041	1412.425	144.72	26.411
Summer Street/Dorchester Avenue	80	22420	4.25	4.67	0.85	2.175	2.39	0.436	1412.425	1551.40	283.131
Summer Street/Melcher Street	80	24330	4.25	5.07	0.92	2.175	2.59	0.473	1412.425	1683.57	307.252
Summer Street/World Trade Center Avenue/Convention Center Drive	17.6	21260	4.25	0.97	0.18	2.175	0.50	0.091	1412.425	323.65	59.066
Summer Street/D Street	65.6	33840	4.25	5.78	1.05	2.175	2.96	0.540	1412.425	1920.14	350.426
Summer Street/Dry Dock Avenue/Pappas Way	69.35	25300	4.25	4.57	0.83	2.175	2.34	0.427	1412.425	1517.63	276.968
Dorchester Avenue/West Broadway	57.3	23660	4.25	3.53	0.64	2.175	1.81	0.330	1412.425	1172.65	214.009
Dorchester Avenue/West Fourth Street	21.9	21020	4.25	1.20	0.22	2.175	0.61	0.112	1412.425	398.18	72.667
Dorchester Avenue/A Street	15.85	22890	4.25	0.94	0.17	2.175	0.48	0.088	1412.425	313.82	57.271
Dorchester Avenue/Old Colony Avenue	22.4	24790	4.25	1.45	0.26	2.175	0.74	0.135	1412.425	480.31	87.657
A Street/West Broadway	77.75	22530	4.25	4.56	0.83	2.175	2.33	0.426	1412.425	1515.17	276.518
A Street/West Second Street	14	20200	4.25	0.74	0.13	2.175	0.38	0.069	1412.425	244.61	44.642
West Broadway/D Street	38.5	14530	4.25	1.46	0.27	2.175	0.75	0.136	1412.425	483.87	88.306
West Broadway/East Broadway/Dorchester Street	70.8	16800	4.25	3.10	0.56	2.175	1.58	0.289	1412.425	1028.83	187.761
Summer Street/East First Street	54.85	21930	4.25	3.13	0.57	2.175	1.60	0.292	1412.425	1040.43	189.879
L Street/East Broadway	69.35	20930	4.25	3.78	0.69	2.175	1.93	0.353	1412.425	1255.50	229.128
A Street/Melcher Street	80	18560	4.25	3.86	0.71	2.175	1.98	0.361	1412.425	1284.30	234.385
Seaport Blvd/Thomson St.	18.25	20440	4.25	0.97	0.18	2.175	0.50	0.091	1412.425	322.66	58.885
L Street/William J. Day Boulevard	6.85	12350	4.25	0.22	0.04	2.175	0.11	0.021	1412.425	73.17	13.354
Totals	hrs	11547.69		108.20	19.75		55.37	10.11		35958.11	6562.36

K Factor 10%

Intersection	Average Delay time (s)	Traffic Volume (adt)	Idle MOBILE6 VOC (g/hr)	VOC (lb/day)	VOC (tpy)	Idle MOBILE6 NOX (g/hr)	NOX (lb/day)	NOX (tpy)	Idle MOBILE6 CO2 (g/hr)	CO2 (lb/day)	CO2 (tpy)
Seaport Boulevard/Atlantic Avenue	80	36230	4.25	7.54	1.38	2.175	3.86	0.705	1412.425	2507.02	457.531
Seaport Boulevard/Sleeper Street	30.5	26460	4.25	2.10	0.38	2.175	1.07	0.196	1412.425	698.05	127.395
Seaport Boulevard/Boston Wharf Road	9	20360	4.25	0.48	0.09	2.175	0.24	0.045	1412.425	158.50	28.926
Seaport Boulevard/East Service Road/Old Northern Avenue	26.9	29050	4.25	2.03	0.37	2.175	1.04	0.190	1412.425	675.92	123.356
Seaport Boulevard/B Street	29.85	24740	4.25	1.92	0.35	2.175	0.98	0.180	1412.425	638.77	116.575
Seaport Boulevard/Northern Avenue/D Street (southbound)/Fish Pier Street	22.7	20930	4.25	1.24	0.23	2.175	0.63	0.115	1412.425	410.96	74.999
Northern Avenue/D Street (northbound)	40.05	13810	4.25	1.44	0.26	2.175	0.74	0.134	1412.425	478.40	87.309
Congress Street/Dorchester Avenue	25.45	14120	4.25	0.94	0.17	2.175	0.48	0.087	1412.425	310.83	56.726
Congress Street/A Street/Thomson Place	59.3	22640	4.25	3.49	0.64	2.175	1.79	0.326	1412.425	1161.26	211.930
Congress Street/West Service Road/Boston Wharf Road	38.85	25240	4.25	2.55	0.47	2.175	1.31	0.238	1412.425	848.16	154.790
Congress Street/Off-Ramp C/Off-Ramp I/East Service Road	34.7	27370	4.25	2.47	0.45	2.175	1.27	0.231	1412.425	821.49	149.922
Congress Street/On-Ramp D/Off-Ramp F/B Street	80	36580	4.25	7.62	1.39	2.175	3.90	0.711	1412.425	2531.24	461.951
Congress Street/D Street	54.65	30990	4.25	4.41	0.80	2.175	2.26	0.412	1412.425	1464.91	267.346
D Street/Silver Line Way	8.6	20280	4.25	0.45	0.08	2.175	0.23	0.042	1412.425	150.86	27.531
Summer Street/Dorchester Avenue	80	22420	4.25	4.67	0.85	2.175	2.39	0.436	1412.425	1551.40	283.131
Summer Street/Melcher Street	62.25	24330	4.25	3.94	0.72	2.175	2.02	0.368	1412.425	1310.03	239.080
Summer Street/World Trade Center Avenue/Convention Center Drive	14.15	21260	4.25	0.78	0.14	2.175	0.40	0.073	1412.425	260.21	47.488
Summer Street/D Street	67.5	33840	4.25	5.95	1.08	2.175	3.04	0.555	1412.425	1975.76	360.576
Summer Street/Dry Dock Avenue/Pappas Way	49.8	25300	4.25	3.28	0.60	2.175	1.68	0.306	1412.425	1089.81	198.890
Dorchester Avenue/West Broadway	45.05	23660	4.25	2.77	0.51	2.175	1.42	0.259	1412.425	921.95	168.256
Dorchester Avenue/West Fourth Street	17.5	21020	4.25	0.96	0.17	2.175	0.49	0.089	1412.425	318.18	58.067
Dorchester Avenue/A Street	15.9	22890	4.25	0.95	0.17	2.175	0.48	0.088	1412.425	314.81	57.452
Dorchester Avenue/Old Colony Avenue	21.85	24790	4.25	1.41	0.26	2.175	0.72	0.132	1412.425	468.52	85.505
A Street/West Broadway	52.5	22530	4.25	3.08	0.56	2.175	1.58	0.288	1412.425	1023.10	186.717
A Street/West Second Street	13.8	20200	4.25	0.73	0.13	2.175	0.37	0.068	1412.425	241.12	44.004
West Broadway/D Street	39.85	14530	4.25	1.51	0.28	2.175	0.77	0.141	1412.425	500.83	91.402
West Broadway/East Broadway/Dorchester Street	69.85	16800	4.25	3.05	0.56	2.175	1.56	0.285	1412.425	1015.02	185.241
Summer Street/East First Street	47.65	21930	4.25	2.72	0.50	2.175	1.39	0.254	1412.425	903.86	164.954
L Street/East Broadway	69.35	20930	4.25	3.78	0.69	2.175	1.93	0.353	1412.425	1255.50	229.128
A Street/Melcher Street	80	18560	4.25	3.86	0.71	2.175	1.98	0.361	1412.425	1284.30	234.385
Seaport Blvd/Thomson St.	20.8	20440	4.25	1.11	0.20	2.175	0.57	0.103	1412.425	367.74	67.113
L Street/William J. Day Boulevard	6.85	12350	4.25	0.22	0.04	2.175	0.11	0.021	1412.425	73.17	13.354
Totals	hrs	8905.83		83.44	15.23		42.70	7.79		27731.69	5061.03

