LANDMARK CENTER REDEVELOPMENT

Expanded Project Notification Form

PREPARED BY

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In association with:
Elkus Manfredi Architects
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SUBMITTED TO

Boston Redevelopment Authority
Boston, MA

PROPONENT

Fenway Enterprises LLC
a Samuels & Associates Entity
333 Newbury Street
Boston, MA 02115

October 2013

October 4, 2013

Peter Meade, Director
Boston Redevelopment Authority
One City Hall Square
Boston, Massachusetts 02201

Re: Landmark Center Redevelopment Project

Dear Mr. Meade:

On behalf of Landmark Center Venture LLC, Fenway Enterprises LLC (a Samuels & Associates affiliated entity) is pleased to submit this Expanded Project Notification Form for the proposed mixed-use redevelopment of a portion of the Landmark Center located at 201 Brookline Avenue (the "Project").

The Project, located at the intersection of Brookline Avenue and Park Drive, within the Brookline Avenue Community Commercial Subdistrict of the Fenway Neighborhood Zoning District (the "Project Site"), presents a unique opportunity to further advance the planning goals established by the community and the City as part of the Fenway rezoning effort. Redevelopment of Landmark Center represents an important step in the continued 'place-making' efforts in the Fenway neighborhood.

The Project will build on Samuels' previous work in the Fenway neighborhood and contribute to the neighborhood's planning vision for a diverse urban village by creating a destination Wegmans food market at the base of the building, dramatically increasing the high quality publicly accessible open space on the Project Site, providing new housing and unique retail opportunities, and revitalizing a large-scale existing office building and transforming it into a modern employment hub. With the demolition of the existing above-grade garage and the planned conversion of surface parking to open space, the Project will not only create new open space, but will create pathways through the building and improve the pedestrian experience along well traveled routes between the neighborhood and the MBTA station. These changes will dramatically enhance the Fenway's position as a vibrant mixed-use district.

The Project consists of the demolition of the existing freestanding garage at the Project Site and the development of a new mixed-use project, integrated with the current historic building, and is anticipated to include up to: 550 residential units; 110,000 square feet of new retail use; 75,000 square feet of grocery use; 15,000 square feet of new office use; and replacement of parking into a subsurface garage with striped spaces for up to 1,500 vehicles with additional capacity for valet parking. The Project's urban design concept also shows special consideration for the original character of the existing historic building on the Project Site and preserves its landmark status, while adding distinctive features that accommodate the increased retail activity in the lower floors.

We are grateful to the neighborhood and the City officials who have provided us with input over the months and years preceding this filing. We believe that the open space and mixed use opportunities offered by the Project represent a major step forward in the continued revitalization of the Fenway District.

We look forward to working with you and your staff in your continuing review of this project. If you have any questions or if any additional information would be helpful, please do not hesitate to contact me.

Very truly yours,

Fenway Enterprises LLC
By S&A Fenway Enterprises LLC

By: ______________________
Steven B. Samuels

Expanded Project Notification Form

Landmark Center Redevelopment

Boston,
Massachusetts

Submitted to **Boston Redevelopment Authority**

Proponent **Fenway Enterprises LLC**
a Samuels & Associates entity
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Executive Summary

Introduction

This expanded Project Notification Form (PNF) is submitted pursuant to the Large Project Review requirements of Article 80 of the Boston Zoning Code and Enabling Act. This PNF presents details about the Landmark Center Redevelopment project (the "Project") located at the corner of Park Drive and Brookline Avenue (the "Project Site") adjacent to the Sear's Rotary in Boston's Fenway neighborhood. Refer to Figure 1.1 for the site location map. This PNF is submitted by Fenway Enterprises LLC, a Samuels & Associate entity, on behalf of Landmark Center Ventures LLC (the "Proponent"). The Project will be undertaken by an affiliate of the Proponent.

This PNF provides an analysis of traffic/transportation, potential environmental impacts, infrastructure needs, as well as urban design and other aspects of the Project, in order to inform city agencies and neighborhood residents about the Project, its potential impacts, and the mitigation measures proposed to address those potential impacts. The following chapter provides an overview of existing site conditions and describes the Project. This chapter also discusses how the Project is consistent with applicable local planning initiatives and municipal and state land use plans and policies, and provides a description of the ongoing public participation and outreach. A summary of public benefits and positive impacts is also presented. Lastly, a summary of findings from the impact analyses presented in subsequent chapters of this expanded PNF is provided.

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Background and Project Overview

For over 15 years, Samuels has been actively involved in the revitalization of the historic Fenway Neighborhood. Samuels worked with the Fenway neighborhood on the rezoning efforts that began in 1997, which culminated in the adoption of Article 66 by the Boston Zoning Commission that has helped shape the vision of an urban village for the West Fenway Neighborhood. Over this time, Samuels has invested significant resources into acquiring, redeveloping, holding and managing a diverse collection of properties in the Fenway.

Samuels' Fenway portfolio ranges from low-rise mixed-use buildings to larger scale developments. Low-rise redevelopment projects include the recently completed 126 Brookline Avenue project (Yardhouse restaurant and Marshall's with office above). This project transformed Van Ness Street from a service alley to an active retail street with a backyard patio replete with a fire pit and streetscape and landscaping improvements. Other smaller scale redevelopments include adaptive reuse of 1249-1255 Boylston Street with Guitar Center and CVS, and a former auto repair shop into the successful Tasty Burger restaurant at 1301 Boylston Street—both of which activated Boylston Street with exciting new uses and quality architecture.

Samuels has also been the developer of larger scale development projects, which have served as catalysts for the emergence of the Fenway neighborhood as a vibrant mixed-use district. The first, known as Trilogy, added 576 residential units, and ground-floor restaurants and retail to the neighborhood. The second, 1330 Boylston, includes 200 residential units and the Fenway Community Health Center. The third, The Van Ness (the redevelopment of 1325 Boylston Street as part of the previously referred to "Fenway Triangle Mixed Use Project" or "Boylston West"), is currently under construction and includes ground floor retail, a unique City Target department store, 172 residential units, and 233,000 square feet of office space. Finally, The Point project, which was recently approved by the Boston Redevelopment Authority (BRA) Board, involves the demolition of existing single-story buildings on the triangular parcel at the juncture of Brookline Avenue and Boylston Street at Park Drive and construction of a 22-story mixed-use building with first and second story retail and 320 residential units on the upper floors. In addition, Samuels has renovated over 150,000 square feet of retail and office spaces throughout the project area. In total, Samuels has added ten new restaurants and over one dozen exciting new retailers. Figure 1.2 shows the Project Site context in relation to these recent/planned developments.

With its concentration of a large number of projects in a relatively small district, Samuels has a unique opportunity to positively influence the neighborhood's development. Samuels places special emphasis on 'place-making' and has a truly long-term focus. Each project is evaluated based on its contribution to the planning vision for the neighborhood as an urban village. Intense amounts of attention are paid to those critical aspects of development that impact urban design, from selecting an operator of a restaurant space who will activate a streetscape, to the details of designing a sidewalk.

The Project is the major component of Samuels' place-making efforts. It will build on Samuels' previous work and contribute to the neighborhood's planning vision for an urban village. The design of the redevelopment has been shaped by planning goals that include:

- Creating an unprecedented amount of publicly accessible open space (2.2 acres representing an almost 100 percent increase) on-site in the heart of the Fenway
- Improving pedestrian access between the MBTA station and the Fenway commercial district
- Showcasing the historic fabric of the existing building's interior to the public
- Creating vibrant retail along all of the Project Site's street frontages
- Bringing Wegmans, a high-quality supermarket anchor, to the neighborhood
- Reducing traffic congestion at intersections by improving access to the site
- Improving bicycle connectivity within the District

- Enhancing urban design by removing blighted facades and providing high-quality architecture, streetscapes and open space
- Building on the proponent's current sustainability efforts to achieve state-of-the-art sustainable buildings.
- Adding housing and affordable housing units to create a 24/7 live-work district
- Create active uses and streetscape along Fullerton Street

The Landmark Center was constructed in 1928 as a distribution center and warehouse for Sears, and was renovated into a retail and office complex in the late 1990's by the Abbey Group. As discussed in more detail below, in 2010, prior to Samuels acquiring the Landmark Center, the Abbey Group proposed a 230-foot high 337,000-square foot office building to be built above the existing parking structure along the Fullerton Street frontage. Shortly after Samuels acquired the Landmark Center, the existing anchor office tenant, Blue Cross Blue Shield, announced its plan to move out of the Fenway in mid-2015, which will leave a large block of vacancy. The Proponent intends to utilize this tenant turnover to create an opportunity to "reimagine" the Landmark Center. The vacancy provides a unique moment in time to undertake a comprehensive redevelopment and to address deficiencies in the existing building's configuration and infrastructure than would otherwise not be possible.

The Proponent's proposal is dependent on removing and replacing the five-level roughly 380,000-square foot parking structure rather than simply building above it. Replacing the above-grade parking with new below-grade parking is very costly, but results in several important benefits. Currently, the structure serves as a major physical barrier to pedestrian flow between commercial districts in the Fenway neighborhood and the MBTA stop. It is a large unattractive mass that significantly detracts from the streetscapes in the Fenway neighborhood; removing it will allow the Proponent to create a new 25,800-square foot public plaza, enhance pedestrian connectivity in the District, improve access to the MBTA station, activate underutilized portions of the building's street frontage, and provide a covered loading dock for truck deliveries.

In addition to creating a public plaza fronting on Brookline Avenue and along the Fullerton Street, the Project will facilitate a reduction of surface parking and paved areas along the Park Drive frontage with landscaped public open space and new outdoor restaurant seating spilling out the front of the building. This open space is designed to complement the creation of new public open space and a daylighted Muddy River in the Sears Rotary currently under construction by the U.S. Army Corps of Engineers (ACOE). The Project also includes construction of a portion of the City's planned public bicycle and walking path along the MBTA's right-of–way that will connect the Riverway Park bike path to the Fenway and Kenmore Square (the "Multi-Use Path").[1]

Redevelopment of the Project Site will bring new ground and second floor retail uses, including a major supermarket anticipated to be a Wegmans. The interior of the Landmark Center will be renovated and reconfigured to provide weather protected travel from the Fenway MBTA station to the commercial district of the Fenway neighborhood, through a destination food market anchored on the Fullerton side of the building by the new Wegmans supermarket. Above the retail, new residential buildings will be constructed. The Project also

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1 To be constructed at the time the City has obtained all necessary approvals.

includes reconfiguration of a portion of existing office and cinema space, mechanical space, residential amenity space and other accessory uses and facilities.

The Project provides compelling regional economic development benefits. By showcasing the Project's historic interior, providing active public open spaces, and creating a best-in-class food market at the base of the building, the Project will transform the office component from back-office space into a compelling working environment for knowledge workers in high-tech, medical and academic fields. With its location in a mixed-use neighborhood stocked with knowledge workforce talent, the reimagined Landmark Center will become a hub of economic activity, capable of drawing new employers from out-of-state. By creating this environment, the Project will create and/or retain over 2,400 office jobs and will create over 600 new transit-accessible retail jobs (a number of which will be at Wegmans—a consistently top ranked employer in the country) as well as approximately 1,690 temporary construction jobs. The City and the region as a whole will benefit from job creation, new housing, and additional city and state tax revenues generated by the Project.

Sustainability - Project Attributes and Proponent's Prior Experience

Sustainability is integrated throughout, as the Project aims to incorporate state-of-the art building technology, achieve at least a 20 percent reduction in energy use and a 30 percent reduction in water consumption compared to current code, revitalize an underutilized site in a dense urban infill location, promote the use of alternative modes of transportation, encourage pedestrian activity and improve water quality. Due to the location of the Project Site in a dense established urban neighborhood with access to public transportation and available services in close proximity, many of the residents and their guests, as well as retail employees and customers, will use alternative means of transportation to and from the Project. Additionally, in accordance with Article 37 – Green Buildings of the Boston Zoning Code, the Proponent intends to incorporate state-of-the-art sustainable features into the design of the Project, and to achieve certification under the U.S. Green Building Council (USGBC) Leadership in Environmental and Energy Design (LEED®) Green Building Rating System.

The Proponent is driven by a company mandate to unify the entire portfolio under a 'green umbrella.' The Proponent believes that improving the sustainability of each real estate project improves both the environment in which the buildings operate and the economic value of the assets. The Proponent's current sustainability initiatives, include:

- Obtaining LEED for Existing Buildings, Operations, and Maintenance (EBOM) and ENERGY STAR certifications for the existing Landmark Center building
- Obtaining LEED certification for The Van Ness building, which is currently tracking a Gold rating
- Retrofitting Trilogy and 1330 Boylston Street for energy conservation
- Building large-scale landscaped green roofs at The Van Ness and Trilogy buildings
- Providing extensive stormwater infiltration infrastructure at 1330 Boylston Street and The Van Ness
- Retrofitting 1330 Boylston Street to add green roofs
- Sponsoring a Hubway bike share station at Landmark Center

Project Context and Exiting Site Conditions

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Project Context

The Project Site is defined by its prominent Park Drive location as well as its proximity to the MBTA Green Line, the Audubon Circle neighborhood to the north, various institutions, such as Wheelock and Emmanuel Colleges and the Longwood Medical Area (LMA) and portions of the Emerald Necklace currently being restored by the ACOE. The Project Site is also defined by the rich, long established residential neighborhoods south of Boylston Street and north of the Project Site in the Audubon Circle area. Brookline Avenue is defined by the historical automotive industry buildings of the 1920's and is anchored at one end by the retail and office development at the Landmark Center and to the east by Fenway Park. These surrounding land uses and outstanding neighborhood services and public amenities have greatly contributed to the success of the recent Fenway district developments by Samuels & Associates at Trilogy and 1330 Boylston Street, and the future The Van Ness project and The Point projects. The Project and its rejuvenation of the Landmark Center retail district, improved parking, expansion and re-design of the pedestrian experience and the addition of new housing will continue this revitalization trend.

Opposite the Project Site across Park Drive are the surrounding public open spaces, specifically the Emerald Necklace. This long, linear district is comprised of the Back Bay Fens, the Muddy River, Olmsted (Leveret) Park, Jamaica Pond and the Arborway.

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Existing Site Conditions

Figure 1.3 shows the existing conditions site plan and Figure 1.4 shows photographs of the existing site conditions. The Project Site is bounded by the MBTA's Green Line and a surface parking area currently owned by the State of Massachusetts to the north, Fullerton Street to the east, Brookline Avenue to the south, and Park Drive to the west (Figure 1.2). The approximately 383,079-square foot (8.6-acre) parcel includes approximately 952,000 square feet of office and retail space, a parking garage and surface parking spaces as well as loading/service areas. The existing Landmark Center building is a commercial center situated in a limestone and brick art deco building built in 1928 for Sears, Roebuck and Company. It features a 200-foot-tall (61 m) tower and, as Sears Roebuck and Company Mail Order Store, it is listed on the National Register of Historic Places (refer to Chapter 7, *Historic Resources* for additional information).

Built in 1928, and designed by Chicago architect George C. Nimmons, this is a rare example of a commercial Art Deco building in Boston. Its notable tower adds the vertical emphasis that often marks the Art Moderne style. For nearly 60 years it served as a warehouse and distribution center for Sears, Roebuck and Company and offered local bargain-hunters an opportunity to obtain merchandise at below-catalog prices. Circa 1966 a four-story concrete warehouse addition by The Ballinger Company was designed for a future expansion of five more levels. The expansion was later converted to a parking garage. In part because the above-ground parking garage was generally an obstacle to the integration of the Project Site with the neighborhood and not viewed as the best and highest use for the existing building or Project Site from a planning and community perspective, various developers investigated new uses for the property. Demolishing the building was also considered several times.

Derelict for a time before being reopened in the fall of 2000 by The Abbey Group, the Landmark building was restored, redeveloped, and extensively modified to include the addition of two seven-story interior spaces that deliver natural light to interior offices. The interior of the building was modified and exterior space was added to house retail stores, including Best Buy, REI and Staples, a 13-screen movie theater and a day care center (a total of approximately 276,000 square feet). The existing Landmark Center also has approximately 675,000 square feet of office space. As described above, the anchor tenant, Blue Cross and Blue Shield of Massachusetts historically has occupied the majority of the existing building space while most of the additional offices are occupied by Harvard Medical School, the Harvard School of Public Health, and Boston Children's Hospital.

The Project Site is currently well served by infrastructure, some of which was recently upgraded, and is in close proximity to public transit (MBTA Green Line, the Framingham/Worcester Commuter Rail Line, and multiple bus routes).

Project Background & Comparison to Prior Owner's Previously Reviewed Expansion Proposal

Landmark Center was the subject of an Article 80 review by the Authority in 1997. This review was commenced with the filing of a PNF by The Abbey Group for the Landmark Center Project on August 18, 1996 and the subsequent issuance by the BRA of a Scoping Determination on September 30, 1996, which set forth the requirements for the preparation of a Draft Project Impact Report ("DPIR"). The DPIR for the project was submitted to the BRA on December 9, 1996 and was subject to a public comment period. On February 5, 1997, the BRA issued a Preliminary Adequacy Determination waiving further review. Subsequently, on January 24, 2000, The Abbey Group filed a Notice of Project Change ("2000 NPC") with the BRA to add a fifth level of parking for approximately 150 vehicles above the existing warehouse structure; however, this additional parking level was never constructed.

In May 2010, The Abbey Group filed a second NPC with the BRA to amend the previously proposed project change presented in the 2000 NPC for the "Landmark Center North" project, which proposed a 230-foot commercial building totaling approximately 308,000 square feet ("2010 NPC"). This project underwent public and city agency review. The proposed addition consisted of commercial space on eight floors with flexibility for office, laboratory, medical, clinical and research uses. This expansion was proposed to be constructed on top of the rear portion of the existing Landmark Center, which is currently used as a four-story parking garage.

After purchasing the building, the Proponent decided to pursue a more comprehensive redevelopment that will resolve the existing building's shortcomings. The Project as currently proposed better addresses the current planning objectives of the community with the addition of new housing units and retail uses, including a first-class supermarket as well as removal of the above-ground garage to allow for improved connectivity through and around the Project Site without increasing the primary impacts of the previously proposed Landmark Center North project. Key potential impacts, such as traffic and shadows are generally less significant or consistent with the previously reviewed plan by The Abbey Group.

Project Description

The Proponent proposes the redevelopment of the existing Landmark Center with a mix of uses, including expanded office and retail space, a new grocery store currently intended to be a Wegmans and construction of up to 550 residential units. Refer to Figure 1.5 for the proposed site plan. Table 1-1 summarizes the proposed development program.

Table 1-1
Proposed Development Program

Use	Existing[1]	Net New	Total[2]
Residential	-0-	Up to 550 units	Up to 550 Units
Retail[3]	276,000 gsf	110,000 gsf	Up to 400,000 gsf
Grocery	-0-	75,000 gsf	Up to 75,000 gsf
Office	675,00 gsf	15,000 gsf	Up to 705,000 gsf

GSF Gross Square Feet
1 Areas represent total allowable gross square footage.
2 As determined on a site-wide basis (exiting project and proposed project).
3 Includes Cinema, Daycare, and Fitness uses.

The parking today serves on-site tenants, retail customers, and off-site parkers and is permitted for up to 1,790 vehicles but functions with approximately 1,500 spaces with additional demand accommodated on a valet-assist basis. The Proponent is proposing to provide up to 1,500 striped structured parking spaces with additional capacity with managed valet operations. The Project reduces the approximately 380,000 square foot above-grade parking structure and facilitates the elimination of surface parking under the future full-build condition. The planned parking capacity is adequate for the Project because daytime office/retail parking spaces will be left vacant overnight, meeting the parking needs of the new residents. Parking for Red Sox games and other area users will be maintained.

The urban design concept for the Project is to create a new vibrant streetscape along Park Drive, Brookline Avenue and Fullerton Street. The Project will provide a base of retail, which will activate and enliven all three street edges of the Project Site by moving the service and loading access to where Fullerton Street meets Miner Street. The current service and loading area includes an open-air 12-bay truck dock along Fullerton Street (Figure 1.4b). The Project will provide up to 10 bays in an enclosed loading and service area, thereby, mitigating noise impacts on the neighborhood. Residential and office uses are proposed above this retail base. All vehicular parking to the development is to be located below-grade and will be accessed via ramps from new service roads for Park Drive and Fullerton Street. The new buildings will create street walls and broad sidewalk that will accommodate an activated pedestrian realm and streetscape. A new public plaza is proposed at the corner of Brookline Avenue and Fullerton Street. Additionally, the existing open space along Park Drive will be improved to maintain the character and dignity of the historic building while activating the urban streetscape and creating an oasis-like area along the Emerald Necklace. This streetscape is to be enhanced by district-wide treatments, signage, street furniture, lighting and landscaping. Generous sidewalk dimensions are proposed throughout the Project. The Park Drive open space will connect via crosswalks to the restored Muddy River portion of the Emerald Necklace and will be landscaped to complement the Park. Figure 1.6 shows an artist's rendering of the Project. Refer to Chapter 3, *Urban Design* of this PNF for additional details on the building design concept, including the floor plans and elevation plans.

A number of public realm and site access improvements are proposed as part of the Project. The existing on-site surface parking, which currently impedes a continuous sidewalk through the Project Site, will be replaced with landscaped public open space and new outdoor restaurant seating. Sidewalks adjacent to the Project Site will be reconstructed. Improvements will include street trees, new curbing and sidewalks, and street lighting to enhance the pedestrian environment and insure public safety. The Project will expand upon the growing developments in the Fenway area and positive growth along Brookline Avenue, and focuses on creating permeability and new connections between the Fenway MBTA stop and Brookline Avenue. Also, the Proponent proposes to construct a portion of the City's planned Multi-Use Path adjacent to the Project Site. Connections to this path are proposed on Fullerton Street with street widening and on-street bicycle lanes. Refer to Chapter 4, *Transportation and Parking* for additional information.

Residents, customers, and employees will be able to take advantage of the various public transit connections easily accessible from the Project Site, including the MBTA Green Line and numerous bus routes. In accordance with BTD guidelines, bicycle racks will be installed within the building for residents and tenants. Additional short-term bicycle storage will also be provided at street level. The Proponent will continue to host the Hubway bike share station along Brookline Avenue.

The Project Site is very well served by utility infrastructure. The existing city and utility infrastructure systems are expected to be adequately sized to accept the demand associated with the development and operation of the Project. Connections to major utilities are available along the site frontage.

The Proponent is deeply committed to building a livable, sustainable community in the Fenway. The Proponent intends to build on its current sustainability initiatives, which include obtaining Gold level certification under LEED for Core & Shell (CS) for The Van Ness project by incorporating state-of-the-art sustainable features into the design of new as well as existing building space. The project design team will use the USGBC's LEED Rating Systems as a model for incorporating sustainable design strategies into the Project. As project design progresses, the Proponent will continue to evaluate and consider additional sustainable and energy efficient measures. As part of a comprehensive sustainability plan for the Project, LEED-EBOM certification is currently being pursued for the existing Landmark Center building. Additionally, in June 2013, the existing Landmark Center received EPA ENERGY STAR certification for exemplary building energy performance with a score of 87, which is considered to be high-performing (a score of 75 or more). For all new construction, the Proponent aspires to achieve a minimum LEED Silver rating. Refer to Chapter 5, *Environmental Protection* for further details on the comprehensive sustainable design approach for the Project.

Project-related benefits, which are summarized in detail below, include job creation, urban design improvements, neighborhood revitalization, housing opportunities, expanded retail options, and additional tax revenues. By replacing the garage structure underground, the Project better utilizes the Project Site's prime location, expanding the retail vitality of the neighborhood and substantially improving the pedestrian environment as well as the urban design and architectural character of the area. Also, the Project will further the goals of the Fenway area planning initiatives.

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Project Phasing and Schedule

The duration of construction for the Project is expected to last approximately 24 months from start of demolition through completion of the base level podium. Completion of interior fit out work and completion of the residential buildings above the podium and cinema reconfiguration work will extend for roughly 12 additional months. The below-grade and retail components of the Project are anticipated to be built in one stage. The residential buildings above the retail base are anticipated to be built concurrent with the retail podium, but one or more of these buildings may be built in later stages depending on market conditions. Reconfiguration work within the interior of the occupied building will be implemented in a number of stages to avoid tenant disruption and the team aspires to complete this work in parallel with the new construction work. Samuels is working to restructure existing lease obligations to allow for conversion of the existing surface parking into open space over time. This work will occur as soon as possible, but could trail completion of the Project.

Summary of Project Benefits

The Project will create numerous positive public benefits. It will dramatically improve connectivity throughout the district, create significant amounts of publicly accessible open space, replace blighted facades with quality architecture, provide a compelling food market and supermarket, increase commercial activity by revitalizing a large block of office space, activate ground-floor retail space around the building, provide new pedestrian and bicycle pathways, enhance streetscapes and public plazas, and improved roadway networks. The City and the region as a whole will benefit from job creation, new housing units, and additional city and state tax revenues. Specific public benefits include:

<u>Neighborhood Design Benefits</u>

- Replace an almost 380,000-square foot above-ground parking structure with new diverse and active ground-floor uses, including unique retail and residential lobbies reinforcing the Fenway's position as one of Boston's desirable neighborhoods.
- Create penetrability of the existing Landmark building, providing enhanced pedestrian connectivity between the MBTA station and the district.
- Increase open space by 97 percent site-wide to a total of 2.2 acres, including:
  - Increase publically accessible open space by almost a half of an acre for a total of approximately 1.3 acres of publicly accessible open space along Park Drive, maintaining the character and dignity of the historic building and activating streetscapes with retail and open space that complements the current public initiative to restore the Emerald Necklace in the Sears Rotary.
  - Create approximately one acre of public open space along Brookline Avenue and Fullerton Street, areas currently occupied by inactive and unattractive facades.

- Preserve the landmark status of the existing historic building through design that considers its original character, while adding distinctive features that accommodate the increased activity in the lower floors.
- Improve streetscapes on all sides of the project with generous sidewalks, streetscape improvements, new lighting, street trees, vibrant retail and quality architecture.

Transportation Benefits

- Improve pedestrian access, comfort, and safety along well-traveled paths between the MBTA Fenway Station and the neighborhood.
- Widen Kilmarnock Street to alleviate congestion on the northbound approach to Brookline Avenue.
- Widen Fullerton Street to improve vehicle turning movements at the intersection of Brookline Avenue.
- Eliminate surface parking while maintaining an adequate on-site parking supply.
- Increase corner radii at the intersection of Brookline Avenue/Kilmarnock Street/Fullerton Street.
- Consolidate site driveways on Park Drive.
- Re-stripe Fullerton Street to provide on-street bicycle accommodations that will connect the Multi-Use Path with Brookline Avenue.
- Provide sufficient protected bicycle storage for tenants and at-grade public bike racks for customers and visitors.
- Construct a portion of the City's planned Multi-Use Path adjacent to the Project Site, when approved.
- Implement a Transportation Demand Management (TDM) plan to discourage single-occupancy vehicle trips.
- Continued sponsorship of a Hubway Station at Landmark Center.

Environmental Benefits

- Incorporate state-of-the-art sustainable design elements in the Project to meet the requirements of Article 37 of the Boston Zoning Code relative to the City's Green Building policies and procedures.
- Use the USGBC's LEED rating systems as a model for sustainable design strategies aspiring to achieve a minimum LEED Silver rating for new construction.
- Obtain LEED-EBOM certification demonstrating the Proponent's goal of maintaining and operating the existing Landmark Center as an energy efficient building as well as implementing best "green" practices.
- Reduce the energy consumption of the new construction by 20% compared to current State building code through incorporation of energy conservation measures
- Reduce the water consumption of the new construction by roughly 30% through careful plant selection and high-efficiency irrigation system to reduce water use for irrigation and installing low-flow plumbing fixtures to reduce the overall domestic water use.
- Improve water quality, reduce runoff volume and control peak rates of runoff by incorporating new stormwater management and treatment systems.
- Maintain and improve groundwater levels through increased stormwater infiltration.

- Incorporate compensatory flood storage achieved through re-grading of the adjacent areas around the building and/or the construction of structural storage areas to maintain the capability of the Project Site to store runoff during extreme storm events.
- Reduce heat island effects by locating all of the proposed parking under cover in structured parking garages and by installing highly reflective roof for new non-vegetated roof area.
- Encourage alternative transportation and reduce Greenhouse Gas (GHG) emissions by providing appropriate bicycle storage facilities and designated parking for low-emitting and fuel-efficient vehicles.
- Provide an enclosed off-street loading dock area at the rear of the Project Site to mitigate noise impacts of the current open-air truck loading area.
- Mitigate for temporary construction-related impacts through the implementation of a Construction Management Plan.

Infrastructure Benefits

- The Project will not result in the introduction of any increased peak flows, pollutants, or sediments that would potentially impact the receiving waters of the local BWSC stormwater drainage system.
- The Project will improve the quality and quantity of site stormwater runoff compared to existing conditions, including consideration for groundwater recharge in accordance with the Groundwater Conservation Overlay District (GCOD).
- Design and construct the proposed stormwater management system to comply with the 2008 DEP Stormwater Management Policy and Standards.
- The installation of proposed utilities within the public way will be in accordance with BWSC, Boston Public Works Department, the Dig-Safe Program, and governing utility company requirements.

Economic and Community Benefits

- Enhance the economy within the Fenway by providing new job opportunities and a source of customers for local retail and service establishments.
- Create approximately 1,690 construction jobs in all trades.
- Create approximately 600 new transit-accessible employment opportunities (permanent part-time and full-time jobs).
- The new development will reposition the existing Landmark Center office space as a top-tier employment center for medical, technology, and research tenants, promoting additional economic development and creating and retaining up to 2,400 high quality office jobs.
- Provide up to 550 new housing units in close proximity to downtown Boston, a portion of which will be set aside as affordable rental housing. Further, the Proponent will submit a Boston Residents Construction Plan, in accordance with the Boston Jobs Policy. To effectuate the Proponent's affordable housing commitment, the Proponent will finalize an affordable housing agreement with the BRA during the Article 80 review period for an affordable housing contribution.

Consistency with Public Planning

This section describes how the Project is consistent with applicable local planning initiatives and municipal and state land use plans and policies.

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Fenway/Kenmore Neighborhood Planning Initiatives

As part of a 2006 legislatively enacted economic stimulus package, $36 million was set aside by the State for the construction, development, modernization, rehabilitation, upgrade and improvement of transportation related infrastructure in the City of Boston focused on the Fenway Neighborhood and the Longwood Medical and Academic Area (LMA). These improvements were targeted to support job growth and economic advancement. Cited among the engines of this advancement was the investment in commercial and residential facilities. The Project responds to the goals of the legislation in that its related transportation improvements dovetail with on-going City planning for improvements to Boylston Street and Brookline Avenue, including the water quality, drainage, and traffic improvements being performed by the Army Corps of Engineers as part of the Muddy River Restoration Project.

The transportation-related improvements being advanced by the City as part of the *Fenway - Longwood - Kenmore Transportation & Pedestrian Safety Action Plan* (the "Action Plan") include reconstructing Boylston Street to significantly improve the pedestrian and bicycle commuter environment through the provision of wider sidewalks with street trees, curb extensions at intersections, and the addition of bicycle lanes, while maintaining traffic capacity.[2] The Project, as currently envisioned, will incorporate the planned sidewalk improvements along its Brookline Avenue frontage as well as include an enhanced pedestrian cross-connection. The plaza proposed at the corner of Brookline Avenue and Fullerton Street and the open space along Park Drive will maintain the character and dignity of the historic building while activating the urban streetscape and creating an oasis-like area along the Emerald Necklace. This streetscape is to be enhanced by district-wide treatments, including signage, street furniture, lighting and landscaping. Generous sidewalk dimensions are proposed throughout the Project. The Park Drive open space will connect via crosswalks to the restored Muddy River portion of the Emerald Necklace and will be landscaped to complement the Park.

As part of the Massachusetts Works program, the Commonwealth and the MBTA is nearing completion of the $13.5 million Yawkey Commuter Rail Station reconstruction project, which will be integrated into the future Fenway Center development. The new rail station will improve connectivity between Beacon Street, Brookline Avenue, and the future Mixed-Use Path (proposed as part of the Action Plan). The Project proposes to activate Brookline Avenue through the introduction of new ground-floor retail uses, and enhanced open space and pedestrian connectivity. This retail space will provide the services that generate pedestrian activity and will expand the economic footprint of the neighborhood by extending the existing pedestrian activity from Fenway Park further west down Brookline Avenue. Additionally, the Project aims to activate Fullerton Street, which is not inviting to pedestrians as it currently includes garage access and open-air "back of the

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2 Boston Transportation Department, *Fenway - Longwood - Kenmore Transportation & Pedestrian Safety Action Plan*, Spring 2009.

house" uses of the existing Landmark Center. In this way, the Project supports all of the area infrastructure enhancements being implemented by various entities.

As previously mentioned, the City's planned Multi-Use Path will run parallel to the MBTA tracks adjacent to the Project Site and will connect the Riverway Park bike path to the Fenway and Kenmore Square. The Project includes construction of the segment of the path that runs adjacent to the Project Site on the north side adjacent to the MBTA's D Line connecting the Fenway Commuter Rail Station with the Emerald Necklace at the time the City has obtained all necessary approvals. The rear wall of the building will be thoughtfully designed in order to complement the newly constructed Multi-Use Path. Additionally, Fullerton Street will be re-striped to provide on-street bicycle accommodations that will connect the Multi-Use Path with Brookline Avenue, subject to necessary approvals, and the Proponent will continue to host the Hubway bike share station along Brookline Avenue.

Open Space Plan 2008-2014

The Boston Parks & Recreation Department Design & Construction Unit prepared the *Open Space Plan 2008-2014*, which assesses existing parks and recreational facilities and identifies goals and objectives for maintaining and improving these facilities, including a five-year implementation plan.[3]

The existing Project Site is in close proximity to the Back Bay Fens—a public park that is part of the larger, more extensive Emerald Necklace park system. The Back Bay Fens includes a Community Garden and offers both passive and active recreational options, including the World War II, Vietnam and Korean War Memorials, the Kelleher Rose Garden, and the Mother's Rest playground, as well as basketball courts, baseball fields, a running tack, and walking/biking paths. Additionally, on-leash dogs are allowed in the park. The Project Site is approximately a ½-mile from DCR's Charles River Reservation—a linear park stretching from the Boston Harbor up the river for 20 miles and accessible by most city neighborhoods. Due to the extensive amount of public open space in close proximity to Project, the introduction of new residents to the area is not expected to have a significant impact on any city-owned recreational facilities. The Project will nearly double the on-site open space and transform it into more usable and attractive spaces.

Climate Action Plan

On Earth Day, April 22, 2011, Mayor Thomas M. Menino released *A Climate of Progress* – the City's updated Climate Action Plan.[4] This Plan includes a set of wide-ranging recommendations aimed at significantly reducing greenhouse gas (GHG) emissions and preparing for the risks of climate change in Boston. The five overarching recommendations of the Climate Action Leadership Committee are:

1. Reduce Boston's GHG emissions 25 percent by 2020;

3 City of Boston Parks & Recreation Department Design & Construction Unit, *Open Space Plan 2008-2014*, January 2008. Website: http://www.cityofboston.gov/parks/openspace0814.asp

4 City of Boston, *A Climate of Progress: City of Boston Climate Action Plan Update*, April 2011. Website: http://www.cityofboston.gov/Images_Documents/A%20Climate%20of%20Progress%20-%20CAP%20Update%202011_tcm3-25020.pdf

2. Immediately start incorporating projected effects of climate change — particularly sea level rise, heat waves, and more intense storms — in all planning and review for municipal and private projects;
3. Develop a comprehensive public engagement effort, including a public commission and strong partnerships with community organizations;
4. Use climate action opportunities to advance Boston's green economy and jobs goals; and
5. Ensure that climate action has clear public and private leadership and sufficient public and private resources.

Achieving these goals of reducing the effects of climate change, cultivating a city of green buildings, and advancing sustainability in multiple realms is intended to drive economic development and innovation.

In 2010, the City of Boston was designated a Green Community under the Green Communities Designation and Grant Program, an initiative of the Department of Energy Resources (DOER). In order to be designated a Green Community and, therefore, be eligible for grant money available annually, communities are required to meet five qualification criteria, such as adoption and implementation of the Stretch Energy Code.[5] The goal of the grant program is for a municipality to use grant money to assist residents, businesses, and municipal departments/facilities to reduce energy use or install renewable energy systems.

The Project includes new below-grade structured parking space, new retail space, including a grocery anchor store, and new residential rental units. These buildings will be served by a combination of three mechanical systems each serving a portion of the Project. All new construction will meet the requirements of the Stretch Energy Code by reducing the use of energy in the building by a minimum of 20 percent above and beyond the requirements of ASHRAE 90.1-2007, Appendix G.

The proposed energy conservation measures will be a critical point of focus by the design team as design progresses. Computer energy modeling techniques will be used to evaluate the estimated energy demands and potential efficiencies of the new building spaces from the beginning of the design process, through final construction documentation. These energy modeling results will be used in an iterative fashion to influence the design of the building façade and roof, HVAC systems and lighting. Each project component is anticipated to contribute to the overall compliance with the Stretch Energy Code in distinct and specific ways, as described below. Additionally, while not covered under the Stretch Energy Code, as part of a comprehensive sustainability plan for the Project, LEED-EBOM certification is currently being pursued for the existing Landmark Center building, which includes extensive energy efficiency upgrades and monitoring for the existing Landmark Center building. And, in June 2013, Landmark Center received EPA ENERGY STAR certification for demonstration of exemplary building energy performance. Such improvements, in addition to energy conservation measures to be designed into the new construction, provide reduced GHG emissions and, therefore, climate change benefits. Refer to Chapter 5, *Environmental Protection* for further details on Project benefits related to sustainable design and energy conservation.

5 Effective January 1, 2011, the City of Boston adopted the Stretch Energy Code (8th Edition Building Code, Appendix 115.AA); there is a concurrency period through June 30, 2011. Its adoption brings to Boston a standard that will require new commercial buildings over 5,000 square feet in size, including multi-family residential buildings over three stories, to operate at an energy efficiency level 20% better than that required under the base energy code criterion, ASHRAE 90.1-2007.

Commonwealth of Massachusetts

Executive Order 385 – Planning for Growth

Generally, Executive Order 385 (EO 385) aims "…to actively promote sustainable economic development practices by advocating for state activities that are supported by adequate infrastructure and that are designed in such a way so that they do not adversely impact the natural environment." The Project is consistent with EO 385 because it aims to redevelop a previously developed urban site that has existing and adequate infrastructure, including public transit. Therefore, the Project reduces or avoids altogether environmental impacts, such as traffic, new impervious surface, and new land alteration. The Project will improve water quality through proposed modifications/upgrades to the stormwater management system.

The Project aims to create a mix of economic and social activities, all of which will support the local and state economy. The Project provides new employment opportunities, including the creation of approximately 1,690 construction jobs in all trades and approximately 600 new transit-accessible employment opportunities (permanent part-time and full-time jobs). As previously described, the revitalized office component of the project will create and retain more than 2,400 jobs. In addition, the Project will create up to 550 new diverse housing units, a portion of which will be designated as affordable. Furthermore, as outlined in this report, the Proponent will minimize any unavoidable environmental impacts through the implementation of appropriate mitigation measures, to the extent feasible.

Commonwealth's Sustainable Development Principles

The Project is consistent with the Office of Commonwealth Development's Sustainable Development Principles.[6] The following lists the smart growth principles with which the Project is consistent.

- **Concentrate Development and Mix Uses.** The Project fulfills this principle as it consists of the redevelopment of an urban site with existing/adequate infrastructure and it promotes a vibrant mixed-use development.
- **Advance Equity.** The Project was developed in coordination with the neighborhood and the BRA so that its uses aim to support and remain consistent with the community planning goals. The Project will create a broad range of economic opportunities for workers and residents of a broad socioeconomic range.
- **Make Efficient Decisions.** A key goal of the Project is to utilize the existing site to the extent practicable in order to limit site work. The Project also introduces new pedestrian-friendly and transit-accessible employment and housing opportunities, thereby reducing local traffic.
- **Protect Land and Ecosystems.** The Project addresses the principle of protecting land and ecosystems by redeveloping a previously developed urban area instead of developing a 'greenfield' site outside the City.

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6 Commonwealth of Massachusetts Sustainable Development Principles (website link: http://www.mass.gov/Agov3/docs/smart_growth/patrick-principles.pdf)

- **Use Natural Resources Wisely.** The Project promotes sustainable planning principles through its use of innovative design elements, such as energy and water efficient building systems and operations, reduced construction and operational waste, and environmentally-preferable materials.
- **Expand Housing Opportunities.** The Project will expand housing opportunities within the City of Boston, including affordable housing units.
- **Provide Transportation Choice.** The Project promotes transit-oriented development, as the site is accessible by commuter train, bicycle, rapid transit, and local buses. In addition, transportation choices will be expanded for residents and visitors through improved pedestrian access and circulation and bicycle storage facilities for both customers and residents.
- **Increase Job and Business Opportunities.** The Project provides new employment opportunities (approximately 1,690 construction jobs in all trades and approximately 600 new transit-accessible permanent retail part-time and full-time jobs and over 2,400 new and retained office jobs). Additionally, the redevelopment will reposition Landmark Center as a top top-tier employment center that can accommodate a tenant base of knowledge workers in the medical and technology fields, promoting additional economic development.
- **Promote Clean Energy.** The Project will be at minimum 20 percent energy efficient in order to meet both the Stretch Energy Code and the City of Boston Zoning Ordinance Article 37 – Green Buildings LEED requirement. Energy efficient building design and systems when compared to conventional building design will result in reduced GHG emissions.

Summary of Community Outreach

The Proponent has a long history of working with the Fenway Neighborhood through development of 1330 Boylston Street, Trilogy, The Van Ness and The Point projects as well as through participation in the planning process leading to the new Article 66 of the Boston Zoning Code for the Fenway Neighborhood District. Chapter 2, *General Information and Regulatory Context* highlights some of the collaborative efforts to date involving community groups and other interested parties relating specifically to the proposed project. The Proponent will continue to work with the neighborhood, including the Fenway Civic Association, the Fenway Community Development Corporation, the Audubon Circle Neighborhood Association, and other neighborhood representatives through the review and evaluation of this proposal.

Summary of Project Impacts

The Project has been thoughtfully designed to complement and connect to the surrounding neighborhood while balancing the historic nature and setting of the existing site. As presented in detail in subsequent chapters, this PNF compares the future no-build and build conditions in order to identify the potential for the Project to impact the environment and/or community. This section summarizes the potential impacts of urban design, transportation, wind, shadow, daylight, solar glare, air quality, noise, solid and hazardous waste, geotechnical/groundwater, water quality, construction, sustainable design, historic resources and infrastructure in connection with the Project and proposed mitigation.

Urban Design

Key findings related to urban design include:

- Replace an almost 380,000-square foot above-ground parking structure with new diverse and active ground-floor uses, including unique retail and residential lobbies reinforcing the Fenway's position as one of Boston's desirable neighborhoods.
- Create penetrability of the existing Landmark building by providing enhanced pedestrian connectivity and improved pedestrian experiences between the MBTA station and the district.
- Further the neighborhood vision for a diverse urban village by providing new area housing and unique retail opportunities, such as a destination food market and revitalized office component that will add vitality to the mixed-use district.
- Preserve the landmark status of the existing historic building through design that considers its original character, while adding distinctive features that accommodate the increased activity in the lower floors.
- Create approximately 2.2 acres of publicly accessible open space on-site, including:
  - Increase publically accessible open space by almost 0.5 acres for a total of approximately 1.3 acres along Park Drive currently occupied by surface parking lots.
  - Create approximately one acre of public open space along Brookline Avenue and Fullerton Street, areas currently occupied by inactive and unattractive service facades.
  - These landscaped areas will respect the character and dignity of the historic building, activate streetscapes with retail and active open space, and complement the current restoration of the Emerald Necklace in the Sears Rotary.

Transportation

The proposed mixed-use development program aims to build upon the neighborhood's goal to provide a live-work environment that will reduce auto-dependency. The Project will expand upon shifting transportation preferences and is consistent with the Fenway-Longwood-Kenmore Transportation and Pedestrian Safety Action Plan, which seeks to balance vehicular traffic with the pedestrian and cyclist demands in the Fenway neighborhood. Additionally, independent of the Project, there are number of planned transportation improvements in the Fenway neighborhood which will improve transit, pedestrian, bicycle, and traffic operations in in the near future.