Link Number	Roadway Segment	Link Distance (miles)	Average Speed Limit (mph)	AM Peak Hour Volume[1]				PM Peak Hour Volume[1]				K-factor	Daily Traffic Volume				
				Existing (2009)	Midterm (2015) No Build	Net Project Traffic	Build (2015)	Existing (2009)	Midterm (2015) No Build	Net Project Traffic	Build (2015)		Existing (2009)	Midterm (2015) No Build	Net Project Traffic	Build (2015)	Mitigated Build (2015)
N1	Atlantic Ave, North of Moakley Bridge	0.14	30	831	952	25	977	721	933	15	948	10.0%	8,310	9,520	250	9,770	9,770
N2	Oliver St, West of Moakley Bridge	0.13	30	1,208	1,523	5	1,528	724	934	89	1,023	10.0%	12,080	15,230	890	15,280	15,280
N3	Atlantic Ave, South of Moakley Bridge	0.14	30	1,026	1,145	3	1,148	1,270	1,422	8	1,430	10.0%	12,700	14,220	80	14,300	14,300
N4	Moakley Bridge, Atlantic Ave to Sleeper St.	0.19	30	1,694	2,120	72	2,192	1,631	2,176	112	2,288	10.0%	16,940	21,760	1,120	22,880	22,880
N5	Old Northern Ave, Sleeper St to East Service Road	0.36	30	713	1,302	-428	874	344	1,320	-386	934	10.0%	7,130	13,200	-3,860	9,340	9,340
N6	Seaport Blvd, Moakley Bridge to Boston Wharf Rd.	0.21	30	1,361	1,635	242	1,877	1,275	1,725	128	1,853	10.0%	13,610	17,250	2,420	18,770	18,770
N7	Seaport Blvd, Boston Wharf Rd. to East Service Rd.	0.10	30	1,226	1,505	242	1,747	1,224	1,467	312	1,779	10.0%	12,260	15,050	3,120	17,790	17,790
N8	Seaport Blvd, East Service Rd. to B. St	0.07	30	1,356	1,906	250	2,156	1,428	1,985	267	2,252	10.0%	14,280	19,850	2,670	22,520	22,520
N9	Seaport Blvd, B St. to D St. SB	0.19	30	1,220	1,195	586	1,781	1,179	1,573	183	1,756	10.0%	12,200	15,730	5,860	17,810	17,810
N10	Northern Ave, East of D St.	0.21	30	771	1,046	68	1,114	793	1,022	84	1,106	10.0%	7,930	10,460	840	11,140	11,140
N11	Congress St., Atlantic Ave to Dorchester Ave.	0.12	30	885	1,058	25	1,083	937	1,145	164	1,309	10.0%	9,370	11,450	1,640	13,090	13,090
N12	Congress St., Dorchester Ave to A St.	0.24	30	496	801	162	963	626	1,067	242	1,309	10.0%	6,260	10,670	2,420	13,090	13,090
N13	Congress St., A St./Thompson Pl. to West Service Rd/Boston Wharf Rd.	0.09	30	856	1,181	10	1,191	963	1,148	252	1,400	10.0%	9,630	11,810	2,520	14,000	14,000
N14	Congress St., West Service Rd/Boston Wharf Rd. to Offramps/East Service Rd.	0.10	30	660	1,079	290	1,369	633	1,237	308	1,545	10.0%	6,600	12,370	3,080	15,450	15,450
N15	Congress St., Offramps/East Service Rd. to B St./Onramps	0.09	30	962	1,564	121	1,685	856	1,589	268	1,857	10.0%	9,620	15,890	2,680	18,570	18,570
N16	Congress St., B St./Onramps to D St.	0.19	30	1,106	1,484	130	1,614	1,258	2,009	159	2,168	10.0%	12,580	20,090	1,590	21,680	21,680
N17	Congress St., East of D. St.	0.13	30	417	672	69	741	358	724	93	817	10.0%	4,170	7,240	930	8,170	8,170
N18	Silver Line, West of D. St	0.09	30	59	67	13	80	51	56	0	56	10.0%	590	670	130	800	800
N19	Silver Line, East of D St.	0.11	30	72	80	-13	67	59	64	0	64	10.0%	720	800	0	670	670
N20	Summer St., Atlantic Ave to Dorchester Ave.	0.15	30	1,094	1,589	33	1,622	1,092	1,713	72	1,785	10.0%	10,940	17,130	720	17,850	17,850
N21	Summer St., Dorchester Ave. to Melcher St.	0.12	30	1,480	1,861	61	1,922	1,415	1,917	137	2,054	10.0%	14,800	19,170	1,370	20,540	20,540
N22	Summer St., Melcher St. to East Side Dr.	0.44	30	1,050	1,560	29	1,589	1,160	1,810	61	1,871	10.0%	11,600	18,100	610	18,710	18,710
N23	Summer St., East Side Dr. to D St.	0.10	30	1,088	1,586	43	1,629	1,161	1,886	80	1,966	10.0%	11,610	18,860	800	19,660	19,660
N24	Summer St., D St. to Pappas Way/Drydock Ave.	0.22	30	1,232	1,630	197	1,827	1,324	1,891	-164	1,727	10.0%	13,240	18,910	1,970	18,270	18,270
N25	Summer St., East of Pappas Way/Drydock Ave.	0.25	30	1,421	1,860	-41	1,819	1,464	1,971	-9	1,962	10.0%	14,640	19,710	-90	19,620	19,620
N26	Melcher St., Summer St. to A St.	0.14	30	247	646	603	1,249	488	970	127	1,097	10.0%	4,880	9,700	6,030	12,490	12,490
N27	Melcher St., East of A. St.	0.05	30	59	143	0	143	50	91	0	91	10.0%	590	1,430	0	1,430	1,430
N28	Dorchester Ave., South of Summer St.	0.34	30	140	270	0	270	187	220	0	220	10.0%	1,870	2,700	0	2,700	2,700
N29	Dorchester Ave., Summer St. to Congress St.	0.08	30	525	707	-41	666	635	823	-64	759	10.0%	6,350	8,230	-410	7,590	7,590
N30	Sleeper St., Congress St. to Seaport Blvd.	0.15	30	233	296	26	322	234	399	71	470	10.0%	2,340	3,990	710	4,700	4,700
N31	A St., South of Melcher St.	0.25	30	692	1,189	44	1,233	787	1,453	95	1,548	10.0%	7,870	14,530	950	15,480	15,480
N32	A St., Melcher St. to Congress St.	0.11	30	648	905	163	1,068	709	1,035	279	1,314	10.0%	7,090	10,350	2,790	13,140	13,140
N33	Thomson Pl., Congress St. to Seaport Blvd.	0.17	30	41	363	128	491	46	352	153	505	10.0%	460	3,630	1,530	5,050	5,050
N34	West Service Rd., South of Congress St.	0.25	30	294	916	147	1,063	556	1,335	198	1,533	10.0%	5,560	13,350	1,980	15,330	15,330
N35	Boston Wharf Rd, Congress St. to Seaport Blvd.	0.18	30	158	250	354	604	499	523	237	760	10.0%	4,990	5,230	3,540	7,600	7,600
N36	Offramp C (from I-90 EB)	0.18	30	719	834	-2	832	276	366	84	450	10.0%	7,190	8,340	840	8,320	8,320
N37	Offramp I (from I-93 NB)	0.11	30	588	782	-13	769	158	289	151	440	10.0%	5,880	7,820	1,510	7,690	7,690
N38	East Service Rd, Congress St. to Seaport Blvd.	0.15	30	619	831	197	1,028	248	376	368	744	10.0%	6,190	8,310	3,680	10,280	10,280
N39	Onramp D (to I-93)	0.11	30	355	417	87	504	928	1,389	51	1,440	10.0%	9,280	13,890	870	14,400	14,400
N40	Offramp F (from I-90 WB)	0.08	30	924	1,455	7	1,462	488	799	142	941	10.0%	9,240	14,550	1,420	14,620	14,620
N41	B St., Congress St. to Seaport Blvd.	0.09	30	496	603	231	834	670	929	-2	927	10.0%	6,700	9,290	2,310	9,270	9,270
N42	East Side Dr., South of Summer St.	0.09	30	153	167	0	167	189	205	0	205	10.0%	1,890	2,050	0	2,050	2,050
N43	World Trade Center Ave, North of Summer St.	0.24	30	64	152	0	152	82	285	0	285	10.0%	820	2,850	0	2,850	2,850
N44	D St., South of Summer St.	0.45	30	640	886	67	953	631	946	131	1,077	10.0%	6,400	9,460	1,310	10,770	10,770
N45	D St., Summer St to Silver Line	0.12	30	925	1,248	237	1,485	1,354	1,225	768	1,993	10.0%	13,540	12,480	7,680	19,930	19,930
N46	D St., Silver Line to Congress St.	0.04	30	998	1,299	127	1,426	1,352	1,778	189	1,967	10.0%	13,520	17,780	1,890	19,670	19,670
N47	D St., SB Congress St to Seaport Blvd.	0.09	30	184	351	116	467	516	900	20	920	10.0%	5,160	9,000	1,160	9,200	9,200
N48	D St., NB Congress St to Seaport Blvd.	0.09	30	166	206	245	451	190	187	471	658	10.0%	1,900	2,060	4,710	6,580	6,580
N49	D St., North from Seaport Blvd. (Fish Pier St. E)	0.06	30	140	152	0	152	123	134	0	134	10.0%	1,400	1,520	0	1,520	1,520
N50	Pappas Way, South of Summer St.	0.29	30	249	254	17	271	223	250	22	272	10.0%	2,490	2,540	220	2,720	2,720
N51	Drydock Ave, North of Summer St.	0.12	30	712	778	17	795	707	775	22	797	10.0%	7,120	7,780	220	7,970	7,970
N52	Onramp to I-93 NB from Atlantic Ave/Seaport Blvd.	0.09	30	377	458	26	484	1,290	1,552	16	1,568	10.0%	12,900	15,520	260	15,680	15,680

Link Number	Roadway Segment	Link Distance (miles)	Average Speed Limit (mph)	AM Peak Hour Volume[1]				PM Peak Hour Volume[1]					Daily Traffic Volume				
				Existing (2009)	Midterm (2015) No Build	Net Project Traffic	Build (2015)	Existing (2009)	Midterm (2015) No Build	Net Project Traffic	Build (2015)	K-factor	Existing (2009)	Midterm (2015) No Build	Net Project Traffic	Build (2015)	Mitigated Build (2015)
S1	West Second St, Dorchester Ave. to A St.	0.15	30	322	390	0	390	305	370	0	370	10.0%	3,220	3,900	0	3,900	3,900
S2	West Second St., A St.to Dorchester St.	0.68	30	355	475	0	475	259	338	0	338	10.0%	3,550	4,750	0	4,750	4,750
S3	West Broadway, West of Dorchester Ave	0.19	30	1,643	1,858	14	1,872	1,539	1,753	42	1,795	10.0%	16,430	18,580	420	18,720	18,720
S4	West Broadway, Dorchester Ave. to A St.	0.11	30	767	899	10	909	647	705	134	839	10.0%	7,670	8,990	1,340	9,090	9,090
S5	West Broadway, A St. to D St.	0.31	30	1,025	926	163	1,089	888	857	97	954	10.0%	10,250	9,260	1,630	10,890	10,890
S6	West Broadway, D St. to Dorchester St.	0.34	30	928	1,053	-76	977	877	1,089	-152	937	10.0%	9,280	10,890	-760	9,770	9,770
S7	East Broadway, Dorchester St. to L St.	0.51	30	850	790	91	881	906	650	264	914	10.0%	9,060	7,900	2,640	9,140	9,140
S8	East Broadway, East of L St.	0.10	30	465	541	5	546	447	527	12	539	10.0%	4,650	5,410	120	5,460	5,460
S9	East First St., West of L St.	0.39	30	217	221	0	221	269	275	0	275	10.0%	2,690	2,750	0	2,750	2,750
S10	East First St., East of L St.	0.10	30	591	688	-1	687	497	613	13	626	10.0%	5,910	6,880	130	6,870	6,870
S11	West Fourth St., West of Dorchester Ave.	0.22	30	1,119	1,190	-22	1,168	970	1,070	-20	1,050	10.0%	11,190	11,900	-200	11,680	11,680
S12	West Fourth St., Dorchester Ave to Dorchester St.	0.69	30	312	344	-22	322	353	403	-20	383	10.0%	3,530	4,030	-200	3,830	3,830
S13	West Seventh St., West of Dorchester Ave.	0.01	30	2	4	0	4	2	4	0	4	10.0%	20	40	0	40	40
S14	West Seventh St., East of Dorchester Ave.	0.20	30	180	158	0	158	98	67	0	67	10.0%	1,800	1,580	0	1,580	1,580
S15	Old Colony Road, B St. to Dorchester St.	0.46	30	1,225	1,010	0	1,010	1,359	670	0	670	10.0%	13,590	10,100	0	10,100	10,100
S16	W. J. Day Blvd, West of L St.	0.46	30	1,098	1,146	-6	1,140	1,138	1,204	18	1,222	10.0%	11,380	12,040	180	12,220	12,220
S17	W. J. Day Blvd, East of L St.	0.10	30	497	506	0	506	600	611	0	611	10.0%	6,000	6,110	0	6,110	6,110
S18	Dorchester Ave, North of West Broadway	0.13	30	577	659	25	684	688	669	47	716	10.0%	6,880	6,690	470	7,160	7,160
S19	Dorchester Ave, West Fourth St. to West Broadway	0.08	30	1,139	1,283	-16	1,267	1,218	1,274	62	1,336	10.0%	12,180	12,830	620	13,360	13,360
S20	Dorchester Ave., A St. to West Fourth St.	0.06	30	1,352	1,423	101	1,524	1,232	1,352	60	1,412	10.0%	13,520	14,230	1,010	15,240	15,240
S21	Dorchester Ave., B St. to A St.	0.17	30	1,752	2,057	44	2,101	1,809	2,162	135	2,297	10.0%	18,090	21,620	1,350	22,970	22,970
S22	Dorchester Ave., D St. to B St./W. Seventh St./Old Colony Rd.	0.31	30	549	1,179	21	1,200	543	1,720	47	1,767	10.0%	5,490	17,200	470	17,670	17,670
S23	A St., Dorchester Ave. to West Broadway	0.10	30	657	676	238	914	807	938	285	1,223	10.0%	8,070	9,380	2,850	12,230	12,230
S24	A St., West Broadway to West Second St.	0.10	30	676	1,088	38	1,126	867	1,496	76	1,572	10.0%	8,670	14,960	760	15,720	15,720
S25	A St., North of West Second St.	0.29	30	719	1,289	44	1,333	933	1,668	94	1,762	10.0%	9,330	16,680	940	17,620	17,620
S26	B St., North of West Seventh St/Dorchester Ave/Old Colony Rd.	0.41	30	193	163	60	223	186	153	0	153	10.0%	1,930	1,630	600	2,230	2,230
S27	D St., South of West Broadway	0.48	30	374	467	-125	342	581	649	-14	635	10.0%	5,810	6,490	-140	6,350	6,350
S28	D St., North of West Broadway	0.23	30	281	359	-125	234	336	407	-14	393	10.0%	3,360	4,070	-140	3,930	3,930
S29	Dorchester St., South of West Broadway/East Broadway	0.46	30	905	939	0	939	1,063	1,109	0	1,109	10.0%	10,630	11,090	0	11,090	11,090
S30	Dorchester St., North of West Broadway/East Broadway	0.16	30	444	457	0	457	513	537	0	537	10.0%	5,130	5,370	0	5,370	5,370
S31	L St, North of East First St	0.24	30	1,606	1,962	-8	1,954	1,506	1,949	37	1,986	10.0%	16,060	19,620	370	19,860	19,860
S32	L St., East Broadway to East First St.	0.17	30	1,160	1,429	-25	1,404	1,219	1,454	97	1,551	10.0%	12,190	14,540	970	15,510	15,510
S33	L St., W.J. Day Blvd to East Broadway	0.43	30	1,028	969	150	1,119	1,086	814	415	1,229	10.0%	10,860	9,690	4,150	12,290	12,290

Notes

1. Where link volumes are unbalanced between intersections, the higher volume was used to provide a conservative analysis.