The Project's retail component is expected to generate traffic demands and patterns that are different from the commuting patterns into Downtown Boston and the adjacent Longwood Medical and Academic Area (LMA). The Project's varying traffic patterns of residents, office, and retail, combined with the reduction of off-site parkers from the Project Site, results in manageable net-new traffic demands during the weekday peak hours. The Project-generated vehicle trips are less than the previously reviewed Landmark North proposal on a weekday. The majority of the Project's impacts will occur during the peak hour on a Saturday as a result of the additional residential, grocery, and retail space. However, on Saturday the baseline traffic volumes are much lower compared to weekday traffic volumes and the traffic model suggests there is capacity to handle the additional Project traffic. As detailed in Chapter 4, *Transportation and Parking*, the Project includes a variety of improved transportation operations and amenities, such as the elimination of on-site surface parking, widening of Fullerton and Kilmarnock Streets, consolidation of site driveways as well as pedestrian connection and circulation improvements and new on-site bicycle facilities.

The Project includes no increase in parking. There are currently 1,790 permitted spaces at Landmark Center. The existing garage and surface parking include approximately 1,500 spaces with additional demand accommodated on a valet-assist basis. A new garage will be constructed with up to 1,500 striped spaces and with additional capacity with valet operations.

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Pedestrian Wind

Pedestrian level winds conditions were evaluated as a part of this Expanded PNF in anticipation of the BRA requiring a quantitative study as required by Section 80-B3 of the Boston Zoning Code. The objective of the wind study was to assess the potential effect of the Project on local wind conditions in pedestrian areas around the Project Site and provide recommendations for minimizing unacceptable effects, if any.

As expected, the Project will result in changes to the pedestrian wind environment on-site. The project design utilizes taller site elements mixed with low-story connecting structures, which is an effective method for minimizing wind impacts at the ground level. It allows the wind to be directed and transitioned from level to level.

While the Project will result in changes to pedestrian wind patterns, the results of the wind tunnel analysis demonstrate that, overall, it does not result in negative impacts under the Build Condition. In fact, some areas of the Project Site and local street frontage were improved as a result of the Project where most locations experience a reduction in annual wind speed. No locations on or around the Project Site are projected to have unacceptable average wind speeds or wind gust conditions. The isolated areas identified as "uncomfortable" wind conditions will be addressed by localized solutions, such as landscaping, awnings, or similar architectural elements.

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Shadow

To be expected when replacing a low-density, suburban-style development pattern with urban buildings of varying heights, the Project will result in new shadows on roads and sidewalks during various times of the year. The majority of new shadows are along the portions of the railroad right-of-way north of the Project Site and across Fullerton Street to the Harvard Vanguard service drive and parking entrance. There is no new shadow impact on the restored section of the Muddy River at the Sears Rotary or the Riverway section of the Emerald Necklace Park west of the Project Site.

The presence of these new shadows is consistent with the urban environment and planning objectives of the neighborhood, and when combined with the Proponent's proposed enhancements to the public realm in the area, are not likely to discourage the use of sidewalks or public areas in the vicinity of the Project Site. The shadow impacts are generally consistent with the previously reviewed plan by the Abbey Group.

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Daylight

The Project will change the view of the skydome from the adjacent streets and sidewalks. From two viewpoints, the skyplane obstruction remains the same or is increased only slightly (Park Drive and Brookline Avenue, respectively). The skyplane obstruction is more significant along Fullerton Street, which is to be expected when replacing a low-level parking garage with a high-rise residential building. The proposed mixed-use nature of the Project will, by design, increase the foot traffic along the adjacent sidewalks and through the Project Site substantially and improve the pedestrian enjoyment of the urban experience in this area. Additionally, Fullerton Street will be transformed into a vibrant urban street by establishing street walls with new buildings and providing for generous sidewalks that accommodate an activated pedestrian realm and streetscape; thereby, mitigating for any impacts to daylight.

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Solar Glare

The Project will not result in solar glare impacts on streets (visual impairment vehicle traffic), or on public open spaces and pedestrian areas (discomfort due to reflective spot glare). The Project will not produce solar heat buildup on nearby buildings from reflective sunlight from the proposed buildings. The proposed building design specifications, such as façade design, glazing systems with specific solar and optical characteristics as well as streetscape improvements (i.e., street trees) are considered to mitigate the reflected glare from the viewers' viewing directions.

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Air Quality

The air quality evaluation demonstrates that the Project complies with city, state, and federal air quality requirements. The microscale analysis evaluated impacts from Project-generated motor vehicle traffic at the most congested intersections in the Study Area (shown in Figure 5.4). State and federal modeling procedures were used to determine worst-case concentrations. The results demonstrate that all Existing, No-Build, and Build CO, PM_{10}, and $PM_{2.5}$ concentrations will be below the National Ambient Air Quality Standards (NAAQS). The air quality study demonstrates that the Project conforms to the Clean Air Act Amendments because:

- No new violation of the NAAQS will be created,
- No increase in the frequency or severity of any existing violations will occur, and
- No delay in attainment of any NAAQS will result.

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Water Quality and Flood Hazard

The Project Site is located within the Groundwater Conservation Overlay District (GCOD), as defined in Article 32 of the Zoning Code. This zoning article sets forth requirements that promote the infiltration of runoff from impervious site areas within the district. The proposed stormwater management system has been designed to address District requirements.

The Project represents an opportunity to improve the quality and reduce the quantity of site stormwater runoff compared to existing conditions through the implementation of improved stormwater management practices in compliance with the 2008 DEP Stormwater Management Policy and Standards. The Project includes stormwater infiltration, which promotes the introduction of stormwater runoff into the ground and reduce the rate and quantity of stormwater discharged to the municipal drainage system and, ultimately, to the Charles River. The infiltration system will have a positive impact on the surrounding groundwater table.

There are no wetlands in the immediate vicinity of the Project Site. The Project is located in a designated flood hazard zone as indicated by a review of the most recent flood mapping available from the Federal Emergency Management Agency (FEMA). The Project is anticipated to locate structures within this flood zone. The design of the Project incorporates compensatory flood storage achieved through re-grading of the adjacent areas around the building and/or the construction of structural storage areas to maintain the capability of the Project Site to store runoff during extreme storm events.

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Groundwater and Geotechnical

Groundwater levels are not expected to be impacted as part of the planned construction due to stormwater infiltration proposed for the Project. Rather, groundwater levels in portions of the Project Site may increase due to stormwater infiltration proposed for the Project, in accordance with the GCOD. Steel sheet piling and permanent building foundation and cutoff walls will be designed to minimize impact to the groundwater level at adjacent properties and buildings. These elements will be driven into, or constructed within, the underlying silty clay, a relatively impervious material. Accordingly, only minimal seepage of groundwater into the excavation is expected and no significant lowering of groundwater outside the perimeter controls is expected. Should groundwater lowering be observed during excavation or construction, the groundwater level will be restored to its pre-construction levels by groundwater recharging.

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Solid and Hazardous Waste

Results of previous subsurface investigations identified the presence of certain contamination at concentrations exceeding applicable MCP Reportable Concentrations and to which DEP assigned RTN 3-2949 and RTN 3-10842. Response actions were performed and MCP closure was brought to the two release sites. As part of the Project, subsurface investigation programs will be implemented to assess soil and groundwater quality at the Project Site, in addition to reviewing the available results of environmental reports performed by others.

Noise

The noise analysis determined that existing ambient sound levels in the surrounding area currently exceed the City of Boston's noise standards. The noise analysis calculated the maximum overall sound level that each building may generate in order to ensure that the sound levels at the sensitive receptor locations (residential areas) comply with the City of Boston's noise standards. During the design phase, the Proponent will select rooftop mechanical equipment (including any necessary mitigation measures) that would result in sound levels that do not exceed the maximum overall sound levels determined in this noise evaluation. In addition, the rooftop mechanical equipment will be strategically located on the roof of each proposed buildings to minimize their contributions on nearby sensitive receptor locations. The service and loading activities will be located on-site and within the proposed buildings, noise impacts to the sensitive receptor locations will be negligible.

Construction

Key findings related to temporary construction activities include:

- Construction impacts are temporary in nature and are typically related to air (dust), noise, and runoff.
- During construction, measures will be implemented to minimize water quality impacts and avoid impacts to abutters.
- The Proponent will work with the BTD to develop a site specific Construction Management Plan (CMP).
- Coordination with the Boston Police Department will be essential in providing safe travel routes for pedestrians during peak construction periods.

Sustainable Building Design

The Proponent is deeply committed to building a livable, sustainable community in the Fenway. The proposed mixed-use, transit-oriented development plan aims to revitalize an underutilized urban site by using land efficiently, promoting the use of alternative modes of transportation, encouraging pedestrian activity, and improving air and water quality. The Proponent intends to build on its current sustainability initiatives, which include obtaining LEED-CS certification for The Van Ness and LEED-EBOM certification of the existing Landmark Center building by incorporating state-of-the-art sustainable features into the design of the individual buildings. The Project will meet the requirements of Article 37 of the Boston Zoning Code relative to the City's Green Building policies and procedures. The project design team will use the USGBC's LEED rating systems as a model for incorporating sustainable design strategies into the Project. For all new construction, the Proponent aspires to achieve a minimum LEED Silver rating and will continue to research additional sustainable and energy efficient measures as the building design progresses. The Project will also comply with the Massachusetts Stretch Energy Code, as required, through the incorporation of energy conservation measures.

Infrastructure Systems

The key impact assessment findings related to infrastructure systems include:

- The existing city and utility infrastructure systems are expected to be adequately sized to accept the demand associated with the development and operation of the Project.
- On-site drainage generally flows towards Charles River Basin via BWSC-owned and maintained drainage infrastructure in Brookline Avenue, adjacent to the Project Site.
- The Project Site is currently serviced by the BWSC for domestic and fire protection water and sanitary sewage conveyance.
- Based upon sewage generation rates outlined in the DEP Sewer Connection and Extension Regulations, 310 CMR 15.203.f, the Project is estimated to generate approximately 118,165 gallons per day (net new) of sanitary sewage and will require approximately 129,982 gallons of water per day (net new).

The key Project-related mitigation and/or benefits associated with the infrastructure systems include:

- Construction of the Project will incorporate on-site stormwater management and treatment systems that will improve water quality, reduce runoff volume, and control peak rates of runoff in comparison to existing conditions.
- The Project will not result in the introduction of any increased peak flows, pollutants, or sediments that would potentially impact the receiving waters of the local BWSC stormwater drainage system.
- The proposed stormwater management systems will provide for groundwater recharge, in accordance with the Groundwater Conservation Overlay District (GCOD) and will comply with the 2008 DEP Stormwater Management Policy and Standards.
- Appropriate low-flow and low-consumption plumbing fixtures will be installed in all apartment units to achieve a reduction in water usage of over 20 percent over the baseline in order to comply with Article 37 of the Boston Zoning Code.

Historic Resources

The key findings related to historic and cultural resources include:

- The Project Site includes the former Sears, Roebuck & Company Mail Order House, which is a designated Boston Landmark.
- The Project Site adjoins, across Park Drive, the Emerald Necklace, which is a designated Boston Landmark.
- Fenway Park and the Isabella Stewart Gardner Museum, also Boston Landmarks, are within ¼-mile of the Project Site.
- While the Project will involve the removal of modern buildings built in the 1960s and 1990s and

construction of new buildings around the historic Sears building, it will maintain the integrity of the exterior of the existing historic structure.

- The Project will be designed to enhance the historic Sears Building as it will redesign the interior of the building to improve passage through the building and will improve the relationship of the historic building to the Fenway MBTA stop.
- Proponent has commenced a $10 million restoration of the historic Sears building façade.

Expanded PNF Contents

Each chapter of this PNF begins with a bulleted list of key findings and benefits followed by a discussion of the technical analyses which assess the Project's potential impacts, in accordance with the Article 80 Large Project Review requirements. This PNF examines issues, such as urban and architectural design, sustainable and green building design, transportation, various environmental impact categories, infrastructure systems, and historic resources.

Chapter 2: General Information and Regulatory Context presents the development team, and discusses the regulatory controls and anticipated approvals and permits.

Chapter 3: Urban Design presents the planning and design goals, describes the neighborhood context and public realm, describes the visual aesthetics and architectural design of the Project, including height and massing of the structures, and describes the proposed ground level treatment, including pedestrian amenities and landscaping.

Chapter 4: Transportation and Parking presents the traffic impact and access study for the Project, including proposed traffic-related improvements and construction traffic management measures.

Chapter 5: Environmental Protection presents findings from the environmental studies that assess the potential Project impacts and the proposed feasible measures intended to mitigate, limit, or minimize Project impacts.

Chapter 6: Infrastructure describes the anticipated water consumption and sewage generation, and proposed utilities, including stormwater management facilities required for the Project.

Chapter 7: Historic Resources identifies any historic properties /districts within close proximity of the Project Site, and describes any effects to these properties and proposed mitigation as a result of the Project.

Chapter 8: Project Certification confirms that this expanded PNF has been submitted to the Boston Redevelopment Authority, as required by Article 80 of the Zoning Code, in September 2013.

Supporting technical appendices include:

- Appendix A Letter of Intent
- Appendix B Transportation Supporting Documentation
- Appendix C Pedestrian Wind Supporting Documentation
- Appendix D Solar Glare Supporting Documentation
- Appendix E Air Quality Supporting Documentation

- Appendix F Noise Analysis Supporting Documentation
- Appendix G Site Utility Plan

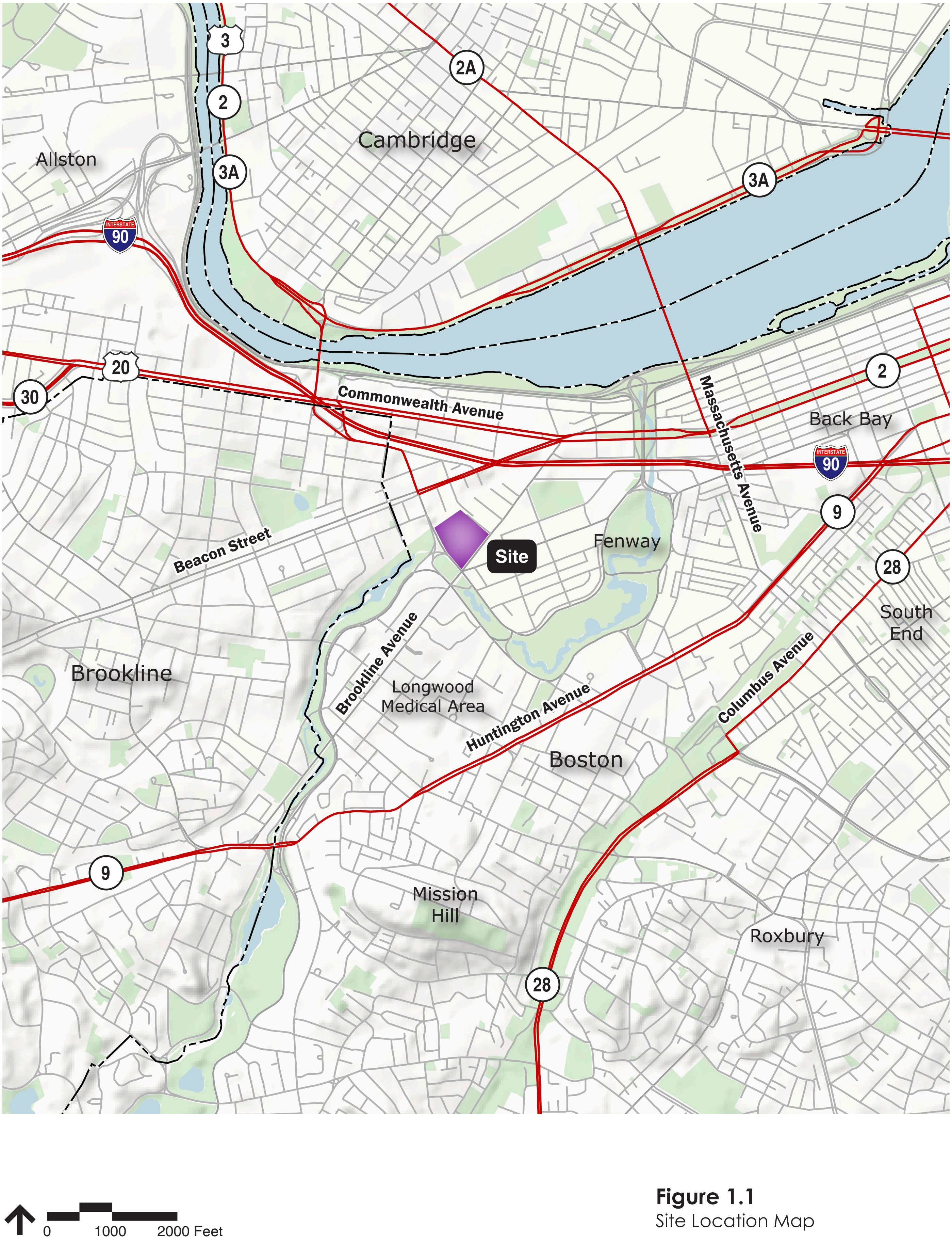

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Figure 1.1
Site Location Map

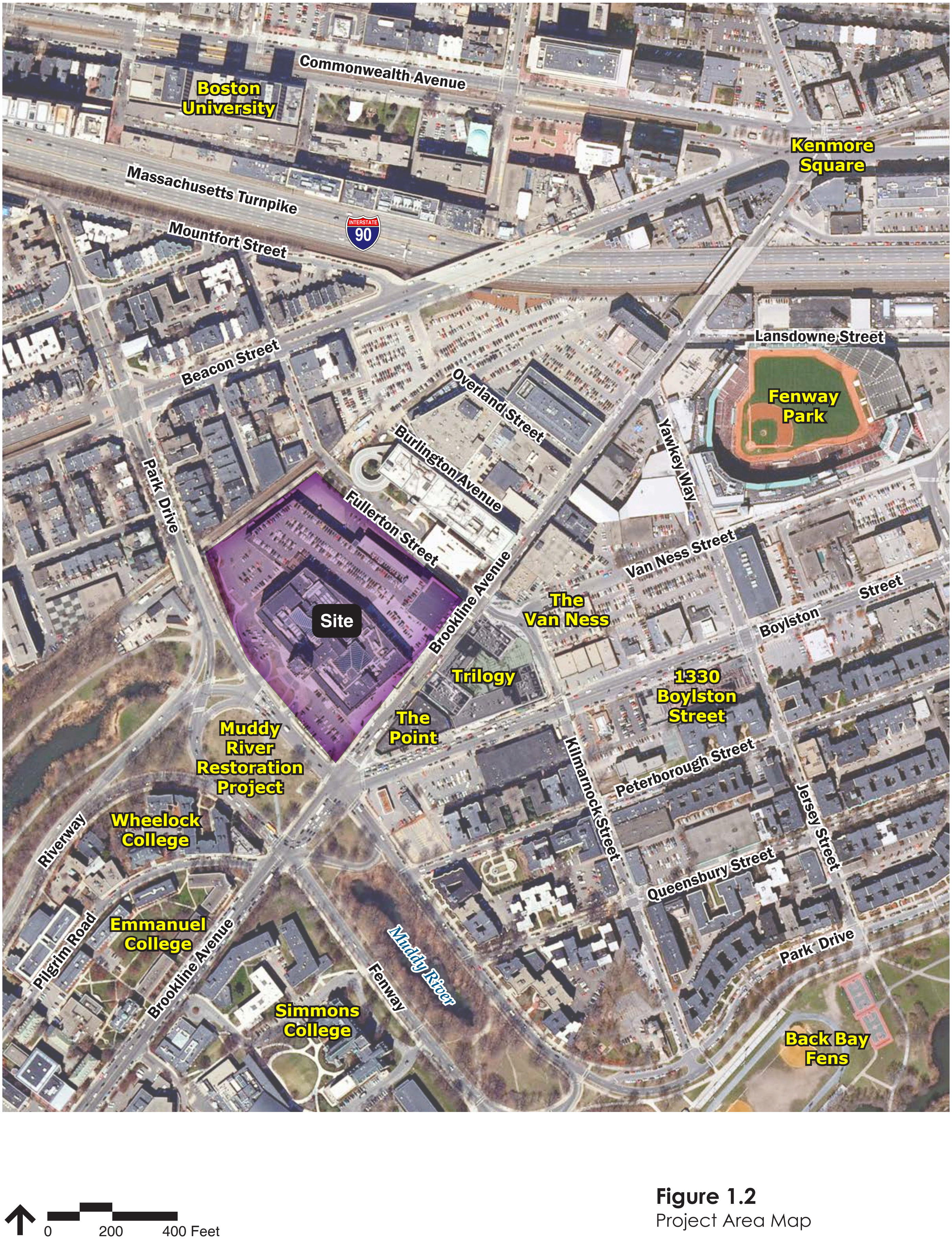

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Figure 1.2
Project Area Map

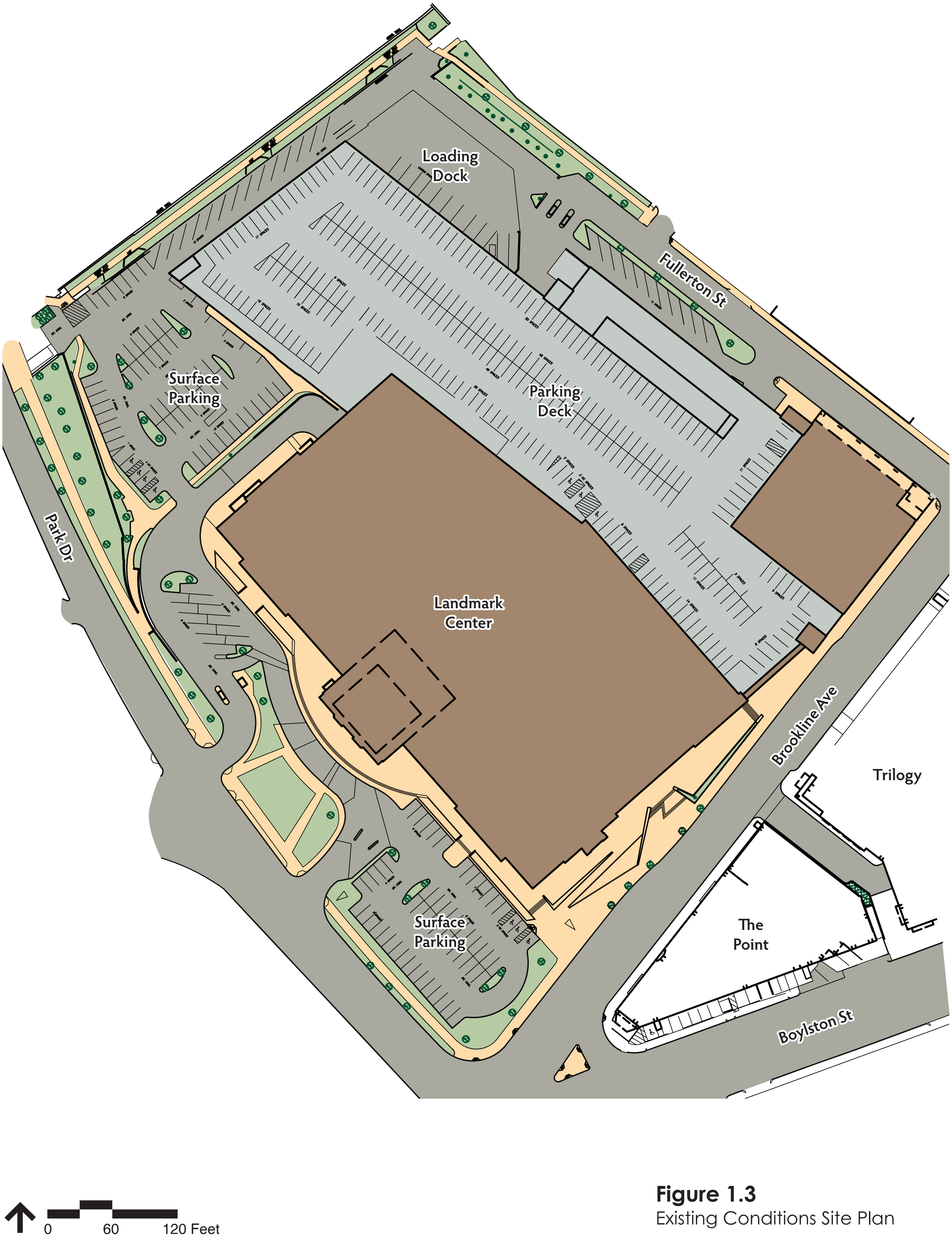

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Figure 1.3
Existing Conditions Site Plan

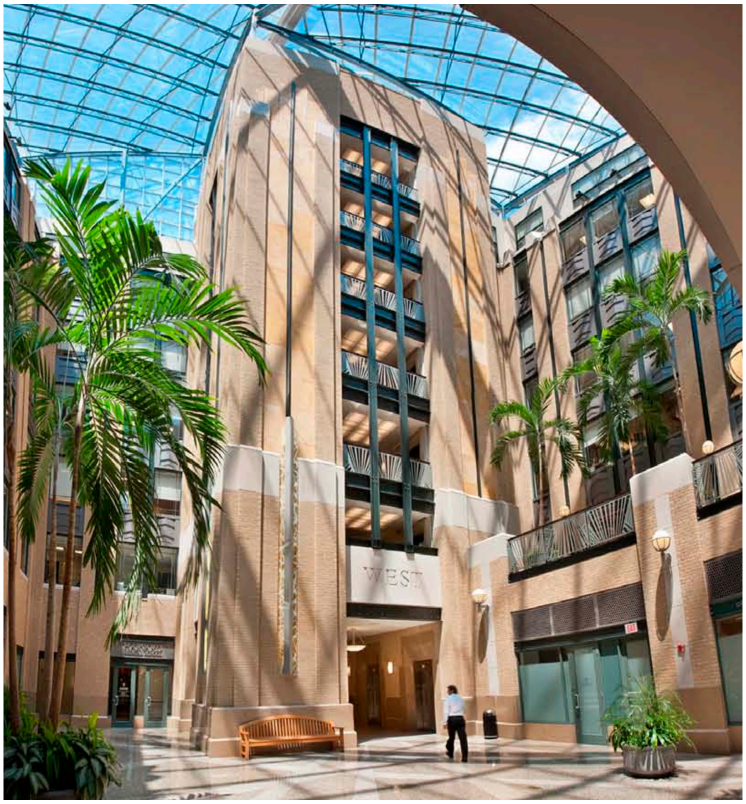

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Figure 1.4a
Photographs of Existing
Landmark Center

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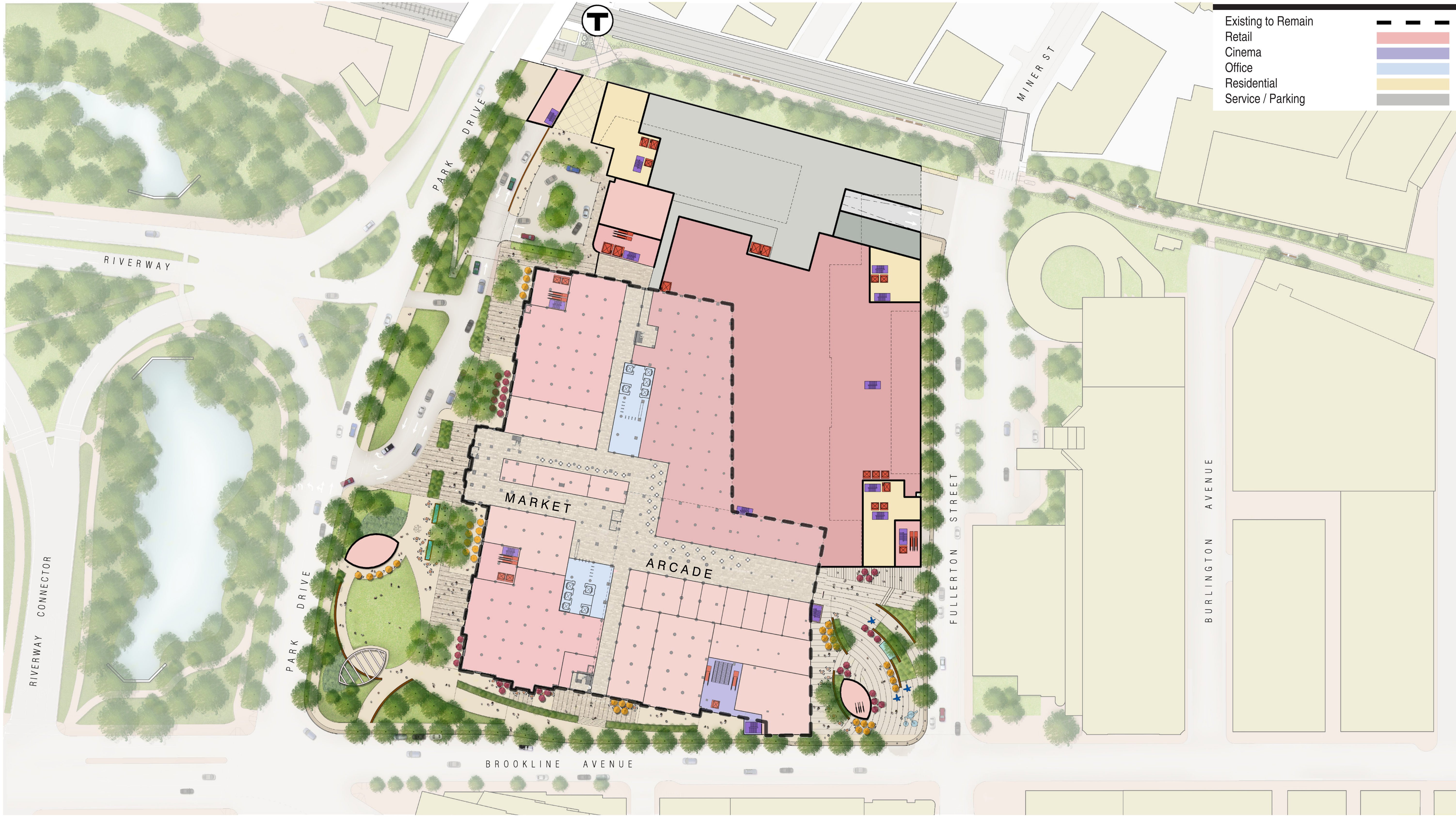
Figure 1.4b
Photographs of Existing
Landmark Center



0 50 100 Feet

Figure 1.5
Proposed Development Plan
(Ground Level)

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Figure 1.6a
View from the Riverway

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Figure 1.6b
View of the Market Arcade

2

General Information and Regulatory Context

Introduction

As mentioned previously in Chapter 1, *Executive Summary*, for more than a decade, the Proponent has been actively involved in the revitalization of the Fenway neighborhood in collaboration with the community and the BRA. Samuels was a strategic participant in the rezoning efforts that began in 1997 and that now help shape the vision of an urban village for the Boylston Street corridor. Samuels & Associates has also planned and implemented a number of development projects within the neighborhood, including Trilogy, 1330 Boylston, The Van Ness and The Point – all of which have served as the catalyst for the redevelopment of Boylston Street and creative reuse of existing buildings, including 120-126 Brookline Avenue and 1249-1255 Boylston Street. The following chapter provides an overview of the Project, presents the development team, and discusses the regulatory controls and approvals/permits anticipated for the Project.

Applicant Information

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Development Team

Proponent/Developer

Landmark Center Venture LLC, or affiliate, c/o
Samuels & Associates
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Prior Development Experience

The Proponent is an affiliate of Samuels & Associates, the real estate development and management firm based in Boston. Steven Samuels, President of Samuels & Associates, has overseen the successful development of over fifty projects in seven states, including many urban projects that satisfy the needs of communities and enhance local neighborhoods. A pioneer in urban planning and development in Boston, Samuels & Associates has produced a number of high quality mixed-use and retail venues in Boston neighborhoods, such as the 440,000 square foot South Bay Center in Dorchester, providing a full complement of necessity retail to the surrounding neighborhoods.

As previously mentioned, Samuels & Associates has been actively involved in the revitalization of the historic Fenway, including working with the Fenway neighborhood on the rezoning efforts that began in 1997 and helped shape the vision of an urban village for the Boylston Street corridor. Additionally, Samuels & Associates has developed three signature projects in the neighborhood: Trilogy; 1330 Boylston; and The Van Ness. All of these projects have served as the catalyst for the emergence of the Fenway neighborhood as the mixed-use urban village envisioned by the neighborhood. Trilogy, completed in 2006, is located on the north side of Boylston Street within the Fenway Triangle and added 576 residential units, ground floor restaurants, and retail to the neighborhood. 1330 Boylston, completed in 2008, is located on the south side of Boylston Street and includes 200 residential units as well as a new home for the Fenway Community Health Center. The most recent project, The Van Ness, consists of a mixed use building with residential and office uses above a retail base at 1325 Boylston Street. This project is under construction and will be occupied in mid-2015. Samuels & Associates is also in the pre-construction phase of The Point, which was recently approved by the BRA Board, is anticipated to consist of approximately 320 residential units above retail uses and residential lobby space on the first two levels.

Samuels & Associates supports a full range of Boston community organizations, including among others, the Boston Main Streets Foundation, the Boston Medical Center, the Boston Police Activities League, the Fenway Alliance, Fenway Civic Association, Fenway Community Development Corporation and others.

Legal Information

- **Legal Judgments or Actions Pending Concerning the Proposed Project:** The Proponent is not aware of any legal judgments or pending action which concerns the Project.
- **History of Tax Arrears on Property Owned in Boston by the Proponent:** The Proponent owns no real estate in Boston for which real estate tax payments are in arrears.
- **Site Control:** An affiliate of the Proponent owns the entire Project Site by virtue of the deed recorded in the Suffolk County Registry of Deeds in Book 4755, Page 121.

Regulatory Controls, Approvals, and Permits

Anticipated State and Local Permits and Other Approvals

Table 2-1 lists the anticipated permits and approvals from state, and local governmental agencies, which are presently expected to be required for the Project, based on information currently available. It is possible that not all of these permits or actions will be required, or that additional permits or actions may be needed.

Table 2-1
List of Anticipated Permits and Approvals

Agency/Department	Permit/Approval/Action
Commonwealth of Massachusetts[1]	
Department of Conservation and Recreation	Construction and Access Permit
MA Department of Environmental Protection	Sewer Extension/Connection Permit Temporary Construction Dewatering Permit
MA DEP, Division of Air Quality Control	Fossil Fuel Utilization Permit - Self Certification Notice of Asbestos Removal Notice of Commencement of Demolition and Construction
MA Department of Transportation	Approval for Construction on Former Right-of-Way
Executive Office of Energy and Environmental Affairs	Certificate Evidencing Completion of MEPA Review
Massachusetts Historical Commission	Project Notification Form
City of Boston	
Boston Redevelopment Authority	Chapter 121A Approval Article 80 Large Project Review Various Article 80 agreements
Boston Civic Design Commission	Schematic Design Review
Boston Landmarks Commission	Article 85 Demolition Delay (Determination of No Significance) Certificate of Design Approval
Boston Parks and Recreation Department	Approval of Demolition and Construction within 100 feet of Park or Parkway (or coordination through 121A process)
Boston Transportation Department	Signal Design Approval Transportation Access Plan Agreement (TAPA) Construction Management Plan
Boston Department of Public Works	Street Opening Permit; Street/ Sidewalk Occupancy Permit
Public Improvement Commission	Review of Private Road Layout Specific Repair Approval for Sidewalk and Curb Improvements Monitoring Well Approval Permit for Sign, Awning, Canopy Approval for earth retention (if required)
Boston Water and Sewer Commission	Site Plan Approval
Boston Conservation Commission	Order of Conditions for work within 100-year floodplain
Boston Committee on Licensing	Permit to Erect and Maintain a Garage Approval for Garage Entrance on Street with Hospital (or coordination through 121A process) Flammable Storage Permit
Boston Department of Inspectional Services	Building Permits and other Construction-Related Permits Certificates of Occupancy

NPDES National Pollutant Discharge Elimination System
GCOD Groundwater Conservation Overlay District
PDA Planned Development Area

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Zoning Controls

The Project Site is located in the Brookline Avenue Community Commercial Subdistrict of the Fenway Neighborhood District pursuant to Article 66 of the Boston Zoning Code (the "Code"). The Brookline Avenue Community Commercial Subdistrict is shown on Map 1Q of the City of Boston Zoning Maps. The Project Site is within the Restricted Parking Overlay District (RPOD) and the Groundwater Conservation Overlay District (GCOD). A portion of the Project Site along Park Drive is located in the Fenway/Park Drive Greenbelt Protection Overlay District (GPOD).

The Project Site is located within a Planned Development Area (PDA), which is subject to Section 3-1A(a) and Article 80 of the Code. A prior proposed project on the Project Site was approved through the adoption of a PDA. The BRA approved a Development Plan for PDA No. 36 Olmsted Plaza on November 30, 1989, which was approved by the Boston Zoning Commission on December 14, 1989. That project, known as Olmsted Plaza, was never constructed. The existing improvements on the Project Site were approved by the BRA as a Chapter 121A project on December 15, 1996 by a Report and Decision (the "Existing 121A Approval") that included a zoning deviation from the requirement in Section 3-1A(a) of the Code that a project within a PDA must proceed under a PDA Development Plan.

The Proponent intends to seek a 121A Approval in connection with the Project and changes in use. Table 2-2 below presents a comparison of the Project's proposed uses, dimensions, parking, loading and design elements with the corresponding characteristics of the existing improvements on the Project Site approved pursuant to the Existing 121A Approval.

Table 2-2
Zoning Code Dimensional Regulations and Project Dimensions

Category	Existing Improvements	Proposed Design	
Permitted Uses (partial list)	Cinema, Fitness Center, Office, Parking Facility, Retail, Restaurant	Cinema, Fitness Center, Multi-Family Residential, Office, Retail, Restaurant, Parking Facility	
Floor Area Ratio (FAR)	Up to 5.0	Up to 5.0	
Maximum Building Height	197 feet (tower)	197 feet (existing tower) 180 feet (new building)	
Parking Spaces	Up to 1,790 spaces	Up to 1,500 spaces[1]	
Off-Street Loading Bays	12	Minimum of 8	
Minimum Front Yard Setback	N/A	N/A	
Minimum Side Yard Setback	N/A	N/A	
Minimum Rear Yard Setback	N/A	N/A	
Minimum Lot Size	N/A	N/A	
Minimum Lot Width	N/A	N/A	
Minimum Lot Frontage	N/A	N/A	
Street Wall Height[2]		<u>Landmark Center Building</u>	<u>Proposed Buildings</u>
	Up to 60 feet (parking/Cinema) on Fullerton Street	N/A	Up to 180 feet on Fullerton Street
	Up to 112 feet on Brookline Avenue	Up to 112 feet on Brookline Avenue	Up to 95 feet on Brookline Avenue
	Up to 197 feet (Sears tower) on Park Drive	Up to 197 feet (Sears tower) on Park Drive	Up to 166 feet on Park Drive
Minimum Usable Open Space per Dwelling Unit (D.U.)	N/A	>41,250 square feet	

N/A Not Applicable
1 To provide 1,500 striped structured parking spaces with additional capacity with managed valet operations.
2 Excluding mechanicals and amenities.

Article 80 Review – Large Project Review

Because the proposed building exceeds 50,000 square feet, the Project is subject to the requirements of Large Project Review pursuant to Article 80 of the Code. Since the proposed building also exceeds 100,000 square feet, the Project is subject to schematic design review by the Boston Civic Design Commission (BCDC) under Article 28 of the Code.

Based on a comprehensive approach to addressing potential impacts and mitigation similar to the level of information normally presented in a Draft Project Impact Report (DPIR), it is the desire of the Proponent that the BRA, after reviewing public and agency comments on this expanded PNF and any further responses to comments made by the Proponent, may issue a Scoping Determination Waiving Further Review pursuant to the Article 80B process.

Preliminary Development Impact Project (DIP) Information

The Project is anticipated to contain more than 100,000 square feet of gross floor area of Development Impact Uses, as defined under Section 80B-7 of the Code. If the final Project uses constitute a Development Impact Project under Section 80B-7 of the Code, the Proponent will comply with all exaction requirements applicable under the Code to the portion of the Project in excess of 100,000 square feet of gross floor area of net new Development Impact Uses.

Impact Advisory Group

In October 2000, Mayor Thomas M. Menino outlined the Impact Advisory Group (IAG) process in "An Order Relative to the Provision of Mitigation by Development Projects in Boston." The Mayor further amended the process in April 2001, in "An Order Further Regulating the Provision of Mitigation by Development Projects in Boston" in order to increase the representation of local elected officials. These Orders, adopted by the BRA Board, create a comprehensive framework to clarify the role of the BRA, the City, the developer, and the community in the determination and mitigation of the impacts of development.

The IAG may contain up to fifteen (15) members, two (2) each nominated by the state senator, state representative, and district city councilor, and the remainder by appointment of the Mayor on the recommendation of residents, businesses, and community organizations as well as at-large city councilors. The IAG advises the BRA on impact and mitigation. IAGs offer BRA staff the chance to work closely with diverse members of the community to understand local concerns, needs, and opportunities. IAG members are invited to take part in the public agency scoping sessions called for in Article 80 of the Boston Zoning Code. The IAG is also encouraged to take part in community meetings that allow for public review and discussion of proposed projects. IAG members are offered the opportunity to review for comment major submissions by a project proponent as well as the Cooperation Agreement between the developer and the BRA prior to its adoption by the BRA.

IAGs do not replace the role of the greater community in the development review process, but is an overlay to the process that allows for greater understanding by the BRA of local concerns and greater public insight into the thinking of the BRA and other public agencies involved in the development review process.

The filing of the Letter of Intent on August 8, 2013 commenced the IAG nomination process conducted by the BRA.

Meetings with Other Interested Parties

The Proponent and its development team have met with the following city and state agency officials, representatives of the local community, local neighborhood associations, property owners and other interested parties during the entire project planning phase. The Proponent will continue to meet with such individuals and groups during the Article 80 review period.

- **Boston Redevelopment Authority** - The Proponent has met with the BRA Planning and Design staff on multiple occasions to review the proposed project, including the contents/analyses included in this expanded PNF filing.
- **Boston Landmarks Commission** – The Proponent met with Landmarks Commission staff with BRA design staff on May 17, 2013.
- **Boston Transportation Department** –The Proponent met with BTD staff on May 7 and May 2[4], 2013 to review the project design, traffic analysis, and to collaborate on planning construction of the multi-use path.
- **Boston Water and Sewer Commission** – Representatives for the Proponent met with the Boston Water and Sewer Commission to review and solicit initial feedback on the preliminary site design. The project team will continue to coordinate with the BWSC as the design develops and will submit the Project for Site Plan review when design reaches the 75% stage.
- **Boston Environment Department (BED)** – On July 2, 2013, the Proponent meet with a BED representative to discuss the Project and, specifically, air quality ("hot spot"), noise analyses, and compliance with Article 37.
- **Boston Conservation Commission** – While the Project does not include wetland resource areas, the existing site contains areas designated as part of the 100 year flood plain primarily along the north edge of the Project site. Representatives for the Proponent met with the Conservation Commission agent to review the existing conditions and discuss ways that the existing flood storage can be accommodated in the proposed site design. The design team will further coordinate with the Commission as the design develops.
- **Massachusetts Department of Conservation and Recreation** – The Proponent is planning to meet with the DCR in early October.
- **Massachusetts Bay Transportation Authority –** The Proponent met with MBTA real estate and operations personnel on June 7 2013 to review the development plan, access improvements through Landmark Center property that will benefit MBTA riders, and to collaborate on the design of the multi-use path.

- **Massachusetts Department of Transportation –** The Proponent met with MassDOT real estate staff (specifically, Jeffrey Simon) to review the plan and the multi-use path improvements.
- **Fenway Civic Association** - The Proponent attended the meeting of the Fenway Civic Association at which the architect presented the building design on July 2, 2013.
- **Audubon Circle Neighborhood Association (ACNA) –** The Proponent attended a meeting of the ACNA at which the Proponent gave an overall summary of the proposal and presented the building design on July 16, 2013, and presented the proposal again at a meeting held on August 6, 2013.

As part of the Article 80 review process, the Proponent is committed to maintaining an open dialogue with all interested parties. Proponent will continue to work with the neighborhood, including the Fenway Civic Association, the Fenway CDC, Audubon Circle Neighborhood Association and other neighborhood representatives through the review and evaluation of this proposal. Additionally, the public will have the opportunity to review this PNF, which has been distributed to various departments and agencies by the BRA and is available upon request.

3

Urban Design

Introduction

The urban design strategies of the Project have largely grown out of and have been nurtured by the local Fenway community groups and the BRA through new zoning of the Fenway. Through zoning changes following a neighborhood visioning process, the Fenway is being transformed with the development of new mixed-use projects, including Trilogy, 1330 Boylston Street, The Van Ness, and The Point and redevelopment of existing buildings, such as 120-126 Brookline Avenue and 1249-1255 Boylston Street. These catalytic developments have set the stage for the continued transformation of the underutilized parcels remaining along Boylston Street and Brookline Avenue. The Project will further the primary objective of creating a diverse urban village (photographs of existing examples of this concept are shown in Figure 3.1) by creating a destination food market at the base of the building, providing over two acres of high quality publicly accessible open space along the Emerald Necklace, providing new area housing and unique retail opportunities, and revitalizing a large-scale existing office building and transforming it into a modern employment hub. With the demolition of the existing above grade garage and conversion of surface parking to open space, the Project will not only create new open space, but will create pathways through the building and improve the pedestrian experience along well traveled routes between the neighborhood and the MBTA station. These changes will dramatically enhance the Fenway's position as a vibrant 24/7 mixed-use district.

The following chapter describes the neighborhood context, presents the design concept for the Project and describes the visual aesthetics and architectural design, including height and massing of the structures, and describes the proposed ground level treatment, including access and circulation and streetscape and landscape improvements.

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Summary of Key Findings

Key findings related to urban design include:

- Replace an almost 380,000-square foot above-ground parking structure with new diverse and active ground-floor uses, including unique retail and residential lobbies reinforcing the Fenway's position as one of Boston's desirable neighborhoods.

- Create penetrability of the existing Landmark building by providing enhanced pedestrian connectivity and improved pedestrian experiences between the MBTA station and the district.
- Further the neighborhood vision for a diverse urban village by providing new area housing and unique retail opportunities, such as a destination food market and revitalized office component that will add vitality to the mixed-use district.
- Preserve the landmark status of the existing historic building through design that considers its original character, while adding distinctive features that accommodate the increased activity in the lower floors.
- Create approximately 2.2 acres of publicly accessible open space on-site, including:
  - Increase publicly accessible open space by almost 0.5 acres for a total of approximately 1.3 acres of publicly accessible open space along Park Drive currently occupied by surface parking lots.
  - Create approximately one acre of public open space along Brookline Avenue and Fullerton Street, areas currently occupied by inactive and unattractive service facades.
  - These landscaped areas will respect the character and dignity of the historic building, activate streetscapes with retail and active open space, and complement the current restoration of the Emerald Necklace in the Sears Rotary.

Urban Context

The existing Landmark Center occupies a prominent location at the intersection of Park Drive and Brookline Avenue less than ¼ mile from Fenway Park, Wheelock, Emmanuel and Simmons Colleges, the Longwood Medical and Academic Area (LMA) the Audubon Circle neighborhood and the Fenway residential neighborhood south of Boylston Street. The historic Sears building and tower face a bend in the Riverway section of the Emerald Necklace where the Muddy River turns southeast toward the Back Bay Fens, standing as a monumental presence on this public open space, visible from a distance in either direction. A service drive entrance off Park Drive leads to surface parking and the parking garage.

Directly across Park Drive is an isolated section of park land, formerly a Sears parking lot, defined by the confluence of traffic from the Riverway, Brookline Avenue, Park Drive and the Fenway. Known as the Sears Rotary, construction is underway to daylight the Muddy River in this isolated section and improve traffic flow around it. This work will restore a restful park oasis for pedestrian and recreational use and make it possible for eastbound traffic on the Riverway to enter the Project Site directly.

The Project Site is bounded on the south by Brookline Avenue which connects Route 9 and Brookline center to Kenmore Square. Brookline Avenue is defined by the historical automotive industry buildings of the 1920's and more recently the development of medical offices (e.g., Harvard Vanguard Medical Associates) and fast food restaurants, bars, and convenience retail. The Regal 13 Cinema and Dick Blick art supply at Landmark have their entrances on Brookline Avenue, across the street from the successful Trilogy residential and retail development and new restaurants and retail at 120-132 Brookline (e.g., Marshalls, Yardhouse, etc.). A portion of the Brookline Avenue frontage of Landmark does not currently live up to its full potential, as there is a grade separation between the retail storefronts and the sidewalk.

To the east of the Project Site is Harvard Vanguard Medical Associates, a medical and surgical care provider in a building converted from its original warehouse and storage use, with an adjacent three-story annex building fronting on Fullerton Street. Fullerton Street sits between Landmark and Harvard Vanguard, and extends toward the rear of the Project Site. Fullerton Street gives access to the Landmark service and loading area, the Landmark and Harvard Vanguard parking garages, the Harvard Vanguard main entrance and drop-off and the annex parking. At the rear of the Harvard Vanguard building is a two story spiral ramp to the second and third floor parking levels. Just beyond this is a bridge over the MBTA subway portal leading from the Harvard Vanguard service drive to Miner Street which connects to Beacon Street.

The north boundary of the Project Site runs parallel to the MBTA Green Line route, which originates at North Station and extends through Brookline and into Newton in the other direction. Across the MBTA right of way is the portion of the Audubon Circle residential neighborhood bounded by Park Drive, Beacon Street and Miner Street. Aberdeen Street comes to a dead end at the MBTA right-of-way in the middle of this area as do the midblock alleys on either side. Residential buildings range from two to six stories with some commercial space on Miner and Aberdeen Streets.

Underneath the Park Drive overpass at the northwest corner of the Project Site is the Fenway T-stop. This stop is used by residents, commuters, students, shoppers, tourists and attendees at Fenway Park events. Pedestrians currently make their way from the MBTA stop to the street via sidewalk out to Park Drive or past the Landmark Center storefronts to Brookline Avenue, or along the footpath behind the parking garage toward Fullerton and the Miner Street overpass. The current parking structure and internal arrangement of Landmark Center form a significant barrier to pedestrian flow between the MBTA and the growing commercial district along Brookline Avenue and Boylston Street, forcing pedestrians to walk a circuitous path around the perimeter of the Project Site where they encounter conflicts with on-site vehicular traffic flow. Additionally, the planned Multi-Use Path will run parallel to the MBTA tracks adjacent to the Project Site connecting to the Fenway and Kenmore Square via the Riverway Park bike path.

Design Concept and Development

The Project proposes to build on the ongoing revitalization of the Fenway neighborhood. It will create enhanced pedestrian connectivity by penetrating the existing building with pedestrian pathways, create new open space and activate the streetscape on all street frontages. The Project, with improved parking (i.e., below grade), expanded retail, and an improved pedestrian experience as well as the addition of new housing will continue this revitalization trend. The proposed massing and height for the Project Site are consistent with the height of adjacent proposed development along Brookline Avenue and have been carefully crafted to fit within the context of the Audubon Circle neighborhood beyond the MBTA tracks to the north.

The urban design concept for Landmark Center creates a new vibrant streetscape along Park Drive, Brookline Avenue and Fullerton Street by expanding the retail, reducing surface parking and expanding open space for public use. The existing parking garage is to be demolished and all vehicular parking to the development is to be located below-grade, accessed via ramps from new driveways at Park Drive and Fullerton Street. Existing conflicts between cars and pedestrian flow will be eliminated by new parking ramp entrances at the perimeter of the Project Site.

The design shows special consideration for the original character of the existing historic building and adds distinctive features that accommodate the increased retail activity in the lower floors. A grand new two-story high market arcade is proposed to connect the central tower entrance on Park Drive through the existing Sears building to the new plaza on Brookline Avenue. Additional ground floor entrances are proposed at the T drop-off and at Brookline Avenue that connect the office elevator lobbies, providing for direct and weather protected pedestrian flow from the MBTA through the Landmark Center. The main tower entrance is made open, transparent and inviting to announce the dramatic change to the interior.

Figures 3.2a-3.2f show the proposed floor plans. The Project will provide a two-story base of retail, which will activate and enliven all three street edges of the Project Site. The service and loading is enclosed within this building base and access is kept roughly in its present location where Fullerton Street ends. Demolition of the 1966 warehouse addition (now parking) and part of the 1990's retail building will allow for the widening of Fullerton Street to include dedicated turning and bicycle lanes and create space for a generous public plaza providing open space on Brookline Avenue and Fullerton Street for public use. Two-story retail and a new east entrance to the Landmark market arcade will define the plaza edge on two sides. The market arcade establishes new connections between the Fenway T-stop and Brookline Avenue intended to break down the current "superblock" and create permeability for pedestrians and expanded retail activity.

Residential and office uses are proposed above the retail base. The proximity of the MBTA Fenway station and the planned Multi-Use Path, Muddy River restoration, and Riverway improvements are all integrated into the Project's design. A Fullerton Street presence is also proposed in keeping with the Proponent's aspiration to make this a vibrant urban street. The new buildings establish street walls and generous sidewalks that accommodate an activated pedestrian realm and streetscape.

The residential buildings are a composition of several distinct masses using form and materials to clearly differentiate the retail from the residential, the cinema entertainment experience, the residential from the historic Landmark building and residential buildings from one another. The residential towers are differentiated from the existing art-deco masonry by form, floor to floor height and materials. Each residential tower adopts a form, design and materiality distinct from the others, yet distinguishable as a group from the retail base and historic building.

Height and Massing

Figure 3.3 shows the east-west cross section of the Project. Building massing has been shaped in response to the height and use of the surrounding context and the desire to preserve daylight and views both on- and off-site. The removal of almost 380,000 square feet of existing above-grade garage offsets the impact of new massing on the Project Site. The two-story base of the development is made up of a mix of small, intermediate and anchor scale retail designed to draw pedestrians to and through the Project Site from the MBTA, Park Drive, Brookline Avenue and Fullerton Street.

Building masses above the retail base are oriented perpendicular to Brookline Avenue and Park Drive to maximize light and air around the proposed development. Building height decreases from south to north, stepping down toward the Audubon Circle neighborhood. The roof space between new and existing buildings above the retail base creates a unique opportunity for multi-level open space that is activated by both the commercial and residential uses. Materials and architectural expression carried down from the building mass to the street level accentuate the massing composition.

Architecture and Aesthetics

A modern architectural expression that responds to the existing context and to the orientation of new buildings is proposed. The proposed buildings will stand alongside recent and new development at Trilogy, 1330 Boylston Street, The Van Ness and The Point, and will express their own unique identity amid the continued positive growth of this neighborhood. Figures 3.4a-3.4d show the proposed elevations.

The architectural expression of the Project starts at the street edge with new paving, lawn, planting, seating, lighting and public art creating a lively and inviting streetscape along the sidewalk and storefronts. The materials of the retail base emphasize a rich and diverse palette, with the use of varied opaque cladding materials alongside combinations of transparent and translucent glazing. Contrasting materials are employed to reduce the scale of the facade and massing as it is viewed from the street. The residential buildings facing Park Drive and Brookline Avenue incorporate a combination of metal panel and glazing that contrasts with the historic masonry building. The residential building adjacent to the Miner Street overpass has a more traditional expression that acknowledges and respects the character of the Audubon neighborhood to the north. Windows throughout the Project will use clear low-e glass in aluminum frames.

Historically, the Sears Roebuck and Company Mail Order Store has displayed the company name in 12 foot high letters on its tower and on corner-mounted blade signage. Bunting, banners, and surface mounted signage were also used to commemorate special events. The Proponent proposes to continue this tradition of monumental celebration signage for Project tenants and events. Refer to Figure 3.5 for examples of historic signage.

Views and Vistas

The Project will create new vistas and building lines along Park Drive, Brookline Avenue, and Fullerton Street in the continued expansion of the Fenway district. Viewed from the Riverway, Fenway and Park Drive the monumental art-deco Sears building will stand out in all its present glory, enhanced by pedestrian and landscape improvements at grade and accompanied by new glass and metal panel residential buildings. From the sidewalk along the north side of Beacon Street the new development, like the existing Sears building, will not be visible except down view corridors at Miner Street, Aberdeen Street and Park Drive. These view corridors will be improved, as they presently frame the unattractive façade of the existing above grade garage structure.

Public Realm and Open Space

Figure 3.6 shows the improved pedestrian circulation plan. The Project will expand upon the growing developments in the Fenway area and positive growth along Brookline Avenue, and focuses on creating permeability and new connections between the Fenway MBTA stop and Brookline Avenue. Demolition of existing parking and retail will clear the way for construction of new below grade parking and a new public plaza fronting on Brookline Avenue and Fullerton Street. Surface parking will be reduced and ultimately eliminated so that open space can be expanded along Park Drive. Fullerton Street will be transformed from a service access road to a true urban streetscape with public open space, retail, residential and medical office activity along its length. This streetscape will be enhanced by district-wide treatments, including signage, street furniture, lighting, and landscaping. Generous sidewalk dimensions and character are proposed throughout the Project Site.

The open space along Park Drive will maintain the character and dignity of the historic building while activating the urban streetscape and creating an oasis-like area along the Emerald Necklace. This open space will connect via crosswalks to the restored Muddy River portion of the Emerald Necklace and will be landscaped to complement the Park. As previously mentioned, a new public plaza fronting on Brookline Avenue and Fullerton Street is proposed. Figures 3.7a and 3.7b present the proposed landscape plans for each of these spaces.

A grand new two-story high market arcade is proposed to connect the central tower entrance on Park Drive through the existing Sears building to the new plaza on Brookline Avenue and the main tower entrance is made more open, transparent and inviting.

The Project includes construction of the segment of the City's planned Multi-Use Path to run adjacent to the Project Site connecting the Riverway Park bike path to the Fenway and Kenmore Square (subject to necessary approvals). The Proponent will continue to host the Hubway bike share station along Brookline Avenue. The rear wall of the building will be thoughtfully designed in order to complement the newly constructed Multi-Use Path.

Vehicular Access and Circulation

The Project will include a new below-grade parking garage. Vehicles enter and exit the garage via ramps accessed from Park Drive and Fullerton Street (refer to Figure 4.1). All large truck deliveries occur at the enclosed loading dock off of Fullerton Street. Curb cut locations are coordinated with planned roadway improvements and traffic requirements. Refer to Chapter 4, *Transportation and Parking* for further details.

Figure 3.1
Photographs of Urban Village Concept

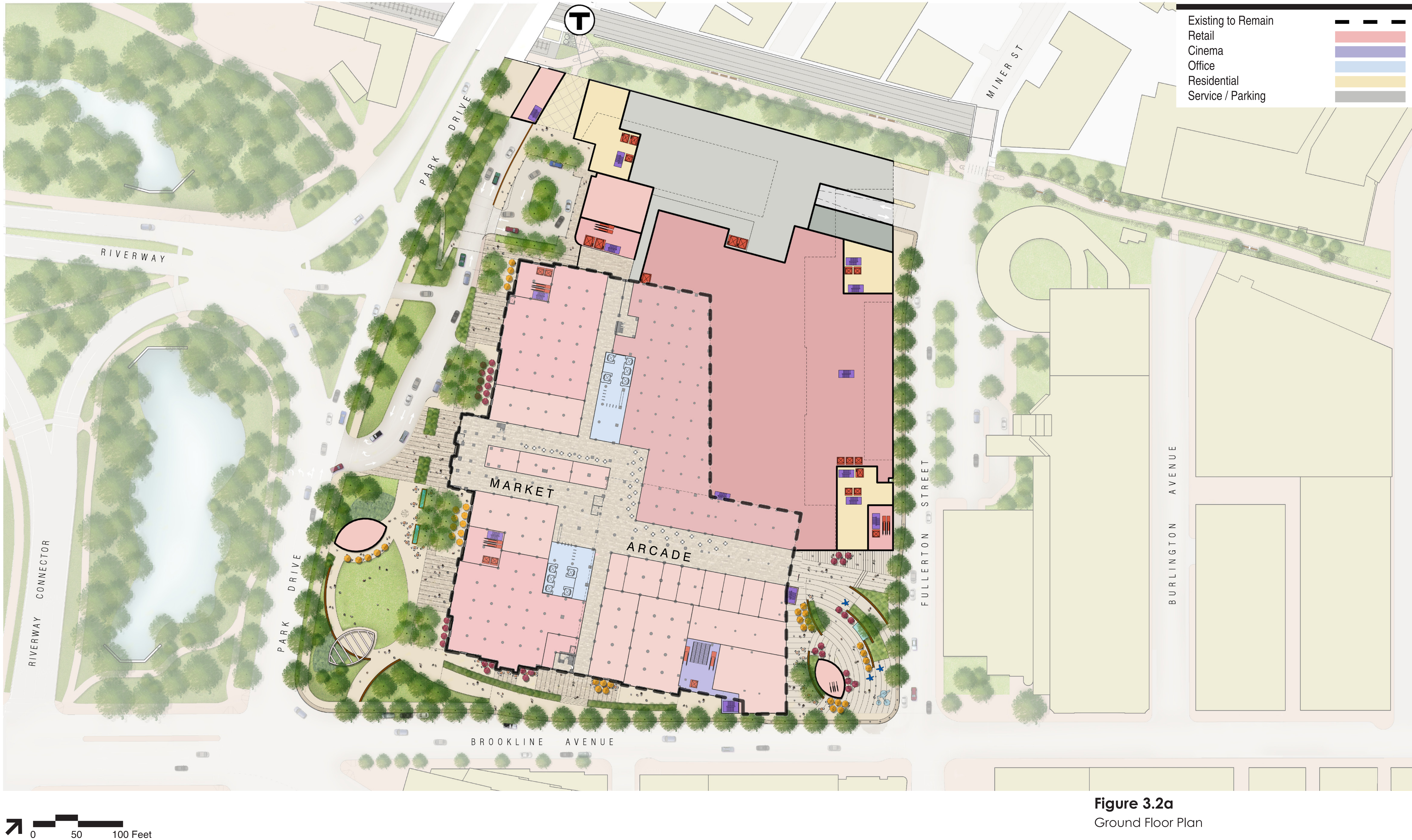

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Figure 3.2a
Ground Floor Plan

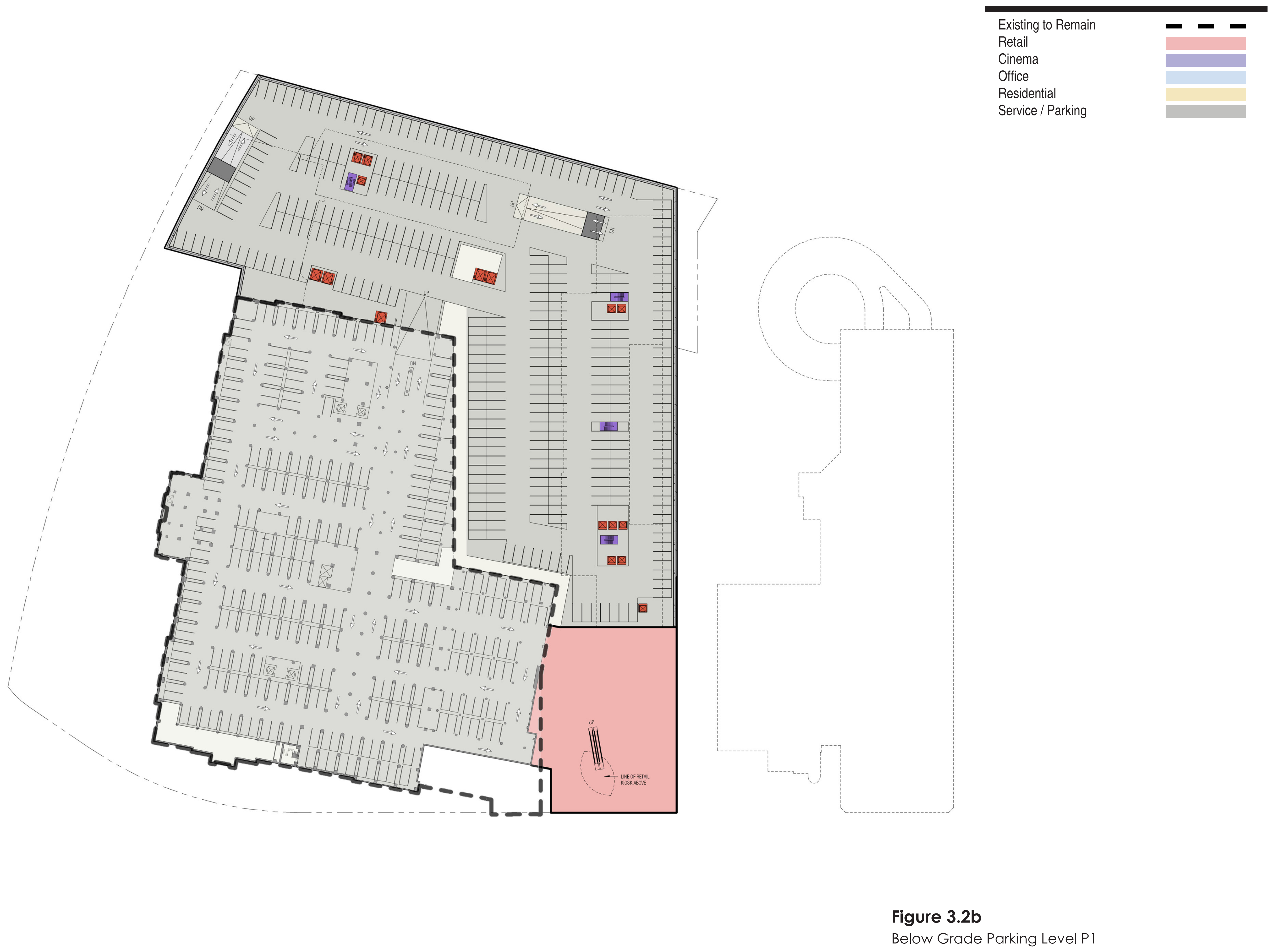

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Figure 3.2b
Below Grade Parking Level P1

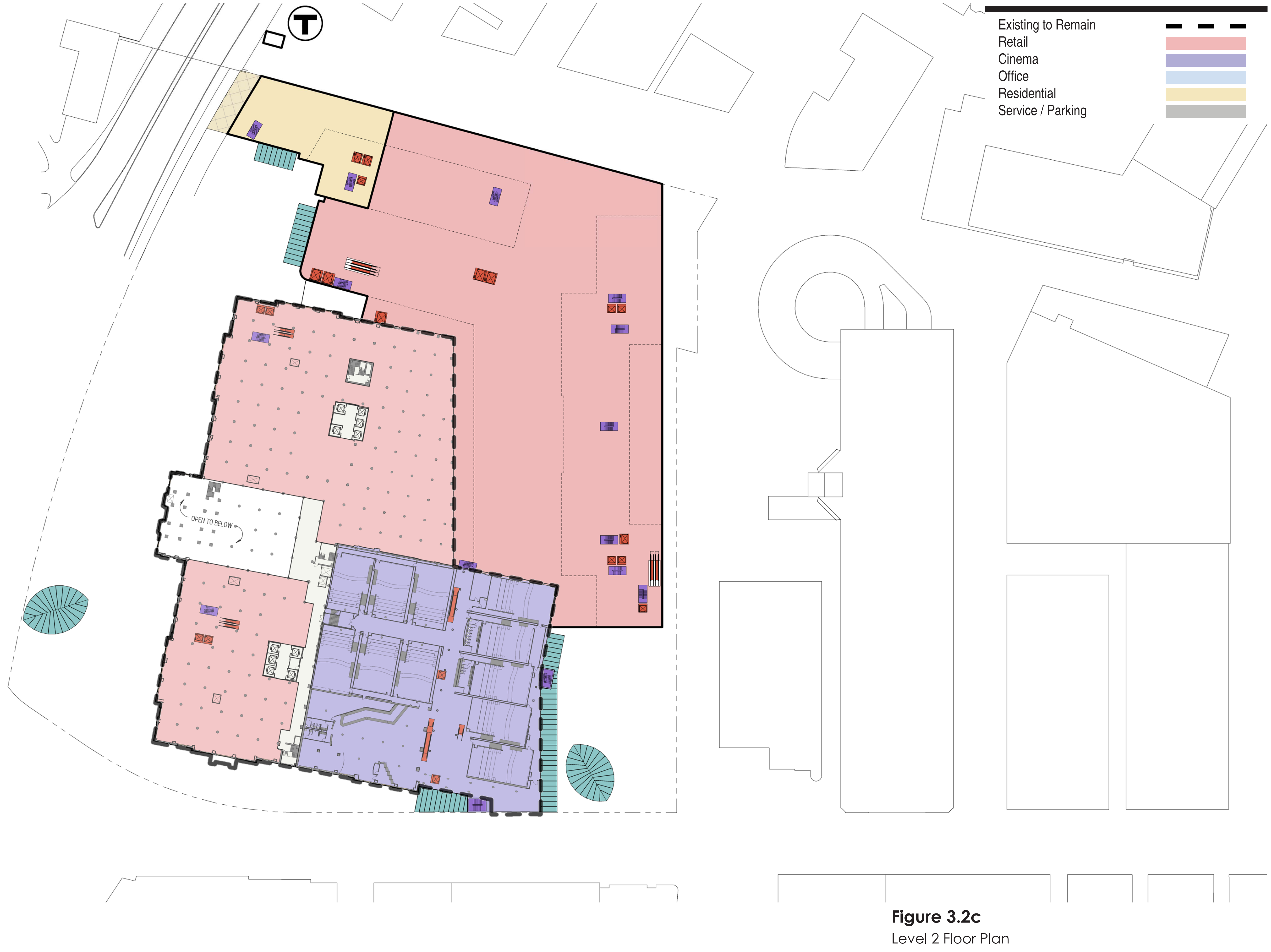

Figure 3.2c
Level 2 Floor Plan

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Figure 3.2d
Level 4 Floor Plan

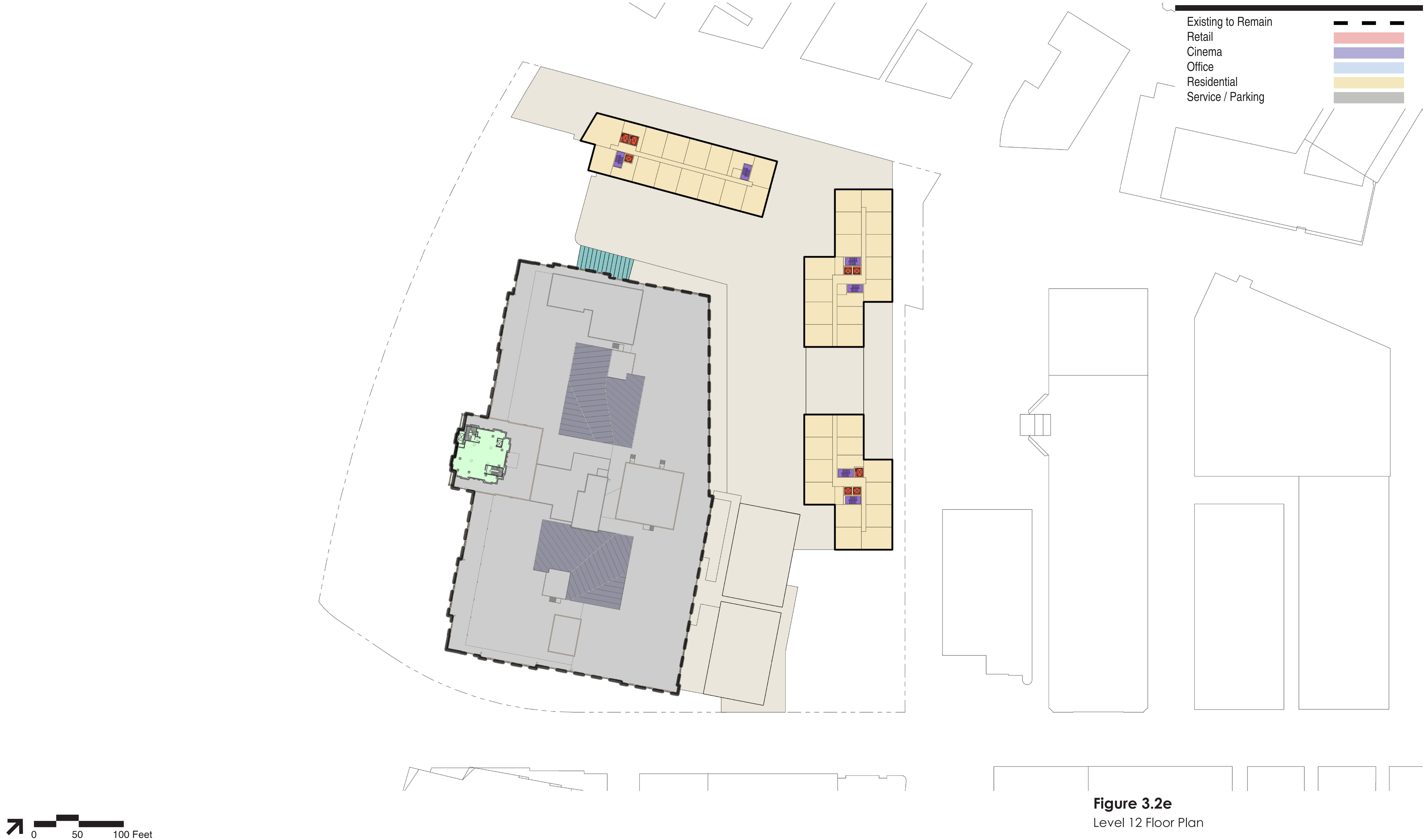

Figure 3.2e
Level 12 Floor Plan

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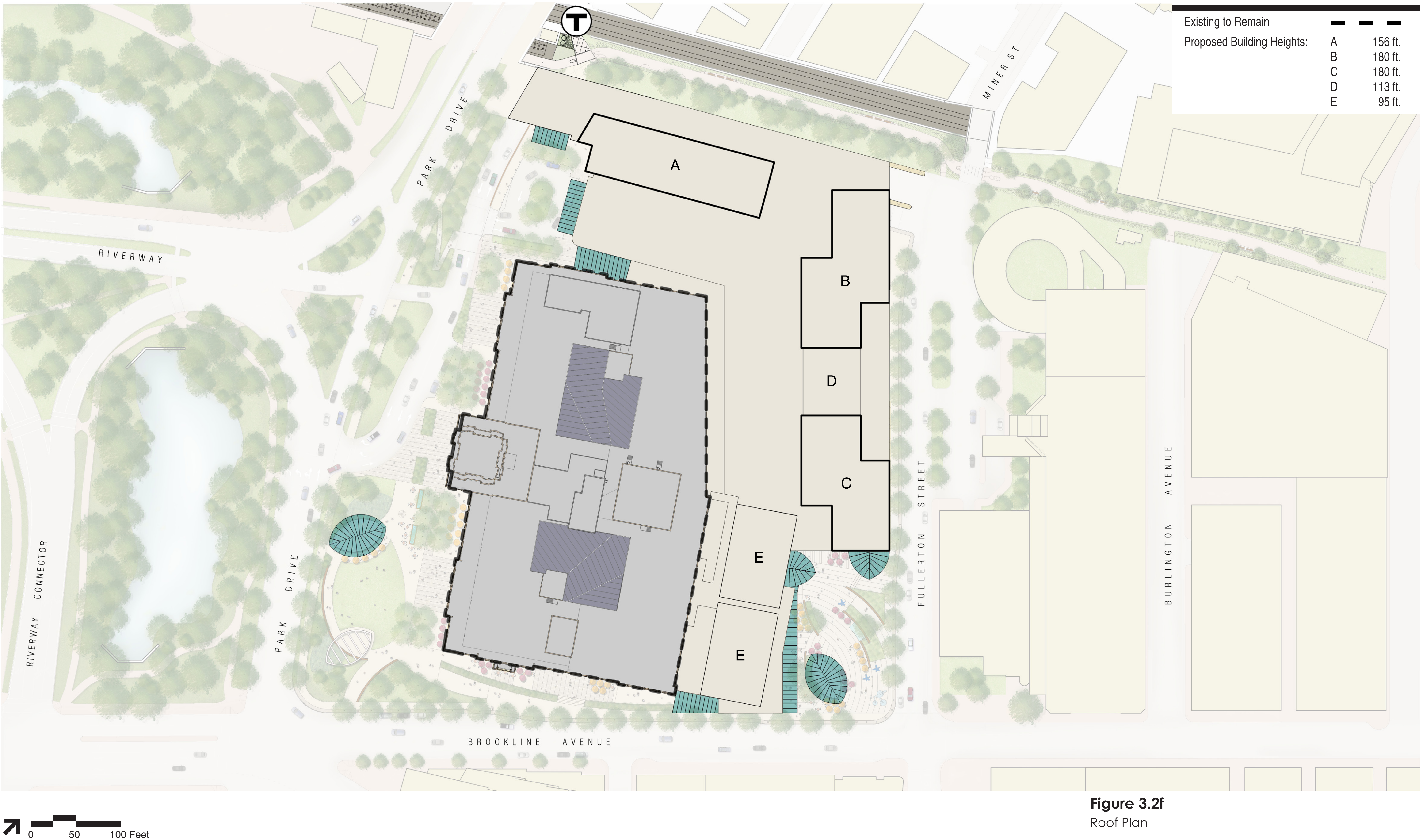

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Figure 3.2f
Roof Plan

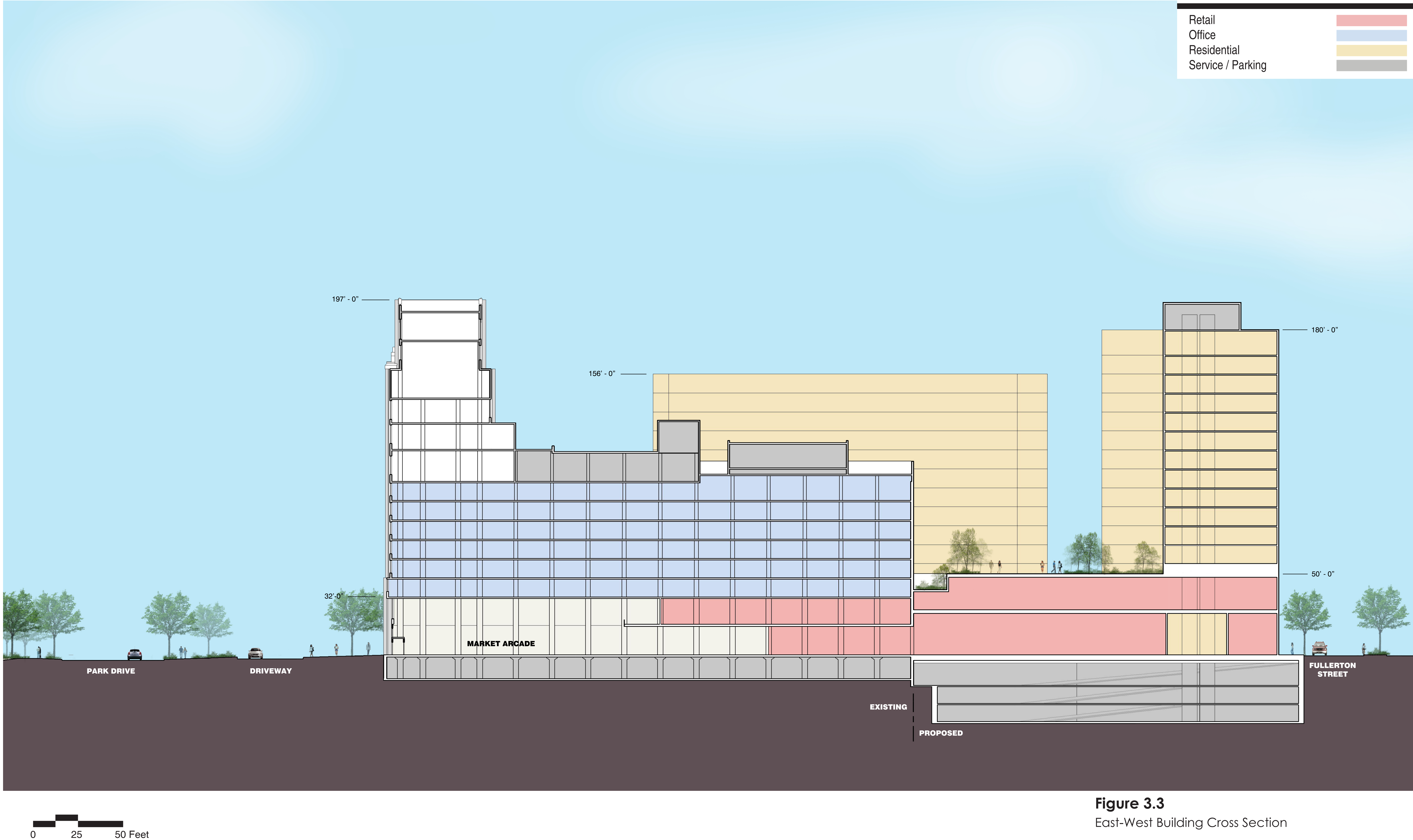

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Figure 3.3
East-West Building Cross Section

0 25 50 Feet

Figure 3.4a
Park Drive Elevation

Figure 3.4b
Brookline Avenue Elevation

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0 25 50 Feet

Figure 3.4c
Fullerton Street Elevation

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Figure 3.4d
MBTA Right-of-way Elevation

Figure 3.5
Historic Signage

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Figure 3.6
Pedestrian Circulation Plan

Figure 3.7a
Park Drive and Brookline Avenue
Open Space Landscape Plan

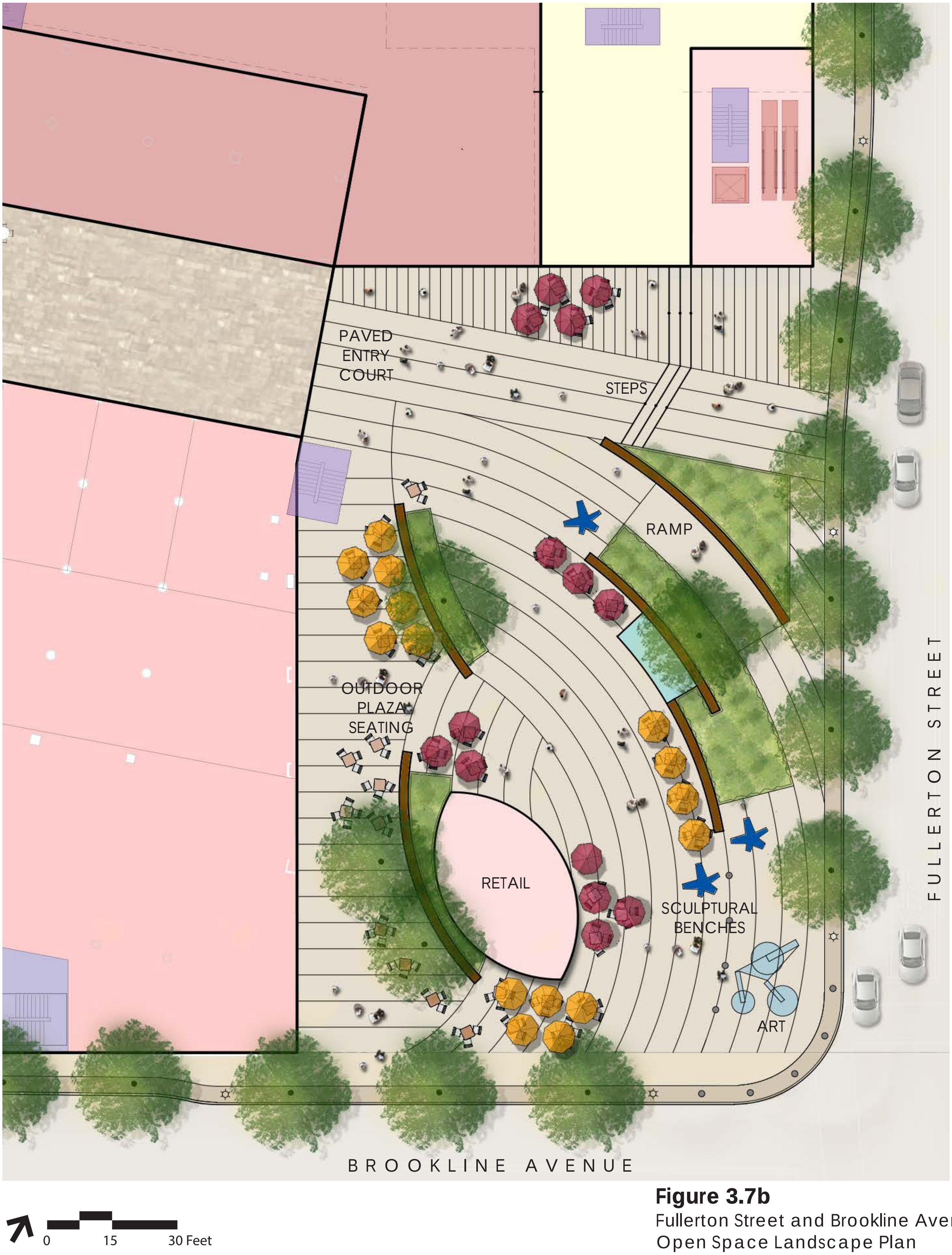

Figure 3.7b
Fullerton Street and Brookline Avenue
Open Space Landscape Plan

4

Transportation and Parking

Introduction

This chapter provides a detailed and comprehensive evaluation of the existing and proposed transportation conditions with and without the Project, as described previously in detail in Chapter 1. The transportation analysis identifies transportation-related impacts as a result of the Project. The analysis captures in detail the operational characteristics of the Project, and provides a basis for determining to what extent, if any, Project-related traffic is likely to affect the wider transportation network.

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Summary of Findings

The Project includes new residential, retail, and office space to help build upon the neighborhood's goal to provide a live-work environment that will reduce auto-dependency. The Project will expand upon the recent success and neighborhood transformation as a result of 1330 Boylston Street, Trilogy, and the planned Van Ness and The Point projects. The Project is consistent with the *Fenway-Longwood-Kenmore Transportation and Pedestrian Safety Action Plan*[1] which seeks to balance vehicular traffic with the pedestrian and cyclist demands in the Fenway neighborhood.

Independent of the Project, there are number of planned transportation improvements in the Fenway neighborhood which will improve transit, pedestrian, bicycle, and traffic operations in in the near future including:

- **Yawkey Station –** the Massachusetts's Bay Transportation Authority's (MBTA) planned reconstruction of Yawkey Station will provide improved transit amenities for Commuter Rail passengers and bus riders.
- **Fenway Multi-Use Path** - the City plans to install a multi-use path for pedestrians and bicycles connecting the Fenway Commuter Rail Station to the Emerald Necklace. As planned, the path will run adjacent to the Project Site along the MBTA's D Line right-of-way.

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1 Boston Transportation Department, *Fenway - Longwood - Kenmore Transportation & Pedestrian Safety Action Plan*, Spring 2009.

- **Boylston Street Reconstruction –** the City plans to reconstruct Boylston Street to include signal upgrades, bicycle lanes, neckdowns, and widened sidewalks. The Point Project plans to construct a portion of this project to provide a formal sidewalk on the Project Site's Boylston Street frontage and removal of the channelized right-turn from Boylston Street to Brookline Avenue to allow for improved pedestrian operations.
- **Ross Way (formerly New Street)** – this two-way roadway, to be built as part of The Van Ness, will connect Boylston Street and Van Ness Street and will help alleviate traffic demands on Kilmarnock Street and Van Ness Street.
- **Two-way Van Ness Street** – planned changes to make Van Ness Street two-way between Kilmarnock Street and Jersey Street/Yawkey Way will improve traffic circulation in the neighborhood. This change is being made as part of The Van Ness.
- **Muddy River Reconstruction Project** – this Army Corps of Engineers project will eliminate the existing jug handle that exists today and will provide a new Riverway connection to Park Drive and into Landmark Center thus removing a portion of traffic from the congested intersections that make up the Sear's Rotary. In addition, a left-turn lane will be provided from Brookline Avenue eastbound to Park Drive northbound. The Riverway eastbound and Park Drive southbound unsignalized merge that exists today will become signalized under this future condition.
- **New Landmark Driveway Entrance at Riverway** - upon completion of the Muddy River Restoration Project, a new driveway will be built at Landmark Center allowing for a direct connection into the Project Site from the Riverway. This connection will remove Landmark Center traffic that would otherwise need to circulate around the Sear's Rotary to access to the Project Site.
- **Audubon Circle Improvements –** this city project will reconstruct Audubon Circle, to remove the channelized right turns on each approach. The improvements also include removing the Beacon Street eastbound left-turn at the signal.
- **Mountfort Street / Maitland Street / Beacon Street Signalization** – with the future Fenway Center Project this currently unsignalized intersection will become signalized to manage the volumes coming to and from the Fenway Center Project. Additionally, the portion of Mountfort Street north of Beacon Street that is currently one-way will become two-way to help disperse site traffic and improve circulation.