Seaport Square

Mesoscale Analysis
2009 Existing Case

	Link	Daily Average Volumes	Miles Per Link	Miles Traveled	Vehicle Speed (mph)	MOBILE6 vehicle class	MOBILE6 VOC (g/mile)	lbs/day	tons/year	MOBILE6 NOX (g/mile)	lbs/day	tons/year	MOBILE6 CO2 (g/mile)	lbs/day	tons/year
N1	Atlantic Ave, North of Moakley Bridge	8,310	0.14	1163.4	30	Composite	0.540	1.385	0.253	1.271	3.260	0.595	556.650	1427.736	260.562
N2	Oliver St, West of Moakley Bridge	12,080	0.13	1570.4	30	Composite	0.540	1.870	0.341	1.271	4.400	0.803	556.650	1927.210	351.716
N3	Atlantic Ave, South of Moakley Bridge	12,700	0.14	1778.0	30	Composite	0.540	2.117	0.386	1.271	4.982	0.909	556.650	2181.979	398.211
N4	Moakley Bridge, Atlantic Ave to Sleeper St.	16,940	0.19	3218.6	30	Composite	0.540	3.832	0.699	1.271	9.019	1.646	556.650	3949.897	720.856
N5	Old Northern Ave, Sleeper St to East Service Road	7,130	0.36	2566.8	30	Composite	0.540	3.056	0.558	1.271	7.192	1.313	556.650	3150.002	574.875
N6	Seaport Blvd, Moakley Bridge to Boston Wharf Rd.	13,610	0.21	2858.1	30	Composite	0.540	3.403	0.621	1.271	8.009	1.462	556.650	3507.488	640.117
N7	Seaport Blvd, Boston Wharf Rd. to East Service Rd.	12,260	0.10	1226.0	30	Composite	0.540	1.460	0.266	1.271	3.435	0.627	556.650	1504.559	274.582
N8	Seaport Blvd, East Service Rd. to B. St	14,280	0.07	999.6	30	Composite	0.540	1.190	0.217	1.271	2.801	0.511	556.650	1226.719	223.876
N9	Seaport Blvd, B St. to D St. SB	12,200	0.19	2318.0	30	Composite	0.540	2.760	0.504	1.271	6.495	1.185	556.650	2844.672	519.153
N10	Northern Ave, East of D St.	7,930	0.21	1665.3	30	Composite	0.540	1.983	0.362	1.271	4.666	0.852	556.650	2043.672	372.970
N11	Congress St., Atlantic Ave to Dorchester Ave.	9,370	0.12	1124.4	30	Composite	0.540	1.339	0.244	1.271	3.151	0.575	556.650	1379.874	251.827
N12	Congress St., Dorchester Ave to A St.	6,260	0.24	1502.4	30	Composite	0.540	1.789	0.326	1.271	4.210	0.768	556.650	1843.760	336.486
N13	Congress St., A St./Thompson Pl. to West Service Rd/Boston Wharf Rd.	9,630	0.09	866.7	30	Composite	0.540	1.032	0.188	1.271	2.429	0.443	556.650	1063.623	194.111
N14	Congress St., West Service Rd/Boston Wharf Rd. to Offramps/East Service Rd.	6,600	0.10	660.0	30	Composite	0.540	0.786	0.143	1.271	1.849	0.338	556.650	809.958	147.817
N15	Congress St., Offramps/East Service Rd. to B St./Onramps	9,620	0.09	865.8	30	Composite	0.540	1.031	0.188	1.271	2.426	0.443	556.650	1062.518	193.910
N16	Congress St., B St./Onramps to D St.	12,580	0.19	2390.2	30	Composite	0.540	2.846	0.519	1.271	6.698	1.222	556.650	2933.276	535.323
N17	Congress St., East of D. St.	4,170	0.13	542.1	30	Composite	0.540	0.645	0.118	1.271	1.519	0.277	556.650	665.270	121.412
N18	Silver Line, West of D. St	590	0.09	53.1	30	Composite	0.540	0.063	0.012	1.271	0.149	0.027	556.650	65.165	11.893
N19	Silver Line, East of D St.	720	0.11	79.2	30	Composite	0.540	0.094	0.017	1.271	0.222	0.041	556.650	97.195	17.738
N20	Summer St., Atlantic Ave to Dorchester Ave.	10,940	0.15	1641.0	30	Composite	0.540	1.954	0.357	1.271	4.598	0.839	556.650	2013.851	367.528
N21	Summer St., Dorchester Ave. to Melcher St.	14,800	0.12	1776.0	30	Composite	0.540	2.114	0.386	1.271	4.977	0.908	556.650	2179.524	397.763
N22	Summer St., Melcher St. to East Side Dr.	11,600	0.44	5104.0	30	Composite	0.540	6.076	1.109	1.271	14.302	2.610	556.650	6263.678	1143.121
N23	Summer St., East Side Dr. to D St.	11,610	0.10	1161.0	30	Composite	0.540	1.382	0.252	1.271	3.253	0.594	556.650	1424.790	260.024
N24	Summer St., D St. to Pappas Way/Drydock Ave.	13,240	0.22	2912.8	30	Composite	0.540	3.468	0.633	1.271	8.162	1.490	556.650	3574.616	652.367
N25	Summer St., East of Pappas Way/Drydock Ave.	14,640	0.25	3660.0	30	Composite	0.540	4.357	0.795	1.271	10.256	1.872	556.650	4491.587	819.715
N26	Melcher St., Summer St. to A St.	4,880	0.14	683.2	30	Composite	0.540	0.813	0.148	1.271	1.914	0.349	556.650	838.430	153.013
N27	Melcher St., East of A. St.	590	0.05	29.5	30	Composite	0.540	0.035	0.006	1.271	0.083	0.015	556.650	36.203	6.607
N28	Dorchester Ave., South of Summer St.	1,870	0.34	635.8	30	Composite	0.540	0.757	0.138	1.271	1.782	0.325	556.650	780.260	142.397
N29	Dorchester Ave., Summer St. to Congress St.	6,350	0.08	508.0	30	Composite	0.540	0.605	0.110	1.271	1.423	0.260	556.650	623.422	113.775
N30	Sleeper St., Congress St. to Seaport Blvd.	2,340	0.15	351.0	30	Composite	0.540	0.418	0.076	1.271	0.984	0.179	556.650	430.751	78.612
N31	A St., South of Melcher St.	7,870	0.25	1967.5	30	Composite	0.540	2.342	0.427	1.271	5.513	1.006	556.650	2414.535	440.653
N32	A St., Melcher St. to Congress St.	7,090	0.11	779.9	30	Composite	0.540	0.928	0.169	1.271	2.185	0.399	556.650	957.101	174.671
N33	Thomson Pl., Congress St. to Seaport Blvd.	460	0.17	78.2	30	Composite	0.540	0.093	0.017	1.271	0.219	0.040	556.650	95.968	17.514
N34	West Service Rd., South of Congress St.	5,560	0.25	1390.0	30	Composite	0.540	1.655	0.302	1.271	3.895	0.711	556.650	1705.821	311.312
N35	Boston Wharf Rd, Congress St. to Seaport Blvd.	4,990	0.18	898.2	30	Composite	0.540	1.069	0.195	1.271	2.517	0.459	556.650	1102.280	201.166
N36	Offramp C (from I-90 EB)	7,190	0.18	1294.2	30	Composite	0.540	1.541	0.281	1.271	3.626	0.662	556.650	1588.255	289.856
N37	Offramp I (from I-93 NB)	5,880	0.11	646.8	30	Composite	0.540	0.770	0.141	1.271	1.812	0.331	556.650	793.759	144.861
N38	East Service Rd, Congress St. to Seaport Blvd.	6,190	0.15	928.5	30	Composite	0.540	1.105	0.202	1.271	2.602	0.475	556.650	1139.464	207.952
N39	Onramp D (to I-93)	9,280	0.11	1020.8	30	Composite	0.540	1.215	0.222	1.271	2.860	0.522	556.650	1252.736	228.624
N40	Offramp F (from I-90 WB)	9,240	0.08	739.2	30	Composite	0.540	0.880	0.161	1.271	2.071	0.378	556.650	907.153	165.555
N41	B St., Congress St. to Seaport Blvd.	6,700	0.09	603.0	30	Composite	0.540	0.718	0.131	1.271	1.690	0.308	556.650	740.007	135.051
N42	East Side Dr., South of Summer St.	1,890	0.09	170.1	30	Composite	0.540	0.203	0.037	1.271	0.477	0.087	556.650	208.748	38.097
N43	World Trade Center Ave, North of Summer St.	820	0.24	196.8	30	Composite	0.540	0.234	0.043	1.271	0.551	0.101	556.650	241.515	44.076
N44	D St., South of Summer St.	6,400	0.45	2880.0	30	Composite	0.540	3.429	0.626	1.271	8.070	1.473	556.650	3534.364	645.021
N45	D St., Summer St to Silver Line	13,540	0.12	1624.8	30	Composite	0.540	1.934	0.353	1.271	4.553	0.831	556.650	1993.970	363.900
N46	D St., Silver Line to Congress St.	13,520	0.04	540.8	30	Composite	0.540	0.644	0.117	1.271	1.515	0.277	556.650	663.675	121.121
N47	D St., SB Congress St to Seaport Blvd.	5,160	0.09	464.4	30	Composite	0.540	0.553	0.101	1.271	1.301	0.237	556.650	569.916	104.010
N48	D St., NB Congress St to Seaport Blvd.	1,900	0.09	171.0	30	Composite	0.540	0.204	0.037	1.271	0.479	0.087	556.650	209.853	38.298
N49	D St., North from Seaport Blvd. (Fish Pier St. E)	1,400	0.06	84.0	30	Composite	0.540	0.100	0.018	1.271	0.235	0.043	556.650	103.086	18.813
N50	Pappas Way, South of Summer St.	2,490	0.29	722.1	30	Composite	0.540	0.860	0.157	1.271	2.023	0.369	556.650	886.168	161.726
N51	Drydock Ave, North of Summer St.	7,120	0.12	854.4	30	Composite	0.540	1.017	0.186	1.271	2.394	0.437	556.650	1048.528	191.356
N52	Onramp to I-93 NB from Atlantic Ave/Seaport Blvd.	12,900	0.09	1161.0	30	Composite	0.540	1.382	0.252	1.271	3.253	0.594	556.650	1424.790	260.024

Seaport Square

Mesoscale Analysis
2009 Existing Case

	Link	Daily Average Volumes	Miles Per Link	Miles Traveled	Vehicle Speed (mph)	MOBILE6 vehicle class	MOBILE6 VOC (g/mile)	lbs/day	tons/year	MOBILE6 NOX (g/mile)	lbs/day	tons/year	MOBILE6 CO2 (g/mile)	lbs/day	tons/year
S1	West Second St, Dorchester Ave. to A St.	3,220	0.15	483.0	30	Composite	0.540	0.575	0.105	1.271	1.353	0.247	556.650	592.742	108.175
S2	West Second St., A St.to Dorchester St.	3,550	0.68	2414.0	30	Composite	0.540	2.874	0.524	1.271	6.764	1.234	556.650	2962.484	540.653
S3	West Broadway, West of Dorchester Ave	16,430	0.19	3121.7	30	Composite	0.540	3.716	0.678	1.271	8.747	1.596	556.650	3830.980	699.154
S4	West Broadway, Dorchester Ave. to A St.	7,670	0.11	843.7	30	Composite	0.540	1.004	0.183	1.271	2.364	0.431	556.650	1035.397	188.960
S5	West Broadway, A St. to D St.	10,250	0.31	3177.5	30	Composite	0.540	3.783	0.690	1.271	8.904	1.625	556.650	3899.458	711.651
S6	West Broadway, D St. to Dorchester St.	9,280	0.34	3155.2	30	Composite	0.540	3.756	0.686	1.271	8.841	1.614	556.650	3872.092	706.657
S7	East Broadway, Dorchester St. to L St.	9,060	0.51	4620.6	30	Composite	0.540	5.501	1.004	1.271	12.947	2.363	556.650	5670.445	1034.856
S8	East Broadway, East of L St.	4,650	0.10	465.0	30	Composite	0.540	0.554	0.101	1.271	1.303	0.238	556.650	570.652	104.144
S9	East First St., West of L St.	2,690	0.39	1049.1	30	Composite	0.540	1.249	0.228	1.271	2.940	0.536	556.650	1287.466	234.962
S10	East First St., East of L St.	5,910	0.10	591.0	30	Composite	0.540	0.704	0.128	1.271	1.656	0.302	556.650	725.281	132.364
S11	West Fourth St., West of Dorchester Ave.	11,190	0.22	2461.8	30	Composite	0.540	2.931	0.535	1.271	6.898	1.259	556.650	3021.145	551.359
S12	West Fourth St., Dorchester Ave to Dorchester St.	3,530	0.69	2435.7	30	Composite	0.540	2.900	0.529	1.271	6.825	1.246	556.650	2989.114	545.513
S13	West Seventh St., West of Dorchester Ave.	20	0.01	0.2	30	Composite	0.540	0.000	0.000	1.271	0.001	0.000	556.650	0.245	0.045
S14	West Seventh St., East of Dorchester Ave.	1,800	0.20	360.0	30	Composite	0.540	0.429	0.078	1.271	1.009	0.184	556.650	441.795	80.628
S15	Old Colony Road, B St. to Dorchester St.	13,590	0.46	6251.4	30	Composite	0.540	7.442	1.358	1.271	17.517	3.197	556.650	7671.778	1400.099
S16	W. J. Day Blvd, West of L St.	11,380	0.46	5234.8	30	Composite	0.540	6.232	1.137	1.271	14.668	2.677	556.650	6424.197	1172.416
S17	W. J. Day Blvd, East of L St.	6,000	0.10	600.0	30	Composite	0.540	0.714	0.130	1.271	1.681	0.307	556.650	736.326	134.379
S18	Dorchester Ave, North of West Broadway	6,880	0.13	894.4	30	Composite	0.540	1.065	0.194	1.271	2.506	0.457	556.650	1097.616	200.315
S19	Dorchester Ave, West Fourth St. to West Broadway	12,180	0.08	974.4	30	Composite	0.540	1.160	0.212	1.271	2.730	0.498	556.650	1195.793	218.232
S20	Dorchester Ave., A St. to West Fourth St.	13,520	0.06	811.2	30	Composite	0.540	0.966	0.176	1.271	2.273	0.415	556.650	995.512	181.681
S21	Dorchester Ave., B St. to A St.	18,090	0.17	3075.3	30	Composite	0.540	3.661	0.668	1.271	8.617	1.573	556.650	3774.038	688.762
S22	Dorchester Ave., D St. to B St./W. Seventh St./Old Colony Rd.	5,490	0.31	1701.9	30	Composite	0.540	2.026	0.370	1.271	4.769	0.870	556.650	2088.588	381.167
S23	A St., Dorchester Ave. to West Broadway	8,070	0.10	807.0	30	Composite	0.540	0.961	0.175	1.271	2.261	0.413	556.650	990.358	180.740
S24	A St., West Broadway to West Second St.	8,670	0.10	867.0	30	Composite	0.540	1.032	0.188	1.271	2.429	0.443	556.650	1063.991	194.178
S25	A St., North of West Second St.	9,330	0.29	2705.7	30	Composite	0.540	3.221	0.588	1.271	7.582	1.384	556.650	3320.461	605.984
S26	B St., North of West Seventh St/Dorchester Ave/Old Colony Rd.	1,930	0.41	791.3	30	Composite	0.540	0.942	0.172	1.271	2.217	0.405	556.650	971.091	177.224
S27	D St., South of West Broadway	5,810	0.48	2788.8	30	Composite	0.540	3.320	0.606	1.271	7.814	1.426	556.650	3422.442	624.596
S28	D St., North of West Broadway	3,360	0.23	772.8	30	Composite	0.540	0.920	0.168	1.271	2.165	0.395	556.650	948.388	173.081
S29	Dorchester St., South of West Broadway/East Broadway	10,630	0.46	4889.8	30	Composite	0.540	5.821	1.062	1.271	13.702	2.501	556.650	6000.809	1095.148
S30	Dorchester St., North of West Broadway/East Broadway	5,130	0.16	820.8	30	Composite	0.540	0.977	0.178	1.271	2.300	0.420	556.650	1007.294	183.831
S31	L St, North of East First St	16,060	0.24	3854.4	30	Composite	0.540	4.589	0.837	1.271	10.800	1.971	556.650	4730.157	863.254
S32	L St., East Broadway to East First St.	12,190	0.17	2072.3	30	Composite	0.540	2.467	0.450	1.271	5.807	1.060	556.650	2543.146	464.124
S33	L St., W.J. Day Blvd to East Broadway	10,860	0.43	4669.8	30	Composite	0.540	5.559	1.015	1.271	13.085	2.388	556.650	5730.823	1045.875
	Total	675850.000	17.140	134887.700				160.584	29.307		377.967	68.979		165535.480	30210.225

Notes:

Seaport Square

Mesoscale Analysis
2015 Mid Term No Build Case

	Link	Daily Average Volumes	Miles Per Link	Miles Traveled	Vehicle Speed (mph)	MOBILE6 vehicle class	MOBILE6 VOC (g/mile)	lbs/day	tons/year	MOBILE6 NOX (g/mile)	lbs/day	tons/year	MOBILE6 CO2 (g/mile)	lbs/day	tons/year
N1	Atlantic Ave, North of Moakley Bridge	9,520	0.14	1332.8	30	Composite	0.259	0.761	0.139	0.477	1.402	0.256	564.970	1660.072	302.963
N2	Oliver St, West of Moakley Bridge	15,230	0.13	1979.9	30	Composite	0.259	1.131	0.206	0.477	2.082	0.380	564.970	2466.069	450.058
N3	Atlantic Ave, South of Moakley Bridge	14,220	0.14	1990.8	30	Composite	0.259	1.137	0.207	0.477	2.094	0.382	564.970	2479.645	452.535
N4	Moakley Bridge, Atlantic Ave to Sleeper St.	21,760	0.19	4134.4	30	Composite	0.259	2.361	0.431	0.477	4.348	0.793	564.970	5149.611	939.804
N5	Old Northern Ave, Sleeper St to East Service Road	13,200	0.36	4752.0	30	Composite	0.259	2.713	0.495	0.477	4.997	0.912	564.970	5918.864	1080.193
N6	Seaport Blvd, Moakley Bridge to Boston Wharf Rd.	17,250	0.21	3622.5	30	Composite	0.259	2.068	0.377	0.477	3.809	0.695	564.970	4512.013	823.442
N7	Seaport Blvd, Boston Wharf Rd. to East Service Rd.	15,050	0.10	1505.0	30	Composite	0.259	0.859	0.157	0.477	1.583	0.289	564.970	1874.556	342.106
N8	Seaport Blvd, East Service Rd. to B. St	19,850	0.07	1389.5	30	Composite	0.259	0.793	0.145	0.477	1.461	0.267	564.970	1730.695	315.852
N9	Seaport Blvd, B St. to D St. SB	15,730	0.19	2988.7	30	Composite	0.259	1.707	0.311	0.477	3.143	0.574	564.970	3722.582	679.371
N10	Northern Ave, East of D St.	10,460	0.21	2196.6	30	Composite	0.259	1.254	0.229	0.477	2.310	0.422	564.970	2735.980	499.316
N11	Congress St., Atlantic Ave to Dorchester Ave.	11,450	0.12	1374.0	30	Composite	0.259	0.785	0.143	0.477	1.445	0.264	564.970	1711.389	312.328
N12	Congress St., Dorchester Ave to A St.	10,670	0.24	2560.8	30	Composite	0.259	1.462	0.267	0.477	2.693	0.491	564.970	3189.610	582.104
N13	Congress St., A St./Thompson Pl. to West Service Rd/Boston Wharf Rd.	11,810	0.09	1062.9	30	Composite	0.259	0.607	0.111	0.477	1.118	0.204	564.970	1323.897	241.611
N14	Congress St., West Service Rd/Boston Wharf Rd. to Offramps/East Service Rd.	12,370	0.10	1237.0	30	Composite	0.259	0.706	0.129	0.477	1.301	0.237	564.970	1540.748	281.187
N15	Congress St., Offramps/East Service Rd. to B St./Onramps	15,890	0.09	1430.1	30	Composite	0.259	0.817	0.149	0.477	1.504	0.274	564.970	1781.264	325.081
N16	Congress St., B St./Onramps to D St.	20,090	0.19	3817.1	30	Composite	0.259	2.180	0.398	0.477	4.014	0.733	564.970	4754.397	867.677
N17	Congress St., East of D. St.	7,240	0.13	941.2	30	Composite	0.259	0.537	0.098	0.477	0.990	0.181	564.970	1172.314	213.947
N18	Silver Line, West of D. St	670	0.09	60.3	30	Composite	0.259	0.034	0.006	0.477	0.063	0.012	564.970	75.107	13.707
N19	Silver Line, East of D St.	800	0.11	88.0	30	Composite	0.259	0.050	0.009	0.477	0.093	0.017	564.970	109.609	20.004
N20	Summer St., Atlantic Ave to Dorchester Ave.	17,130	0.15	2569.5	30	Composite	0.259	1.467	0.268	0.477	2.702	0.493	564.970	3200.446	584.081
N21	Summer St., Dorchester Ave. to Melcher St.	19,170	0.12	2300.4	30	Composite	0.259	1.314	0.240	0.477	2.419	0.441	564.970	2865.268	522.911
N22	Summer St., Melcher St. to East Side Dr.	18,100	0.44	7964.0	30	Composite	0.259	4.547	0.830	0.477	8.375	1.528	564.970	9919.577	1810.323
N23	Summer St., East Side Dr. to D St.	18,860	0.10	1886.0	30	Composite	0.259	1.077	0.197	0.477	1.983	0.362	564.970	2349.111	428.713
N24	Summer St., D St. to Pappas Way/Drydock Ave.	18,910	0.22	4160.2	30	Composite	0.259	2.375	0.434	0.477	4.375	0.798	564.970	5181.746	945.669
N25	Summer St., East of Pappas Way/Drydock Ave.	19,710	0.25	4927.5	30	Composite	0.259	2.814	0.513	0.477	5.182	0.946	564.970	6137.458	1120.086
N26	Melcher St., Summer St. to A St.	9,700	0.14	1358.0	30	Composite	0.259	0.775	0.142	0.477	1.428	0.261	564.970	1691.460	308.691
N27	Melcher St., East of A. St.	1,430	0.05	71.5	30	Composite	0.259	0.041	0.007	0.477	0.075	0.014	564.970	89.057	16.253
N28	Dorchester Ave., South of Summer St.	2,700	0.34	918.0	30	Composite	0.259	0.524	0.096	0.477	0.965	0.176	564.970	1143.417	208.674
N29	Dorchester Ave., Summer St. to Congress St.	8,230	0.08	658.4	30	Composite	0.259	0.376	0.069	0.477	0.692	0.126	564.970	820.072	149.663
N30	Sleeper St., Congress St. to Seaport Blvd.	3,990	0.15	598.5	30	Composite	0.259	0.342	0.062	0.477	0.629	0.115	564.970	745.463	136.047
N31	A St., South of Melcher St.	14,530	0.25	3632.5	30	Composite	0.259	2.074	0.379	0.477	3.820	0.697	564.970	4524.468	825.715
N32	A St., Melcher St. to Congress St.	10,350	0.11	1138.5	30	Composite	0.259	0.650	0.119	0.477	1.197	0.218	564.970	1418.061	258.796
N33	Thomson Pl., Congress St. to Seaport Blvd.	3,630	0.17	617.1	30	Composite	0.259	0.352	0.064	0.477	0.649	0.118	564.970	768.630	140.275
N34	West Service Rd., South of Congress St.	13,350	0.25	3337.5	30	Composite	0.259	1.906	0.348	0.477	3.510	0.641	564.970	4157.030	758.658
N35	Boston Wharf Rd, Congress St. to Seaport Blvd.	5,230	0.18	941.4	30	Composite	0.259	0.538	0.098	0.477	0.990	0.181	564.970	1172.563	213.993
N36	Offramp C (from I-90 EB)	8,340	0.18	1501.2	30	Composite	0.259	0.857	0.156	0.477	1.579	0.288	564.970	1869.823	341.243
N37	Offramp I (from I-93 NB)	7,820	0.11	860.2	30	Composite	0.259	0.491	0.090	0.477	0.905	0.165	564.970	1071.424	195.535
N38	East Service Rd, Congress St. to Seaport Blvd.	8,310	0.15	1246.5	30	Composite	0.259	0.712	0.130	0.477	1.311	0.239	564.970	1552.581	283.346
N39	Onramp D (to I-93)	13,890	0.11	1527.9	30	Composite	0.259	0.872	0.159	0.477	1.607	0.293	564.970	1903.079	347.312
N40	Offramp F (from I-90 WB)	14,550	0.08	1164.0	30	Composite	0.259	0.665	0.121	0.477	1.224	0.223	564.970	1449.823	264.593
N41	B St., Congress St. to Seaport Blvd.	9,290	0.09	836.1	30	Composite	0.259	0.477	0.087	0.477	0.879	0.160	564.970	1041.406	190.057
N42	East Side Dr., South of Summer St.	2,050	0.09	184.5	30	Composite	0.259	0.105	0.019	0.477	0.194	0.035	564.970	229.804	41.939
N43	World Trade Center Ave, North of Summer St.	2,850	0.24	684.0	30	Composite	0.259	0.391	0.071	0.477	0.719	0.131	564.970	851.958	155.482
N44	D St., South of Summer St.	9,460	0.45	4257.0	30	Composite	0.259	2.431	0.444	0.477	4.477	0.817	564.970	5302.316	967.673
N45	D St., Summer St to Silver Line	12,480	0.12	1497.6	30	Composite	0.259	0.855	0.156	0.477	1.575	0.287	564.970	1865.339	340.424
N46	D St., Silver Line to Congress St.	17,780	0.04	711.2	30	Composite	0.259	0.406	0.074	0.477	0.748	0.136	564.970	885.837	161.665
N47	D St., SB Congress St to Seaport Blvd.	9,000	0.09	810.0	30	Composite	0.259	0.463	0.084	0.477	0.852	0.155	564.970	1008.897	184.124
N48	D St., NB Congress St to Seaport Blvd.	2,060	0.09	185.4	30	Composite	0.259	0.106	0.019	0.477	0.195	0.036	564.970	230.925	42.144
N49	D St., North from Seaport Blvd. (Fish Pier St. E)	1,520	0.06	91.2	30	Composite	0.259	0.052	0.010	0.477	0.096	0.018	564.970	113.594	20.731
N50	Pappas Way, South of Summer St.	2,540	0.29	736.6	30	Composite	0.259	0.421	0.077	0.477	0.775	0.141	564.970	917.474	167.439
N51	Drydock Ave, North of Summer St.	7,780	0.12	933.6	30	Composite	0.259	0.533	0.097	0.477	0.982	0.179	564.970	1162.847	212.220
N52	Onramp to I-93 NB from Atlantic Ave/Seaport Blvd.	15,520	0.09	1396.8	30	Composite	0.259	0.798	0.146	0.477	1.469	0.268	564.970	1739.787	317.511