The Project's retail component will generate traffic demands and patterns that are different from the commuting patterns into Downtown Boston and the adjacent Longwood Medical and Academic Area (LMA). The Project's varying traffic patterns of residents, office, and retail, combined with the removal of off-site commuter parkers from the Project Site, results in less traffic than the previously reviewed Landmark North proposal on a weekday. The majority of the Project's impacts will occur during the peak hour on a Saturday as a result of the additional residential, grocery, and retail space. However, on Saturday the baseline traffic volumes are much lower compared to weekday traffic volumes and the traffic model suggests there is capacity to handle the additional Project traffic.

The Project includes no increase in parking. There are currently 1,790 permitted vehicle parking spaces at Landmark Center. The existing garage and surface parking includes approximately 1,500 spaces and with valet assist operations there is a physical capacity for more vehicles. A new garage will be constructed with up to 1,500 striped parking spaces. There are currently 500 spaces in the existing garage being used by off-site commuter parkers on weekdays. These parkers will relocate off-site to other garages (likely to the Fenway

Center), which provides capacity in the new garage to accommodate new retail and residential uses without increasing the size of the garage.

The Project will help to improve transportation operations and amenities for the neighborhood by:

- Maintaining the number of physical spaces on-site by constructing up to 1,500 striped garage spaces;
- Eliminating surface parking;
- Promoting public transit use by improving access between the Fenway commercial district and the MBTA station;
- Improving pedestrian access and safety by eliminating multiple conflicts between cars and pedestrians near the MBTA station;
- Improving pedestrian connections between Fenway Station and the neighborhood;
- Consolidating site driveways on Park Drive;
- Widening Kilmarnock Street to alleviate congestion on the northbound approach to Brookline Avenue;
- Widening Fullerton Street to improve vehicle turning movements at the intersection of Brookline Avenue;
- Providing on-street bicycle accommodations on Fullerton Street adjacent to the Project;
- Constructing a portion of the City's planned Multi-Use Path (i.e., segment adjacent to the northern edge of the Project Site);
- Increasing corner radii at the intersection of Brookline Avenue/Kilmarnock Street/Fullerton Street;
- Providing an off-street loading dock area at the rear of the Project Site to mitigate noise impacts of the current open-air truck loading area;
- Providing new sidewalks and street trees;
- Installing new lighting to enhance the pedestrian environment and increase safety;
- Providing protected bicycle storage for tenants and at grade public bike racks; and
- Implementing a Transportation Demand Management (TDM) plan to discourage single-occupancy vehicle trips.

Project Overview

Landmark Center is located at the intersection of Brookline Avenue and Park Drive adjacent to the Sear's Rotary. To the north, the Project Site is bound by the MBTA's Green Line and adjacent MassDOT owned right of way. To the east, the Project Site is bound by Fullerton Street. The Project Site currently includes a mix of office and retail space including a sports club, cinema, and mid-size and large format retailers at the ground floor. The Project Site provides parking in a combination of surface spaces at-grade, below-grade spaces, and above-grade structured parking.

The Project, as shown previously in Figure 4.1, consists of the addition of multiple building elements within the existing Landmark Center Property. The current proposal will maintain the existing original building and redevelop the balance of the Project Site to create a vibrant office, retail and residential anchor for the Fenway neighborhood. The program for the Project is shown in Table 4-1.

Table 4-1
Project Development Program*

Land Use	Existing[1]	New	Total
Residential	-	Up to 600 Units[2]	Up to 600 Units[2]
Retail	276,200 sf	110,000 sf	386,200 sf
Grocery	-	75,000 sf	75,000 sf
Office	602,340 sf	15,000 sf	617,340 sf
Parking	1,790 vehicles	-	1,500 striped spaces

* Represents the program assumed for the purposes of the traffic analysis.
1 Based on leasable square footage.
2 Current program contemplates up to 550 units. Traffic analysis herein is conservative.

Existing above-ground structured parking and surface spaces will be replaced by a new underground parking garage. Parking will be provided for up to 1,500 striped spaces.

The Project Site will be designed to create new pedestrian open space and connections to the Fenway neighborhood to the South and East. In addition, the Project includes construction of the planned Fenway Multi-Use Path adjacent to the property to the north.

Study Methodology

The analysis presented in this Expanded PNF provides a detailed description of the Project's transportation characteristics and evaluates any impacts to the transportation infrastructure. The transportation analysis presented in this chapter conforms to the Boston Transportation Department (BTD) Transportation Access Plans Guidelines.

The transportation analysis includes the projection of Project-related trips based on Institute of Transportation Engineers (ITE) trip generation rates and the application of local travel characteristics established through the *Access Boston 2000-2010* initiative. *Synchro 6* software was used to facilitate the evaluation of traffic operations based on Highway Capacity Manual (HCM) methodologies.

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Traffic Study Area

The following intersections were identified for detailed analysis because it was anticipated that Project-related traffic might potentially impact traffic operations at these locations. As shown in Figure 4.2 they include the following:

- Beacon Street/Mountfort Street/Maitland Street (unsignalized)
- Beacon Street/Arundel Street/Miner Street (unsignalized)

- Audubon Circle (Park Drive/Beacon Street) (signalized)
- Sear's Rotary
- Park Drive Northbound/Southbound Split (unsignalized)
- Park Drive Southbound at Riverway Westbound (signalized)
- Park Drive Southbound at Riverway Eastbound (unsignalized)
- Brookline Avenue/Riverway/Fenway (signalized)
- Brookline Avenue/Boylston Street/Park Drive (signalized)
- Park Drive/Landmark Center Exit Driveway (signalized)
- Brookline Avenue/Fullerton Street/Kilmarnock Street (signalized)
- Brookline Avenue/Overland Street (unsignalized)
- Kilmarnock Street/Van Ness Street (unsignalized)
- Boylston Street/Kilmarnock Street (signalized)
- Boylston Street/Jersey Street/Yawkey Way (signalized)
- Boylston Street/Ipswich Street (signalized)

■

Analysis Conditions

The transportation analysis considers three analysis scenarios as follows:

- **2013 Existing Condition**;
- **2018 No-Build Condition** assuming no changes to the Project Site, but accounts for planned transportation infrastructure improvements and background growth associated with increased regional growth and specific planned development projects; and
- **2018 Build Condition** assuming the same No-Build Condition background growth and infrastructure changes, but including the Project-related traffic and infrastructure improvements.

All analysis conditions include an assessment of the morning and evening commuter peak hours, and the Saturday mid-day peak hour.

Existing Transportation Conditions

This section describes existing transportation conditions, including an overview of roadway conditions, transit operations, pedestrian and bicycle facilities, and general site conditions. A discussion of the existing on- and off-street public parking supply is also provided.

Roadways

Brookline Avenue borders the Project Site to the south connecting the Sear's Rotary/Longwood Medical and Academic Area (LMA) to the west and Kenmore Square to the east. Generally, there is one travel lane provided in each direction with left turn lanes located at the Kilmarnock Street/Fullerton Street intersection. Adjacent to the Project Site, metered parking is provided along the south side of the street with no parking allowed along the north side of the street. East of the Project Site, metered parking is generally provided on both sides of the street. Sidewalks are provided on both sides of the street.

Fullerton Street borders the east side of the Project Site connecting Brookline Avenue from the south to Miner Street/Beacon Street to the north. South of Brookline Avenue, the roadway continues as Kilmarnock Street to the south. Fullerton Street provides access to and from the existing Landmark Center garage and loading at the rear of the building. The roadway is a single lane in both the north and south directions with a short left turn lane as it approaches the intersection with Brookline Avenue.

Park Drive is a Department of Conservation and Recreation (DCR) roadway that borders the west of the Project Site providing access to Audubon Circle to the north. The four lane roadway is northbound only reaching from the Fenway neighborhoods to the southeast. The portion of Park Drive adjacent to the Project Site provides two access points to Landmark Center, one entrance and one exit under existing conditions. In the future, upon completion of the Muddy River Project, a third entrance into Landmark Center from the Riverway will be provided.

Study Area Intersections

Beacon Street/Mountfort Street/Maitland Street is a four-leg unsignalized intersection. Both approaches on Beacon Street consist of two general-purpose lanes with adjacent parking. Mountfort Street southbound provides a single approach lane. The northbound Maitland Street approach consists of one general travel lane. Both Mountfort Street and Maitland Street are stop-controlled at the intersection. Parking is provided on both sides of Mountfort Street. The Maitland Street approach is on an approximate eight percent upgrade. Even though sidewalks are provided adjacent to all approaches, the only crosswalk provided is across the Mountfort Street approach. This intersection will be signalized with the implementation of the Fenway Center Project in the future.

Beacon Street/Arundel Street/Miner Street is a four-leg unsignalized intersection. Beacon Street is the major street traveling in the east/west direction. Both approaches on Beacon Street consist of two general-purpose lanes with adjacent on-street parking. Both Arundel Street, from the north, and Miner Street, from the south, consist of one general-purpose lane, adjacent parking, and are stop-controlled. Sidewalks are provided adjacent to all approaches, and crosswalks are provided at all approaches except the eastern Beacon Street leg.

Audubon Circle (Beacon Street/Park Drive) is a four-legged intersection under four-phase traffic signal control with an exclusive push-button activated exclusive pedestrian phase. Three of the four right turns from this intersection are unsignalized, channelized right turns (the exception is the eastbound Beacon Street right turn movement, which is signalized). All four approaches are divided by medians. The MBTA Green Line (C Branch) runs within the median of Beacon Street west of the intersection, going underground immediately to the west of Park Drive. Each approach consists of two general-purpose lanes, operating effectively as a shared left/through lane and a through lane; the exception is the eastbound Beacon Street approach, consisting of a shared left/through lane and two through lanes. This approach also has a u-turn slip lane just prior to the intersection. Sidewalks are provided along all intersection approaches. On-street parking is permitted on all approaches. Crosswalks are provided in all directions, crossing by way of the medians and the channelized right turns islands. MBTA bus stops are provided on either side of Park Drive, north of the intersection, which is served by routes 47 and CT2. In the future conditions, this intersection will be completely reconstructed by the City of Boston. The channelized right turns will be eliminated and a third approach lane will be added to Beacon Street westbound and Park Drive northbound.

Sear's Rotary is a circular grouping of six intersections (four signalized and two unsignalized). Along Park Drive, the roadway is four lanes in the northbound direction. The Riverway segment in the southbound direction is also four lanes. Brookline Avenue which spans east/west at the south of the Rotary is two lanes in the westbound direction and four lanes in the eastbound direction. A single-lane jug-handle provides a turn-around for vehicles traveling south or east from the Fenway/Riverway/Brookline intersection to travel north on Park Drive. The Rotary is to be completely reconstructed as part of the Army Corps of Engineers' Muddy River Restoration Project. The Muddy River Project will alter how many of the intersections within the Sears Rotary operate via roadway realignments, land addition/removal, additional signalized intersections, and operational changes. The Muddy River Project will also signalize the current merge at Riverway eastbound and Park Drive southbound within the Rotary.

Brookline Avenue / Fullerton Street / Kilmarnock Street is a four-way signalized intersection. The Brookline Avenue approaches provide a shared through/right-turn lane and an exclusive left-turn lane. The eastbound left-turn operates with a protected lead phase. The northbound Kilmarnock Street approach consists of one general travel lane while the Fullerton Street southbound approach provides a shared left-turn/through lane and an exclusive right-turn lane that is included in the protected turn phase. Metered parking is provided along both sides of Brookline Avenue to the east of the intersection, and along the south side of Brookline Avenue to the west. Parking is prohibited on both sides of Kilmarnock Street and Fullerton Street. Bus stops are located on both sides of Brookline Avenue directly to the east of the intersection. Crosswalks are provided across all approaches. Pedestrians are accommodated in concurrent pedestrian signal phases.

Brookline Avenue/Overland Street is a three-way unsignalized intersection with Brookline Street traveling in the east/west direction and Overland Street approaching the intersection from the north. Both approaches on Brookline Street consist of one general-purpose lane with adjacent parking. Overland Street consists of a single general-purpose lane in each direction with parking permitted on either side. Sidewalks are provided along each leg of the intersection, and a crosswalk is provided across Overland Street.

Kilmarnock Street / Van Ness Street is a three-way unsignalized intersection in which Van Ness Street intersects Kilmarnock Street from the east. Van Ness Street operates as a one-way westbound roadway with stop control at Kilmarnock Street. With construction of The Van Ness, Van Ness Street will be modified from a one-way westbound street to a two-way street between Kilmarnock Street and Yawkey Way. East of Yawkey Way it is currently a two-way street adjacent to Fenway Park. Modifying the street to allow two-way travel will improve traffic circulation, activate Van Ness Street, and help to disperse traffic in the area. Two-hour parking is provided on both sides of Van Ness Street and is prohibited on Kilmarnock Street. A crosswalk is provided across Van Ness Street and across the north leg of Kilmarnock Street.

Boylston Street / Kilmarnock Street is a four-way signalized intersection. Both the eastbound and westbound Boylston Street approaches provide one shared through/right-turn lane and one shared through/left-turn lane. Metered parking is provided along both sides of the street. The Kilmarnock Street northbound approach provides one general-purpose travel lane while the southbound approach provides an exclusive left-turn lane and a shared through/right-turn lane. South of the intersection, residential permit parking is provided along both sides of Kilmarnock Street. Crosswalks are provided across all approaches of the intersection. Pedestrians are accommodated in concurrent pedestrian signal phases.

Boylston Street / Jersey Street/Yawkey Way is a three-way signalized intersection with Boylston Street running in the east/west direction and Jersey Street approaching from the south. Yawkey Way is one-way northbound departing the intersection. Boylston Street provides a shared through/right-turn lane and through/left-turn lane in both directions. Jersey Street is a striped as a single general-purpose lane. An MBTA bus stop is located on the east side of the Jersey Street leg. Metered parking is provided on both sides of Boylston Street. Pedestrians are accommodated with concurrent pedestrian phasing and crosswalks across each leg of the intersection.

Boylston Street / Ipswich Street is a signalized intersection that includes three-legs. Boylston Street runs east/west at the intersection with Ipswich Street approaching from the north. A gas station to the south has a driveway that is located within the intersection but not included in the existing signal operations. Boylston Street provides a shared through/right-turn lane and through/left-turn lane in both directions. Ipswich Street is striped as a single general lane, but operates as two lanes, a right-turn and left-turn lane. An MBTA bus stop is located on the west side of Ipswich Street at the approach to the intersection servicing route 55. Pedestrians are accommodated with concurrent pedestrian phasing that includes a Lead Pedestrian Phase for the Beacon Street crossing. Crosswalks are provided across each leg of the intersection.

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Data Collection

Manual turning movement counts (TMCs) were utilized from recent traffic studies completed within the Landmark Center's study area for the weekday volumes and new TMCs were collected for the Saturday peak in May 2013. The weekday morning and evening TMCs were collected in May 2012 and April 2011. These volumes were adjusted to represent 2013 volumes by increasing each movement by 0.5 percent per year, which would account for any traffic growth within the area. The raw count data are included in Appendix B.

The intersection TMCs were used to establish traffic networks for the 2013 Existing Condition. From the turning movement counts, the study area's traffic peak hours were determined to be 7:45 to 8:45 AM and 4:45 to 5:45 PM. Existing Condition weekday peak hour traffic volumes are shown in Figures 4.3a and 4.3b. The Saturday midday peak hour was calculated to be 12:00 Noon – 1:00 PM. The Saturday midday peak traffic volumes are shown in Figure 4.3c. Peak hour pedestrian volumes crossing the intersection approaches are presented in Figures 4.4a-c.

■

Public Transportation

The Project Site is well served by the MBTA's public transportation services as shown in Figure 4.5. Access to the Green Line's Fenway Station on the D Branch is located adjacent to Project Site. The Green Line's B and C Branches can also be accessed, less than half a mile away, in Kenmore Square. The Framingham/Worcester Commuter Rail Line is accessible at Yawkey Station to the east on Brookline Avenue.

Five local bus routes serve Brookline Avenue and stop adjacent to the Project Site. Two additional route connections are provided at the Sear's Rotary, including the cross-town CT2 and CT3 limited-stop routes. Connections can be made to the Route 57 bus serving Brighton Center at Kenmore Station. The local Route 55 is also nearby and serves Kilmarnock Street to the south of Boylston Street, along with Routes 60, 65 and 8 servicing Brookline Avenue.

Peak period frequencies/headways for MBTA services are summarized in Table 4-2.

Table 4-2
MBTA Service

Service	Origin / Destination	Peak-hour Frequency (minutes)
Framingham/Worcester Commuter Rail	South Station - Worcester	Approx. 40
Green Line		
(B Branch)	Boston College – Lechmere	6
(C Branch)	Cleveland Circle – Lechmere	7
(D Branch)	Riverside – Lechmere	6
Route 8	Harbor Point/UMass – Kenmore Station	14-25
Route 9	City Point – Copley Square	5-10
Route 19	Fields Corner Station – Kenmore Station	14-25
Route 47	Central Square. – Broadway Station	20-22
Route 55	Jersey and Queensbury or Park and Tremont – Copley Square	16-45
Route 57	Watertown Yard – Kenmore Station	8-12
Route 60	Chestnut Hill – Kenmore Station	24-28
Route 65	Brighton Center – Kenmore Station	9-25
CT 2	Sullivan Station – Ruggles Station	20-25
CT 3	Longwood – Andrew Station	20-30

Source: MBTA May 2013

Pedestrian Environment and Accessibility

At the study area intersections, sidewalks are generally in good condition with accessible ramps, striped crosswalks and pedestrian signals with the exception of the north side of Boylston Street approaching the Sear's Rotary. This portion of sidewalk abuts the planned Point Project which will construction a formal sidewalk and eliminate the channelized right-turn lane from Boylston Street to Brookline Avenue to improve pedestrian operations.

Pedestrian data indicates that there is a strong desire line between the MBTA Fenway Station adjacent to Landmark Center and Brookline Avenue. The majority of pedestrians choose to travel the shortest path and cross through the Landmark Center surface parking area, creating multiple conflicts between cars and MBTA pedestrian traffic in this location. Few pedestrians (less than 10 per hour) on a weekday walk along the Park Drive sidewalks adjacent to the Project Site. As a result there are high pedestrian crossing volumes at the Boylston Street/Park Drive/Brookline Avenue and Brookline Avenue/Kilmarnock Street/Fullerton Street intersections adjacent to the Project.

Peak hour pedestrian crossing counts at study area intersections were presented previously in Figures 4.4a-c for the morning and evening peak hours, respectively.

Bicycles

Bicycling is becoming an increasingly popular travel mode in the Fenway. Bicycle counts and field observations reveal many commuters bicycling even in midwinter to and from the nearby Longwood Medical and Academic Area (LMA). Beacon Street has the highest bicycle volume during the morning commute traveling eastbound into the Kenmore Square area. Park Drive between Audubon Circle and the Sear's Rotary has a consistently high volume of bicyclists with approximately 50 combined north/south bicyclists during the morning and Saturday peaks and 100 bicyclists (55 northbound/45 southbound) during the evening peak hour. Existing bicycle volumes are presented in Figures 4.6a-c.

Landmark Center provides 60 on-site bicycle parking spaces for visitors and tenants today in a combination of 40 indoor spaces and 20 publicly accessible outdoor spaces and dedicated shower facilities and changing rooms. Peak utilization for the Project Site is currently 40 bicycle spaces as shown in Table 4-3.

Table 4-3
Peak Existing Bicycle Storage*

Building	Spaces Provided	Utilized Bicycle Spaces*
Landmark Center Outdoor	20	18
Landmark Center Indoor	40	22

*Results shown indicate highest bicycle count during the survey.

The Hubway bike share network has also increased bicycle popularity in the neighborhood. The Proponent sponsors a Hubway station at Landmark Center along the Brookline Avenue frontage. Currently there are 11 spaces available at this location.

There are no specific on-street bicycle facilities, such as bicycle lanes, in the immediate area of Project Site. The Boylston Street Reconstruction Project includes installation of bicycle lanes on Boylston Street. In addition, the Project plans to implement a portion of the City's planned Multi-Use Path along the MBTA's D Line right-of-way to the north of the Project Site. This path will connect the planned Fenway Center development at the Fenway Commuter Rail Station on Overland Street to the Emerald Necklace. It is expected that bicycle volumes will increase in the near future with the provision of on- and off-street bicycle lanes.

■

Existing Parking

The Project Site currently provides parking in a combination of at-grade surface spaces, structured above grade spaces, and below-grade garage spaces. Landmark Center is permitted for parking up to 1,790 vehicles; however, only approximately 1,500 physical spaces exist today. Additional parking demands are met on-site through valet operations at peak periods. Structured parking spaces are currently accessed via Fullerton Street and Park Drive. The parking today serves on-site tenants, retail customers, and off-site commuters. With the Project, approximately 500 off-site commuter parking spaces will be eliminated to accommodate future demands associated with the Project.

On-street public parking in the area is presented in Figure 4.7. No parking is allowed on the street adjacent to the Project Site. Metered parking is available on the south side of Brookline Avenue south of the Project Site. Multiple public parking garages, as shown in Figure 4.8, are available for use within the area.

Future Transportation Conditions

Two future conditions scenarios were evaluated for a future five-year time horizon (2018) in order to assess the potential Project-related traffic impacts: the No-Build and Build Conditions. These future conditions are summarized in the sections below.

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No-Build Condition

The 2018 No-Build Condition was developed to evaluate future transportation conditions in the traffic study area without consideration of the Project. In accordance with BTD guidelines, this future analysis year represents a five-year horizon (2018) from existing conditions (2013). The No-Build Condition provides insight to future traffic conditions resulting from regional growth as well as traffic generated by specific planned projects that are expected to affect the local roadway network.

Background Growth

A background growth rate of half a percent per year was applied to the traffic volumes during the morning and evening peak hours. This growth rate accounts for regional growth outside of the Fenway neighborhood and projects without specific traffic forecasts at the time the traffic model was developed such as the recently filed 1350 Boylston Street. The Saturday midday peak hour was grown by one percent per year to account for planned development project's that did not include specific Saturday traffic forecasts.

In addition to the background growth rate, traffic projections and infrastructure changes for several specific projects were incorporated in the development of No-Build Condition. These include the following development projects:

- Fenway Center (Parcel 7)
- 121 Brookline Avenue (Research and Development)
- The Fenway Triangle Mixed-Use Project
- 1282 Boylston Street Mixed-Use Project
- The Point Project
- Stonewall (25 Miner Street)
- Boston Children's Hospital 819 Beacon Street

Planned infrastructure projects that will impact vehicle operations, as presented in Figure 4.9, include the following:

- **Boylston Street Reconstruction –** the City plans to reconstruct Boylston Street to include signal upgrades, bicycle lanes and widened sidewalks. The Point Project plans to construct a portion of this project to remove the channelized right-turn from Boylston Street to Brookline Avenue allowing for improved pedestrian operations.
- **Signal Timing Improvements** – proposed signal timing changes have been made at the intersection of Brookline Avenue/Kilmarnock Street/Fullerton Street to reduce delay and improve operations as part of The Van Ness.
- **Ross Way**– this two-way roadway, to be built as part of The Van Ness Project, will connect Boylston Street and Van Ness Street and will help alleviate traffic demands on Kilmarnock Street and Van Ness Street.
- **Two-way Van Ness Street** – planned changes to make Van Ness Street two-way between Kilmarnock Street and Jersey Street/Yawkey Way will improve traffic circulation in the neighborhood. This change is being made as part of The Van Ness.
- **Muddy River Restoration Project** – this Army Corps of Engineers Project will eliminate the existing jug handle that exists today and will provide a new eastbound Riverway connection to Park Drive northbound and into Landmark Center thus removing a portion of traffic from the congested intersections that make up the Sear's Rotary. In addition, a left-turn lane will be provided from Brookline Avenue eastbound to Park Drive northbound. The Riverway eastbound and Park Drive southbound unsignalized merge that exists today will become signalized under this future condition.

- **New Landmark Driveway Entrance at Riverway** - upon completion of the Muddy River Restoration Project, a new driveway will be built at Landmark Center to allow for a direct connection into the Project Site from the Riverway eastbound. This connection will remove Landmark Center traffic that would otherwise need to circulate around the Sear's Rotary to access to the Project Site.
- **Audubon Circle Improvements –** this city project will reconstruct Audubon Circle, removing the channelized right turns at each approach. The improvements also include removing the Beacon Street eastbound left-turn at the signal to improve eastbound traffic flow.
- **Mountfort Street / Maitland Street / Beacon Street Signalization** – with the future Fenway Center Project this currently unsignalized intersection will become signalized to manage the volumes coming to and from the Fenway Center Project. Additionally, the portion of Mountfort Street north of Beacon Street that is currently one-way will become two-way with the future improvements.

Figures 4.10a-c present the 2018 No-Build Condition traffic volumes accounting for background growth and planned infrastructure changes for the morning and evening peak hours, respectively.

■

Build Condition

The 2018 Build Condition for the traffic analysis includes construction of the following:

- Up to 600 residential units
- 75,000 square feet grocery
- 110,000 square feet retail
- 15,000 square feet office
- Eliminates (-500) off-site commuter parkers
- No new parking

The current building plan includes up to 550 residential units; however, to be conservative, 600 units were included in the traffic analysis.

As part of the Project, the driveways on Park Drive will be consolidated to improve the pedestrian realm along the parkway frontage. Removal of existing surface parking spaces at the Project Site will improve the pedestrian connection between Fenway Station, the uses on-site, and the neighborhood.

The Project is committed to constructing a portion of the City's planned Fenway Multi-Use path adjacent to the Project Site as part of the Project's mitigation. In addition, the Project proposes widening at the intersection of Fullerton Street/Kilmarnock Street/Brookline Avenue to improve traffic flow and better facilitate truck turning maneuvers entering and exiting the Project Site.

Site Access and Circulation

Access to Landmark Center will be maintained on Fullerton Street and Park Drive with the Project. As planned, independent of the Project, a new connection in the future from the Riverway Connector into the Project Site will be provided to eliminate Landmark Center traffic circulating around the Sear's Rotary.

The Project proposes to consolidate the remaining entrance and exit driveways on Park Drive at the existing signalized exit location. The current entrance driveway closest to Brookline Avenue will be closed as shown in previously Figure 4.1.

The Project's below-grade garage will have a ramp on Fullerton Street and a second ramp internal to the Project Site on the Park Drive side. The two garage ramps will help disperse site traffic, relocate it to the periphery of the Project Site to avoid pedestrian conflicts.

The Project also proposes to widen Kilmarnock Street adjacent to 132 Brookline Avenue to increase capacity and improve traffic operations at the intersection of Brookline Avenue/Kilmarnock Street/Fullerton Street. As planned, the widened Kilmarnock Street will include a shared left/thru travel lane and a dedicated right-turn lane.

Project-Generated Trips

To assess the impact of the Project, trip estimates were based on standard Institute of Transportation Engineers (ITE) rates. The appropriate ITE land use codes are shown in Table 4-4 below.

Table 4-4
Trip Generation Land Use Codes

Land Use	ITE Land Use Code (LUC)	Independent Variable
Residential	220 - Apartments	Dwelling Units
Retail	820 – Shopping Center	Square Feet
Grocery	850 - Supermarket	Square Feet
Office	710 – Office	Square Feet

Source: ITE

Mode Share and Vehicle Occupancy Rates

To account for alternative modes of transportation, mode shares for the area, based on BTD guidelines, were applied to the unadjusted ITE trip results. Mode shares by land use are shown in Table 4-5 below.

Table 4-5
Mode Split by Land Use Category

Mode	Residential	Retail/ Commercial
Automobile	21%	33%
Public Transit	15%	31%
Walk/Bike/Other	64%	36%

BTD Guidelines: Area 4.

The vehicle trip generation estimates for weekday and Saturday are shown in Tables 4-6 and 4-7, respectively.

Table 4-6
Total Weekday Project Trip Generation

Time Period/Direction	Public Transportation	Walk/Bike/Other	Vehicle	Less Existing Off-Site Parkers	Net-New Vehicle Trips
Daily					
In	2,593	6,020	2,351	-500	1,851
Out	2,593	6,020	2,351	-500	1,851
Total	5,186	12,040	4,702	-1,000	3,702
AM Peak Hour					
In	131	183	85	-150	-65
Out	117	273	95	-10	85
Total	248	456	180	-160	20
PM Peak Hour					
In	230	714	179	-11	168
Out	214	619	160	-137	23
Total	444	1333	339	-148	191

Table 4-7
Total Saturday Project Trip Generation

Time Period/Direction	Public Transportation	Walk/Bike/Other	Vehicle	Less Existing Off-Site Parkers	Net-New Vehicle Trips
Daily					
In	3,740	8,537	4,444	-20	4,424
Out	3,740	8,537	4,444	-20	4,424
Total	7,480	17,074	8,888	-40	8,867
Saturday Peak Hour					
In	384	521	312	-2	310
Out	363	499	296	-2	294
Total	747	1,020	608	-4	604

The majority of trips generated by the Project are expected to be walk and transit trips since the Project is well served by transit and situated in a vibrant area of the Fenway neighborhood that provides numerous retail and work opportunities. Due to the loss of off-site commuter parking to accommodate Project-related parking demands, there is an overall reduction of entering vehicle traffic during the morning peak hour. The morning peak hour results in approximately 20 net-new vehicle trips (-65 entering and 85 exiting). The Project will generate approximately 191 vehicle trips during the evening peak hour (168 entering and 23 exiting) and 604 vehicle trips during the Saturday peak hour (310 entering and 294 exiting).

Auto Trip Distribution

Trip distribution was based on BTD's guidelines for Area 4. These guidelines, based on 2000 census data, provide information on where area residents work and where area employees live. Using this data, vehicle trips can then be assigned to the roadway network. Trip distribution patterns were established separately for the residential and the retail/commercial uses. A summary of the results is presented in Table 4-8, and is shown graphically in Figure 4.11.

Table 4-8
Geographic Distribution

Corridor	Residential Distribution	Commercial Distribution
Storrow Drive	38%	38%
Kenmore Square	19%	7%
Audubon Circle	4%	4%
Park Drive / Fenway	19%	24%
Brookline Avenue / Riverway	20%	27%

Net-new Project generated trips were then assigned to the Landmark Center driveways. The resulting net-new trips are illustrated in Figures 4.12a-c.

Net-new Project-generated trips were then added to the No-Build Condition traffic networks. The resulting Build Condition networks are shown in Figures 4.13a-c for the morning, evening, and Saturday peak hours, respectively. A comprehensive operational and level of service (LOS) analysis of all study area intersections is presented later in this chapter.

Comparison to Landmark North

Vehicle trip generation was compared to the previously filed Landmark North Project. Landmark North proposed office and research and development uses which generate the most traffic during weekday commuter peak hours. As shown, in Table 4-9, the current Project proposal will generate fewer weekday peak hour vehicle trips compared to the previously reviewed development proposal.

Table 4-9
Net-New Vehicle Trip Comparison: Landmark North (Previously Proposed Project)

Time Period/Direction		Landmark North*	Current Proposal	Change
Weekday Daily				
In		1,576	1,851	275
Out		1,576	1,851	275
	Total	3,152	3,702	550
AM Peak Hour				
In		381	-65	-446
Out		68	85	17
	Total	449	20	-429
PM Peak Hour				
In		68	168	100
Out		364	23	-341
	Total	432	191	-241

* Landmark North Notice of Project Change dated May 3, 2010

The Project will generate (-429) and (-241) fewer vehicle trips during the morning and evening peak hours respectively when compared to Landmark North. As a result, the Project's impact on the study area intersections are less compared to the impacts associated with the previously proposed Landmark North Project.

Pedestrians/Bicycles

Additional pedestrian and bicycle activity will be greatest during the evening and Saturday peak hours when the retail component is busiest. As previously shown in Table 4-6, the Project is expected to generate approximately 456 and 1,333 walk and bicycle trips to and from the Project Site during the morning and evening peak hours, respectively. In addition, approximately 1,020 walk and bicycle trips will be generated during the Saturday peak hour as shown in Table 4-7.

In the future, the three planned driveways will be consolidated into two driveways, which will improve the pedestrian environment along the parkway. The Project will construct the segment of the Multi-Use Path that runs adjacent to the Project Site on the north side adjacent to the MBTA's D Line connecting the Fenway Commuter Rail Station with the Emerald necklace. Additionally, Fullerton Street will be re-striped to provide on-street bicycle accommodations that will connect the Multi-Use Path with Brookline Avenue.

In accordance with the City of Boston's Off-Street Bicycle Parking Guidelines, additional bicycle racks will be installed in the building for residents and tenants. Additional short-term bicycle storage will also be provided at street level. The Project will continue to endorse the Hubway Station on Brookline Avenue and will provide expansion space if additional bike racks are needed for bike-sharing in the neighborhood.

Parking

There are currently 1,790 permitted vehicle parking spaces at Landmark Center. The existing garage and surface parking includes approximately 1,500 spaces and with valet assist operations there is a physical capacity for more vehicles. A new garage will be constructed with up to 1,500 striped parking spaces.

There are currently 500 spaces in the existing garage being used by off-site parkers on weekdays. These parkers will relocate off-site to other garages (likely to the Fenway Center), which provides capacity in the new garage to accommodate the proposed on-site retail and residential uses without increasing the size of the garage.

Table 4-10 summarizes the estimated parking demand for the Project. The residential parking demand of 0.5 spaces per unit is based on existing daytime and overnight demand at Trilogy and 1330 Boylston Street today. The office and retail parking demand of 0.75 spaces per 1,000 square feet is based on underlying zoning and BTD district based guidelines for new development. The removal of 500 off-site parkers will provide availability to meet the Project's peak demand of 500 spaces.

Table 4-10
Net-New Project Parking Demand

Land Use	Size	Parking Rate	Number of Parking Spaces
Office	15,000 sf	0.75 spaces/ ksf	11
Retail	285,000 sf	0.75 spaces/ksf	214
Residential	550 units*	0.5 spaces/unit	275
Total Parking Demand			500

* Current program contemplates up to 550 units. 600 units was used for a conservative transportation analysis.

The Project's total parking demand is summarized below in Table 4-11.

Table 4-11
Total Parking Demand (Existing & Project)

Land Use	Size[1]	Parking Rate	Number of Parking Spaces
Office	617,340 sf	0.75 spaces/ksf	463
Retail	461,200 sf	0.75 spaces/ksf	346
Residential	550 Units	0.5 spaces/unit	275
General Transient/Public	-	-	250
Total Parking Demand			1,334

Source: Samuels & Associates

1 Based on leasable square footage.

The total future parking demand at the Project Site is approximately 1,334 spaces on a typical weekday. The parking demand will fluctuate with events in the Fenway and with back to school and holiday shopping. So that all parking demands may be met on-site, the Project will include up to 1,500 striped parking spaces. Additional spaces will be provided with managed valet operations. It is anticipated that Red Sox parking and parking for other area users will be maintained.

The garage will have a ramp on Fullerton Street and a second ramp internal to the Project Site on the Park Drive side. The two garage ramps will help disperse site-related traffic. As proposed, the surface parking lots at the front of Landmark Center will be converted to open space. The Proponent will implement the reconfiguration of the driveways and convert as much of the surface parking area as possible to open space during the redevelopment. Conversion of some of the surface parking area may occur over time as existing parking obligations expire or are terminated.

Loading

An off-street loading dock will be provided and will be accessed via Fullerton Street. The Project proposes widening at the Fullerton Street/Brookline Avenue intersection to better accommodate truck turning maneuvers in the future. The loading dock will be fully enclosed and sized to allow vehicles to turnaround internal to the Project Site. As currently planned, this loading area will accommodate tractor-trailer trucks and garbage pick-up. Up to ten (10) dock spaces are planned to support the Project. The loading dock manager will oversee operations and ensure that the dock is being used efficiently.

Transportation Demand Management (TDM)

Consistent with the City's goals to reduce auto dependency, the Project will offer TDM measures to encourage alternative modes of transportation. The Project will:

- Provide indoor bicycle storage spaces for building residents and tenants.
- Install additional bicycle racks at grade for general public use.
- Charge market rates for parking for new tenants.
- Designate an on-site Transportation Coordinator to oversee parking and loading operations as well as promote the use of alternative transportation measures and carpooling.
- Encourage commercial tenants to provide on-site transit pass sales to employees.
- Encourage commercial tenants to provide a 50 percent transit subsidy.
- Encourage commercial tenants to join the MASCO Transportation Management Association (TMA).
- Encourage the residential property manager to provide on-site pass sales to residents.
- Provide transit information such as maps and schedules to new residents and tenants in an orientation package and in the residential lobby.

All TDM measures will be formalized in the Transportation Access Plan Agreement (TAPA) to be executed with BTD.

Traffic Operations Analysis

Consistent with BTD's guidelines, *Synchro 6* software was used to model level of service (LOS) operations at the study area intersections. LOS is a qualitative measure of control delay at an intersection providing an index to the operational qualities of a roadway or intersection.

LOS designations range from A to F, with LOS A representing the best operating conditions and LOS F representing the worst operating conditions. LOS D is typically considered acceptable. LOS E indicates that vehicles experience significant delay and queuing while LOS F suggests unacceptable delay for the average vehicle. LOS thresholds differ for signalized and unsignalized intersections. Longer delays at signalized intersections than at unsignalized intersections are perceived as acceptable.

Table 4-12 below presents the level of service delay threshold criteria as defined in the 2010 Highway Capacity Manual (HCM).

Table 4-12
Level of Service Criteria

Level of Service	Un-signalized Intersection Control Delay (sec/veh)	Signalized Intersection Control Delay (sec/veh)
LOS A	0-10	≤ 10
LOS B	> 10-15	> 10-20
LOS C	> 15-25	> 20-35
LOS D	> 25-35	> 35-55
LOS E	> 35-50	> 55-80
LOS F	> 50	> 80

Source: 2010 HCM

In consideration of transportation conditions in the Fenway area, it is important to be cognizant of the traffic and parking conditions associated with Red Sox home game days. However, it would not be practical to base operational analysis for the Project on the conditions that prevail under police control on the limited number of game days per year.

Adjustments were made to the Synchro model to include characteristics of each intersection, such as intersection geometry, signal timings, heavy vehicles, bus operations, parking activity, and pedestrian crossings. The LOS results of the analyses are summarized in Table 4-13 for the Existing, No-Build, and Build conditions. Detailed results including delay by movement, queuing, and volume-to-capacity ratio are presented in Appendix B along with the detailed Synchro results.

The Beacon Street, Boylston Street, and Brookline Avenue corridors process high traffic and pedestrians volumes during the commuter peak hours. At times, long queue lengths and high vehicle delays can be observed. The traffic model includes a conservative approach to future traffic trends by forecasting an increase in background traffic and assigning specific known development projects to the study area as required by the Boston Transportation Department. The model also includes several planned infrastructure projects that will benefit traffic operations in the neighborhood. As discussed previously, the changes assumed under the No-Build Condition include:

- Boylston Street Reconstruction Project with elimination of the channelized right-turn lane from Boylston Street to Brookline Avenue
- Signal Timing Improvements at Brookline Avenue/Kilmarnock Street/Fullerton Street as part of the Van Ness Project
- Landmark Center Riverway Driveway (entrance only)
- Mountfort Street two-way operations
- Mountfort Street/Maitland Street/Beacon Street traffic signal as part of the Fenway Center Project
- Audubon Circle Reconstruction
- Ross Way between Boylston Street and Van Ness Street as part of The Van Ness
- Two-way Van Ness Street as part of The Van Ness
- Army Corp of Engineer's Muddy River Project

Under the Build Condition, the Proponent intends to remove the existing site Entrance Driveway on Park Drive and consolidate it with the exit driveway at the signalized intersection. The Proponent also plans to improve the Kilmarnock Street/Fullerton Street/Brookline Street intersection by widening Kilmarnock Street and Fullerton Street to reduce traffic congestion and to better accommodate turning vehicles.

Level of service analyses for the 2018 Build Condition, are shown in Table 4-13. Detailed tables are provided in the Appendix B. Results of the analysis indicate that the redevelopment of the Project Site and its associated traffic cause minimal decreases in overall LOS at most of the signalized intersections analyzed. Additionally, as can be expected in an urban area, several of the study area intersections operate with long delays either on some of their individual approaches or for the entire intersection, with or without the Project.

The results of the traffic analysis indicate that during the morning peak hour there will be no change in overall LOS at any of the study area intersections as a result of the Project.

During the evening peak hour, several intersections see a change in overall LOS including:

- Audubon Circle changes from an LOS D in the No-Build to LOS E in the Build Condition. Under Existing Conditions, the Audubon Circle currently operates at LOS E as well and only slightly improved in the No-Build Condition as a result of the City's planned improvements.
- Boylston Street/ Ipswich Street changes from LOS C to LOS D due to the higher volume utilizing Ipswich Street with The Van Ness two-way operations.
- Boylston Street/Kilmarnock Street changes from a LOS B to a LOS C due to increase peak hour traffic as a result of the Project.
- The Landmark Center Exit Driveway on Park Drive changes from LOS A to LOS B due to consolidation of the site driveways and the additional traffic making a right-turn into the Project Site at this location.
- The unsignalized intersection of Van Ness Street at Kilmarnock Street changes from a LOS C to LOS D due to an increase in Project-generated left-turns from Kilmarnock Street onto Van Ness Street.

During the Saturday midday peak hour, two signalized intersections decrease in LOS. Kilmarnock Street/Fullerton Street/Brookline Avenue changes from LOS B to LOS C. Boylston Street/Kilmarnock Street changes from LOS A to LOS B. With the exception of existing congestion the intersection at Brookline Avenue/Park Drive/Boylston Street, all intersections continue to operate a LOS D or better on Saturday.

Conclusion

The Project's varying traffic patterns of residents, office, and retail, combined with the removal of 500 off-site commuter parkers from the Project Site, results in less net-new traffic demands during the weekday peak hours compared to the previously reviewed Landmark North proposal. The majority of the Project's impacts will occur during the peak hour on a Saturday as a result of the additional residential, grocery, and retail space. However, on Saturday the baseline traffic volumes are much lower compared to weekday traffic volumes and the traffic model suggests there is capacity to handle the additional Project-related traffic.

The Project proposes to improve traffic operations by widening Fullerton Street and Kilmarnock Street. This will help alleviate traffic pressures at the intersection of Brookline Avenue/Kilmarnock Street/Fullerton Street. These improvements will also help to better facilitate truck turning maneuvers at this intersection.

The Project will eliminate the above-grade parking garage and surface parking and create an underground parking garage totaling up to 1,500 striped parking spaces. Additional spaces will be provided with managed valet operations.