Seaport Square

Mesoscale Analysis
2015 Mid Term No Build Case

	Link	Daily Average Volumes	Miles Per Link	Miles Traveled	Vehicle Speed (mph)	MOBILE6 vehicle class	MOBILE6 VOC (g/mile)	lbs/day	tons/year	MOBILE6 NOX (g/mile)	lbs/day	tons/year	MOBILE6 CO2 (g/mile)	lbs/day	tons/year
S1	West Second St, Dorchester Ave. to A St.	3,900	0.15	585.0	30	Composite	0.259	0.334	0.061	0.477	0.615	0.112	564.970	728.648	132.978
S2	West Second St., A St.to Dorchester St.	4,750	0.68	3230.0	30	Composite	0.259	1.844	0.337	0.477	3.397	0.620	564.970	4023.133	734.222
S3	West Broadway, West of Dorchester Ave	18,580	0.19	3530.2	30	Composite	0.259	2.016	0.368	0.477	3.712	0.678	564.970	4397.048	802.461
S4	West Broadway, Dorchester Ave. to A St.	8,990	0.11	988.9	30	Composite	0.259	0.565	0.103	0.477	1.040	0.190	564.970	1231.727	224.790
S5	West Broadway, A St. to D St.	9,260	0.31	2870.6	30	Composite	0.259	1.639	0.299	0.477	3.019	0.551	564.970	3575.482	652.525
S6	West Broadway, D St. to Dorchester St.	10,890	0.34	3702.6	30	Composite	0.259	2.114	0.386	0.477	3.894	0.711	564.970	4611.781	841.650
S7	East Broadway, Dorchester St. to L St.	7,900	0.51	4029.0	30	Composite	0.259	2.301	0.420	0.477	4.237	0.773	564.970	5018.330	915.845
S8	East Broadway, East of L St.	5,410	0.10	541.0	30	Composite	0.259	0.309	0.056	0.477	0.569	0.104	564.970	673.844	122.976
S9	East First St., West of L St.	2,750	0.39	1072.5	30	Composite	0.259	0.612	0.112	0.477	1.128	0.206	564.970	1335.855	243.793
S10	East First St., East of L St.	6,880	0.10	688.0	30	Composite	0.259	0.393	0.072	0.477	0.724	0.132	564.970	856.940	156.392
S11	West Fourth St., West of Dorchester Ave.	11,900	0.22	2618.0	30	Composite	0.259	1.495	0.273	0.477	2.753	0.502	564.970	3260.856	595.106
S12	West Fourth St., Dorchester Ave to Dorchester St.	4,030	0.69	2780.7	30	Composite	0.259	1.588	0.290	0.477	2.924	0.534	564.970	3463.507	632.090
S13	West Seventh St., West of Dorchester Ave.	40	0.01	0.4	30	Composite	0.259	0.000	0.000	0.477	0.000	0.000	564.970	0.498	0.091
S14	West Seventh St., East of Dorchester Ave.	1,580	0.20	316.0	30	Composite	0.259	0.180	0.033	0.477	0.332	0.061	564.970	393.594	71.831
S15	Old Colony Road, B St. to Dorchester St.	10,100	0.46	4646.0	30	Composite	0.259	2.653	0.484	0.477	4.886	0.892	564.970	5786.835	1056.097
S16	W. J. Day Blvd, West of L St.	12,040	0.46	5538.4	30	Composite	0.259	3.162	0.577	0.477	5.824	1.063	564.970	6898.366	1258.952
S17	W. J. Day Blvd, East of L St.	6,110	0.10	611.0	30	Composite	0.259	0.349	0.064	0.477	0.643	0.117	564.970	761.032	138.888
S18	Dorchester Ave, North of West Broadway	6,690	0.13	869.7	30	Composite	0.259	0.497	0.091	0.477	0.915	0.167	564.970	1083.257	197.694
S19	Dorchester Ave, West Fourth St. to West Broadway	12,830	0.08	1026.4	30	Composite	0.259	0.586	0.107	0.477	1.079	0.197	564.970	1278.435	233.314
S20	Dorchester Ave., A St. to West Fourth St.	14,230	0.06	853.8	30	Composite	0.259	0.488	0.089	0.477	0.898	0.164	564.970	1063.452	194.080
S21	Dorchester Ave., B St. to A St.	21,620	0.17	3675.4	30	Composite	0.259	2.099	0.383	0.477	3.865	0.705	564.970	4577.902	835.467
S22	Dorchester Ave., D St. to B St./W. Seventh St./Old Colony Rd.	17,200	0.31	5332.0	30	Composite	0.259	3.045	0.556	0.477	5.607	1.023	564.970	6641.284	1212.034
S23	A St., Dorchester Ave. to West Broadway	9,380	0.10	938.0	30	Composite	0.259	0.536	0.098	0.477	0.986	0.180	564.970	1168.328	213.220
S24	A St., West Broadway to West Second St.	14,960	0.10	1496.0	30	Composite	0.259	0.854	0.156	0.477	1.573	0.287	564.970	1863.346	340.061
S25	A St., North of West Second St.	16,680	0.29	4837.2	30	Composite	0.259	2.762	0.504	0.477	5.087	0.928	564.970	6024.985	1099.560
S26	B St., North of West Seventh St/Dorchester Ave/Old Colony Rd.	1,630	0.41	668.3	30	Composite	0.259	0.382	0.070	0.477	0.703	0.128	564.970	832.403	151.913
S27	D St., South of West Broadway	6,490	0.48	3115.2	30	Composite	0.259	1.779	0.325	0.477	3.276	0.598	564.970	3880.144	708.126
S28	D St., North of West Broadway	4,070	0.23	936.1	30	Composite	0.259	0.535	0.098	0.477	0.984	0.180	564.970	1165.961	212.788
S29	Dorchester St., South of West Broadway/East Broadway	11,090	0.46	5101.4	30	Composite	0.259	2.913	0.532	0.477	5.365	0.979	564.970	6354.060	1159.616
S30	Dorchester St., North of West Broadway/East Broadway	5,370	0.16	859.2	30	Composite	0.259	0.491	0.090	0.477	0.904	0.165	564.970	1070.178	195.308
S31	L St, North of East First St	19,620	0.24	4708.8	30	Composite	0.259	2.689	0.491	0.477	4.952	0.904	564.970	5865.056	1070.373
S32	L St., East Broadway to East First St.	14,540	0.17	2471.8	30	Composite	0.259	1.411	0.258	0.477	2.599	0.474	564.970	3078.756	561.873
S33	L St., W.J. Day Blvd to East Broadway	9,690	0.43	4166.7	30	Composite	0.259	2.379	0.434	0.477	4.382	0.800	564.970	5189.842	947.146
	Total	884720.000	17.140	172970.700				98.766	18.025		181.898	33.196		215444.027	39318.535

Notes:

Seaport Square

Mesoscale Analysis
2015 Build Case

	Link	Daily Average Volumes	Miles Per Link	Miles Traveled	Vehicle Speed (mph)	MOBILE6 vehicle class	MOBILE6 VOC (g/mile)	lbs/day	tons/year	MOBILE6 NOX (g/mile)	lbs/day	tons/year	MOBILE6 CO2 (g/mile)	lbs/day	tons/year
N1	Atlantic Ave, North of Moakley Bridge	9,770	0.14	1367.8	30	Composite	0.259	0.781	0.143	0.477	1.438	0.263	564.970	1703.666	310.919
N2	Oliver St, West of Moakley Bridge	15,280	0.13	1986.4	30	Composite	0.259	1.134	0.207	0.477	2.089	0.381	564.970	2474.165	451.535
N3	Atlantic Ave, South of Moakley Bridge	14,300	0.14	2002.0	30	Composite	0.259	1.143	0.209	0.477	2.105	0.384	564.970	2493.595	455.081
N4	Moakley Bridge, Atlantic Ave to Sleeper St.	22,880	0.19	4347.2	30	Composite	0.259	2.482	0.453	0.477	4.572	0.834	564.970	5414.664	988.176
N5	Old Northern Ave, Sleeper St to East Service Road	9,340	0.36	3362.4	30	Composite	0.259	1.920	0.350	0.477	3.536	0.645	564.970	4188.045	764.318
N6	Seaport Blvd, Moakley Bridge to Boston Wharf Rd.	18,770	0.21	3941.7	30	Composite	0.259	2.251	0.411	0.477	4.145	0.756	564.970	4909.593	896.001
N7	Seaport Blvd, Boston Wharf Rd. to East Service Rd.	17,790	0.10	1779.0	30	Composite	0.259	1.016	0.185	0.477	1.871	0.341	564.970	2215.837	404.390
N8	Seaport Blvd, East Service Rd. to B. St	22,520	0.07	1576.4	30	Composite	0.259	0.900	0.164	0.477	1.658	0.303	564.970	1963.488	358.337
N9	Seaport Blvd, B St. to D St. SB	17,810	0.19	3383.9	30	Composite	0.259	1.932	0.353	0.477	3.559	0.649	564.970	4214.824	769.205
N10	Northern Ave, East of D St.	11,140	0.21	2339.4	30	Composite	0.259	1.336	0.244	0.477	2.460	0.449	564.970	2913.845	531.777
N11	Congress St., Atlantic Ave to Dorchester Ave.	13,090	0.12	1570.8	30	Composite	0.259	0.897	0.164	0.477	1.652	0.301	564.970	1956.513	357.064
N12	Congress St., Dorchester Ave to A St.	13,090	0.24	3141.6	30	Composite	0.259	1.794	0.327	0.477	3.304	0.603	564.970	3913.027	714.127
N13	Congress St., A St./Thompson Pl. to West Service Rd/Boston Wharf Rd.	14,000	0.09	1260.0	30	Composite	0.259	0.719	0.131	0.477	1.325	0.242	564.970	1569.396	286.415
N14	Congress St., West Service Rd/Boston Wharf Rd. to Offramps/East Service Rd.	15,450	0.10	1545.0	30	Composite	0.259	0.882	0.161	0.477	1.625	0.297	564.970	1924.378	351.199
N15	Congress St., Offramps/East Service Rd. to B St./Onramps	18,570	0.09	1671.3	30	Composite	0.259	0.954	0.174	0.477	1.758	0.321	564.970	2081.691	379.909
N16	Congress St., B St./Onramps to D St.	21,680	0.19	4119.2	30	Composite	0.259	2.352	0.429	0.477	4.332	0.791	564.970	5130.678	936.349
N17	Congress St., East of D. St.	8,170	0.13	1062.1	30	Composite	0.259	0.606	0.111	0.477	1.117	0.204	564.970	1322.901	241.429
N18	Silver Line, West of D. St	800	0.09	72.0	30	Composite	0.259	0.041	0.008	0.477	0.076	0.014	564.970	89.680	16.367
N19	Silver Line, East of D St.	670	0.11	73.7	30	Composite	0.259	0.042	0.008	0.477	0.078	0.014	564.970	91.797	16.753
N20	Summer St., Atlantic Ave to Dorchester Ave.	17,850	0.15	2677.5	30	Composite	0.259	1.529	0.279	0.477	2.816	0.514	564.970	3334.966	608.631
N21	Summer St., Dorchester Ave. to Melcher St.	20,540	0.12	2464.8	30	Composite	0.259	1.407	0.257	0.477	2.592	0.473	564.970	3070.037	560.282
N22	Summer St., Melcher St. to East Side Dr.	18,710	0.44	8232.4	30	Composite	0.259	4.701	0.858	0.477	8.657	1.580	564.970	10253.884	1871.334
N23	Summer St., East Side Dr. to D St.	19,660	0.10	1966.0	30	Composite	0.259	1.123	0.205	0.477	2.067	0.377	564.970	2448.756	446.898
N24	Summer St., D St. to Pappas Way/Drydock Ave.	18,270	0.22	4019.4	30	Composite	0.259	2.295	0.419	0.477	4.227	0.771	564.970	5006.372	913.663
N25	Summer St., East of Pappas Way/Drydock Ave.	19,620	0.25	4905.0	30	Composite	0.259	2.801	0.511	0.477	5.158	0.941	564.970	6109.433	1114.972
N26	Melcher St., Summer St. to A St.	12,490	0.14	1748.6	30	Composite	0.259	0.998	0.182	0.477	1.839	0.336	564.970	2177.972	397.480
N27	Melcher St., East of A. St.	1,430	0.05	71.5	30	Composite	0.259	0.041	0.007	0.477	0.075	0.014	564.970	89.057	16.253
N28	Dorchester Ave., South of Summer St.	2,700	0.34	918.0	30	Composite	0.259	0.524	0.096	0.477	0.965	0.176	564.970	1143.417	208.674
N29	Dorchester Ave., Summer St. to Congress St.	7,590	0.08	607.2	30	Composite	0.259	0.347	0.063	0.477	0.639	0.117	564.970	756.299	138.025
N30	Sleeper St., Congress St. to Seaport Blvd.	4,700	0.15	705.0	30	Composite	0.259	0.403	0.073	0.477	0.741	0.135	564.970	878.114	160.256
N31	A St., South of Melcher St.	15,480	0.25	3870.0	30	Composite	0.259	2.210	0.403	0.477	4.070	0.743	564.970	4820.287	879.702
N32	A St., Melcher St. to Congress St.	13,140	0.11	1445.4	30	Composite	0.259	0.825	0.151	0.477	1.520	0.277	564.970	1800.321	328.559
N33	Thomson Pl., Congress St. to Seaport Blvd.	5,050	0.17	858.5	30	Composite	0.259	0.490	0.089	0.477	0.903	0.165	564.970	1069.307	195.148
N34	West Service Rd., South of Congress St.	15,330	0.25	3832.5	30	Composite	0.259	2.188	0.399	0.477	4.030	0.736	564.970	4773.579	871.178
N35	Boston Wharf Rd, Congress St. to Seaport Blvd.	7,600	0.18	1368.0	30	Composite	0.259	0.781	0.143	0.477	1.439	0.263	564.970	1703.915	310.965
N36	Offramp C (from I-90 EB)	8,320	0.18	1497.6	30	Composite	0.259	0.855	0.156	0.477	1.575	0.287	564.970	1865.339	340.424
N37	Offramp I (from I-93 NB)	7,690	0.11	845.9	30	Composite	0.259	0.483	0.088	0.477	0.890	0.162	564.970	1053.613	192.284
N38	East Service Rd, Congress St. to Seaport Blvd.	10,280	0.15	1542.0	30	Composite	0.259	0.880	0.161	0.477	1.622	0.296	564.970	1920.641	350.517
N39	Onramp D (to I-93)	14,400	0.11	1584.0	30	Composite	0.259	0.904	0.165	0.477	1.666	0.304	564.970	1972.955	360.064
N40	Offramp F (from I-90 WB)	14,620	0.08	1169.6	30	Composite	0.259	0.668	0.122	0.477	1.230	0.224	564.970	1456.798	265.866
N41	B St., Congress St. to Seaport Blvd.	9,270	0.09	834.3	30	Composite	0.259	0.476	0.087	0.477	0.877	0.160	564.970	1039.164	189.647
N42	East Side Dr., South of Summer St.	2,050	0.09	184.5	30	Composite	0.259	0.105	0.019	0.477	0.194	0.035	564.970	229.804	41.939
N43	World Trade Center Ave, North of Summer St.	2,850	0.24	684.0	30	Composite	0.259	0.391	0.071	0.477	0.719	0.131	564.970	851.958	155.482
N44	D St., South of Summer St.	10,770	0.45	4846.5	30	Composite	0.259	2.767	0.505	0.477	5.097	0.930	564.970	6036.568	1101.674
N45	D St., Summer St to Silver Line	19,930	0.12	2391.6	30	Composite	0.259	1.366	0.249	0.477	2.515	0.459	564.970	2978.863	543.642
N46	D St., Silver Line to Congress St.	19,670	0.04	786.8	30	Composite	0.259	0.449	0.082	0.477	0.827	0.151	564.970	980.000	178.850
N47	D St., SB Congress St to Seaport Blvd.	9,200	0.09	828.0	30	Composite	0.259	0.473	0.086	0.477	0.871	0.159	564.970	1031.317	188.215
N48	D St., NB Congress St to Seaport Blvd.	6,580	0.09	592.2	30	Composite	0.259	0.338	0.062	0.477	0.623	0.114	564.970	737.616	134.615
N49	D St., North from Seaport Blvd. (Fish Pier St. E)	1,520	0.06	91.2	30	Composite	0.259	0.052	0.010	0.477	0.096	0.018	564.970	113.594	20.731
N50	Pappas Way, South of Summer St.	2,720	0.29	788.8	30	Composite	0.259	0.450	0.082	0.477	0.830	0.151	564.970	982.492	179.305
N51	Drydock Ave, North of Summer St.	7,970	0.12	956.4	30	Composite	0.259	0.546	0.100	0.477	1.006	0.184	564.970	1191.246	217.402
N52	Onramp to I-93 NB from Atlantic Ave/Seaport Blvd.	15,680	0.09	1411.2	30	Composite	0.259	0.806	0.147	0.477	1.484	0.271	564.970	1757.723	320.784

Seaport Square

Mesoscale Analysis
2015 Build Case

	Link	Daily Average Volumes	Miles Per Link	Miles Traveled	Vehicle Speed (mph)	MOBILE6 vehicle class	MOBILE6 VOC (g/mile)	lbs/day	tons/year	MOBILE6 NOX (g/mile)	lbs/day	tons/year	MOBILE6 CO2 (g/mile)	lbs/day	tons/year
S1	West Second St, Dorchester Ave. to A St.	3,900	0.15	585.0	30	Composite	0.259	0.334	0.061	0.477	0.615	0.112	564.970	728.648	132.978
S2	West Second St., A St.to Dorchester St.	4,750	0.68	3230.0	30	Composite	0.259	1.844	0.337	0.477	3.397	0.620	564.970	4023.133	734.222
S3	West Broadway, West of Dorchester Ave	18,720	0.19	3556.8	30	Composite	0.259	2.031	0.371	0.477	3.740	0.683	564.970	4430.180	808.508
S4	West Broadway, Dorchester Ave. to A St.	9,090	0.11	999.9	30	Composite	0.259	0.571	0.104	0.477	1.052	0.192	564.970	1245.428	227.291
S5	West Broadway, A St. to D St.	10,890	0.31	3375.9	30	Composite	0.259	1.928	0.352	0.477	3.550	0.648	564.970	4204.860	767.387
S6	West Broadway, D St. to Dorchester St.	9,770	0.34	3321.8	30	Composite	0.259	1.897	0.346	0.477	3.493	0.638	564.970	4137.475	755.089
S7	East Broadway, Dorchester St. to L St.	9,140	0.51	4661.4	30	Composite	0.259	2.662	0.486	0.477	4.902	0.895	564.970	5806.017	1059.598
S8	East Broadway, East of L St.	5,460	0.10	546.0	30	Composite	0.259	0.312	0.057	0.477	0.574	0.105	564.970	680.071	124.113
S9	East First St., West of L St.	2,750	0.39	1072.5	30	Composite	0.259	0.612	0.112	0.477	1.128	0.206	564.970	1335.855	243.793
S10	East First St., East of L St.	6,870	0.10	687.0	30	Composite	0.259	0.392	0.072	0.477	0.722	0.132	564.970	855.694	156.164
S11	West Fourth St., West of Dorchester Ave.	11,680	0.22	2569.6	30	Composite	0.259	1.467	0.268	0.477	2.702	0.493	564.970	3200.571	584.104
S12	West Fourth St., Dorchester Ave to Dorchester St.	3,830	0.69	2642.7	30	Composite	0.259	1.509	0.275	0.477	2.779	0.507	564.970	3291.621	600.721
S13	West Seventh St., West of Dorchester Ave.	40	0.01	0.4	30	Composite	0.259	0.000	0.000	0.477	0.000	0.000	564.970	0.498	0.091
S14	West Seventh St., East of Dorchester Ave.	1,580	0.20	316.0	30	Composite	0.259	0.180	0.033	0.477	0.332	0.061	564.970	393.594	71.831
S15	Old Colony Road, B St. to Dorchester St.	10,100	0.46	4646.0	30	Composite	0.259	2.653	0.484	0.477	4.886	0.892	564.970	5786.835	1056.097
S16	W. J. Day Blvd, West of L St.	12,220	0.46	5621.2	30	Composite	0.259	3.210	0.586	0.477	5.911	1.079	564.970	7001.498	1277.773
S17	W. J. Day Blvd, East of L St.	6,110	0.10	611.0	30	Composite	0.259	0.349	0.064	0.477	0.643	0.117	564.970	761.032	138.888
S18	Dorchester Ave, North of West Broadway	7,160	0.13	930.8	30	Composite	0.259	0.531	0.097	0.477	0.979	0.179	564.970	1159.360	211.583
S19	Dorchester Ave, West Fourth St. to West Broadway	13,360	0.08	1068.8	30	Composite	0.259	0.610	0.111	0.477	1.124	0.205	564.970	1331.246	242.952
S20	Dorchester Ave., A St. to West Fourth St.	15,240	0.06	914.4	30	Composite	0.259	0.522	0.095	0.477	0.962	0.175	564.970	1138.933	207.855
S21	Dorchester Ave., B St. to A St.	22,970	0.17	3904.9	30	Composite	0.259	2.230	0.407	0.477	4.106	0.749	564.970	4863.757	887.636
S22	Dorchester Ave., D St. to B St./W. Seventh St./Old Colony Rd.	17,670	0.31	5477.7	30	Composite	0.259	3.128	0.571	0.477	5.760	1.051	564.970	6822.761	1245.154
S23	A St., Dorchester Ave. to West Broadway	12,230	0.10	1223.0	30	Composite	0.259	0.698	0.127	0.477	1.286	0.235	564.970	1523.310	278.004
S24	A St., West Broadway to West Second St.	15,720	0.10	1572.0	30	Composite	0.259	0.898	0.164	0.477	1.653	0.302	564.970	1958.008	357.336
S25	A St., North of West Second St.	17,620	0.29	5109.8	30	Composite	0.259	2.918	0.532	0.477	5.374	0.981	564.970	6364.522	1161.525
S26	B St., North of West Seventh St/Dorchester Ave/Old Colony Rd.	2,230	0.41	914.3	30	Composite	0.259	0.522	0.095	0.477	0.961	0.175	564.970	1138.808	207.833
S27	D St., South of West Broadway	6,350	0.48	3048.0	30	Composite	0.259	1.740	0.318	0.477	3.205	0.585	564.970	3796.443	692.851
S28	D St., North of West Broadway	3,930	0.23	903.9	30	Composite	0.259	0.516	0.094	0.477	0.951	0.173	564.970	1125.855	205.468
S29	Dorchester St., South of West Broadway/East Broadway	11,090	0.46	5101.4	30	Composite	0.259	2.913	0.532	0.477	5.365	0.979	564.970	6354.060	1159.616
S30	Dorchester St., North of West Broadway/East Broadway	5,370	0.16	859.2	30	Composite	0.259	0.491	0.090	0.477	0.904	0.165	564.970	1070.178	195.308
S31	L St, North of East First St	19,860	0.24	4766.4	30	Composite	0.259	2.722	0.497	0.477	5.012	0.915	564.970	5936.800	1083.466
S32	L St., East Broadway to East First St.	15,510	0.17	2636.7	30	Composite	0.259	1.506	0.275	0.477	2.773	0.506	564.970	3284.147	599.357
S33	L St., W.J. Day Blvd to East Broadway	12,290	0.43	5284.7	30	Composite	0.259	3.018	0.551	0.477	5.557	1.014	564.970	6582.369	1201.282
	Total	954300.000	17.140	183485.500				104.770	19.121		192.955	35.214		228540.759	41708.689