The Project embraces the City's plans for activating the pedestrian realm, providing bicycle facilities and activating the streetscape. The Project also recognizes the neighborhood's goal to provide mixed-use development that will reduce auto-dependency. The Project will help reach these goals by:

- Maintaining the number of physical spaces on-site by constructing up to 1,500 striped garage spaces;
- Eliminating surface parking;
- Promoting public transit use by improving access between the Fenway commercial district and the MBTA station;
- Improving pedestrian access and safety by eliminating multiple conflicts between cars and pedestrians near the MBTA station;
- Consolidating site driveways on Park Drive;
- Widening Kilmarnock Street to alleviate congestion on the approach to Brookline Avenue;
- Widening Fullerton Street to better facilitate vehicle turning maneuvers at the intersection of Brookline Avenue
- Providing on-street bicycle accommodations on Fullerton Street adjacent to the Project;
- Increase corner radii at the intersection of Brookline Avenue/Kilmarnock Street/Fullerton Street
- Providing an off-street loading dock area;
- Providing new sidewalks and street trees;

Table 4-13
Intersection Level of Service (LOS) Summary

Intersection	AM Peak Hour Operations Existing	AM No-Build	AM Build	PM Peak Hour Operations Existing	PM No-Build	PM Build	Saturday Peak Hour Operations Existing	Saturday No-Build	Saturday Build
Beacon Street / Mountfort Street / Maitland Street	D	C	C	E	C	C	C	B	B
Beacon Street / Miner Street / Arundel Street	E	E	E	F	F	E	D	D	D
Beacon Street / Park Drive (Audubon Circle)	C	D	D	E	D	E	C	C	C
Brookline Avenue / Fullerton Street / Kilmarnock Street	C	B	B	C	C	C	B	B	C
Van Ness Street / Kilmarnock Street	B	C	C	C	C	D	B	B	B
Boylston Street / Kilmarnock Street	A	A	A	B	B	C	B	A	B
Boylston Street / Yawkey Way / Jersey Street	E	C	C	D	C	C	B	A	A
Boylston Street / Ipswich Street	B	B	B	C	C	D	B	B	B
Park Drive Northbound / Southbound Split	A	A	A	A	A	A	A	A	A
Riverway Westbound / Park Drive Southbound	B	C	C	B	F	F	B	C	C
Riverway Eastbound / Park Drive Southbound	B	C	C	F	B	B	F	C	C
Brookline Avenue / Riverway / Fenway	D	C	C	C	C	C	D	C	C
Brookline Avenue / Park Drive / Boylston Street	D	F	F	E	F	F	D	F	F
Park Drive / Landmark Center Entrance Driveway	A	A	-	A	A	-	A	A	-
Park Drive / Landmark Center Exit Driveway	A	A	A	A	A	B	A	B	B
Brookline Avenue / Overland Street	C	E	E	D	F	F	C	C	C
Park Drive / Riverway Extension / Landmark Center Entrance Driveway	-	A	A	-	A	A	-	A	A

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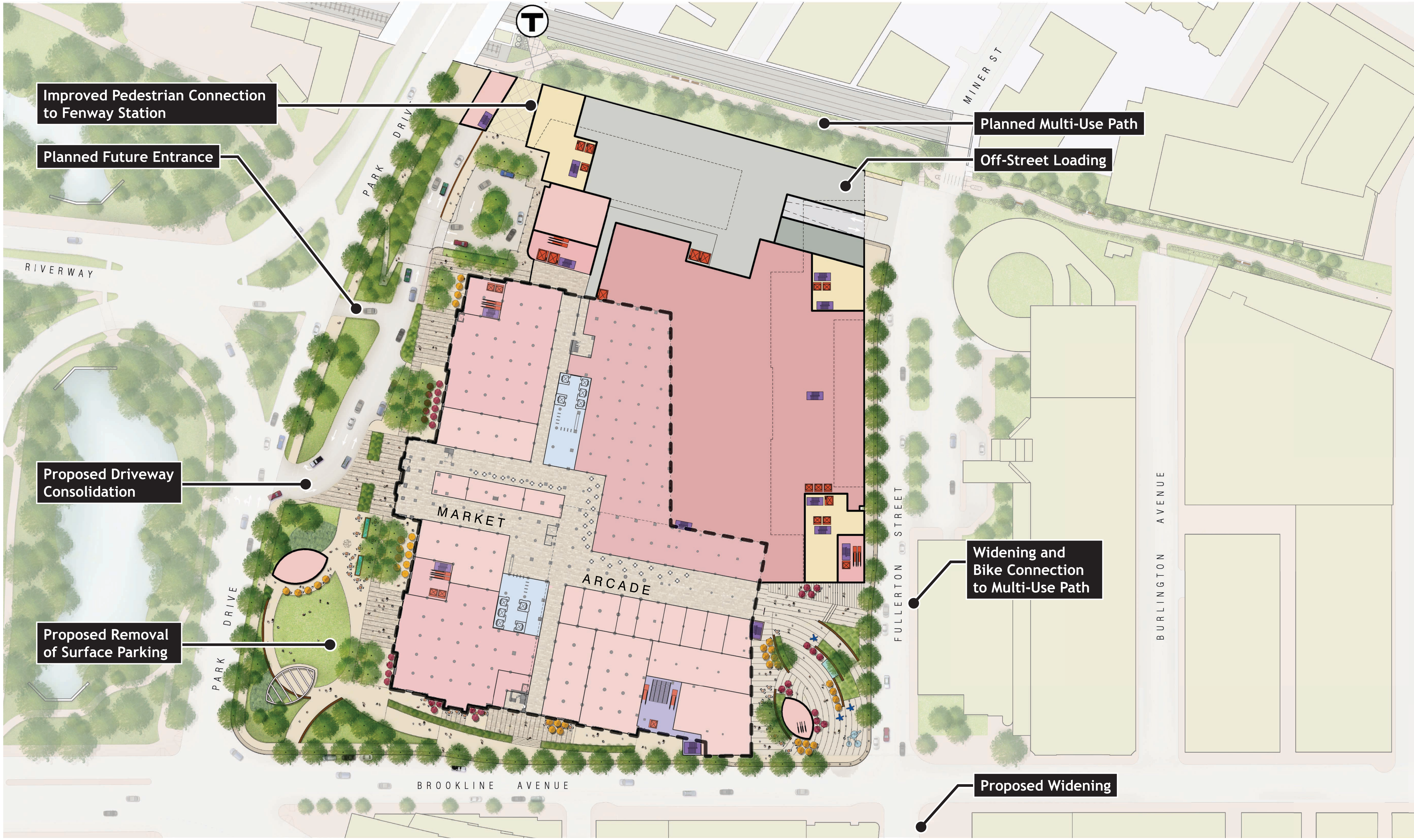
- Constructing a portion of the City's planned Multi-Use Path adjacent to the Project Site;
- Installing new lighting to enhance the pedestrian environment and increase safety;
- Providing protected bicycle storage for tenants and at grade public bike racks; and
- Implementing an aggressive Transportation Demand Management (TDM) plan to discourage single-occupancy vehicle trips.



Note: Tenants subject to change

Figure 4.1
Proposed Transportation Improvements Plan

1. Beacon Street at Maitland Street / Mountfort Street
2. Beacon Street at Miner Street / Arundel Street
3. Beacon Street at Park Drive (Audobon Circle)
4. Park Drive Northbound / Southbound Split
5. Park Drive at Riverway Westbound
6. Park Drive at Riverway Eastbound
7. Brookline Avenue at Riverway / Fenway
8. Brookline Avenue at Boylston Street / Park Drive
9. Park Drive at Landmark Center Exit Driveway
10. Brookline Avenue at Fullerton Street / Kilmarnock Street
11. Brookline Avenue at Overland Street
12. Kilmarnock Street at Van Ness Street
13. Boylston Street at Kilmarnock Street
14. Boylston Street at Jersey Street / Yawkey Way
15. Boylston Street at Ipswich Street

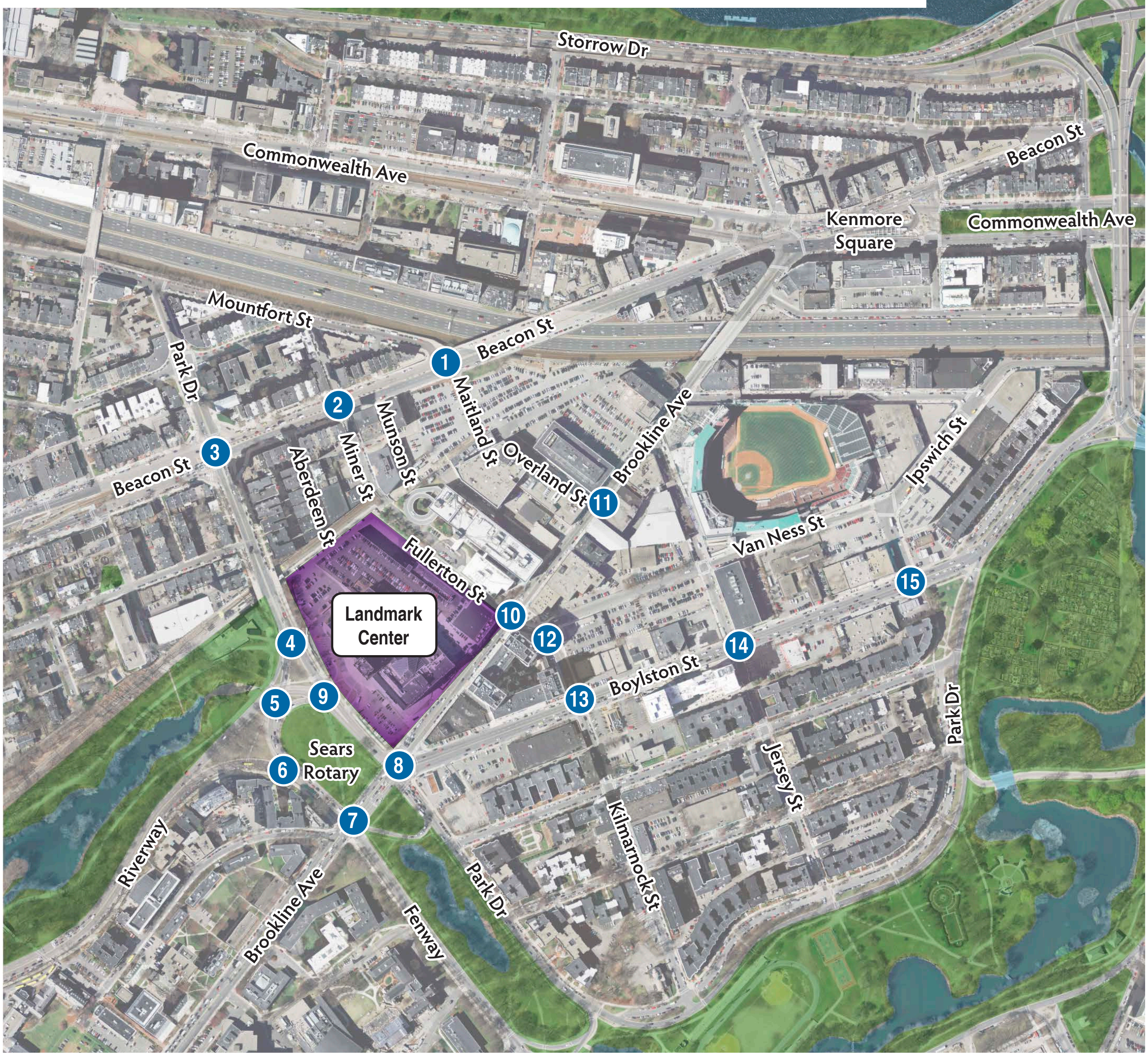


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Figure 4.2
Traffic Study Area

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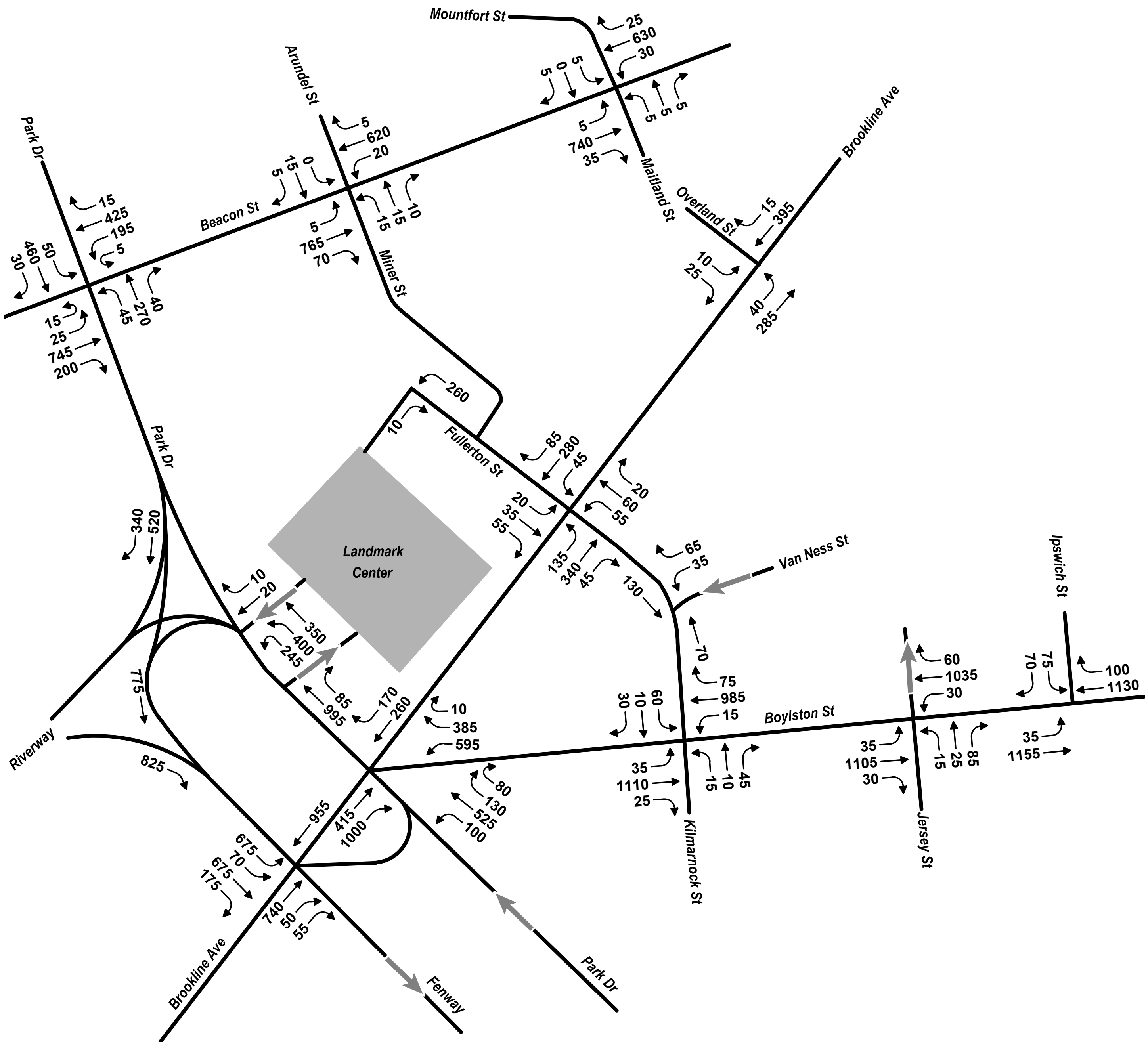

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Figure 4.3a

2013 Existing Traffic Volumes
Weekday Morning Peak Hour
(7:45-8:45 AM)

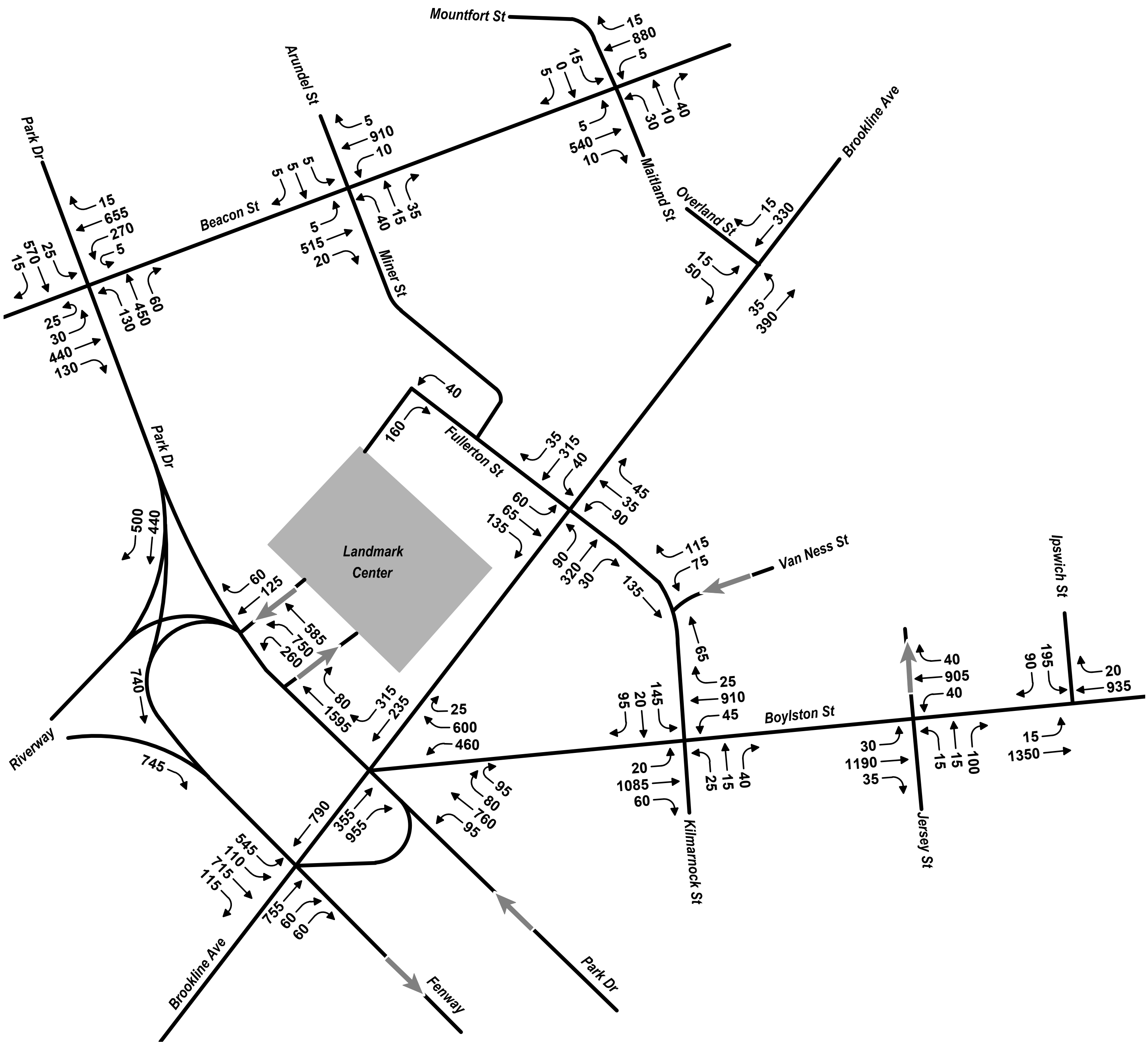

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Figure 4.3b

2013 Existing Traffic Volumes
Weekday Evening Peak Hour
(4:45-5:45 PM)

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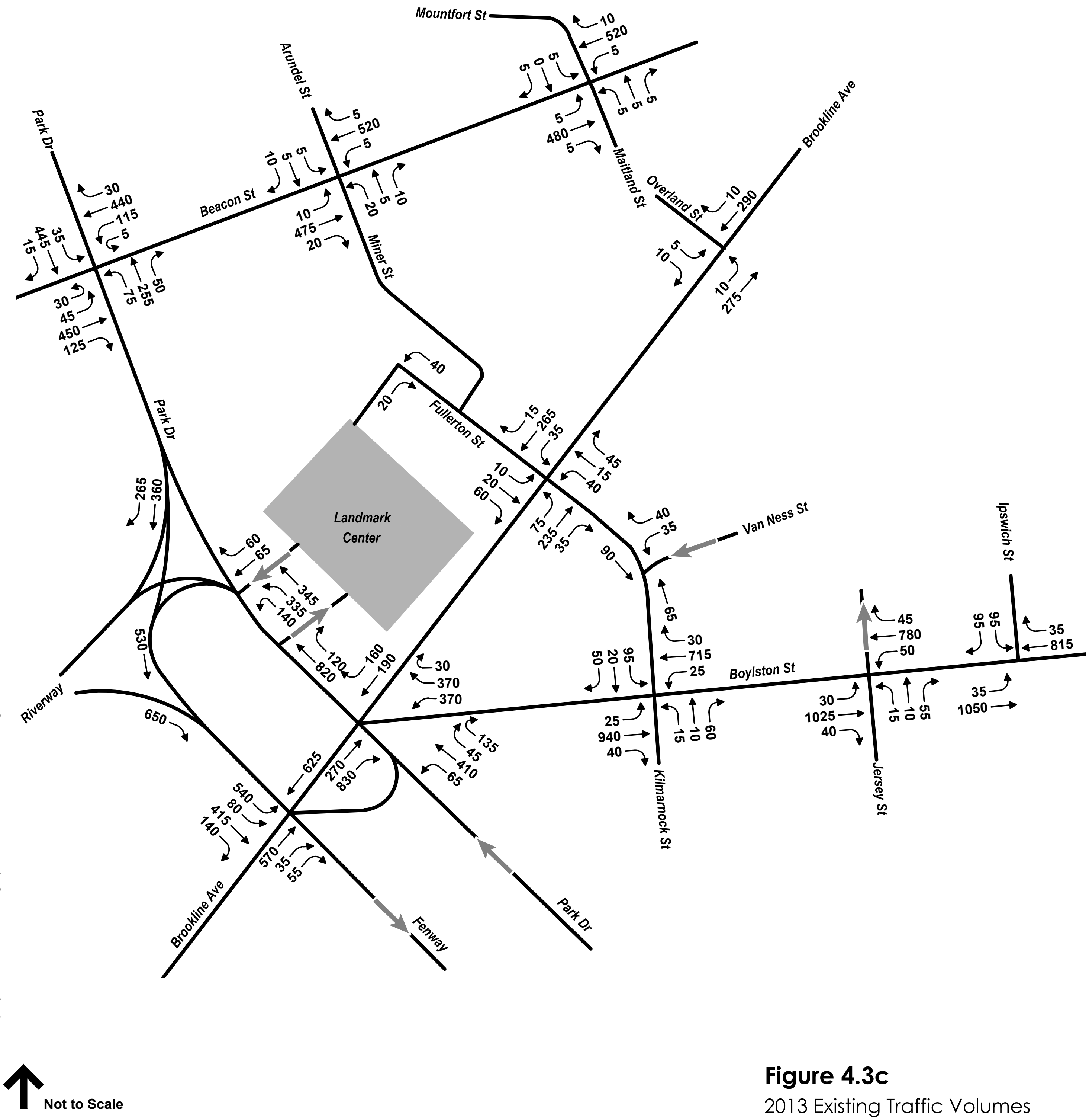
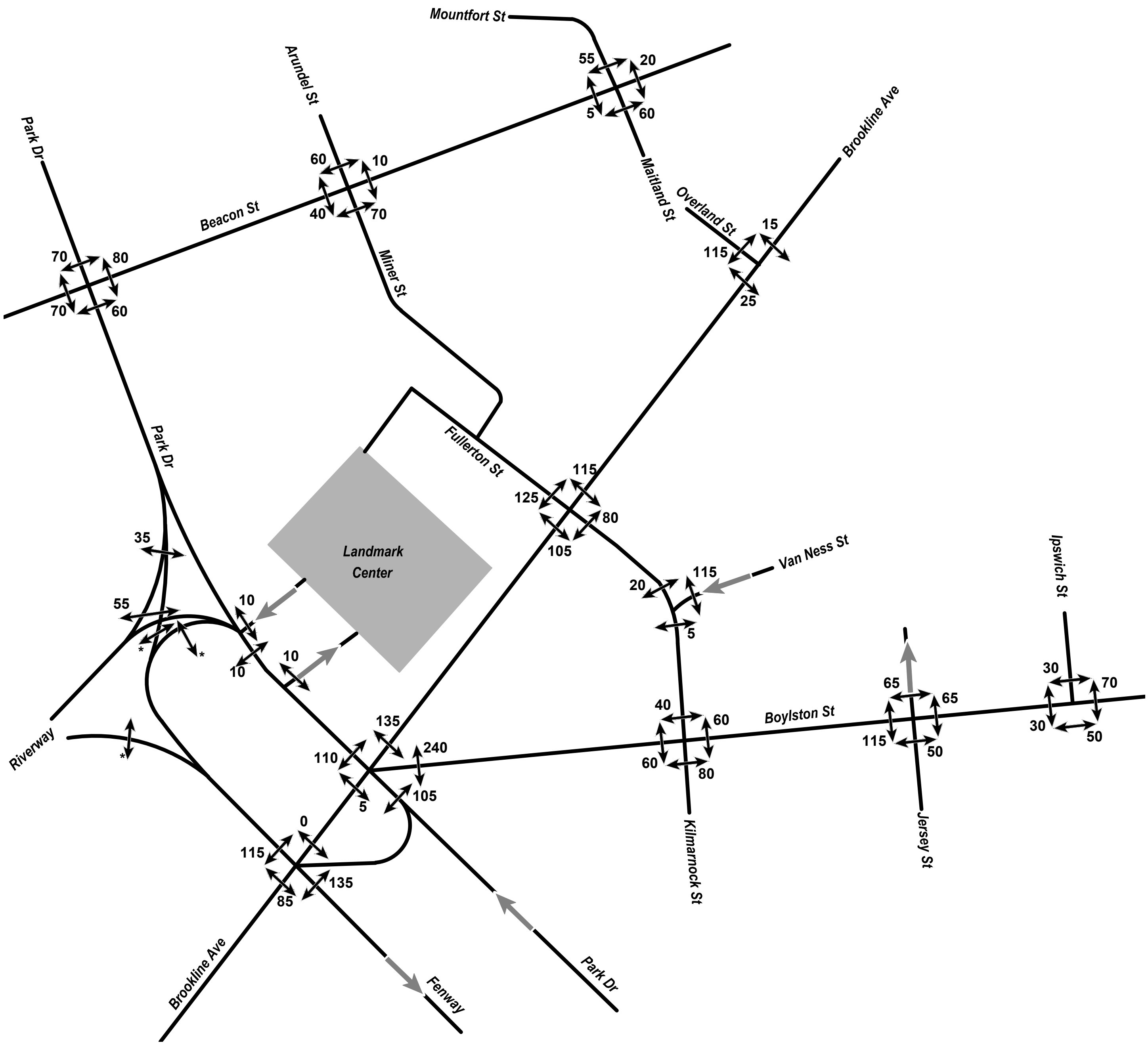


Figure 4.3c

2013 Existing Traffic Volumes
Saturday Midday Peak Hour
(12:00-1:00 PM)



* Crosswalks closed due to ACOE construction

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Figure 4.4a

2013 Existing Pedestrian Volumes
Weekday Morning Peak Hour
(7:45-8:45 AM)

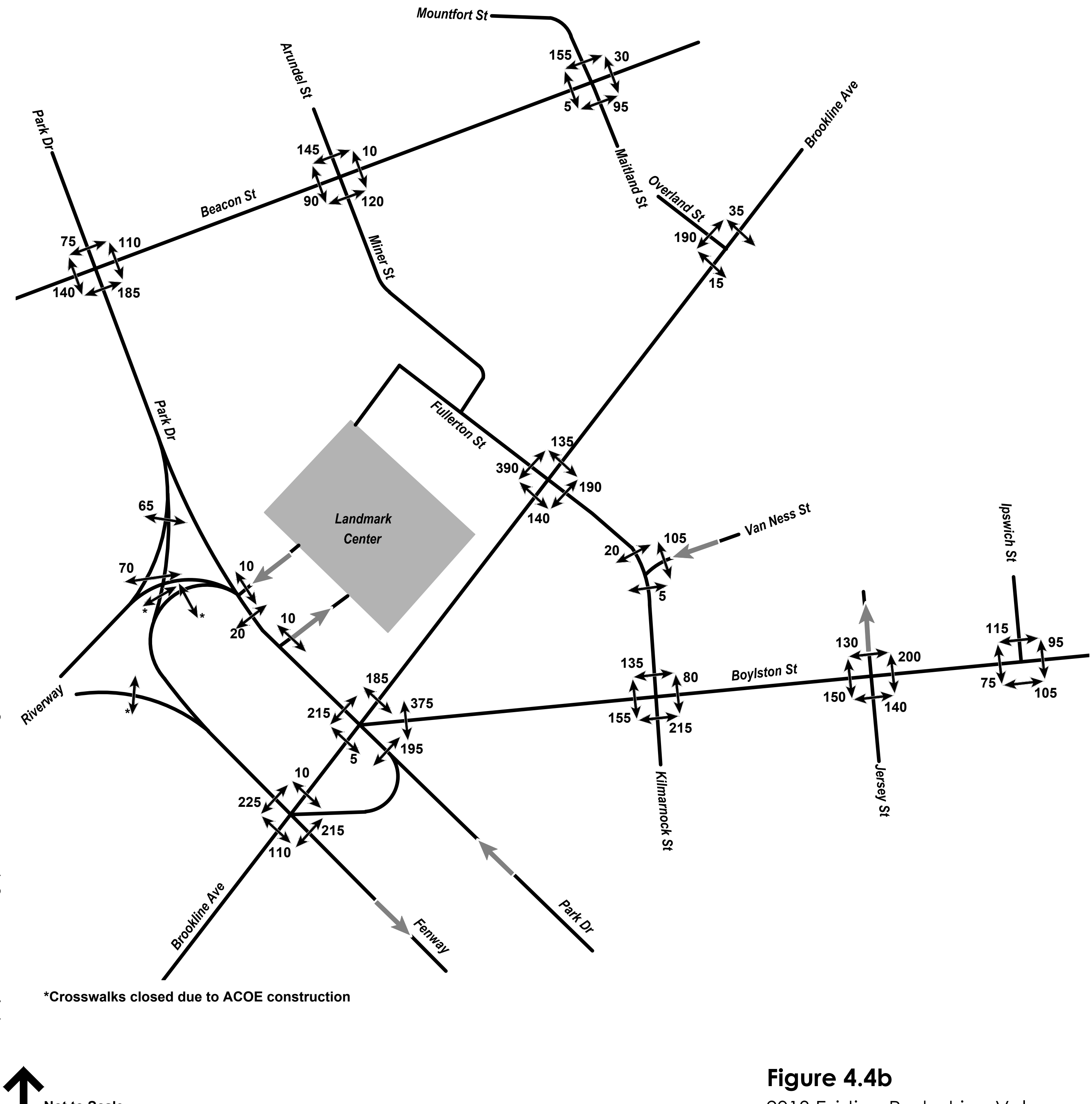

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Figure 4.4b

2013 Existing Pedestrian Volumes
Weekday Evening Peak Hour
(4:45-5:45 PM)

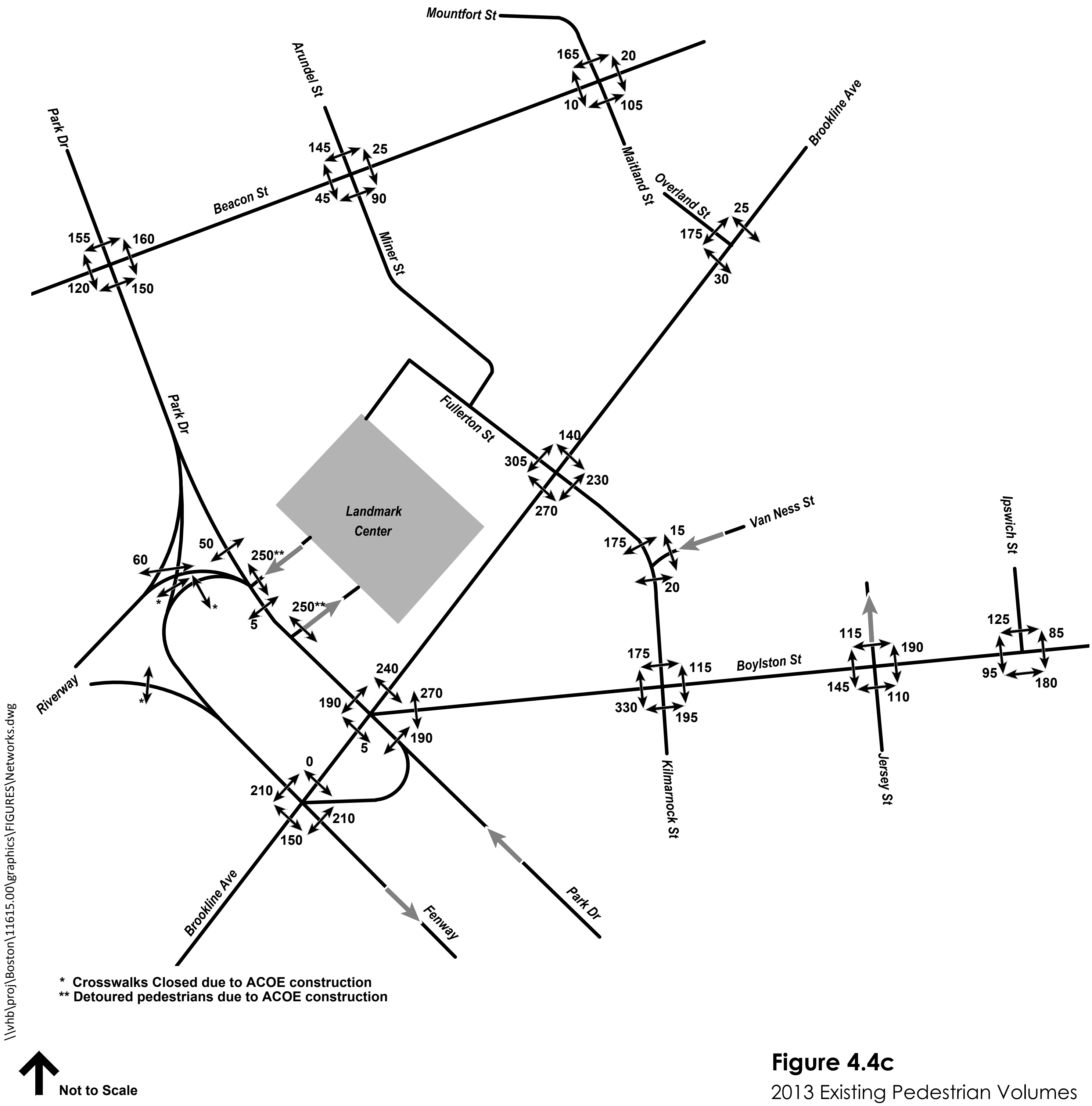

Figure 4.4c

2013 Existing Pedestrian Volumes
Saturday Midday Peak Hour
(12:00-1:00 PM)

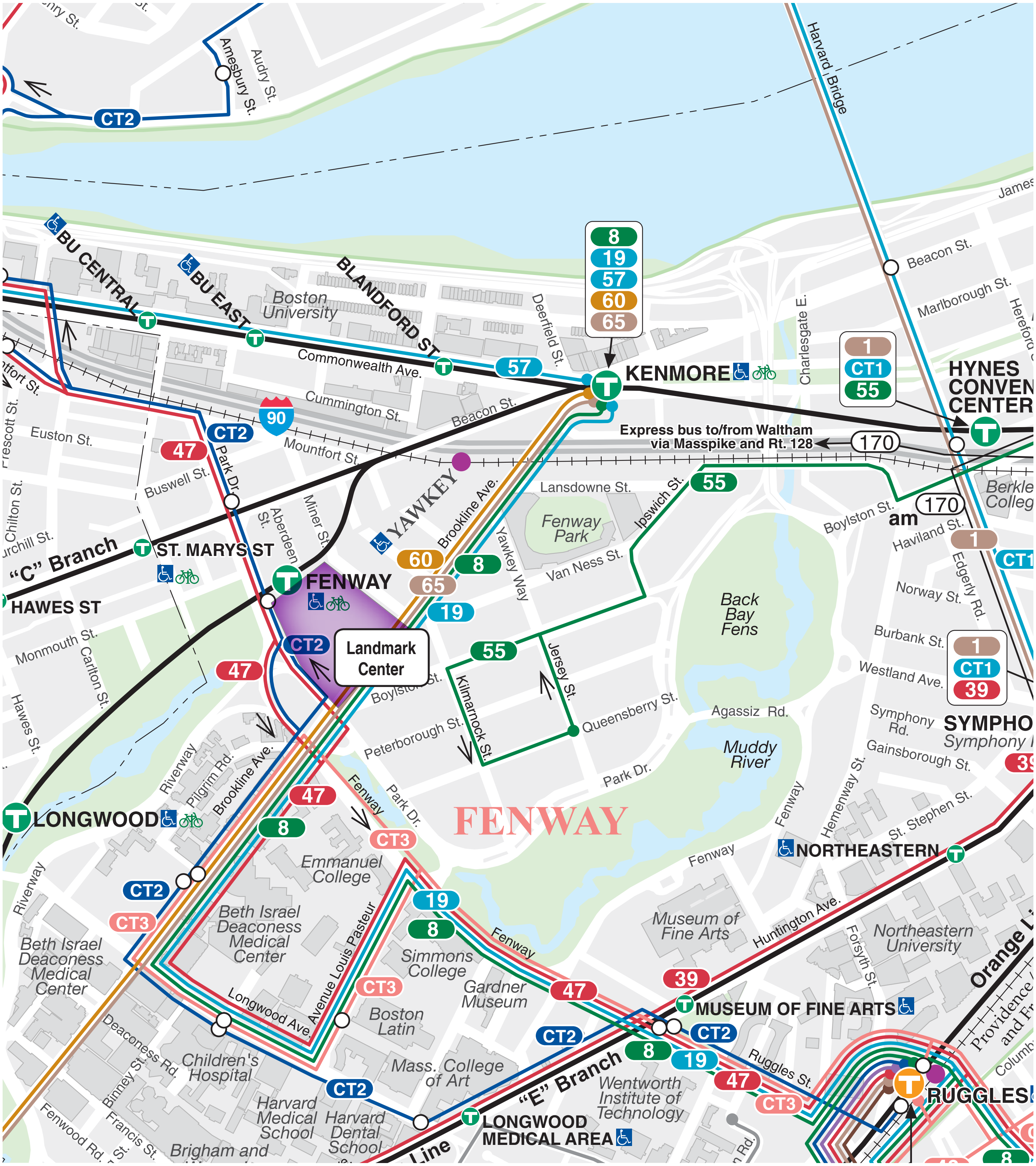

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Figure 4.5
Existing Public Transportation

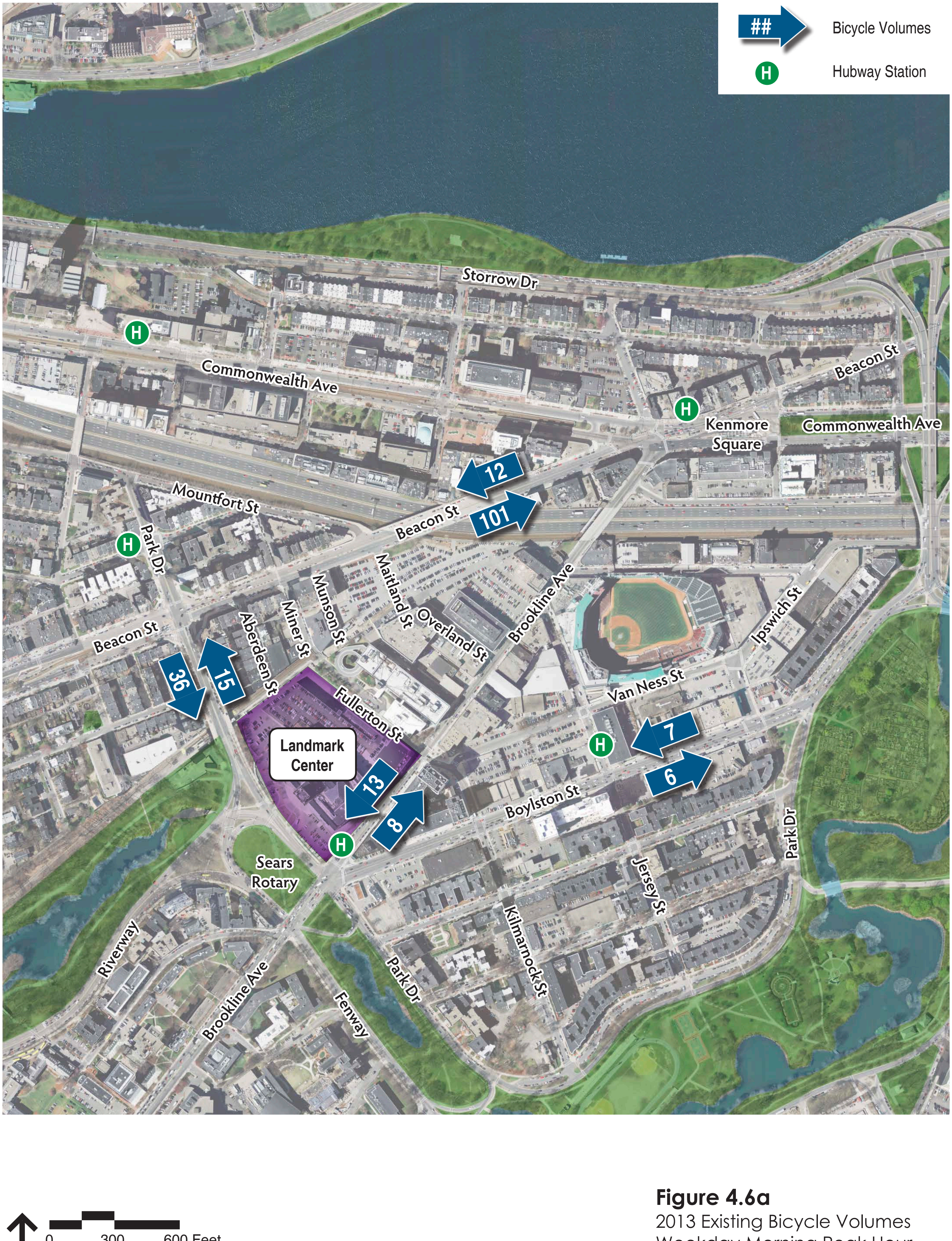

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Figure 4.6a
2013 Existing Bicycle Volumes
Weekday Morning Peak Hour
(7:45-8:45 AM)

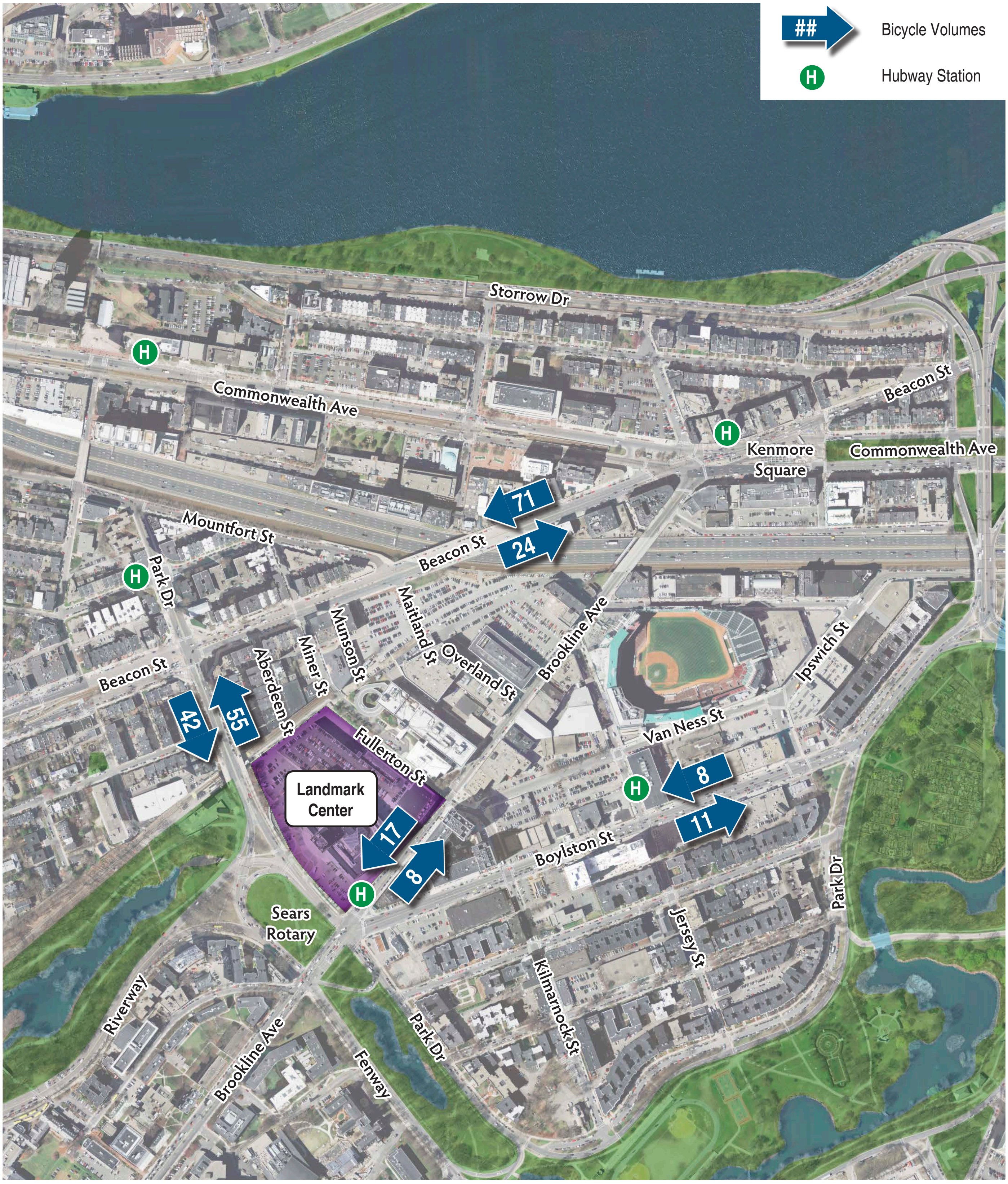

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Figure 4.6b
2013 Existing Bicycle Volumes
Weekday Evening Peak Hour
(4:45-5:45 PM)

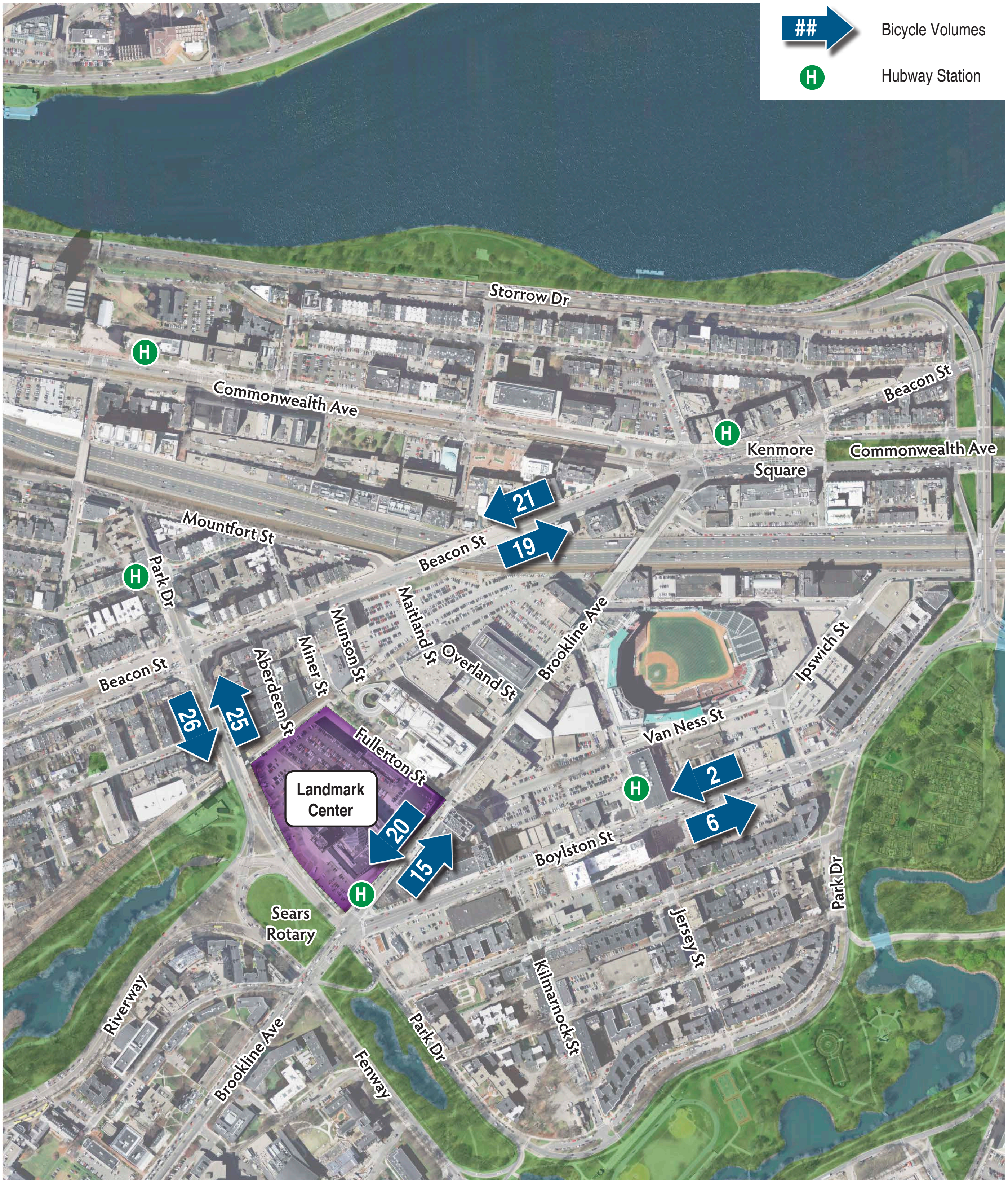

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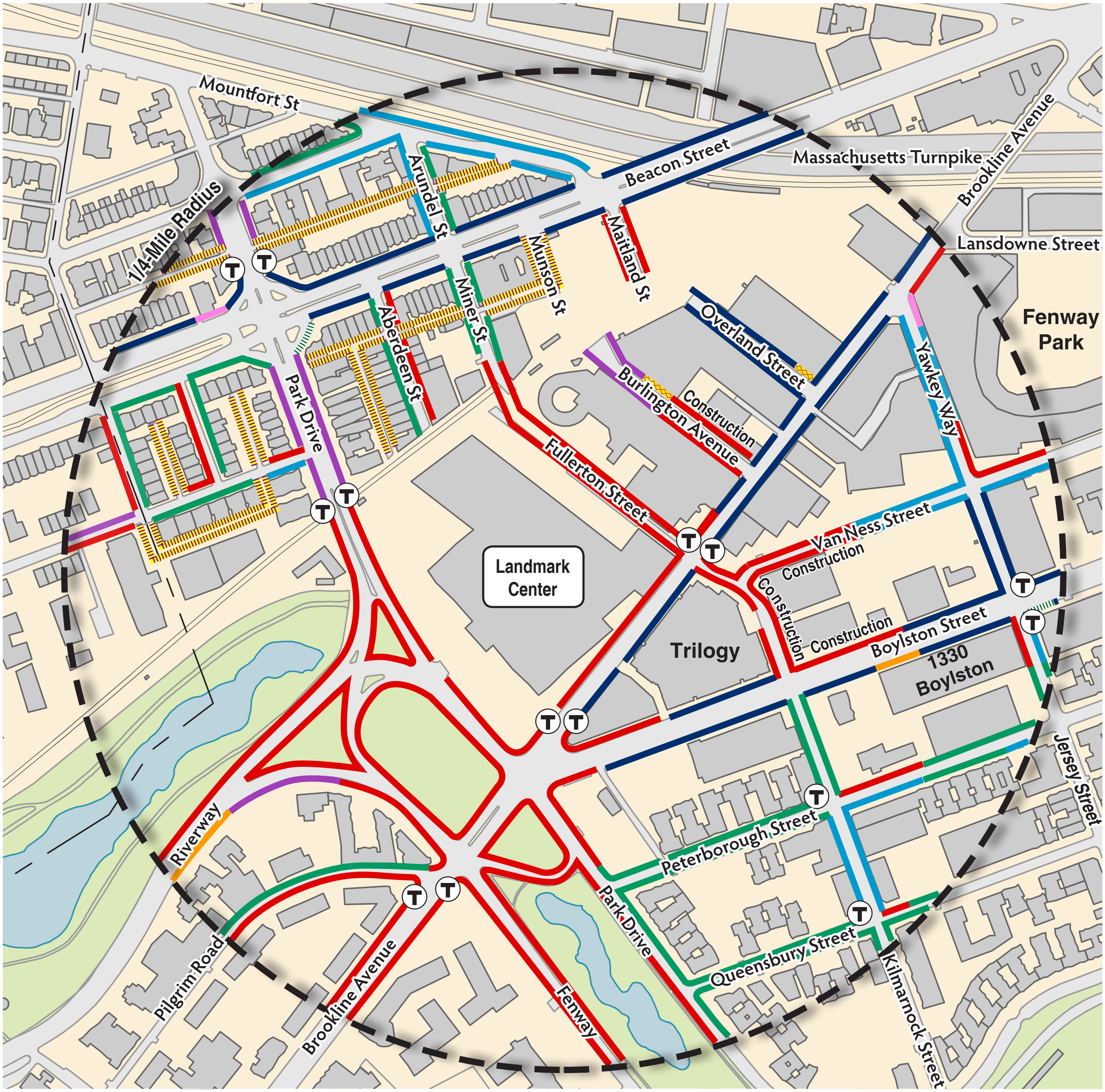
Figure 4.6c
2013 Existing Bicycle Volumes
Saturday Midday Peak Hour
(12:00-1:00 PM)

- Metered
- Fenway/Kenmore Resident
- 2-Hour Parking
- HP-V Plate Parking
- Drop-Off/Pick-Up
- Unrestricted / Unmarked
- Alley/Private
- Loading/Commercial
- No Parking/Stopping Anytime
- Taxi Stand
- MBTA Bus Stop



Note: Game Day restrictions apply to street parking in the vicinity of Fenway Park

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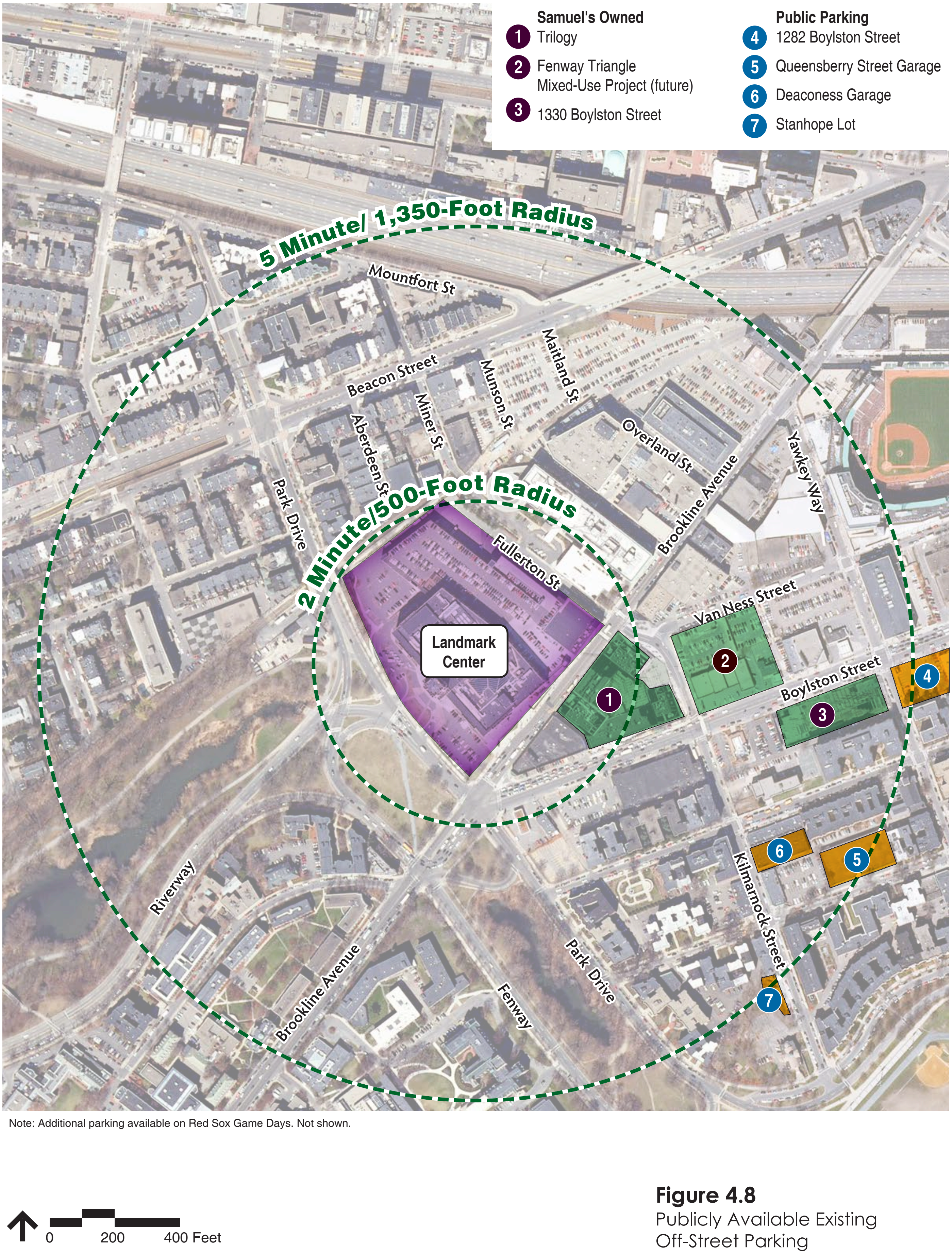
0 200 400 Feet

Figure 4.7
Summary of On-Street Parking Regulations



Note: Additional parking available on Red Sox Game Days. Not shown.

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Figure 4.8
Publicly Available Existing Off-Street Parking (Non-Game Day)

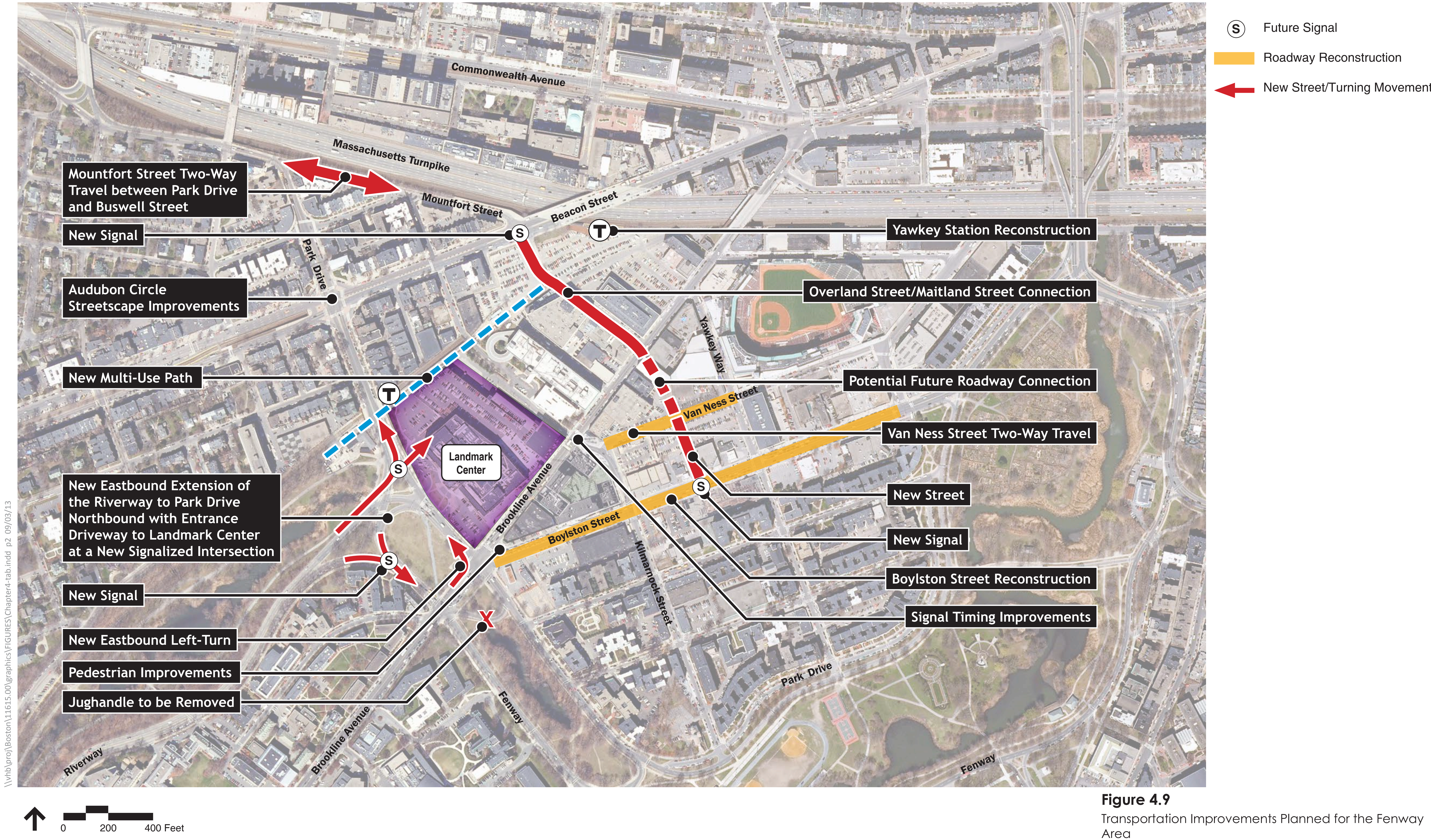

Figure 4.9
Transportation Improvements Planned for the Fenway Area

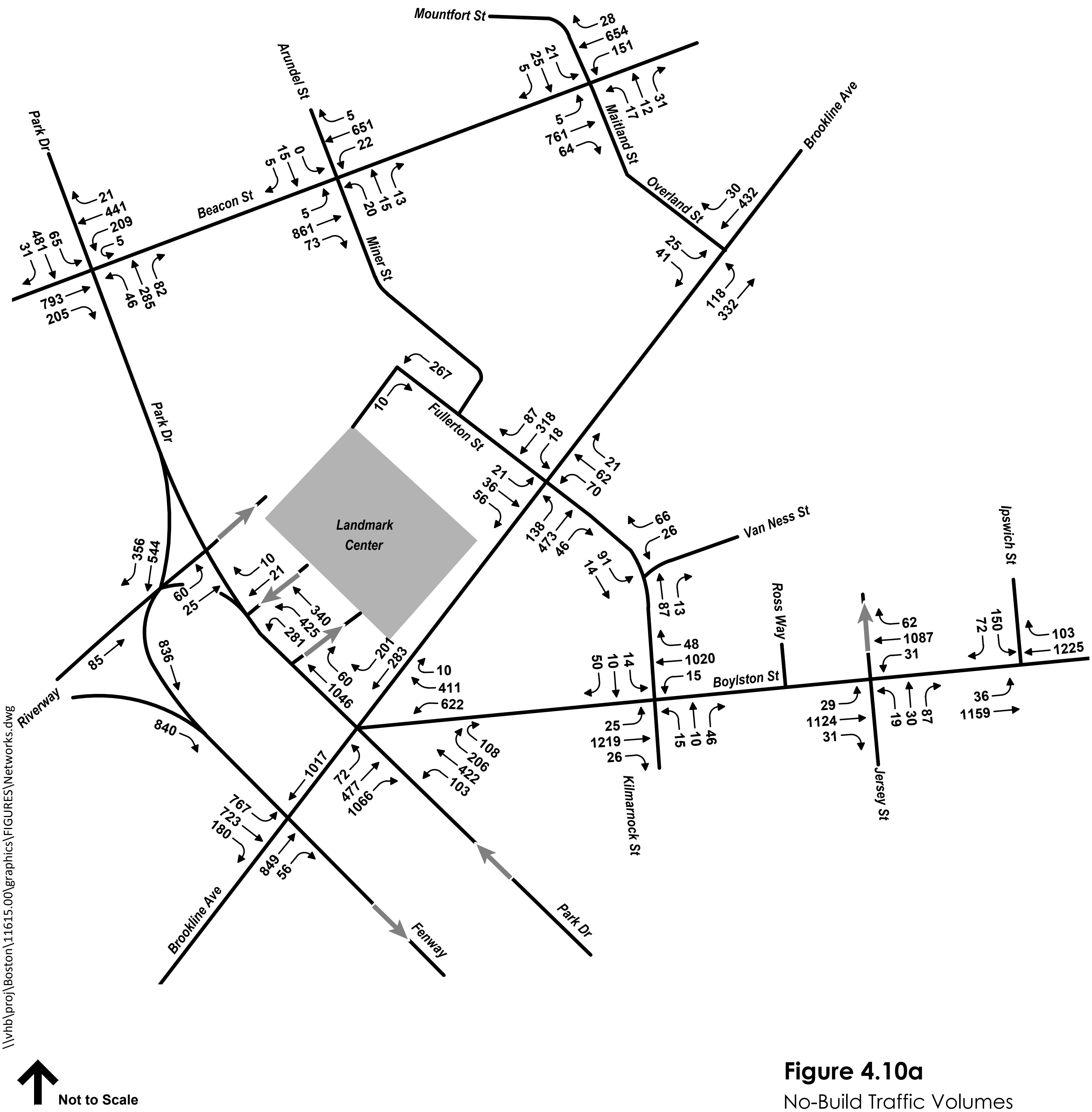

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Figure 4.10a

No-Build Traffic Volumes
Weekday Morning Peak Hour
(7:45-8:45 AM)

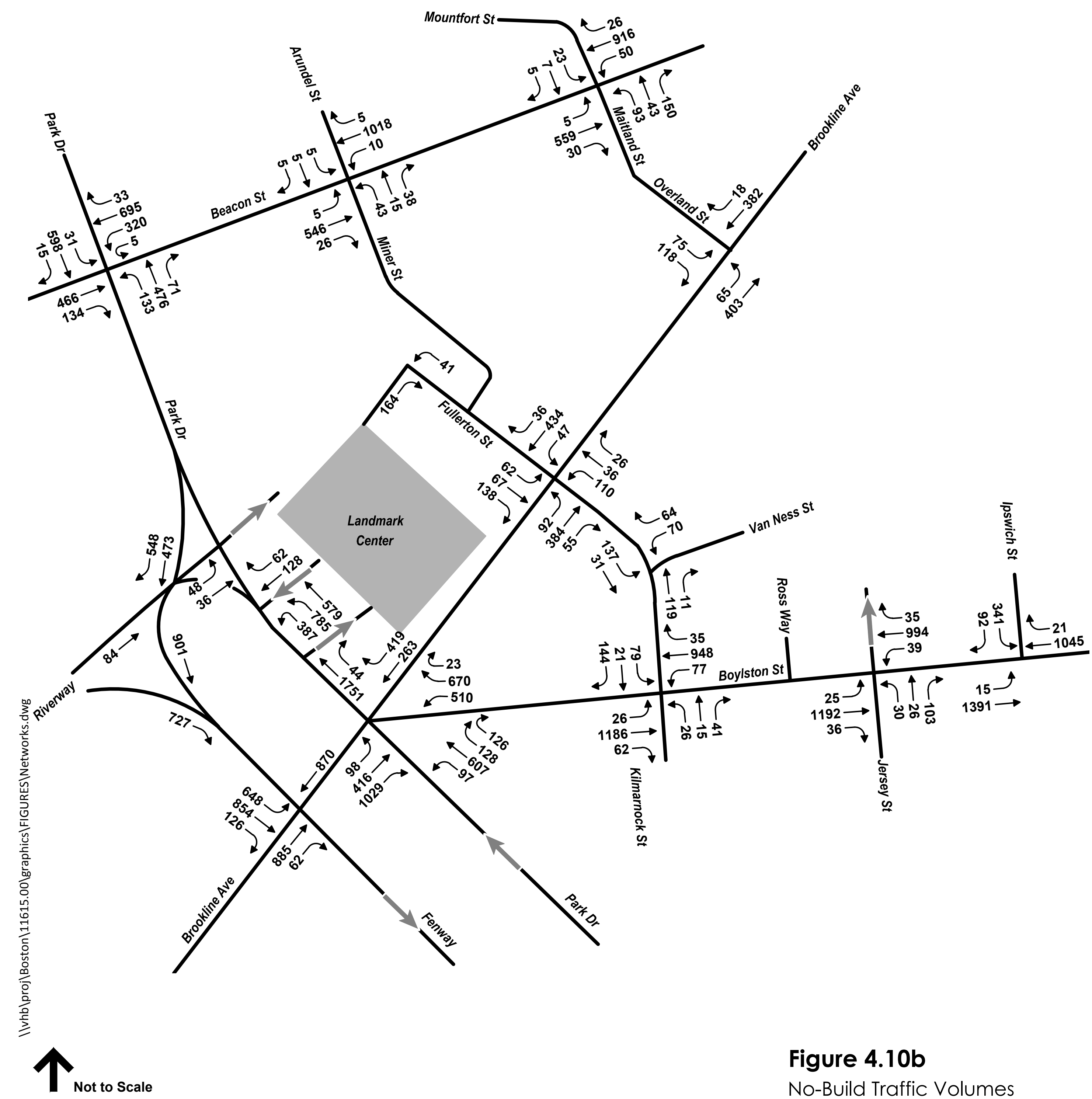
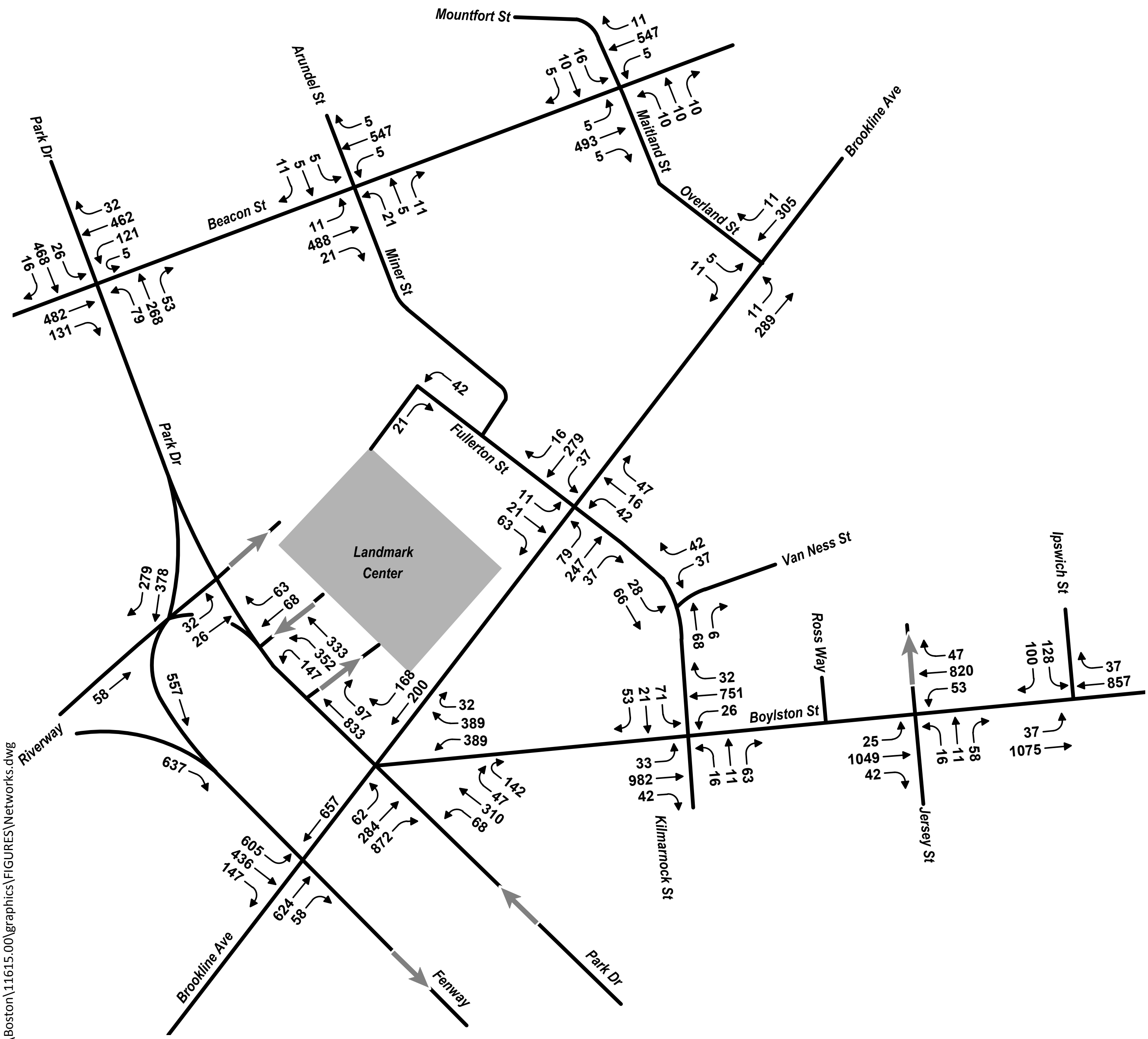


Figure 4.10b

No-Build Traffic Volumes
Weekday Evening Peak Hour
(4:45-5:45 PM)



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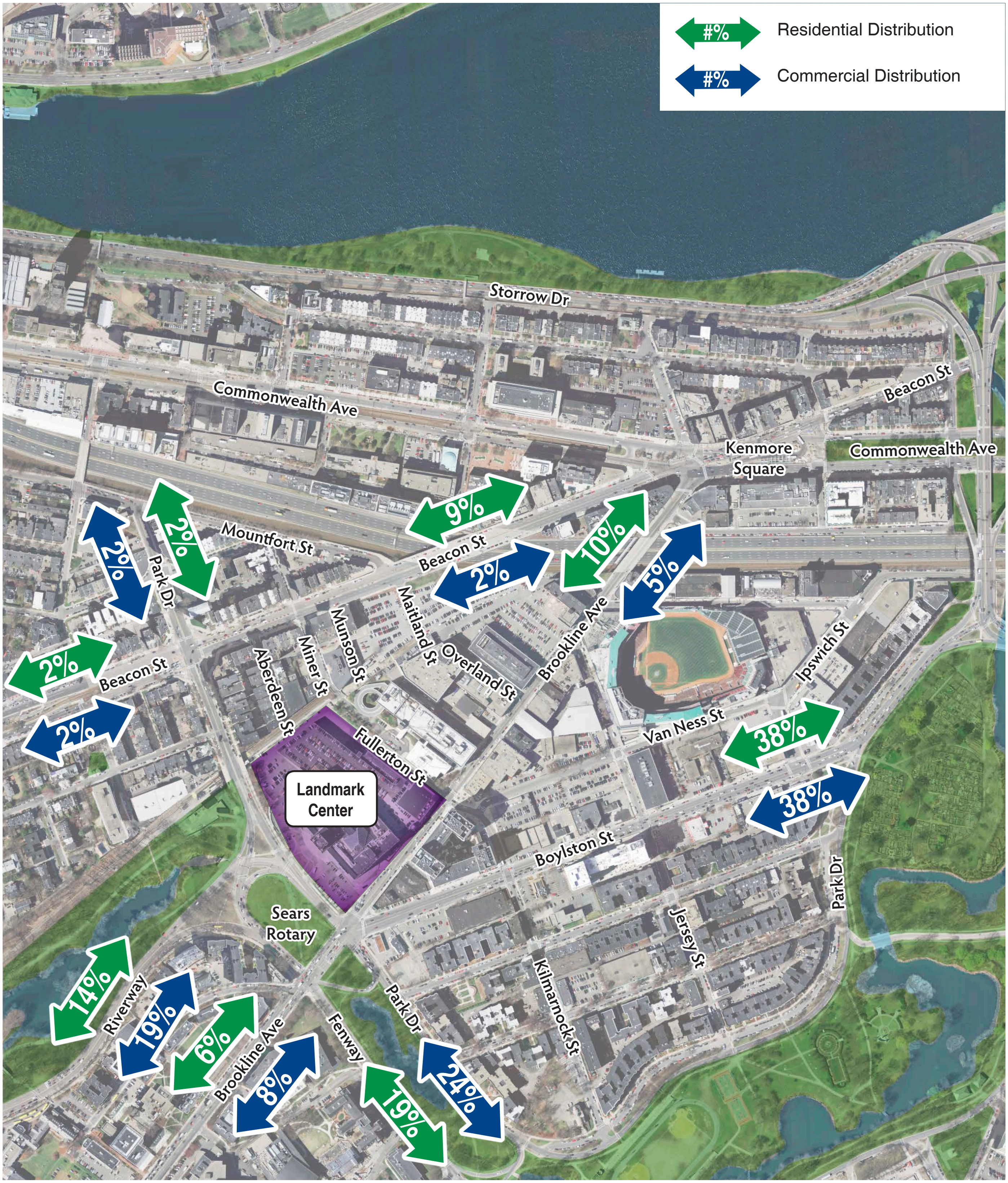
Not to Scale

Figure 4.10c

No-Build Traffic Volumes
Saturday Midday Peak Hour
(12:00-1:00 PM)



0 300 600 Feet

Figure 4.11
Vehicle Trip Distribution

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Net-New Morning Trips
In: (-65)
Out: 85

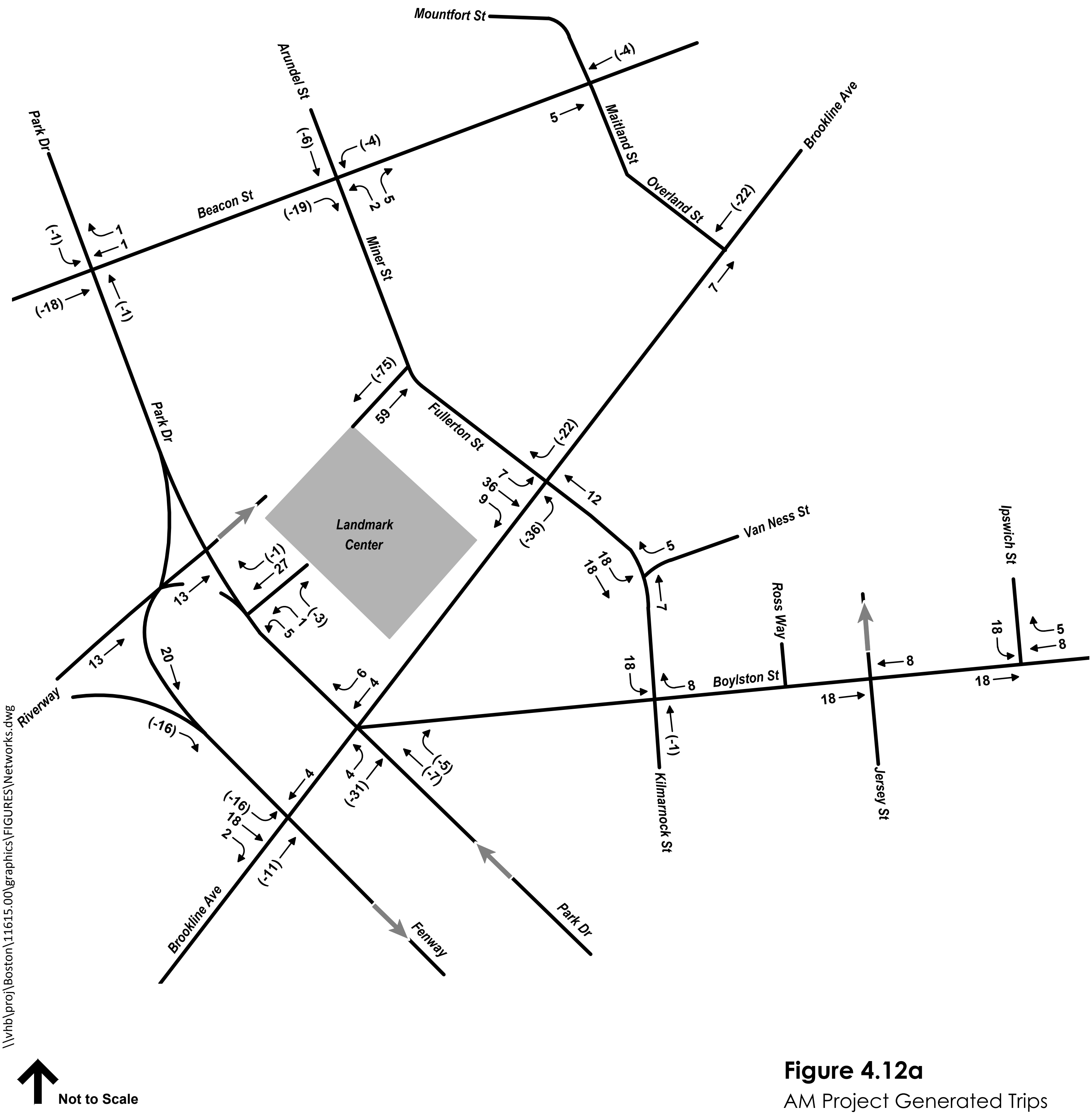

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Figure 4.12a

AM Project Generated Trips
Weekday Morning Peak Hour
(7:45-8:45 AM)

Net-New Evening Trips
In: 168
Out: 23

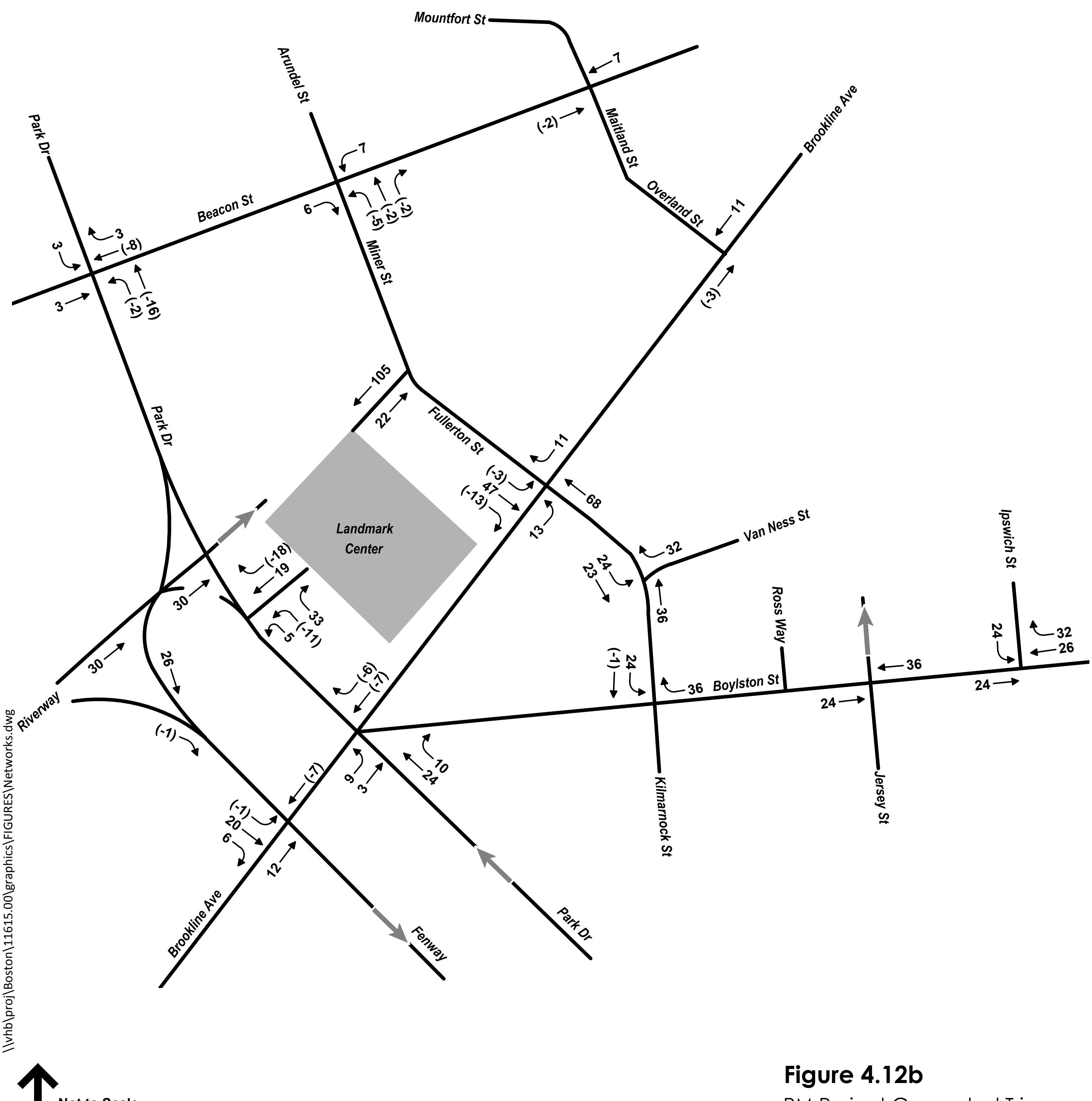

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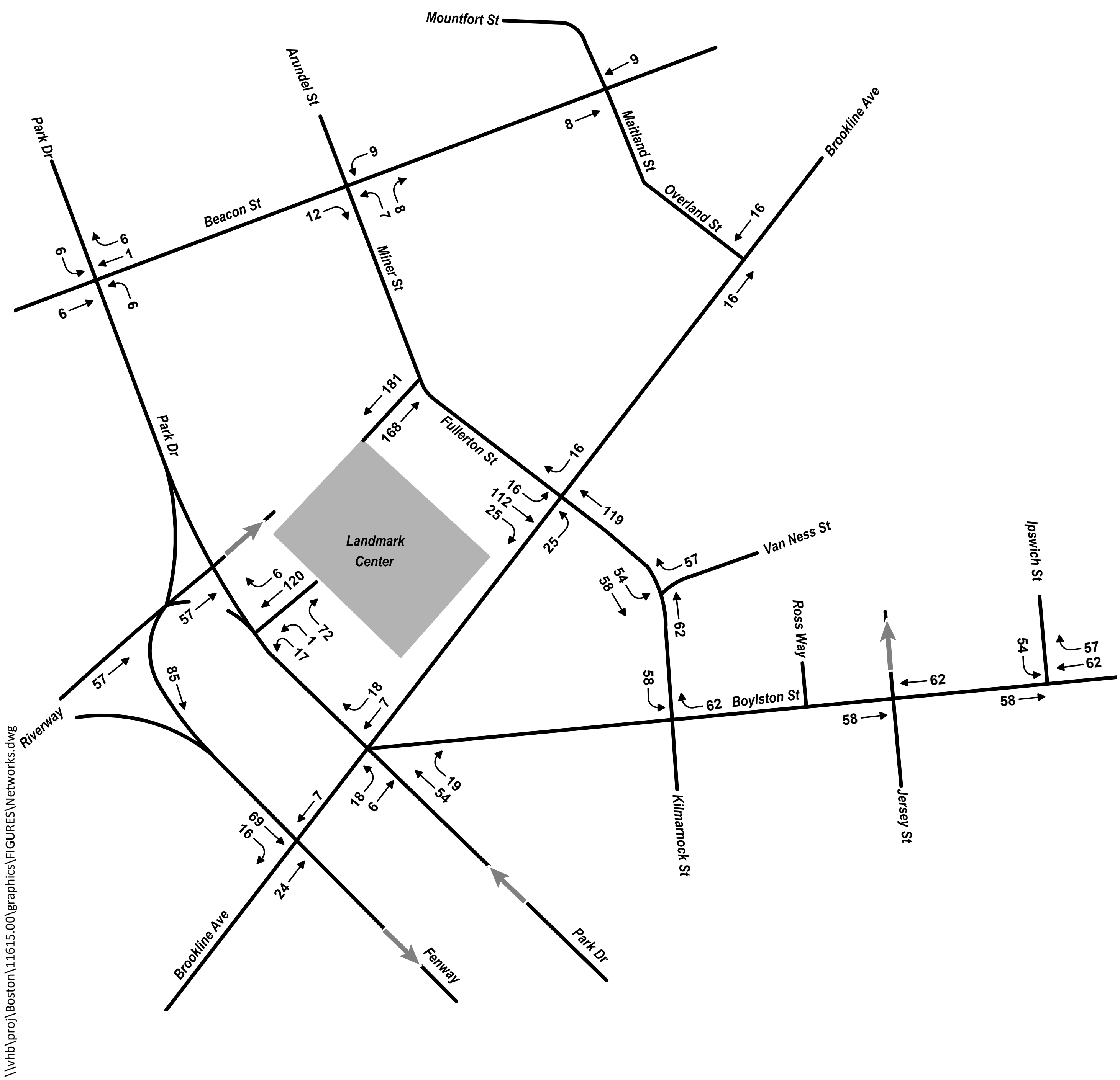
Figure 4.12b
PM Project Generated Trips
Weeday Evening Peak Hour
(4:45-5:45 PM)

Net-New Saturday Trips
In: 310
Out: 294



Not to Scale

Figure 4.12c

Saturday Project Generated Trips
Saturday Midday Peak Hour
(12:00-1:00 PM)