Notes:

Seaport Square

Mesoscale Analysis
2015 Build with Mitigation Case

	Link	Daily Average Volumes	Miles Per Link	Miles Traveled	Vehicle Speed (mph)	MOBILE6 vehicle class	MOBILE6 VOC (g/mile)	lbs/day	tons/year	MOBILE6 NOX (g/mile)	lbs/day	tons/year	MOBILE6 CO2 (g/mile)	lbs/day	tons/year
N1	Atlantic Ave, North of Moakley Bridge	9,770	0.14	1367.8	30	Composite	0.259	0.781	0.143	0.477	1.438	0.263	564.970	1703.666	310.919
N2	Oliver St, West of Moakley Bridge	15,280	0.13	1986.4	30	Composite	0.259	1.134	0.207	0.477	2.089	0.381	564.970	2474.165	451.535
N3	Atlantic Ave, South of Moakley Bridge	14,300	0.14	2002.0	30	Composite	0.259	1.143	0.209	0.477	2.105	0.384	564.970	2493.595	455.081
N4	Moakley Bridge, Atlantic Ave to Sleeper St.	22,880	0.19	4347.2	30	Composite	0.259	2.482	0.453	0.477	4.572	0.834	564.970	5414.664	988.176
N5	Old Northern Ave, Sleeper St to East Service Road	9,340	0.36	3362.4	30	Composite	0.259	1.920	0.350	0.477	3.536	0.645	564.970	4188.045	764.318
N6	Seaport Blvd, Moakley Bridge to Boston Wharf Rd.	18,770	0.21	3941.7	30	Composite	0.259	2.251	0.411	0.477	4.145	0.756	564.970	4909.593	896.001
N7	Seaport Blvd, Boston Wharf Rd. to East Service Rd.	17,790	0.10	1779.0	30	Composite	0.259	1.016	0.185	0.477	1.871	0.341	564.970	2215.837	404.390
N8	Seaport Blvd, East Service Rd. to B. St	22,520	0.07	1576.4	30	Composite	0.259	0.900	0.164	0.477	1.658	0.303	564.970	1963.488	358.337
N9	Seaport Blvd, B St. to D St. SB	17,810	0.19	3383.9	30	Composite	0.259	1.932	0.353	0.477	3.559	0.649	564.970	4214.824	769.205
N10	Northern Ave, East of D St.	11,140	0.21	2339.4	30	Composite	0.259	1.336	0.244	0.477	2.460	0.449	564.970	2913.845	531.777
N11	Congress St., Atlantic Ave to Dorchester Ave.	13,090	0.12	1570.8	30	Composite	0.259	0.897	0.164	0.477	1.652	0.301	564.970	1956.513	357.064
N12	Congress St., Dorchester Ave to A St.	13,090	0.24	3141.6	30	Composite	0.259	1.794	0.327	0.477	3.304	0.603	564.970	3913.027	714.127
N13	Congress St., A St./Thompson Pl. to West Service Rd/Boston Wharf Rd.	14,000	0.09	1260.0	30	Composite	0.259	0.719	0.131	0.477	1.325	0.242	564.970	1569.396	286.415
N14	Congress St., West Service Rd/Boston Wharf Rd. to Offramps/East Service Rd.	15,450	0.10	1545.0	30	Composite	0.259	0.882	0.161	0.477	1.625	0.297	564.970	1924.378	351.199
N15	Congress St., Offramps/East Service Rd. to B St./Onramps	18,570	0.09	1671.3	30	Composite	0.259	0.954	0.174	0.477	1.758	0.321	564.970	2081.691	379.909
N16	Congress St., B St./Onramps to D St.	21,680	0.19	4119.2	30	Composite	0.259	2.352	0.429	0.477	4.332	0.791	564.970	5130.678	936.349
N17	Congress St., East of D. St.	8,170	0.13	1062.1	30	Composite	0.259	0.606	0.111	0.477	1.117	0.204	564.970	1322.901	241.429
N18	Silver Line, West of D. St	800	0.09	72.0	30	Composite	0.259	0.041	0.008	0.477	0.076	0.014	564.970	89.680	16.367
N19	Silver Line, East of D St.	670	0.11	73.7	30	Composite	0.259	0.042	0.008	0.477	0.078	0.014	564.970	91.797	16.753
N20	Summer St., Atlantic Ave to Dorchester Ave.	17,850	0.15	2677.5	30	Composite	0.259	1.529	0.279	0.477	2.816	0.514	564.970	3334.966	608.631
N21	Summer St., Dorchester Ave. to Melcher St.	20,540	0.12	2464.8	30	Composite	0.259	1.407	0.257	0.477	2.592	0.473	564.970	3070.037	560.282
N22	Summer St., Melcher St. to East Side Dr.	18,710	0.44	8232.4	30	Composite	0.259	4.701	0.858	0.477	8.657	1.580	564.970	10253.884	1871.334
N23	Summer St., East Side Dr. to D St.	19,660	0.10	1966.0	30	Composite	0.259	1.123	0.205	0.477	2.067	0.377	564.970	2448.756	446.898
N24	Summer St., D St. to Pappas Way/Drydock Ave.	18,270	0.22	4019.4	30	Composite	0.259	2.295	0.419	0.477	4.227	0.771	564.970	5006.372	913.663
N25	Summer St., East of Pappas Way/Drydock Ave.	19,620	0.25	4905.0	30	Composite	0.259	2.801	0.511	0.477	5.158	0.941	564.970	6109.433	1114.972
N26	Melcher St., Summer St. to A St.	12,490	0.14	1748.6	30	Composite	0.259	0.998	0.182	0.477	1.839	0.336	564.970	2177.972	397.480
N27	Melcher St., East of A. St.	1,430	0.05	71.5	30	Composite	0.259	0.041	0.007	0.477	0.075	0.014	564.970	89.057	16.253
N28	Dorchester Ave., South of Summer St.	2,700	0.34	918.0	30	Composite	0.259	0.524	0.096	0.477	0.965	0.176	564.970	1143.417	208.674
N29	Dorchester Ave., Summer St. to Congress St.	7,590	0.08	607.2	30	Composite	0.259	0.347	0.063	0.477	0.639	0.117	564.970	756.299	138.025
N30	Sleeper St., Congress St. to Seaport Blvd.	4,700	0.15	705.0	30	Composite	0.259	0.403	0.073	0.477	0.741	0.135	564.970	878.114	160.256
N31	A St., South of Melcher St.	15,480	0.25	3870.0	30	Composite	0.259	2.210	0.403	0.477	4.070	0.743	564.970	4820.287	879.702
N32	A St., Melcher St. to Congress St.	13,140	0.11	1445.4	30	Composite	0.259	0.825	0.151	0.477	1.520	0.277	564.970	1800.321	328.559
N33	Thomson Pl., Congress St. to Seaport Blvd.	5,050	0.17	858.5	30	Composite	0.259	0.490	0.089	0.477	0.903	0.165	564.970	1069.307	195.148
N34	West Service Rd., South of Congress St.	15,330	0.25	3832.5	30	Composite	0.259	2.188	0.399	0.477	4.030	0.736	564.970	4773.579	871.178
N35	Boston Wharf Rd, Congress St. to Seaport Blvd.	7,600	0.18	1368.0	30	Composite	0.259	0.781	0.143	0.477	1.439	0.263	564.970	1703.915	310.965
N36	Offramp C (from I-90 EB)	8,320	0.18	1497.6	30	Composite	0.259	0.855	0.156	0.477	1.575	0.287	564.970	1865.339	340.424
N37	Offramp I (from I-93 NB)	7,690	0.11	845.9	30	Composite	0.259	0.483	0.088	0.477	0.890	0.162	564.970	1053.613	192.284
N38	East Service Rd, Congress St. to Seaport Blvd.	10,280	0.15	1542.0	30	Composite	0.259	0.880	0.161	0.477	1.622	0.296	564.970	1920.641	350.517
N39	Onramp D (to I-93)	14,400	0.11	1584.0	30	Composite	0.259	0.904	0.165	0.477	1.666	0.304	564.970	1972.955	360.064
N40	Offramp F (from I-90 WB)	14,620	0.08	1169.6	30	Composite	0.259	0.668	0.122	0.477	1.230	0.224	564.970	1456.798	265.866
N41	B St., Congress St. to Seaport Blvd.	9,270	0.09	834.3	30	Composite	0.259	0.476	0.087	0.477	0.877	0.160	564.970	1039.164	189.647
N42	East Side Dr., South of Summer St.	2,050	0.09	184.5	30	Composite	0.259	0.105	0.019	0.477	0.194	0.035	564.970	229.804	41.939
N43	World Trade Center Ave, North of Summer St.	2,850	0.24	684.0	30	Composite	0.259	0.391	0.071	0.477	0.719	0.131	564.970	851.958	155.482
N44	D St., South of Summer St.	10,770	0.45	4846.5	30	Composite	0.259	2.767	0.505	0.477	5.097	0.930	564.970	6036.568	1101.674
N45	D St., Summer St to Silver Line	19,930	0.12	2391.6	30	Composite	0.259	1.366	0.249	0.477	2.515	0.459	564.970	2978.863	543.642
N46	D St., Silver Line to Congress St.	19,670	0.04	786.8	30	Composite	0.259	0.449	0.082	0.477	0.827	0.151	564.970	980.000	178.850
N47	D St., SB Congress St to Seaport Blvd.	9,200	0.09	828.0	30	Composite	0.259	0.473	0.086	0.477	0.871	0.159	564.970	1031.317	188.215
N48	D St., NB Congress St to Seaport Blvd.	6,580	0.09	592.2	30	Composite	0.259	0.338	0.062	0.477	0.623	0.114	564.970	737.616	134.615
N49	D St., North from Seaport Blvd. (Fish Pier St. E)	1,520	0.06	91.2	30	Composite	0.259	0.052	0.010	0.477	0.096	0.018	564.970	113.594	20.731
N50	Pappas Way, South of Summer St.	2,720	0.29	788.8	30	Composite	0.259	0.450	0.082	0.477	0.830	0.151	564.970	982.492	179.305
N51	Drydock Ave, North of Summer St.	7,970	0.12	956.4	30	Composite	0.259	0.546	0.100	0.477	1.006	0.184	564.970	1191.246	217.402
N52	Onramp to I-93 NB from Atlantic Ave/Seaport Blvd.	15,680	0.09	1411.2	30	Composite	0.259	0.806	0.147	0.477	1.484	0.271	564.970	1757.723	320.784