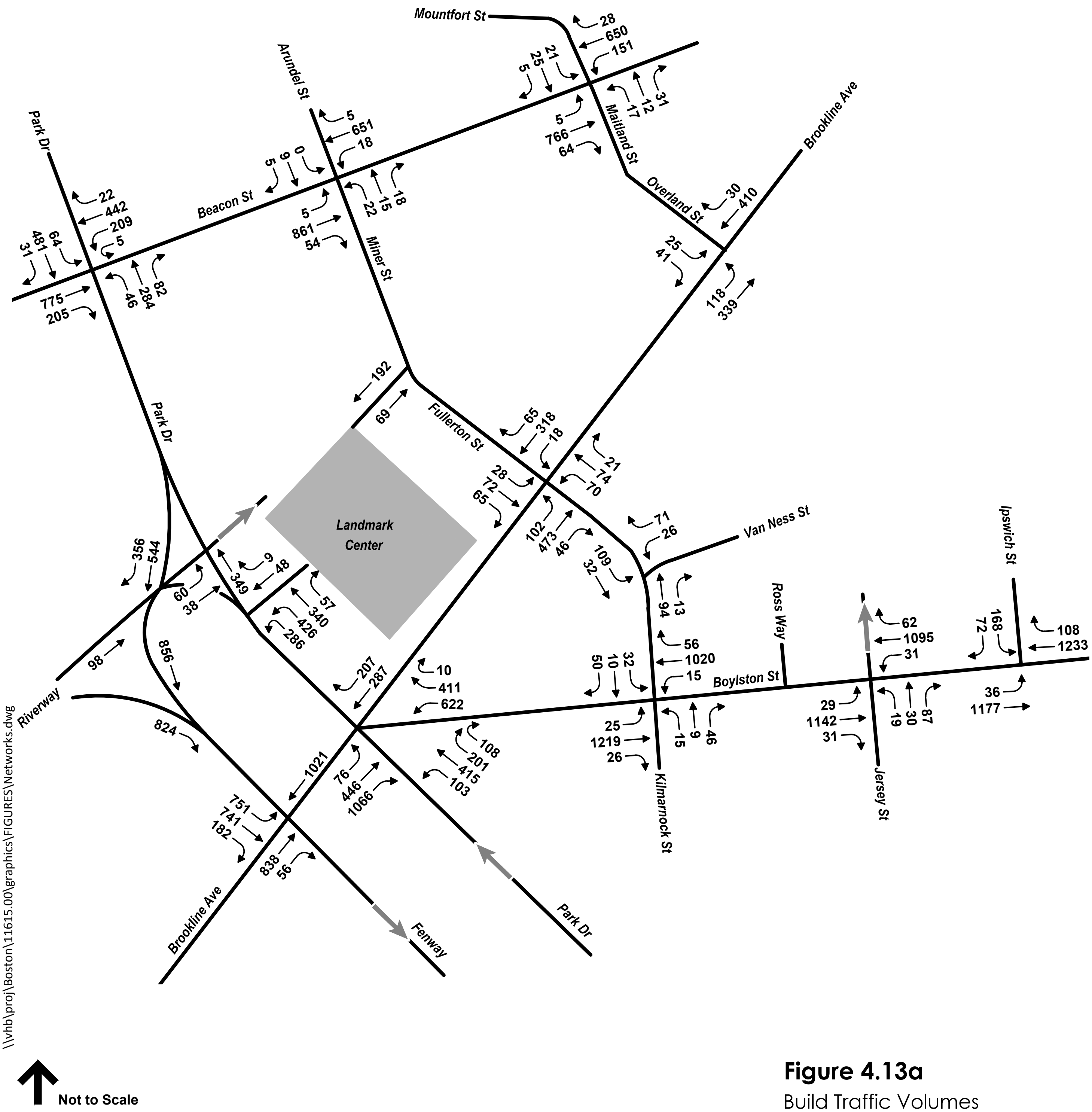


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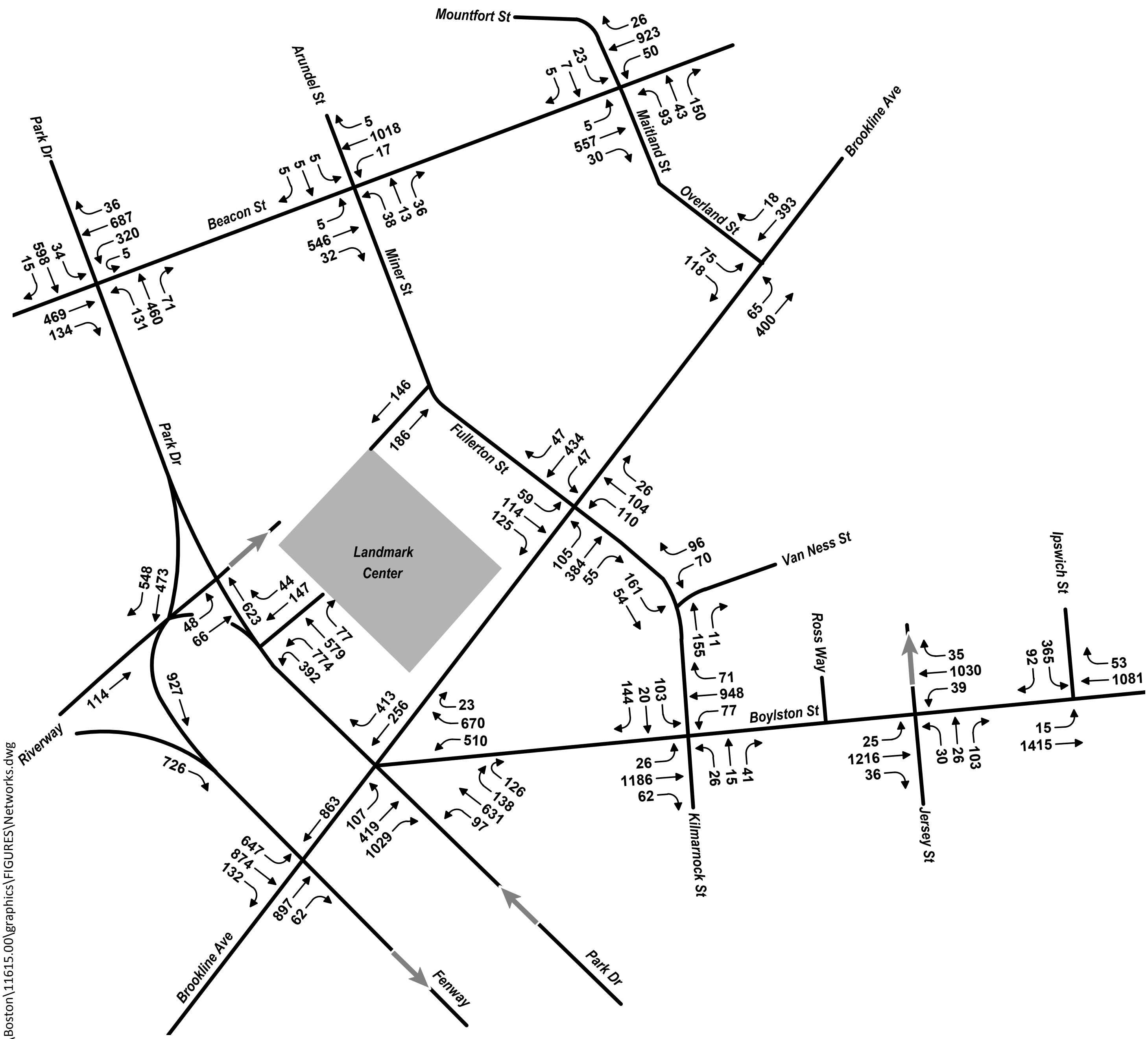
Figure 4.13a

Build Traffic Volumes
Weekday Morning Peak Hour
(7:45-8:45 AM)



\\vhb\proj\Boston\11615.00\graphics\FIGURES\Networks.dwg

Not to Scale

Figure 4.13b

Build Traffic Volumes
Weekday Evening Peak Hour
(4:45-5:45 PM)

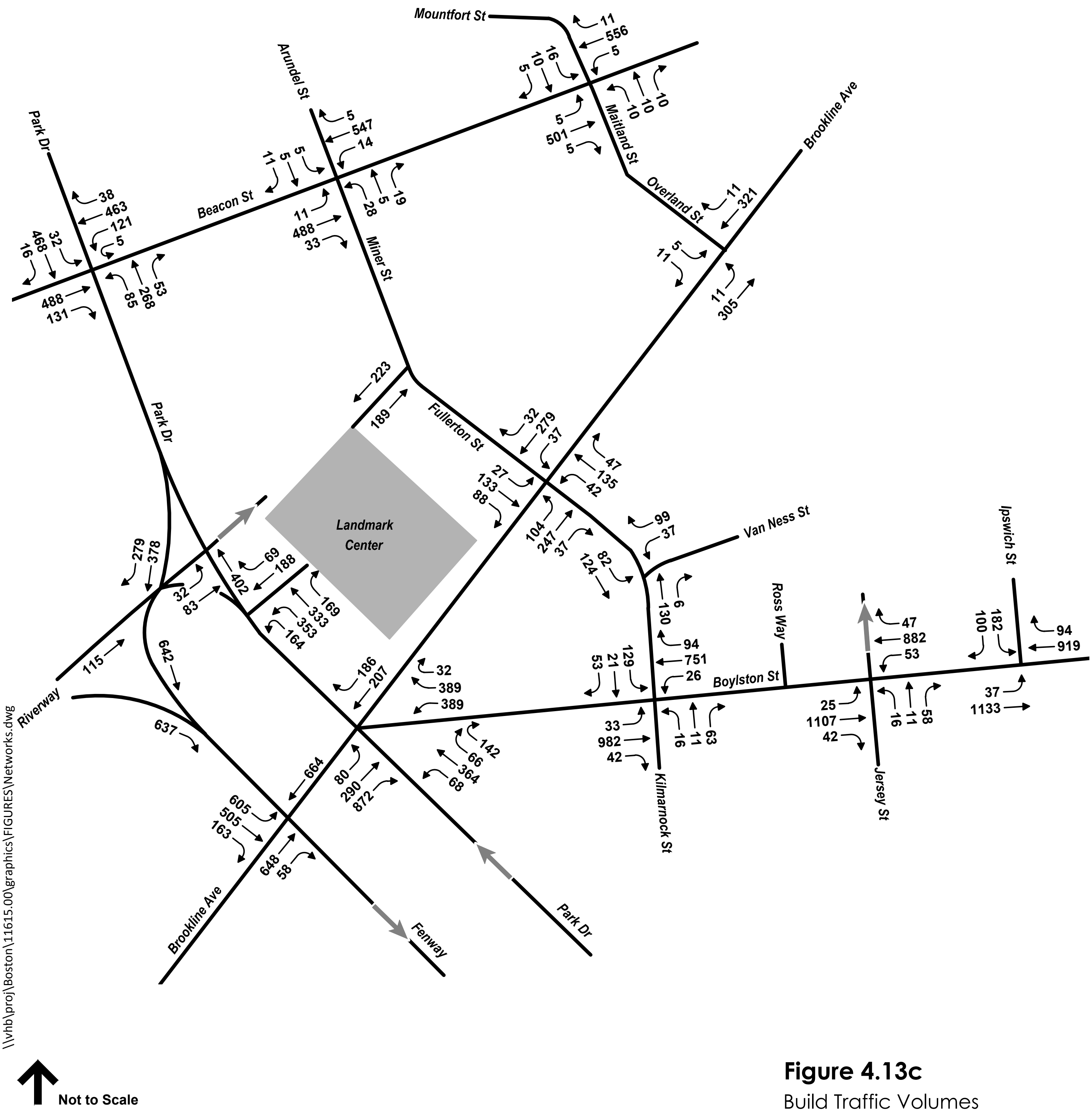


Figure 4.13c

Build Traffic Volumes
Saturday Midday Peak Hour
(12:00-1:00 PM)

5

Environmental Protection

Introduction

This chapter presents information on the environmental conditions in the vicinity of the Project Site and the potential changes that may occur as a result of the Project. A key goal of the Project is to redevelop the Project Site for higher and better uses, while avoiding or minimizing potential adverse environmental impacts.

As discussed in more detail below, the Project-related impacts, which are to be expected in any high-rise development of this scale, are counterbalanced by the significant benefits for the neighborhood and city, including the realization of many of the City's planning goals for the Fenway neighborhood. Temporary construction-period impacts will be managed to minimize disruption to the surrounding neighborhood.

In compliance with the Article 80 Large Project Review guidelines of the Boston Zoning Code, this expanded PNF considers the potential environmental impacts in the following categories:

- Pedestrian Wind
- Shadow
- Daylight
- Solar Glare
- Air Quality
- Water Quality
- Flood Hazard
- Groundwater and Geotechnical
- Solid and Hazardous Waste
- Noise
- Construction
- Rodent Control
- Green Building/Sustainability

A pedestrian wind analysis is required because the Project is over 150-feet in height. There is no wildlife habitat located with or in the vicinity of the Project Site. Chapter 3, *Urban Design,* provides detailed descriptions of architectural characteristics, including height, massing, and ground-level treatments, such as pedestrian ways, amenities and landscaping. Chapter 4, *Transportation,* provides the detailed traffic and access impact study. Chapter 6, *Infrastructure,* provides detailed descriptions of the infrastructure and utilities required to support the Project. Chapter 7, *Historic Resources,* identifies and describes historic resources in the vicinity of the Project Site and evaluates potential Project-related impacts to them.

As demonstrated in the following sections as well as in the above-referenced chapters, the Project has been designed to mitigate its environmental impacts.

Pedestrian Wind

Pedestrian level winds conditions were evaluated as a part of this expanded PNF document in anticipation of the BRA requiring a quantitative study as required by Section 80-B3 of the Boston Zoning Code. The objective of the wind study was to assess the potential effect of the Project on local wind conditions in pedestrian areas around the Project Site and provide recommendations for minimizing unacceptable effects, if any.

The study involved wind simulation on a 1:400 scale model of the project area. The simulations were conducted by Rowan, Williams Davies and Irwin (RWDI) in a boundary-layer wind tunnel for the purpose of estimating local wind speed conditions under the No-Build and Build Conditions (i.e., without and with the Project, respectively). The study model that was used for wind tunnel testing included a taller residential massing along Fullerton Street than the proposed Project. The balance of the model was the same as the proposed Project. RWDI reviewed the differences in the massing and determined that the proposed Project would not have a negative effect on wind conditions compared to the conditions using the study model. Both the No-Build and Build Conditions include the redevelopment of 121 Brookline Avenue, which is nearly complete, the proposed buildings at 1325 Boylston Street (A.K.A. The Van Ness) and 132 Brookline Avenue (previously referred to collectively as the Fenway Triangle Mixed Use Project) and The Point building—all of which have been reviewed and approved by the BRA. The study identifies specific changes in wind patterns and velocities.

The study modeled the ground-level wind conditions at ninety-four (94) locations including pedestrian routes and public streets surrounding the Project Site which include Park Drive, Boylston Street and Fullerton Street. The study locations were reviewed by the BRA prior to conducting the study.

■

Summary of Key Findings

The Project includes a re-ordering of the Project Site, which preserves the historic building and reconfigures the balance of the site through new low-story and vertical massing to create an environment that balances existing office uses, enhanced retail uses and new residential uses. As expected, the Project will result in changes to the pedestrian wind environment on-site. The project design utilizes taller site elements mixed with low-story connecting structures, which is an effective method for minimizing wind impacts at the ground level. It allows the wind to be directed and transitioned from level to level.

While the Project will result in changes to pedestrian wind patterns, the results of the wind tunnel analysis demonstrate that, overall, it does not result in negative impacts under the Build Condition. In fact, some areas of the Project Site and local street frontage were improved as a result of the Project where most locations experience a reduction in annual wind speed. No locations on or around the Project Site are projected to have unacceptable average wind speeds or wind gust conditions. The isolated areas identified as “uncomfortable” wind conditions will be addressed by localized solutions, such as landscaping, awnings, or similar architectural elements.

Overview

Major buildings, especially those that extend above their surroundings, may 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 have the potential to deflect them down to the pedestrian environment. The funneling of wind through gaps between buildings and the acceleration of wind around corners of buildings may also cause an increase in wind speed. Conversely, if a building is surrounded by others of equivalent height, it may be protected from prevailing upper-level winds, resulting in no significant changes to the local pedestrian-level wind environment.

The design of the building is an important factor in limiting and wind impacts. The configuration of the building can limit wind impacts through orientation of the building massing, provision of articulation that break up massings, ground level appurtenances such as canopies and landscaping, and even elements of the building face.

The most effective way to assess potential pedestrian-level wind impacts around a proposed new building is to conduct scale model tests in a wind tunnel. For that reason, RWDI has conducted the tests which are reported in this section.

The scale model includes existing and proposed buildings but typically does not include existing and proposed trees and landscaping which would have a calming effect on pedestrian wind conditions. Only proposed trees included with the recent wind analysis of The Point building are included. In open space areas that include an established tree canopy we would expect the wind conditions to be calmer than what is depicted in this study.

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 cafés 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 or other loose materials in a moderate breeze, to severe difficulty with walking due to the wind forces on the pedestrian.

Methodology

Information concerning the site and surroundings were derived from site photographs, information on surrounding buildings supplied by the architect, and site plans and elevations of the proposed development provided by the design team.

The following configurations were simulated:

- **No-Build Condition** – includes existing buildings on and around the Project Site as well as planned buildings within the study locus (i.e., background growth); and

- **Build Condition** – includes the existing site surroundings, proposed project design, and planned buildings within the study locus.

The scale model was equipped with specifically 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 about five feet above grade in pedestrian areas throughout the study area. Study locations were selected by RWDI based on their extensive experience in modeling pedestrian level wind conditions in Boston. These locations were reviewed by the BRA and updated per their comments prior to testing. Specific study locations were selected to adequately model conditions at along the public pedestrian ways around the site and adjacent abutting properties. The horizontal extent of the study area was selected to capture any locations likely to be affected by the Proposed Program. This methodology was confirmed by comparing the modeled conditions at the perimeter of the study area under the No-Build and Build conditions. As shown on Figures 5.1a and 5.1b, none of the study locations at the edge of the study area showed a change between these two study conditions. See Appendix C for further information, including findings related to wind gusts.

Wind speeds were measured for 36 wind directions, in 10 degree increments, starting from true north (Figure 5.1a). 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.

This study involved state-of-the-art measurements and analysis techniques to predict wind conditions at the study site. However, 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. The comfort limits used in this report 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 experiences at the site. Finally, the predictions of wind speeds are necessarily a statistical procedure. The wind speeds reported are for the frequency or occurrence stated (on percent of the time). Higher wind speeds may occur but on a less frequent basis.

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 miles per hour (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 location is based on the work of Melbourne. 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 1-hour mean wind speed exceeded one percent of the time (i.e., the 99th percentile mean wind speed). They are as follows in Table 5-1.

Table 5-1
Boston Redevelopment Authority Mean Wind Criteria*

Melbourne Category	Description	Criteria*
1. Comfortable for Sitting	Recommended for outdoor cafes and amenities that promote sitting.	≤12 miles per hour
2. Comfortable for Standing	Appropriate at major building entrances, bus stops or other areas where people may want to linger but not necessarily sit for extended periods of time.	>12 and ≤15 miles per hour
3. Comfortable for Walking	Appropriate from sidewalks, plazas, parks where people are more likely to be active and receptive to some wind activity.	>15 and ≤19 miles per hour
4. Uncomfortable for Walking	Considered a nuisance for some activities, but can be acceptable, depending upon the season and use of an area.	>19 and ≤27 miles per hour
5. Dangerous	Wind speeds can adversely affect a pedestrian's balance and footing.	> 27 miles per hour

Source: Boston Redevelopment Authority
* Applicable to the hourly mean wind speed exceeded one percent of the time.

The wind climate found in a typical urbanized area in Boston is generally comfortable for the pedestrian use of sidewalks and thoroughfares meeting the BRA effective gust velocity criterion of 31 mph. However, without any mitigation measures, the general wind climate in Boston can be uncomfortable for more passive activities, such as sitting.

No-Build Pedestrian Wind Conditions

The No-Build conditions were examined to provide a baseline for the pedestrian wind environment. The same ground level points were used to assess the No-Build and Build Conditions.

The No-Build Condition wind conditions are shown on Figure 5.1a. In the No-Build Condition, the area around the Project Site shows some variability in wind conditions resulting from the current building massings and street configurations. Most areas meet the criteria of being comfortable for Sitting, Standing, or Walking, as described in Table 5-1. Two locations along the face of the existing Landmark Building (18 and 24) and a number of locations beyond the site (41, 47, 48, 49, 56 and 61) indicate average annual wind speeds characterized as Uncomfortable. No locations are characterized as Unacceptable or Dangerous (Figure 5.1a).

■

Build Pedestrian Wind Conditions

The Build Condition wind conditions are shown on Figure 5.1b. Changes to the wind speeds and patterns as a result of the Project are generally in the immediate vicinity of the proposed buildings. For the most part, the changes are incremental and clustered at the new buildings. As anticipated, the buildings effect on the winter winds from the northwest are most notable.

Over the study area, some areas show an increase in annual velocities while others decrease. Any notable changes in wind speed are within the immediate vicinity of the Project.

Overall, wind conditions along Park Drive frontage show the least change. For the most part, areas along this face of the building seem to be well suited for the planned pedestrian improvements included as part of the Project.

Location 24, at the corner of the existing Landmark building, is Uncomfortable in the No-Build Condition and remains so in the Build Condition with a 1 MPH reduction in annual wind speed. It is in the low end of the Uncomfortable range and does not meet this criterion in the summer season. This is not surprising given the large open space to the west of this point and the predominant winds from the west and northwest in the fall, winter and spring. Location 18, which is also at an existing building corner, is improved by the new massing and experiences a reduction of 9 MPH in annual wind speed.

Across Park Drive, locations 63 and 64 show an increase of 1 MPH in average wind speed as a result of the Project bumping their rating to Uncomfortable. It should be noted that the wind tunnel study did not include the trees or canopy in this open space, which will provide a measure of mitigation to these locations. In reality, actual wind speeds are expected to be less than what is predicted by the study. Changes as a result of the proposed massing are slight and are not expected to impact the use of this area.

Wind conditions along Brookline Avenue are variable based on location. Generally, locations along this corridor were slightly changed as a result of the Project. Locations 44 and 42 show an increase of annual wind speed of 1 MPH, which is enough to move their classification into Uncomfortable. Conditions along the balance of the Brookline Avenue corridor are projected to be classified as Sitting or Standing under the Build Condition.

The Project creates a new public open space at the intersection of Fullerton Street and Brookline Avenue that is intended to act as a pedestrian connection to the Fenway neighborhood increasing the permeability of the Project Site. The proposed wind conditions in this area range from Sitting to Standing, which supports the active pedestrian space planned here.

Further, to the northwest on Fullerton Street, the proposed building massing was shaped though testing to minimize impacts to the pedestrian environment. Location 10, at the north corner of the proposed building, will experience an increase of wind speed resulting in an Uncomfortable classification. RWDI recommends mitigating this condition by planting trees along the westerly face of the proposed building (between sensor locations 10 and 11) in order to address westerly/northwesterly wind being directed along the westerly building face causing an increase in wind speed at location 10. These trees will be incorporated into the design of the portion of the Multi-Use Path adjacent to the Project Site.

Location 10 is the only location projected to move more than one wind speed classification. All other locations will experience only slight changes, either up or down, in seasonal or annual wind speeds. Looking at the entire data set, more evaluation locations saw a decrease in annual wind speed than an increase in annual wind speed.

Despite the urban conditions and scale of the project area, the overwhelming majority of studied locations experienced conditions generally comfortable for walking or standing, consistent with proposed vision for the Project Site, specifically connecting pedestrian spaces.

Shadow

This section describes the anticipated changes to shadows in the project area as a result of the Project.

Summary of Key Findings

To be expected when replacing a low-density, suburban-style development pattern with urban buildings of varying heights, the Project will result in new shadows on roads and sidewalks during various times of the year. The majority of new shadows are along the portions of the railroad right-of-way north of the Project Site and across Fullerton Street to the Harvard Vanguard service drive and parking entrance. There is no new shadow impact on the restored section of the Muddy River at the Sears Rotary or the Riverway section of the Emerald Necklace Park west of the Project Site.

The presence of these new shadows is consistent with the urban environment and planning objectives of the neighborhood, and when combined with the Proponent's proposed enhancements to the public realm in the area, are not likely to discourage the use of sidewalks or public areas in the vicinity of the Project Site. The shadow impacts are generally consistent with The Abbey Group's previously reviewed plan.

Regulatory Context

The Proponent has completed a shadow study as part of this expanded PNF to ascertain the potential new shadow impacts resulting from the Project. The shadow impact study has been conducted in accordance with Section 80B-2 of the City of Boston Zoning Code with particular emphasis on sidewalks, public plazas, and other public open spaces as well as nearby building of historical importance. As contemplated by Section 80B-2(b) of the code, the shadow study for the Project compares the Build and No-Build Conditions.

Methodology

The following shadow study has been prepared using methodologies consistent with accepted practices for such studies completed under Article 80 review. The analysis provides a comparison of the No-Build and Build Conditions. This is accomplished by using a three-dimensional model of the project area using data provided by the BRA, updated to include nearby foreseeable projects. The analysis is based on the BRA's 3D massing model for the Fenway neighborhood and includes the adjacent Trilogy building, The Van Ness (1325 Boylston Street, under construction), and currently approved projects (i.e., The Point). The study was completed using standard sun altitude and azimuth data for each study date estimated to occur at latitude and longitude 42°20'39.56"N, 71°6'11.26"W. Times were adjusted for daylight savings time as appropriate. The No-Build and Build Conditions were compared for the spring and fall equinoxes, and the summer and winter solstices at 9:00 AM, 12:00 Noon and 3:00 PM. Additional shadows were estimated for summer solstice and the equinoxes at 6:00 PM.

Potential Effects

The following section describes the estimated shadows under the Build and No-Build Conditions.

March 21

March 21 is the spring equinox on which Boston experiences roughly equal length day and night. The No-Build and Build Condition shadows for this condition are depicted on Figure 5.2a.

No-Build Condition

On March 21 at 9:00 AM, the Landmark Center casts its shadows west over its front entrance onto Park Drive and north over its parking lot and the MBTA right-of-way. The Fenway T-stop, Park Drive overpass, and Audubon Circle neighbors are in sun. Most of the sidewalk along Brookline Avenue is in shadows cast by The Van Ness, Trilogy and the Point. The southern end of Fullerton Street is in shadow and the Harvard Vanguard service drive is in sun.

At 12:00 PM the sun moves higher and to the south so that Landmark Center no longer casts shadows by its front entrance and both Park Drive and the MBTA right-of-way are in sun. The eastern two-thirds of Brookline Avenue and the Fullerton Street intersection remain in shadow. By 3:00 PM, the shadows move east, shading more of Fullerton Street and the on-site loading dock. The railroad right-of-way and both sides of Brookline Avenue are in sun.

At 6:00 PM the Landmark Center casts long shadows across Fullerton Street and two-thirds of the Brookline Avenue frontage, joining shadows cast by mixed use development to the south and commercial, office and hotel properties to the east. The Park Drive overpass, Fenway T-stop and railroad right-of-way are in shadows cast by residential buildings to the west and north. The sun sets on March 21 at approximately 6:58 PM DST.

Build Condition

Under the Build Condition, at 9:00 AM new shadows are cast northwest across Park Drive, the Fenway T-stop and onto the southernmost buildings of the Audubon neighborhood. By 12:00 PM, these new shadows withdraw from the neighborhood and begin to shade the Miner Street overpass and the Harvard Vanguard service drive and parking entrance. The Fullerton Street intersection at Brookline Avenue receives net new sunlight as a result of demolition to create the new plaza. At 3:00 PM, the shadows along the railroad right-of-way have mostly cleared off. New shadows are cast on the Harvard Vanguard main entrance and southeast façade. New sunlight continues to fall on Fullerton Street. At 6:00PM, the Project continues to cast new shadows on Harvard Vanguard and on rooftops beyond to the east. There is new shadow on Van Ness street at the southeast corner of Fenway Park that would be overshadowed by any form of low-rise future development on the west side of Yawkey Way.

June 21

June 21 is the summer solstice with the longest day of the year and the smallest shadows expected. Figure 5.2b depicts the anticipated shadows cast by the No-Build and Build Conditions on June 21.

No-Build Condition

At 9:00 AM, only the tower of Landmark Center and The Point cast shadows on Park Drive, the MBTA right-of-way is in sun and the middle third of the railroad right-of-way is shaded. Most of Brookline Avenue is in the shade of buildings to the south but the Fullerton Street intersection is in sun. By 12:00 PM, very little shadow is cast onto adjacent property and most of the property side of Brookline Avenue is in sun. At 3:00 PM, the existing shadows shift to the east, partially shading the Fullerton Street intersection. All other frontages receive full sun exposure. By 6:00 PM, the Fenway T-stop, Park Drive overpass and MBTA right-of-way are shaded by properties to the west and Landmark Center shadows shade Brookline and Fullerton to the east. The sun sets on June 21 at approximately 8:25 PM DST.

Build Condition

At 9:00 AM, the Project casts minor new shadows on the Fenway T-stop, Park Drive overpass and railroad right-of-way. At 12:00 PM, the neighborhood is in sunlight, as the sun is very high in the sky and, therefore, very limited amounts of net new shadows fall on the railroad right-of-way and the Project side of Fullerton Street. At 3:00 PM, new shadow falls on the Harvard Vanguard service drive and a portion of the annex building. The Fullerton Street intersection at Brookline Avenue receives net new sunlight as a result of demolition to create the new plaza. By 6:00 PM, the sun is north of west and new shadows fall on the Harvard Vanguard annex, Brookline Avenue, and 132 Brookline Avenue.

September 21

September 21 is the fall equinox where Boston experiences roughly equal length days and nights. The No-Build and Build Condition shadows are depicted on Figure 5.2c for this condition. In comparison to the spring equinox, the fall equinox shadows are somewhat shorter in the morning and somewhat longer in the afternoon at comparable times of the day.

No-Build Condition

At 9:00 AM, the sun is located in the southeast. As during the spring equinox, the Landmark Center casts its shadows west over its front entrance onto Park Drive and north over its parking lot and the MBTA right-of-way. The Fenway T-stop, Park Drive overpass, and Audubon Circle neighbors are in sun. Most of the sidewalk along Brookline Avenue is in shadows cast by The Van Ness, Trilogy and the Point. The southern end of Fullerton Street is in shadow and the Harvard Vanguard service drive is in sun.

At 12:00 PM the sun moves higher and to the south so that Landmark Center no longer casts shadows by its front entrance and both Park Drive and the MBTA right-of-way are in sun. The eastern two-thirds of Brookline Avenue and the Fullerton Street intersection remain in shadow. By 3:00 PM, the shadows move east, shading more of Fullerton Street and the on-site loading dock. The railroad right-of-way and both sides of Brookline Avenue are in sun.

At 6:00 PM the Landmark Center casts long shadows across Fullerton Street and two-thirds of the Brookline Avenue frontage, joining shadows cast by mixed use development to the south and commercial, office and hotel properties to the east. The Park Drive overpass, Fenway T-stop and railroad right-of-way are in shadows cast by residential buildings to the west and north. The sun sets on September 21 at approximately 6:43 PM DST.

Build Condition

Under the Build Condition, at 9:00 AM new shadows are cast northwest across Park Drive, the Fenway T-stop and onto the roofs of southernmost buildings of the Audubon neighborhood. By 12:00 PM, these new shadows withdraw from the neighborhood and begin to shade the Miner Street overpass and the Harvard Vanguard service drive and parking entrance. New sunlight falls on Fullerton Street adjacent to the new plaza. At 3:00 PM, the shadows along the railroad right-of-way have mostly cleared off. New shadows are cast on the Harvard Vanguard main entrance and southeast façade. New sunlight continues to fall on Fullerton Street. At 6:00PM the Project continues to cast new shadows on Harvard Vanguard and on rooftops beyond to the east. There is new shadow on Van Ness Street at the southeast corner of Fenway Park that may be overshadowed by even low-rise future development on the west side of Yawkey Way.

December 21

December 21 is the winter solstice and the shortest day of the year. Boston experiences long shadows throughout the day in most locations. The No-Build and Build Condition shadows for this condition are depicted on Figure 5.2d.

No-Build Condition

At 9:00 AM, the sun is low in the southeast sky resulting in long shadows to the northwest. Under the No-Build Conditions, the site frontage on all sides is in shade with the exception of the southern two-thirds of Park Drive and a sliver of sunlight between Trilogy and The Point. At 12:00 PM, the existing building casts shadows across the MBTA right-of-way and Fullerton Street. Like the summer solstice and the two equinoxes, Park Drive and the intersection at Brookline Avenue are in full sun. At 3:00 PM, the sun is located in the southwest and low in the sky shading much of the railroad right-of-way and all of Fullerton Street and the Harvard Vanguard service drive and entrances. The Brookline Avenue frontage is mostly clear of shadows on the Project side. The sun sets on December 21 at approximately 4:15 PM EST.

Build Condition

At 9:00 AM, new shadows are limited to rooftops and upper south facing façades of buildings in the Audubon Circle neighborhood north of the Landmark Center. By 12:00 PM, new shadows are cast north across the MBTA right-of-way down midblock alleys and streets in the neighborhood and across the bridge to Miner Street. The Harvard Vanguard service drive and parking ramp are also in shadow. At 3:00 PM, the sun is low in the sky and shadows cover most of the area north and east of the site. New shadows are cast on the railroad right-of-way, Harvard Vanguard and roof tops and sections of the proposed multi-use path beyond. The Brookline Avenue frontage comes out of shadow and the Park Drive frontage remains in full sunlight during this time.

Daylight

The following section describes the anticipated effect on daylight coverage at the Project Site as a result of the Project. An analysis of the obstruction of skyplane under the No-Build and Build Conditions is a requirement of the Article 80, Large Project Review (Section 80B-2(c) of the City of Boston Zoning Code). The daylight analysis was prepared using the BRA’s Daylight Analysis Program (BRADA) and has been completed in accordance with the requirements of Article 80.

Summary of Key Findings

The Project will change the view of the skyplane from the adjacent streets and sidewalks. From two viewpoints, the skyplane obstruction remains the same or is increased only slightly (Park Drive and Brookline Avenue, respectively). The skyplane obstruction is more significant along Fullerton Street, which is to be expected when replacing a low-level parking garage with a high-rise residential building. The proposed mixed-use nature of the Project will, by design, increase the foot traffic along the adjacent sidewalks and through the Project Site substantially and improve the pedestrian enjoyment of the urban experience in this area. Additionally, Fullerton Street will be transformed into a vibrant urban street by establishing street walls with new buildings and providing for generous sidewalks that accommodate an activated pedestrian realm and streetscape; thereby, mitigating for any impacts to daylight.

Methodology

The Project was analyzed using the BRADA and by comparing the Existing/No-Build Condition and Build Condition. This section provides a description of the methodology used for the analysis.

BRADA Software

The BRADA program was developed in 1985 by the Massachusetts Institute of Technology to estimate the pedestrian's view of the skyplane taking into account the massing and building materials used. The software approximates a pedestrian's view of a site based on input parameters such as: location of viewpoint, length and height of buildings and the relative reflectivity of the building facades. The model typically uses the midpoint of an adjacent right-of-way or sidewalk as the analysis viewpoint. Based on these data, the model calculates the perceived skyplane obstruction and provides a graphic depicting the analysis conditions.

The model inputs were taken from a combination of the BRA City model, an existing conditions survey, and schematic design plans prepared by the project architects dated July 3, 2013. As described above, the BRADA software considers the relative reflectivity of building facades when calculating perceived daylight obstruction. Highly reflective materials are thought to reduce the perceived skyplane obstruction when compared to non-reflective materials. For the purposes of this daylight analysis, the building facades are considered non-reflective, resulting in a conservative estimate of daylight obstruction.

Viewpoints

The following viewpoints were used for this daylight analysis:

- **Park Drive** – This viewpoint is located on the centerline of Park Drive, centered on the western façade of the existing Landmark Center.
- **Brookline Avenue** – This viewpoint is located on the centerline of Brookline Avenue, centered on the southern façade of the Project.
- **Fullerton Street** – This viewpoint is located on the centerline of Fullerton Street, centered on the eastern façade of the Project.

These points represent one viewpoint for each building façade when viewed from the adjacent pubic way, sidewalk or property line, as appropriate.

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Daylight Existing/No-Build Conditions

The Existing/No-Build daylight conditions are presented in Figures 5.3a-c. Under the Existing/No-Build Condition, about one quarter, or 23 percent, of the Project Site's skyplane is obstructed along Park Drive due to the building setback the existing Landmark Center (Figure 5.3a). Along Brookline Avenue, more of the skyplane is obstructed (40.4 percent) compared to Park Drive because the buildings are not set back along this site frontage (Figure 5.3b). Fullerton Street has just over one quarter, or 28.2 percent, of obstructed skyplane due to the existing garage structure and back-of-house service/loading areas currently fronting this street (Figure 5.3c).

Daylight Build Conditions

The changes to daylight conditions as a result of the Project are presented in Figure 5.3a-c. Under the Build Condition, the amount of skyplane obstruction along Park Drive will essentially remain unchanged because the existing Landmark Center building, which is closest to the property limits, is unchanged and the new buildings are significantly set back from Park Drive. Along Brookline Avenue, the amount of skyplane obstruction increases slightly (by nine percent). The highest amount of skyplane obstruction is projected along Fullerton Street (from 28.2 percent to 70.3 percent) due to the increased building height. This effect is to be expected and cannot be avoided when replacing a low-rise building (the parking garage) with a much taller building (the proposed residential buildings). The Project is consistent with the planning goals for the Fenway neighborhood (e.g., mixed-use development of higher densities than what currently exists). The desired density and massing of the Project necessitates obstructing a portion of the views at the Project Site.

The proposed mixed-use nature of the Project will, by design, build on and increase the pedestrian activity generated by recent mixed use projects along the adjacent sidewalks of Park Drive and Brookline Avenue, and will transform Fullerton Street into a vibrant urban street by establishing street walls with new buildings and providing for generous sidewalks that accommodate an activated pedestrian realm and streetscape. Pedestrian enjoyment of the urban experience in this area will be further enhanced through public realm improvements and the net effect of the Project will be a substantial improvement of the public realm in this area.

Solar Glare

This section summarizes the potential solar glare impacts as a result of the Project. Analysis was conducted on the potential solar glare impact on streets (visual impairment vehicle traffic), and public open spaces and pedestrian areas (discomfort due to reflective spot glare), as well as the potential for solar heat buildup in any nearby buildings receiving reflective sunlight from the proposed building. As with the pedestrian wind study, the model used for the solar glare study included a taller residential massing along Fullerton Street than the proposed Project. The balance of the model was the same as the proposed Project. The differences in the massing were reviewed and it was determined that the proposed Project would not have a negative effect on solar glare conditions compared to the conditions using the study model. Appendix D of this PNF includes the complete solar glare study.

Summary of Key Findings

The Project will not result in solar glare impacts on streets (visual impairment vehicle traffic), or on public open spaces and pedestrian areas (discomfort due to reflective spot glare). The Project will not produce solar heat buildup on nearby buildings from reflective sunlight from the proposed buildings. The proposed building design specifications, such as façade design, glazing systems with specific solar and optical characteristics as well as streetscape improvements (i.e., street trees) are considered to mitigate the reflected glare from the viewers’ viewing directions.

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Solar Glare Analysis Methodology

Glare is the loss in visual performance or visibility, or annoyance or discomfort produced by a luminance in the visual field greater than the luminance to which the eyes are adapted. There are three types of glare: veiling or disability glare, discomfort glare, and reflection glare.

A computer simulation combined with spread sheet calculations were used to determine the CIE Glare Index (CGI) and/or CIE Glare factors/ rating for the Project. Assumptions were based on schematic design plans prepared by the project architects dated July 3, 2013.

The simulation uses hourly weather data based on average Boston climatic conditions to obtain glare conditions within the critical field of view. The computer simulation also accounts for actual glass/glazing assumptions in order to determine spectral transmittance and reflectance data which identifies problem areas near the proposed building. The subjective scales for the evaluation of these reflections include:

- **Perceptible** - The point at which you would prefer the light not to be present. Imagine that it is a pilot light on a computer and you are obliged to set the pilot light on/pilot light off. This is the level at which you would begin to care about such decision.
- **Annoying** - You could live with this glare source present if you were borrowing someone else's computer for a day. If this glare source were present, you would prefer to remove the glare source if it were possible, but could live with this annoyance for the next hour or so.
- **Disturbing** - This make you feel uncomfortable. If you had to work like this for any reasonable length of time (5 minutes or so) you would do something to cover the source. Shield your eyes, etc. In order to avoid the discomfort.
- **Intolerable** - you could not imagine yourself working with the light source like this. You would certainly close your eyes or take another avoidance action.

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Solar Glare Impact Analysis Findings

The results indicate that there are no adverse impacts on surrounding spaces due to reflected sunlight. The results show that there are no adverse thermal or visual impacts on the surrounding spaces and/or specifically selected points of interest by the design team using glass types (i.e., with an outwardly visible reflectance below 15 percent and solar reflectance not exceeding 35 percent).

The proposed new residential buildings are not expected to produce reflected illumination, or sky-reflected glare, or direct illumination across any lot line from a visible source of illumination of such intensity to cause visual discomfort to pedestrian traffic (public walking) on the adjacent property or within the property (e.g. pedestrians or building occupants entering and leaving the building site or the regular employees/public during regular daytime working hours). Nor would these buildings cause visual discomfort to vehicular traffic and is not expected to cause traffic hazard or detract from the use or enjoyment of adjacent surrounding property.

The selected glazing material for all building exterior surfaces utilize glass options with reflectance not exceeding 15 percent of outwardly visible reflectance and 35 percent solar reflectance. Therefore, the new buildings are not expected to have adverse impacts on surrounding uses/structures upon which they reflect heat, affect daylight availability, or significantly change climatic conditions (i.e., increases in cooling loads). Nor will the Project negatively affect surrounding vegetation or plants within or adjacent to the Project Site.

Based on the current design, the overall glare and thermal conditions are anticipated to increase by 12 percent and eight percent, respectively. Through final design, the Proponent will consider glazing system options that allow the Project to fully comply with all requirements for a glare-free environment with no adverse thermal impact, as discussed more fully in the solar glare study provided in Appendix D.

Air Quality

This section presents an overview of the results for the air quality assessment conducted for the Project. The purpose of the air quality assessment is to demonstrate that the Project satisfies applicable City of Boston's air quality requirements. Specifically, the air quality assessment for the Project includes a localized microscale, or "hot spot", study that evaluates the Project-related concentrations (from vehicles traveling through congested intersections in the project area) of Carbon Monoxide (CO) and Particulate Matter (PM_{10} and $PM_{2.5}$) at sensitive receptor locations. Appendix E presents the supporting documentation for the air quality analysis.

Summary of Key Findings

The air quality evaluation demonstrates that the Project complies with city, state, and federal air quality requirements. The microscale analysis evaluated impacts from Project-generated motor vehicle traffic at the most congested intersections in the study area, as shown in Figure 5.4. State and federal modeling procedures were used to determine worst-case concentrations. The results demonstrate that all Existing, No-Build, and Build CO, PM_{10}, and $PM_{2.5}$ concentrations will be below the National Ambient Air Quality Standards (NAAQS). The air quality study demonstrates that the Project conforms to the Clean Air Act Amendments because:

- No new violation of the NAAQS will be created,
- No increase in the frequency or severity of any existing violations will occur, and
- No delay in attainment of any NAAQS will result.

Background

The 1990 Clean Air Act Amendments (CAAA) and the Massachusetts State Implementation Plan (SIP) require that proposed projects not cause any new violation of the NAAQS for pollutants of concern, or increase the frequency or severity of any existing violations, or delay attainment of any NAAQS. The air quality study includes a hotspot (microscale) evaluation of mobile source pollutants. The microscale analysis evaluated the worst case CO, PM_{10}, and $PM_{2.5}$ concentrations at congested intersections and nearby roadways.

The Environmental Protection Agency (EPA) and Massachusetts Department of Environmental Protection (DEP) have established guidance for modeling and review for air quality analysis prepared pursuant to the Massachusetts Environmental Policy Act (MEPA) process. The City of Boston requires that air quality analyses prepared for PNFs meet the EPA and DEP guidelines.

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Pollutants of Concern and Attainment Status

Air pollution is of concern because of its demonstrated effects on human health, in particular the respiratory effects of the pollutants. The following is a discussion of health effects of mobile source pollutants:

Carbon Monoxide

Carbon monoxide is a colorless and odorless gas that is a product of incomplete combustion. Carbon monoxide is absorbed by the lungs and reacts with hemoglobin to reduce the oxygen carrying capacity of the blood. At low concentrations, CO has been shown to aggravate the symptoms of cardiovascular disease. It can cause headaches and nausea and, at sustained high concentration levels, can lead to coma and death.

Boston is a CO Maintenance area. A Maintenance area is an area that formerly was non-attainment, but, has demonstrated that the air quality has improved to attainment. After 20 years of clean air quality, Maintenance areas can be re-designated to attainment. Projects located in Maintenance areas, as the Landmark Center Project currently is, are required to evaluate their CO concentrations on the NAAQS.

Particulate Matter

Particulate matter is made up of small, solid particles and liquid droplets. PM_{10} refers to particulate matter with a nominal aerodynamic diameter of 10 micrometers or less, and $PM_{2.5}$ refers to particulate matter with an aerodynamic diameter of 2.5 micrometers or less. Particulates can enter the body through the respiratory system. Particulates over 10 micrometers in size are generally captured in the nose and throat and are readily expelled from the body. Particles smaller than 10 micrometers, and especially particles smaller than 2.5 micrometers, can reach the air ducts (bronchi) and the air sacs (alveoli) in the lungs. Particulates are associated with increased incidence of respiratory diseases, cardiopulmonary disease, and cancer.