Seaport Square

Mesoscale Analysis
2015 Build with Mitigation Case

	Link	Daily Average Volumes	Miles Per Link	Miles Traveled	Vehicle Speed (mph)	MOBILE6 vehicle class	MOBILE6 VOC (g/mile)	lbs/day	tons/year	MOBILE6 NOX (g/mile)	lbs/day	tons/year	MOBILE6 CO2 (g/mile)	lbs/day	tons/year
S1	**West Second St, Dorchester Ave. to A St.**	3,900	0.15	585.0	30	Composite	0.259	0.334	0.061	0.477	0.615	0.112	564.970	728.648	132.978
S2	**West Second St., A St.to Dorchester St.**	4,750	0.68	3230.0	30	Composite	0.259	1.844	0.337	0.477	3.397	0.620	564.970	4023.133	734.222
S3	**West Broadway, West of Dorchester Ave**	18,720	0.19	3556.8	30	Composite	0.259	2.031	0.371	0.477	3.740	0.683	564.970	4430.180	808.508
S4	**West Broadway, Dorchester Ave. to A St.**	9,090	0.11	999.9	30	Composite	0.259	0.571	0.104	0.477	1.052	0.192	564.970	1245.428	227.291
S5	**West Broadway, A St. to D St.**	10,890	0.31	3375.9	30	Composite	0.259	1.928	0.352	0.477	3.550	0.648	564.970	4204.860	767.387
S6	**West Broadway, D St. to Dorchester St.**	9,770	0.34	3321.8	30	Composite	0.259	1.897	0.346	0.477	3.493	0.638	564.970	4137.475	755.089
S7	**East Broadway, Dorchester St. to L St.**	9,140	0.51	4661.4	30	Composite	0.259	2.662	0.486	0.477	4.902	0.895	564.970	5806.017	1059.598
S8	**East Broadway, East of L St.**	5,460	0.10	546.0	30	Composite	0.259	0.312	0.057	0.477	0.574	0.105	564.970	680.071	124.113
S9	**East First St., West of L St.**	2,750	0.39	1072.5	30	Composite	0.259	0.612	0.112	0.477	1.128	0.206	564.970	1335.855	243.793
S10	**East First St., East of L St.**	6,870	0.10	687.0	30	Composite	0.259	0.392	0.072	0.477	0.722	0.132	564.970	855.694	156.164
S11	**West Fourth St., West of Dorchester Ave.**	11,680	0.22	2569.6	30	Composite	0.259	1.467	0.268	0.477	2.702	0.493	564.970	3200.571	584.104
S12	**West Fourth St., Dorchester Ave to Dorchester St.**	3,830	0.69	2642.7	30	Composite	0.259	1.509	0.275	0.477	2.779	0.507	564.970	3291.621	600.721
S13	**West Seventh St., West of Dorchester Ave.**	40	0.01	0.4	30	Composite	0.259	0.000	0.000	0.477	0.000	0.000	564.970	0.498	0.091
S14	**West Seventh St., East of Dorchester Ave.**	1,580	0.20	316.0	30	Composite	0.259	0.180	0.033	0.477	0.332	0.061	564.970	393.594	71.831
S15	**Old Colony Road, B St. to Dorchester St.**	10,100	0.46	4646.0	30	Composite	0.259	2.653	0.484	0.477	4.886	0.892	564.970	5786.835	1056.097
S16	**W. J. Day Blvd, West of L St.**	12,220	0.46	5621.2	30	Composite	0.259	3.210	0.586	0.477	5.911	1.079	564.970	7001.498	1277.773
S17	**W. J. Day Blvd, East of L St.**	6,110	0.10	611.0	30	Composite	0.259	0.349	0.064	0.477	0.643	0.117	564.970	761.032	138.888
S18	**Dorchester Ave, North of West Broadway**	7,160	0.13	930.8	30	Composite	0.259	0.531	0.097	0.477	0.979	0.179	564.970	1159.360	211.583
S19	**Dorchester Ave, West Fourth St. to West Broadway**	13,360	0.08	1068.8	30	Composite	0.259	0.610	0.111	0.477	1.124	0.205	564.970	1331.246	242.952
S20	**Dorchester Ave., A St. to West Fourth St.**	15,240	0.06	914.4	30	Composite	0.259	0.522	0.095	0.477	0.962	0.175	564.970	1138.933	207.855
S21	**Dorchester Ave., B St. to A St.**	22,970	0.17	3904.9	30	Composite	0.259	2.230	0.407	0.477	4.106	0.749	564.970	4863.757	887.636
S22	**Dorchester Ave., D St. to B St./W. Seventh St./Old Colony Rd.**	17,670	0.31	5477.7	30	Composite	0.259	3.128	0.571	0.477	5.760	1.051	564.970	6822.761	1245.154
S23	**A St., Dorchester Ave. to West Broadway**	12,230	0.10	1223.0	30	Composite	0.259	0.698	0.127	0.477	1.286	0.235	564.970	1523.310	278.004
S24	**A St., West Broadway to West Second St.**	15,720	0.10	1572.0	30	Composite	0.259	0.898	0.164	0.477	1.653	0.302	564.970	1958.008	357.336
S25	**A St., North of West Second St.**	17,620	0.29	5109.8	30	Composite	0.259	2.918	0.532	0.477	5.374	0.981	564.970	6364.522	1161.525
S26	**B St., North of West Seventh St/Dorchester Ave/Old Colony Rd.**	2,230	0.41	914.3	30	Composite	0.259	0.522	0.095	0.477	0.961	0.175	564.970	1138.808	207.833
S27	**D St., South of West Broadway**	6,350	0.48	3048.0	30	Composite	0.259	1.740	0.318	0.477	3.205	0.585	564.970	3796.443	692.851
S28	**D St., North of West Broadway**	3,930	0.23	903.9	30	Composite	0.259	0.516	0.094	0.477	0.951	0.173	564.970	1125.855	205.468
S29	**Dorchester St., South of West Broadway/East Broadway**	11,090	0.46	5101.4	30	Composite	0.259	2.913	0.532	0.477	5.365	0.979	564.970	6354.060	1159.616
S30	**Dorchester St., North of West Broadway/East Broadway**	5,370	0.16	859.2	30	Composite	0.259	0.491	0.090	0.477	0.904	0.165	564.970	1070.178	195.308
S31	**L St, North of East First St**	19,860	0.24	4766.4	30	Composite	0.259	2.722	0.497	0.477	5.012	0.915	564.970	5936.800	1083.466
S32	**L St., East Broadway to East First St.**	15,510	0.17	2636.7	30	Composite	0.259	1.506	0.275	0.477	2.773	0.506	564.970	3284.147	599.357
S33	**L St., W.J. Day Blvd to East Broadway**	12,290	0.43	5284.7	30	Composite	0.259	3.018	0.551	0.477	5.557	1.014	564.970	6582.369	1201.282
	Total	954300.000	17.140	183485.500				104.770	19.121		192.955	35.214		228540.759	41708.689

Notes:

Dispersion Modeling Input/Output

Available on digital media upon request.

APPENDIX I CIRCULATION LIST

Federal Aviation Administration
New England Region, Airports Division
12 New England Executive Park
Burlington, MA 01803

Secretary Ian A. Bowles
Executive Office of Energy and
Environmental Affairs
Attn: MEPA Office
100 Cambridge Street, Suite 900
Boston, MA 02114

Undersecretary for Policy
100 Cambridge Street, Suite 900
Boston, MA 02114

Department of Environmental Protection
Attn: Commissioner's Office
One Winter Street
Boston, MA 02108

Department of Environmental Protection
Andrea Langhauser, Waterways Department
One Winter Street
Boston, MA 02108

Department of Environmental Protection
Division of Water Pollution
One Winter Street
Boston, MA 02108

Department of Environmental Protection
Division of Water Pollution Control
One Winter Street
Boston, MA 02108

Department of Environmental Protection
Division of Air Quality Control
One Winter Street
Boston, MA 02108

Department of Environmental Protection
Northeast Regional Office
Attn: MEPA Coordinator
205B Lowell Street
Wilmington, MA 01887

Department of Environmental Protection
Attn: Nancy Seidman
One Winter Street
Boston, MA 02114

Department of Environmental Protection
Jerome Grafe
One Winter Street
Boston, MA 02108

Department of Energy Resources
Attn: John Ballam
100 Cambridge Street, Suite 1020
Boston, MA 02114

Department of Energy Resources
Meg Lusardi
100 Cambridge Street, Suite 1020
Boston, MA

Executive Office of Transportation
Attn: Environmental Reviewer
10 Park Plaza, Room 3510
Boston, MA 02116-3969

Massachusetts Highway Department
Public/Private Development Unit
10 Park Plaza
Boston, MA 02116

Massachusetts Highway Department
MHD – District #4
Attn: MEPA Coordinator
519 Appleton Street
Arlington, MA 02174

Massachusetts Aeronautics Commission
Attn: MEPA Coordinator
10 Park Plaza, Room 3510
Boston, MA 02116

Massachusetts Historical Commission
The MA Archives Building
220 Morrissey Boulevard
Boston, MA 02125

Metropolitan Area Planning Council
60 Temple Place, 6th Floor
Boston, MA 02111

Office of Coastal Zone Management
Attn: Project Review Coordinator
251 Causeway Street, Suite 500
Boston, MA 02114

Office of Coastal Zone Management
Brad Washburn
Boston Harbor Regional Coordinator
251 Causeway Street, Suite 500
Boston, MA 02114

Division of Marine Fisheries
Attn: Environmental Reviewer
30 Emerson Avenue
Gloucester, MA 01930

Department of Conservation and Recreation
Division of Urban Parks
Attn: MEPA Coordinator
251 Causeway Street, Suite 600
Boston, MA 02114

Massachusetts Bay Transit Authority
Attn: MEPA Coordinator
10 Park Plaza, 6th Floor
Boston, MA 02216-3966

Massachusetts Water Resource Authority
Attn: MEPA Coordinator
100 First Avenue
Charlestown Navy Yard
Boston, MA 02129

Department of Public Health (DPH)
Director of Environmental Health
250 Washington Street
Boston, MA 02115

Massachusetts Port Authority
James P. Doolin
One Harborside Drive, Suite 200S
East Boston, MA 02128

Boston Redevelopment Authority
Attn: John Palmieri, Director
One City Hall Plaza, 9th Floor
Boston, MA 02201

Boston Conservation Commission
Boston Environment Department
One City Hall Plaza, Room 805
Boston, MA 02201

Boston Public Health Commission
Attn: John M. Auerbach Executive Director
1010 Massachusetts Avenue
Boston, MA 02118

Boston Water and Sewer Commission
Attn: MEPA Reviewer
980 Harrison Avenue
Boston, MA 02119

Boston Parks and Recreation Department
Attn: Aldo Ghirin
1010 Massachusetts Avenue, 3rd Floor
Boston, MA 02118

Boston Environment Department
One City Hall Square, Room 805
Boston, MA 02201

Boston Transportation Department
One City Hall Plaza, Room 721
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Boston Groundwater Trust
Elliott Laffer, Executive Director
234 Clarendon Street, Third Floor
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Boston City Council
Attn: Maureen Feeney, President
One City Hall Plaza, 5th Floor
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State House
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Representative Brian Wallace
State House
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