Boston is currently in attainment/unclassifiable for PM_{10} and $PM_{2.5}$. An attainment/unclassifiable area is an area that does not yet have sufficient data to determine its attainment status. The EPA and Federal Highway Administration (FHWA) are in the process of developing modeling guidance for attainment/unclassifiable areas. This air quality evaluation included a microscale analysis to demonstrate compliance with the NAAQS.

Ultra-Fine Particulate Matter

Ultra-Fine Particulates (UFP) are particles ($PM_{0.1}$) with diameter of 0.1 micrometers or less. They are a concern because they are able to travel deep into the human respiratory system and potentially serve as a carrier for other compounds. In addition, UFP are also more difficult to measured and calculate impacts than PM_{10} and $PM_{2.5}$. Because UFP particles weigh almost nothing, they can stay airborne for a long time. However, $PM_{0.1}$ is a relatively new pollutant of concern. EPA is currently conducting and reviewing numerous air pollution studies to better understand: (i) the types of sources; (ii) emission characteristics; and (iii) human health effects associated with this pollutant.

To date, there is no state or federal NAAQS for UFP particles, nor is there any EPA or DEP recommended modeling procedures for assessing UFP particles. Therefore, this pollutant was not directly assessed in this air quality chapter. The primary source of $PM_{0.1}$ is expected to be mobile sources, such as breaks and exhausts. The Project is expected to have a small impact on particulate matter. Similar trends would be expected for $PM_{0.1}$ as for PM_{10} and $PM_{2.5}$ because $PM_{0.1}$, PM_{10}, and $PM_{2.5}$ have some distinct similarities in their origins (e.g., mobile sources).

The Project will include TDM measures for mobile sources and the latest emission controls on mechanical equipment to help decrease the overall emissions of PM_{10}, $PM_{2.5}$, and $PM_{0.1}$, which will help lower potential health risks.

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Air Quality Standards

The EPA has set the NAAQS to protect the public health. The NAAQS are presented in Table 5-2. The predominant source of air pollution anticipated from the Project is emissions from Project-related motor vehicle traffic. Carbon monoxide is emitted by motor vehicles. The concentrations can be calculated and compared to the NAAQS.

Table 5-2
National Ambient Air Quality Standards

Pollutant	Level	Averaging Time	Primary/Secondary[1]	Form/Rule
Carbon Monoxide	9 ppm (10 mg/m^3)	8-hour[1]	Primary	Not to be exceeded more than once per year
	35 ppm (40 mg/m^3)	1-hour[1]		
Lead	1.5 ug/m^3 (2)	Rolling 3 Month Average	Primary and Secondary	Not to be exceeded
Nitrogen Dioxide	100 ppb	1-hour[4]	Primary	98th percentile, averaged over 3 years
	53 ppb (3)	Annual	Primary and Secondary	Annual Mean
Ozone	0.075 ppm (4)	8-hour[8]	Primary and Secondary	Annual fourth-highest daily maximum 8-hr concentration, averaged over 3 years
Particulate Matter ($PM_{2.5}$)	0.12 ug/m^3	Annual	Primary	Annual mean, averaged over 3 years
	15 ug/m^3	Annual	Secondary	Annual mean, averaged over 3 years
	35 ug/m^3	24-hour	Primary and Secondary	98th percentile, averaged over 3 years
Particulate Matter (PM_{10})	150 ug/m^3	24-hour	Primary and Secondary	Not to be exceeded more than once per year on average over 3 years
Sulfur Dioxide	75 ppb(5)	1-hour	Primary	3-hour[1]
	0.5 ppm	3-hour	Secondary	3-hour

1 Primary standards provide public health protection, including protecting the health of "sensitive" populations such as asthmatics, children, and the elderly. Secondary standards provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings.

2 Final rule signed October 15, 2008. The 1978 lead standard (1.5 µg/m3 as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.

3 The official level of the annual NO2 standard is 0.053 ppm, equal to 53 ppb, which is shown here for the purpose of clearer comparison to the 1-hour standard.

4 Final rule signed March 12, 2008. The 1997 ozone standard (0.08 ppm, annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years) and related implementation rules remain in place. In 1997, EPA revoked the 1-hour ozone standard (0.12 ppm, not to be exceeded more than once per year) in all areas, although some areas have continued obligations under that standard ("anti-backsliding"). The 1-hour ozone standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is less than or equal to 1.

5 Final rule signed June 2, 2010. The 1971 annual and 24-hour SO2 standards were revoked in that same rulemaking. However, these standards remain in effect until one year after an area is designated for the 2010 standard, except in areas designated nonattainment for the 1971 standards, where the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standard are approved.

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Methodology

The microscale analysis evaluated the emissions of mobile sources from nearby intersections. The mobile source modeling followed the EPA's modeling guidelines. The traffic data was evaluated and the intersections that are currently the most congested and expected to experience an increase in project-generated traffic were identified. Emission factors were obtained from DEP and were combined with the traffic data in EPA's mobile source model to calculate CO, PM_{10}, and $PM_{2.5}$ worst-case concentrations. The microscale worst-case concentrations from the mobile sources determined the maximum project's CO, PM_{10}, and $PM_{2.5}$ concentrations and were compared to the NAAQS.

The microscale analysis utilizes traffic and emissions data for the existing and future No-Build and Build conditions, as described previously. The microscale analysis utilized the traffic (volumes and speeds) and emission factor data for the 2013 Existing, 2018 No-Build, and 2018 Build Conditions. These data were incorporated into air quality models to demonstrate that the project will meet the CAAA criteria. The microscale analysis calculated CO, PM_{10}, and $PM_{2.5}$ concentrations at congested intersections near the project site under Existing, No-Build, and Build conditions.

Study Area

The objective of the microscale analysis was to evaluate the CO concentrations at congested intersections in the study area. The intersections in the study area were ranked based on traffic volumes and level of service. The following intersections, which are presented in Figure 5.4, were selected for analysis:

- Beacon Street at Park Drive
- Riverway at Park Drive
- Brookline Avenue at Riverway
- Brookline Avenue at Park Drive
- Brookline Avenue at Fullerton Street/Kilmarnock Street

Modeling

The microscale analysis calculated maximum 1-hour and 8-hour CO concentrations in the project area during the peak CO season (winter), maximum 24-hour PM_{10} concentrations, and maximum 24-hour and annual $PM_{2.5}$ concentrations for PM summer season. The EPA's computer model CAL3QHC Version 2[1] was used to predict CO, PM_{10}, and $PM_{2.5}$ concentrations for each intersection. Receptor locations were selected near the congested intersections based upon areas where the public has access. The intersection receptors were placed at the edge of the roadway, but not closer than 10 feet (3 meters) from the nearest travel lane, as required by EPA. The results calculated at these receptor locations represent the highest concentrations at each intersection. Receptor locations farther away from the intersections will have lower concentrations because of dispersion characteristics. The receptor locations that are along other roadways in the study area are also expected to have lower concentrations than the receptor locations at the intersection. The emission rates for vehicles traveling along these roadways are much lower than the emission rates for vehicles queuing at intersections.

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1 *User's Guide to CAL3QHC Version 2.0: A Modeling Methodology for Predicting Pollutant Concentrations Near Roadway Intersections*, US Environmental Protection Agency, Office of Air Quality Planning and Standards, Technical Support Division; Research Triangle Park, NC; EPA-454/R-92-005; November 1992

The CO, PM_{10}, and $PM_{2.5}$ concentrations were calculated directly using the EPA computer model. The 1-hour CO concentrations include a 1-hour background concentration of 3.0 ppm. The 8-hour CO concentrations were derived by applying a persistence factor of 0.70 to the 1-hour CO concentrations. Similar to the 1-hour CO emissions, the concentrations are expressed in parts per million (ppm) and include an 8-hour background concentration of 2.1 ppm.

The 24-hour PM_{10} concentrations were derived by applying a persistence factor of 0.40 to the 1-hour PM_{10} concentrations. The persistence factor for PM was obtained from the DEP's modeling guidelines.[2] The background concentrations[3] assumed for the 24-hour PM_{10} was 39.3ug/m^3.

The 24-hour $PM_{2.5}$ concentrations were derived by applying a persistence factor of 0.40 to the 1-hour $PM_{2.5}$ concentrations. The background concentrations assumed for the 24-hour $PM_{2.5}$ was 20.7 ug/m^3. The annual $PM_{2.5}$ concentrations were derived by applying a persistence factor of 0.08 to the 1-hour $PM_{2.5}$ concentrations. The background concentrations assumed for the annual $PM_{2.5}$ was 9.2 ug/m^3.

Emission Rates

All the vehicle emission factors used in the microscale analysis were obtained using the EPA's MOBILE 6.2[4] emissions model. MOBILE 6.2 calculates CO emission factors from motor vehicles in grams per vehicle-mile. The emission rates calculated in this study were adjusted to reflect Massachusetts-specific conditions, such as the state vehicle registration age distribution, the statewide Inspection and Maintenance (I/M) Program, and the Stage II Vapor Recovery System.[5] Emission factors for the mobile sources were determined using the DEP-recommended temperatures for the winter (CO) season and summer (PM) season.

Traffic Data

The air quality study utilized motor vehicle traffic data specifically developed for each analysis condition. The Build Condition used for the microscale analysis includes the physical and operational mitigation proposed to improve traffic operations. The microscale analysis used the evening peak hour traffic conditions during the CO season (winter). Vehicle speeds were developed based upon traffic volumes, observed traffic flow characteristics, and roadway capacity. The traffic data were developed based on the traffic study presented in this Expanded PNF.

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Existing Air Quality Conditions

The CAAA resulted in states being divided into attainment and non-attainment areas, with classifications based upon the severity of their air quality problems. The Project is located in the Boston Metropolitan area,

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2 *First Level Screening Guideline for Determining the Air Quality Impact of Stationary Source Air Pollution*; January 1996.

3 2009-2011 *New England Annual Report on Air Quality*, United States Environmental Protection Agency, Region 1, Office of Environmental Measurement and Evaluation North Chelmsford, MA 01863, Ecosystems Assessment Unit.

5 MOBILE 6.2 (Mobile Source Emission Factor Model), The May 19, 2004 official release from US EPA, Office of Mobile Sources, Ann Arbor, MI.

6 *The Stage II Vapor Recovery System* is the process of collecting gasoline vapors form vehicles as they are refueled. This requires the use of a special gasoline nozzle at the fuel pump.

which has been classified as a "Maintenance" area for CO and an attainment area for PM_{10} and $PM_{2.5}$.

The microscale analysis determined that the 1-hour CO concentrations for the 2013 Existing Condition ranged from a minimum of 4.0 parts per million (ppm) at the intersection of Brookline Avenue at Fullerton Street/Kilmarnock Street and Boylston Street at Fullerton Street/Kilmarnock Street to a maximum of 6.2 ppm at the intersection of Brookline Avenue at Riverway and Fenway. The corresponding maximum 8-hour CO concentrations ranged from a minimum of 2.8 ppm to a maximum of 4.3 ppm. The microscale CO results are presented in Table 5-3 and Table 5-4 (presented below). All the 1-hour and 8-hour concentrations are below the CO NAAQS of 35 and 9 ppm, respectively. These values are consistent with the area's designation as a CO Maintenance area.

The microscale analysis determined that the 24-hour PM_{10} concentrations for the 2013 Existing Condition ranged from a minimum of 39.7 micrograms per cubic meter (ug/m^3) at the intersection of Brookline Avenue at Fullerton Street/Kilmarnock Street to a maximum of 42.9 ug/m^3 at the intersection of Brookline Avenue at Riverway and Fenway. The microscale PM_{10} results are presented in Table 5-4 (presented below). All concentrations are below the PM_{10} NAAQS of 150 ug/m^3.

The microscale analysis determined that the 24-hour $PM_{2.5}$ concentrations for the 2013 Existing Condition ranged from a minimum of 20.7 ug/m^3 at the intersection of Brookline Avenue at Fullerton Street/Kilmarnock Street to a maximum of 22.7 ug/m^3 at the intersection of Brookline Avenue at Riverway/Fenway. The maximum annual $PM_{2.5}$ concentrations ranged from a minimum of 9.2 ug/m^3 to a maximum of 9.6 ug/m^3. The microscale $PM_{2.5}$ results are presented in Table 5-5 and Table 5-6 (presented below). All the 24-hour and annual concentrations are below the $PM_{2.5}$ NAAQS of 35 and 15 ug/m^3, respectively.

Future Air Quality Conditions (Project-Related Impacts)

The following sections present the future Project-related emissions. The microscale ("hot spot") air quality analysis evaluated the Project-related (from traffic) concentrations of CO from motor vehicle emissions at nearby intersections. This analysis demonstrates that the Project will meet and is well below the NAAQS and Massachusetts standards for CO.

Carbon Monoxide (CO)

The highest CO concentrations for each intersection are presented in Table 5-3 and Table 5-4. The results show that there are minimal to no differences for 1-hour and 8-hour CO concentrations between the 2018 No-Build and Build conditions due to the minor traffic volume variations and minimal intersection delays experienced at the study intersections. Due to the high mode-share for walking and transit, the Project is anticipated to produce minimal vehicular traffic during the peak hours. The 1-hour CO concentrations ranged between 4.0 and 6.0 ppm, and the 8-hour CO concentrations ranged between 2.8 and 4.2 ppm for both 2018 No-Build and Build conditions. The results of the microscale analysis demonstrate that the 2018 No-Build and Build CO concentrations (both 1- and 8-hour values) for the proposed project are below the NAAQS.

Table 5-3
Predicted Maximum 1-Hour CO Concentrations (Parts Per Million)[1, 2]

Intersection	Receptor	1-Hour CO Concentrations (ppm)		
		2013 Existing	2018 No-Build	2018 Build
Beacon Street at Park Drive	R1 – Ruggle Baptist Church	4.4	4.1	4.1
	R2 – Residences	4.4	4.3	4.3
	R3 – Residences	4.3	4.0	4.0
	R4 - Office (Copley Group Realty)/Elephant Walk	4.1	4.0	4.0
Park Drive at Riverway Westbound	R5 – Open Space	5.5	5.5	5.5
	R6 – Open Space	4.7	4.7	4.7
	R7 – Open Space	4.2	4.1	4.1
	R8 – Open Space	4.5	4.9	4.9
Brookline Avenue at Riverway and Fenway	R9 – Open Space	6.2	6.0	5.9
	R10 – Emmanuel College	6.2	5.8	5.9
	R11 – Residences	6.0	5.8	5.9
	R12 – 110 Riverway Residences	6.2	5.8	5.9
	R13 – Open Space	6.0	5.8	5.9
Brookline Avenue at Boylston Street/Park Drive	R14 – D'Angelo Sandwich Shop	5.1	5.2	5.2
	R15 – Gulf Gas Station	4.9	4.7	4.7
	R16 – Open Space	5.0	5.0	5.0
	R17 –Open Space	5.1	5.1	5.1
	R18 – Parking Lot/Landmark Center	4.7	4.7	4.8
Boylston Street at Fullerton Street/Kilmarnock Street	R19 – Marshalls Farmstand	4.1	5.4	5.4
	R20 – Burger King	4.0	4.6	4.6
	R21 – Shaws	4.1	4.5	4.5
	R22 – Barrio Cantina	4.0	5.0	5.1
Brookline Avenue at Fullerton Street/Kilmarnock Street	R23 – Harvard Vanguard Medical Associates	4.1	5.4	5.4
	R24 – Bus Station/Il Giardino Café	4.0	4.6	4.6
	R25 – Chipotle Mexican Grill	4.1	4.5	4.5
	R26 – Blick Art Materials	4.0	5.0	5.1

Source: Vanasse Hangen Brustlin, Inc.
1 The concentrations are expressed in parts per million (ppm) and include a 1-hour background concentration of 3.0ppm. The 1-hour NAAQS for CO is 35 ppm. The emissions presented represent the highest emissions experienced at each intersection.

Table 5-4
Predicted Maximum 8-Hour CO Concentrations (Parts Per Million)[1, 2]

Intersection	Receptor	8-Hour CO Concentrations (ppm) 2013 Existing	2018 No-Build	2018 Build
Beacon Street at Park Drive	R1 – Ruggle Baptist Church	3.1	2.9	2.9
	R2 – Residences	3.1	3.0	3.0
	R3 – Residences	3.0	2.8	2.8
	R4 - Office (Copley Group Realty)/Elephant Walk	2.9	2.8	2.8
Park Drive at Riverway Westbound	R5 – Open Space	3.9	3.9	3.9
	R6 – Open Space	3.3	3.3	3.3
	R7 – Open Space	2.9	2.9	2.9
	R8 – Open Space	3.2	3.4	3.4
Brookline Avenue at Riverway and Fenway	R9 – Open Space	4.3	4.2	4.1
	R10 – Emmanuel College	4.3	4.1	4.1
	R11 – Residences	4.2	4.1	4.1
	R12 – 110 Riverway Residences	4.3	4.1	4.1
	R13 – Open Space	4.2	4.1	4.1
Brookline Avenue at Boylston Street/Park Drive	R14 – D'Angelo Sandwich Shop	3.6	3.6	3.6
	R15 – Gulf Gas Station	3.4	3.3	3.3
	R16 – Open Space	3.5	3.5	3.5
	R17 –Open Space	3.6	3.6	3.6
	R18 – Parking Lot/Landmark Center	3.3	3.3	3.4
Boylston Street at Fullerton Street/Kilmarnock Street	R19 – Marshalls Farmstand	2.9	3.8	3.8
	R20 – Burger King	2.8	3.2	3.2
	R21 – Shaws	2.9	3.2	3.2
	R22 – Barrio Cantina	2.8	3.5	3.6
Brookline Avenue at Fullerton Street/Kilmarnock Street	R23 – Harvard Vanguard Medical Associates	2.9	3.8	3.8
	R24 – Bus Station/Il Giardino Café	2.8	3.2	3.2
	R25 – Chipotle Mexican Grill	2.9	3.2	3.2
	R26 – Blick Art Materials	2.8	3.5	3.6

Source: Vanasse Hangen Brustlin, Inc.

1 The concentrations are expressed in parts per million (ppm). 8-Hour CO background of 2.1 ppm and a persistence factor of 0.70 were used. The 8-hour NAAQS for CO is 9 ppm. The emissions presented represent the highest emissions experienced at each intersection.

Particulate Matter (PM_{10})

The analysis results show that the maximum increase for 24-hour PM_{10} concentrations between the 2018 No-Build and Build conditions is 3.2 ug/m^3. The 24-hour PM_{10} for 2018 No-Build and Build conditions ranged between 39.7 and 42.9 ug/m^3. The results of the microscale analysis demonstrate that the 2018 No-Build and Build PM_{10} concentrations for the Project are below the NAAQS. The highest PM_{10} concentrations for each intersection are presented in Table 5-5.

Table 5-5
Predicted Maximum 24-Hour PM_{10} Concentrations (ug/m^3)[1,2]

Intersection	Receptor	24-Hour CO Concentrations (ppm)		
		2013 Existing	2018 No-Build	2018 Build
Beacon Street at Park Drive	R1 – Ruggle Baptist Church	40.9	40.5	40.5
	R2 – Residences	40.9	40.5	40.5
	R3 – Residences	40.9	40.5	40.5
	R4 - Office (Copley Group Realty)/Elephant Walk	40.9	40.5	40.5
Park Drive at Riverway Westbound	R5 – Open Space	41.3	41.3	41.3
	R6 – Open Space	40.9	40.9	40.9
	R7 – Open Space	40.5	40.5	40.5
	R8 – Open Space	40.9	41.3	41.3
Brookline Avenue at Riverway and Fenway	R9 – Open Space	42.5	42.5	42.5
	R10 – Emmanuel College	42.1	41.7	41.7
	R11 – Residences	42.9	42.9	42.9
	R12 – 110 Riverway Residences	42.5	42.1	42.5
	R13 – Open Space	42.9	42.9	42.9
Brookline Avenue at Boylston Street/Park Drive	R14 – D'Angelo Sandwich Shop	41.7	41.7	41.7
	R15 – Gulf Gas Station	41.3	41.3	41.3
	R16 – Open Space	41.7	41.7	41.7
	R17 –Open Space	41.7	41.7	41.7
	R18 – Parking Lot/Landmark Center	41.7	41.7	41.7
Boylston Street at Fullerton Street/Kilmarnock Street	R19 – Marshalls Farmstand	40.9	41.7	41.7
	R20 – Burger King	40.9	40.9	40.9
	R21 – Shaws	40.5	40.9	40.9
	R22 – Barrio Cantina	40.5	41.3	41.3
Brookline Avenue at Fullerton Street/Kilmarnock Street	R23 – Harvard Vanguard Medical Associates	40.1	40.1	40.1
	R24 – Bus Station/Il Giardino Café	40.1	40.1	40.1
	R25 – Chipotle Mexican Grill	40.1	40.1	40.1
	R26 – Blick Art Materials	40.1	40.1	40.1

Source: Vanasse Hangen Brustlin, Inc.
1 The concentrations are expressed in micrograms per cubic meter (ug/m^3). The background concentrations assumed for the 24-Hour PM_{10} was 39.3ug/m^3 . The NAAQS for PM_{10} is 150 ug/m^3. The emissions presented represent the highest emissions experienced at each intersection.

Particulate Matter 2.5 ($PM_{2.5}$)

The results show that there are minimal increases for 24-hour and annual $PM_{2.5}$ concentrations between the 2018 No-Build and Build conditions due to the minor traffic volume increase and minimal intersection delays experienced at the study intersections. The 24-hour and annual $PM_{2.5}$ for 2018 No-Build and Build conditions ranged from 20.7 to 22.7 ug/m^3 and 9.2 to 9.6 ug/m^3 respectively. The results of the microscale analysis demonstrate that the 2018 No-Build and Build $PM_{2.5}$ concentrations for the proposed project are below the NAAQS. The highest $PM_{2.5}$ concentrations for each intersection are presented in Tables 5-6 and Table 5-7.

Table 5-6
Predicted Maximum 24-Hour $PM_{2.5}$ Concentrations (ug/m^3)[1, 2]

Intersection	Receptor	24-Hour $PM_{2.5}$ Concentrations (ppm)		
		2013 Existing	2018 No-Build	2018 Build
Beacon Street at Park Drive	R1 – Ruggle Baptist Church	21.5	21.5	21.5
	R2 – Residences	21.5	21.5	21.5
	R3 – Residences	21.5	21.5	21.5
	R4 - Office (Copley Group Realty)/Elephant Walk	21.5	21.1	21.1
Park Drive at Riverway Westbound	R5 – Open Space	21.9	21.5	21.5
	R6 – Open Space	21.5	21.5	21.5
	R7 – Open Space	21.5	21.5	21.5
	R8 – Open Space	21.5	21.5	21.5
Brookline Avenue at Riverway and Fenway	R9 – Open Space	22.3	22.3	22.3
	R10 – Emmanuel College	22.3	21.9	21.9
	R11 – Residences	22.7	22.3	22.3
	R12 – 110 Riverway Residences	22.3	22.3	22.3
	R13 – Open Space	22.7	22.3	22.3
Brookline Avenue at Boylston Street/Park Drive	R14 – D'Angelo Sandwich Shop	21.9	21.9	21.9
	R15 – Gulf Gas Station	21.9	21.5	21.5
	R16 – Open Space	21.9	21.9	21.9
	R17 –Open Space	21.9	21.9	21.9
	R18 – Parking Lot/Landmark Center	21.9	21.9	21.9
Boylston Street at Fullerton Street/Kilmarnock Street	R19 – Marshalls Farmstand	21.5	21.9	21.9
	R20 – Burger King	21.5	21.5	21.5
	R21 – Shaws	21.5	21.5	21.5
	R22 – Barrio Cantina	21.5	21.5	21.5
Brookline Avenue at Fullerton Street/Kilmarnock Street	R23 – Harvard Vanguard Medical Associates	21.1	21.1	21.1
	R24 – Bus Station/Il Giardino Café	21.1	21.1	21.1
	R25 – Chipotle Mexican Grill	21.1	21.1	21.1
	R26 – Blick Art Materials	21.1	21.1	21.1

Source: Vanasse Hangen Brustlin, Inc.

1 The concentrations are expressed in micrograms per cubic meter (ug/m3). The background concentrations assumed for the 24-Hour $PM_{2.5}$ was 20.7 ug/m^3. The NAAQS for $PM_{2.5}$ is 35 ug/m3. The emissions presented represent the highest emissions experienced at each intersection.

Table 5-7
Predicted Maximum Annual $PM_{2.5}$ Concentrations (Parts Per Million)[1, 2]

Intersection	Receptor	Annual $PM_{2.5}$ Concentrations (ppm)		
		2013 Existing	2018 No-Build	2018 Build
Beacon Street at Park Drive	R1 – Ruggle Baptist Church	9.4	9.4	9.4
	R2 – Residences	9.4	9.4	9.4
	R3 – Residences	9.4	9.4	9.4
	R4 - Office (Copley Group Realty)/Elephant Walk	9.4	9.3	9.3
Park Drive at Riverway Westbound	R5 – Open Space	9.4	9.4	9.4
	R6 – Open Space	9.4	9.4	9.4
	R7 – Open Space	9.4	9.4	9.4
	R8 – Open Space	9.4	9.4	9.4
Brookline Avenue at Riverway and Fenway	R9 – Open Space	9.5	9.5	9.5
	R10 – Emmanuel College	9.5	9.4	9.4
	R11 – Residences	9.6	9.5	9.5
	R12 – 110 Riverway Residences	9.5	9.5	9.5
	R13 – Open Space	9.6	9.5	9.5
Brookline Avenue at Boylston Street/Park Drive	R14 – D'Angelo Sandwich Shop	9.4	9.4	9.4
	R15 – Gulf Gas Station	9.4	9.4	9.4
	R16 – Open Space	9.4	9.4	9.4
	R17 –Open Space	9.5	9.4	9.4
	R18 – Parking Lot/Landmark Center	9.4	9.4	9.4
Boylston Street at Fullerton Street/Kilmarnock Street	R19 – Marshalls Farmstand	9.4	9.4	9.4
	R20 – Burger King	9.4	9.4	9.4
	R21 – Shaws	9.4	9.4	9.4
	R22 – Barrio Cantina	9.4	9.4	9.4
Brookline Avenue at Fullerton Street/Kilmarnock Street	R23 – Harvard Vanguard Medical Associates	9.3	9.3	9.3
	R24 – Bus Station/Il Giardino Café	9.3	9.3	9.3
	R25 – Chipotle Mexican Grill	9.3	9.3	9.3
	R26 – Blick Art Materials	9.3	9.3	9.3

Source: Vanasse Hangen Brustlin, Inc.

1 The concentrations are expressed in micrograms per cubic meter (ug/m3). The background concentrations assumed for the annual $PM_{2.5}$ was 9.2 ug/m³. The NAAQS for $PM_{2.5}$ is 15 ug/m³. The emissions presented represent the highest emissions experienced at each intersection.

Stationary Sources

The Project will include stationary sources, such as heating boilers, hot water heaters, and emergency generators. Because the Project is currently under design, the size and number of the stationary sources have not yet been finalized. As these stationary sources move ahead in the design process, the Project will obtain operating permits for appropriate equipment under DEP's regulations (310 CMR 7.02), as may be required. The DEP regulatory process will ensure that these emission sources meet the NAAQS.

Water Quality

As discussed in Chapter 6, *Infrastructure*, the Project represents an opportunity to improve the quality and reduce the quantity of site stormwater runoff compared to existing conditions. Through the implementation of improved stormwater management practices, the Project will comply with the 2008 DEP Stormwater Management Policy and Standards, including phosphorous treatment.

The Project is located within the Groundwater Conservation Overlay District (GCOD), as defined in Article 32 of the Zoning Code. This zoning article sets forth requirements promoting the infiltration of runoff from impervious site areas within the GCOD. To meet the requirements of this Article, projects within the GCOD must retain the first inch of runoff and utilize it to replenish the groundwater table. The current design provides the required volume and utilizes a gravity driven leaching bed to achieve infiltration.

Flood Hazard

There are no wetlands in the immediate vicinity of the Project Site. The Project is located in a designated flood hazard zone as indicated by a review of the most recent flood mapping available from the Federal Emergency Management Agency (FEMA). The Project is anticipated to locate structures within this flood zone. The Project is subject to review by the local Conservation Commission and will be filing a Notice of Intent for the proposed work. The design of the Project incorporates compensatory flood storage achieved through re-grading of the adjacent areas around the building and/or the construction of structural storage areas to maintain the capability of the Project Site to store runoff during extreme storm events.

Groundwater and Geotechnical

This section addresses excavation and below-grade construction work anticipated for the Project. Presented below are descriptions of existing soil and groundwater conditions; foundation construction methods and excavation work anticipated for the Project based on preliminary evaluations completed to date; and potential project impacts and proposed mitigation measures.

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Summary of Key Findings

Groundwater levels are not expected to be impacted as part of the planned construction due to stormwater infiltration proposed for the Project. Rather, groundwater levels in portions of the Project Site may increase due to stormwater infiltration proposed for the Project, in accordance with the GCOD. Steel sheet piling and permanent building foundation and cutoff walls will be designed to minimize impact to the groundwater level at adjacent properties and buildings. These elements will be driven into, or constructed within, the underlying silty clay, a relatively impervious material. Accordingly, only minimal seepage of groundwater into the excavation is expected and no significant lowering of groundwater outside the perimeter controls is expected. Should groundwater lowering be observed during excavation or construction, the groundwater level will be restored to its pre-construction levels by groundwater recharging.

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Regulatory Context

Groundwater in the vicinity of the Project Site is monitored on a regular basis by the Boston Groundwater Trust (the “Trust”). The Trust, created by City Ordinance in 1986, maintains a network of groundwater monitoring wells in the City, including about 14 wells within a two block radius of the Project Site. Figure 5.5 shows the locations of these wells as described in the Trust’s database. The Proponent will coordinate with the Trust on an as-needed basis during the public review and construction phases of the Project.

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Project Site and Subsurface Conditions

Currently, the Project Site is occupied by a primarily eight-story reinforced concrete and masonry building (Buildings A through D) including a 12-story tower constructed between 1928 to 1931 and collectively referred to as the Sears Building, an attached three-story building (Building E) constructed in 1946, an attached three-story parking/warehouse building (Buildings F and F’) constructed in 1965, and an attached three-story structure (Building M) constructed in 1928. Buildings A through F’ contain a single basement level. The remainder of the site serves as an asphalt parking lot. Buildings A through E are founded on a combination of spread footings and caissons and are planned to remain as part of the site redevelopment. Buildings F, F’, and M will be demolished.

The existing ground surface across the Project Site varies in elevation from about Elevation +15 FT (BCB) at the north corner of the Project Site to about 16 FT (BCB) at the south and east corners of the Project Site and 18 FT (BCB) at the west corner of the Project Site. The ground surface steps up as high as about Elevation +34 FT along Park Drive at the west corner of the Project Site.

The Project Site is bounded by Park Drive to the southwest, Brookline Avenue to the southeast, Fullerton Street to the northeast and MBTA property, including parking and a pair of at-grade railroad tracks as well as a platform to the northwest. The Muddy River passes the Project Site to the south and east in below-grade culverts.

Subsurface information gathered on the project site to date indicates that the site is underlain by a deposit of granular fill ranging up to 19.5 feet deep overlying a deposit of organic silt up to 8 feet thick, where present. The fill and organic deposits are underlain by a 2- to 15-foot thick deposit of widely graded sand overlying an extensive deposit of marine clay. The marine clay deposit is expected to be on the order of 120 to 170 feet in thickness and is immediately underlain by a thin glacial deposit. Bedrock underlies the glacial deposit at a depth from the ground surface of about 180 to 210 feet across the site. The bedrock is expected to be a shale-like deposit known locally as Cambridge Argillite.

Groundwater Conditions

Groundwater has been measured in monitoring wells on the Project Site at approximately Elevation +6 (BCB).

Groundwater Control

The proposed main building will include three levels of below-grade parking. The lowest level floor slab will be about 22 feet below the Project Site's average groundwater elevation. A perimeter groundwater cut-off wall consisting of interlocking steel sheet piling is proposed to be installed around the perimeter of the excavation to act as a groundwater cut-off wall and barrier to seepage into the excavation during construction. The steel sheet piling will be driven into the extensive clay deposit underlying the site and will remain following construction.

The proposed main structure will be supported on conventional footing foundations consisting of a combination of individual spread footings and structural mats bearing directly on the relatively impervious silty clay. A continuous perimeter wall footing bearing in the clay will form a groundwater barrier to essentially preclude any significant flow of groundwater through the clay layer under the lowest floor slab. The perimeter wall will be waterproofed and the lowest level slab will be designed as an underdrained slab-on-grade. The underdrainage system will be designed to eliminate hydrostatic uplift pressures from acting against the slab and will consist of a network of perforated PVC pipes embedded within a blanket of geotextile and crushed stone designed to collect the minor volume of groundwater that accumulates below the lowest slab level inside the permanent groundwater cutoff barrier. The piping system will lead groundwater to sump pits located under the lowest level slab.

It is not anticipated that the small quantity of groundwater collected by the underslab drainage system that seeps through the relatively impervious silty clay deposit will have a negative impact on the general groundwater regime surrounding the project site. This system has been successfully utilized on the Trilogy building and the 1330 Boylston Street building, and is being installed for the Boylston West Building currently under construction. Groundwater monitoring data collected by the Boston Groundwater Trust indicates relatively stable groundwater levels in the area surrounding the proposed Landmark Center development and the Boylston West Building under construction, as well as, the previously constructed the Trilogy building and the 1330 Boylston Street building, which do not indicate negative impacts to groundwater levels resulting from the previously constructed buildings.

The Project will include a groundwater survey prior to excavation at the Project Site. This survey will include:

- Review city records for the locations of pile supported buildings in the vicinity of the Project Site;

- Preconstruction locational survey of pile supported buildings within an appropriate range of the Project Site;
- Compilation of groundwater monitoring results for available wells in the vicinity of the Project Site as collected by the Boston Groundwater Trust or otherwise available.

The Trust has an extensive existing network of groundwater monitoring wells in the vicinity of the Project Site. The Proponent will consult with Eliot Laffer, the Executive Director of the Trust, as appropriate, during and after the preparation of the survey regarding the need for additional groundwater monitoring wells.

Proposed Foundation Construction

The proposed main building is planned to occupy the northwest and northeast portion of the Project Site following demolition of existing Buildings F and F'. The proposed building is planned to be offset from the existing Buildings B, C and E by 10 to 27 feet. Foundation support for the proposed main building is planned to consist of spread footing and mat foundations bearing directly on the silty clay deposit underlying the Project Site. Construction of the foundation and underground parking levels will require an excavation of approximately 35 to 38 feet deep across the building footprint and approximately 50 feet deep adjacent to Park Drive where the ground surface is locally elevated. The lateral earth support system will consist of interlocked steel sheet piling with multiple levels of post-tensioned tie-backs and/or preloaded internal cross-lot or raker bracing to provide horizontal support. Where cross bracing or rakers are used in lieu of tiebacks, the bracing members will be preloaded with 50% of the horizontal design load to limit lateral movements. Deformation instrumentation, such as inclinometers, will be used to monitor potential movements of the earth support system and deformation monitoring points will be surveyed to monitor potential movements of the ground and buildings adjacent to the excavation.

The steel sheet piling wall will be designed to provide a groundwater cutoff during the construction phase and the permanent waterproofed cast-in-place perimeter wall and continuous footing which will be sealed into the silty clay deposit will be designed to provide the permanent groundwater cutoff. Near-surface obstructions in the fill will be removed prior to installing the steel sheet piling. This is typically accomplished by excavating along the sheet pile alignment and is also known as pre-trenching.

A relatively small, oval- shaped retail building is also planned as part of the Project, which will be located at the southeast corner of the Project Site at the intersection of Brookline Avenue and Fullerton Street. The structure will contain no below-grade space and will be likely founded on timber piles or pressure-injected footings depending on the building loads. The timber piles or pressure-injected footings will be designed to transfer the building load through the unsuitable fill and organic soils down to the surface of the natural sand deposit.

Probable Project Impacts and Mitigation Measures

The steel sheet piling and permanent building foundation and cutoff walls will be designed to minimize impact to the groundwater level at adjacent properties and buildings. These elements will be driven into or constructed within the underlying silty clay, a relatively impervious material. Accordingly, only minimal seepage of groundwater into the excavation is expected and no significant lowering of groundwater outside the perimeter controls is expected. Should groundwater lowering be observed during excavation or construction, the groundwater level will be restored to its pre-construction levels by groundwater recharging.

Prior to construction, instrumentation will be installed on adjacent structures and utilities. Instrumentation locations will be coordinated with adjacent building and utility owners. A pre-construction survey of buildings and MBTA property immediately adjacent to the excavation will also be performed to document existing building and property conditions. The performance of the sheet piling lateral support system will be monitored during construction using inclinometers to monitor horizontal movements of the earth support walls and settlement points to check potential vertical deflections.

Solid and Hazardous Waste

Previous environmental due diligence investigations have been performed by others at the Project Site. Additional environmental due diligence is planned to be performed by the Proponent as part of the design process. The Project Site is currently in compliance with the Massachusetts Contingency Plan (MCP).

Summary of Findings

Results of previous subsurface investigations identified the presence of certain contamination at concentrations exceeding applicable MCP Reportable Concentrations and to which DEP assigned RTN 3-2949 and RTN 3-10842. Response actions were performed and MCP closure was brought to the two release sites. As part of the Project, subsurface investigation programs will be implemented to assess soil and groundwater quality at the Project Site, in addition to reviewing the available results of environmental reports performed by others.

Existing Subsurface Conditions

The soil stratigraphy at the Project Site generally consists of a granular urban fill over a discontinuous thickness of organic silt layer. Beneath the organic silt layer is a widely graded sand layer, underlain by an extensive clay layer. The groundwater level generally resides within the granular urban fill or organic silt layers. Previous subsurface investigations identified contamination in soil samples collected from the granular fill. The source of the contamination is considered to be past use of the Project Site for commercial purposes and underground fuel storage.

Subsurface Investigations

Previous subsurface investigations identified the presence of contaminants at the Project Site at concentrations exceeding applicable MCP Reportable Concentrations (primarily petroleum hydrocarbons), which were addressed to reach a Condition of No Significant Risk and brought MCP closure to the Project Site in a Class A1 Response Action Outcome (RAO) for the disposal site identified by the DEP as RTN 3-18042 and a Class A2 RAO for the disposal site identified as RTN 3-2949.

Results of the subsurface investigations previously completed at this property identified the presence of certain contamination at concentrations exceeding applicable MCP Reportable Concentrations and to which DEP assigned RTN 3-2949 and RTN 3-10842. Response actions were performed and MCP closure was brought to the two release sites.

Reports available from the DEP for the Project Site identified by RTN 3-2949 indicate that evidence of metals, gasoline and petroleum contamination were detected in the northwest and northeast portion of the Landmark Center property, north of Building A and east of Building F′, respectively. Available reports indicate that DEP was notified and response actions were performed in accordance with the provisions of the MCP. A Phase II Comprehensive Site Assessment Report and RAO for RTN 3-2949 were submitted to the DEP for this release in October 1999.

With respect to the release site assigned RTN 3-18042, reports available from the Massachusetts DEP indicate evidence of petroleum contamination was detected adjacent to the northwest and southeast sides of the existing Landmark Building during foundation excavation in 1999 which revealed the presence of five abandoned underground storage tanks (USTs). Available reports indicate that DEP was notified and response actions were performed in accordance with the provisions of the MCP. An RAO and Immediate Response Action Completion report for RTN 3-18042 were submitted to the DEP for this release in April 1999.

Future environmental due diligence efforts for the Project will be performed by McPhail Associates, LLC on behalf of the Proponent. As part of McPhail's due diligence work, subsurface investigation programs will be implemented to assess soil and groundwater quality at the property in addition to reviewing the available results of environmental reports performed by others. The program will include the advancement of test borings, installation of monitoring wells, and collection of soil and groundwater samples.

Noise

This section presents the noise evaluation conducted for the Project. The noise analysis included noise monitoring to determine existing sound levels and calculations of future sound levels associated with potential mechanical equipment. The noise evaluation discusses noise background, the City of Boston's noise standards, noise analysis methodology, and a comparison to the City's noise criteria. Appendix F presents the supporting documentation for the noise evaluation.

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Summary of Key Findings

The noise analysis determined that existing ambient sound levels in the surrounding area currently exceed the City of Boston's noise standards. The noise analysis calculated the maximum overall sound level that each building may generate in order to ensure that the sound levels at the sensitive receptor locations (residential areas) comply with the City of Boston's noise standards. During the design phase, the Proponent will select rooftop mechanical equipment (including any necessary mitigation measures) that would result in sound levels that do not exceed the maximum overall sound levels determined in this noise evaluation. In addition, the rooftop mechanical equipment will be strategically located on the roof of each proposed buildings to minimize their contributions on nearby sensitive receptor locations. The service and loading activities will be located on-site and within the proposed buildings, noise impacts to the sensitive receptor locations will be negligible.

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Noise Background

Noise is defined as unwanted or excessive sound. Sound becomes unwanted when it interferes with normal activities such as sleep, work, or recreation. How people perceive sound depends on several measurable physical characteristics. These factors include:

- Intensity - Sound intensity is often equated to loudness.
- Frequency - Sounds are comprised of acoustic energy distributed over an array of frequencies. Acoustic frequencies, commonly referred to as tone or pitch, are typically measured in Hertz. Pure tones have all their energy concentrated in a narrow frequency range.

Sound levels are most often measured on a logarithmic scale of decibels (dB). The decibel scale compresses the audible acoustic pressure levels which can vary from the threshold of hearing (0 dB) to the threshold of pain (120 dB). Because sound levels are measured in dB, the addition of two sound levels is not linear. Adding two equal sound levels creates a 3 dB increase in the overall level. Research indicates the following general relationships between sound level and human perception:

- A 3 dB increase is a doubling of acoustic energy and is the threshold of perceptibility to the average person.
- A 10 dB increase is a tenfold increase in acoustic energy but is perceived as a doubling in loudness to the average person.

The human ear does not perceive sound levels from each frequency as equally loud. To compensate for this phenomenon in perception, a frequency filter known as A-weighted [dB(A)] is used to evaluate environmental noise levels. Table 5-8 presents a list of common outdoor and indoor sound levels

A variety of sound level indicators can be used for environmental noise analysis. These indicators describe the variations in intensity and temporal pattern of the sound levels. The following is a list of sound level descriptors:

- Lmin is the minimum sound level measured during the time period.
- L10 is the sound level which is exceeded for 10 percent of the time during the time period. During a 100 minute period, the L10 would be the sound level which was exceeded by other sound levels for 10 minutes.
- L90 is the sound level which is exceeded for 90 percent of the time during the time period. The L90 is generally considered to be the ambient or background sound level.
- Lmax is the maximum sound level measured during the time period.

Table 5-8
Common Outdoor and Indoor Sound Levels

Outdoor Sound Levels	Sound Pressure (µPa)*		Sound Level dB(A)**	Indoor Sound Levels
	6,324,555	-	110	Rock Band at 5 m
Jet Over Flight at 300 m		-	105	
	2,000,000	-	100	Inside New York Subway Train
Gas Lawn Mower at 1 m		-	95	
	632,456	-	90	Food Blender at 1 m
Diesel Truck at 15 m		-	85	
Noisy Urban Area—Daytime	200,000	-	80	Garbage Disposal at 1 m
		-	75	Shouting at 1 m
Gas Lawn Mower at 30 m	63,246	-	70	Vacuum Cleaner at 3 m
Suburban Commercial Area		-	65	Normal Speech at 1 m
	20,000	-	60	
Quiet Urban Area—Daytime		-	55	Quiet Conversation at 1 m
	6,325	-	50	Dishwasher Next Room
Quiet Urban Area—Nighttime		-	45	
	2,000	-	40	Empty Theater or Library
Quiet Suburb—Nighttime		-	35	
	632	-	30	Quiet Bedroom at Night
Quiet Rural Area—Nighttime		-	25	Empty Concert Hall
Rustling Leaves	200	-	20	
		-	15	Broadcast and Recording Studios
	63	-	10	
		-	5	
Reference Pressure Level	20	-	0	Threshold of Hearing

Source: *Highway Noise Fundamentals*. Federal Highway Administration, September 1980.
* µPA – MicroPascals, which describe pressure. The pressure level is what sound level monitors measure.
** dB(A) – A-weighted decibels, which describe pressure logarithmically with respect to 20 µPa (the reference pressure level).

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City of Boston Noise Standards

The City of Boston has developed noise standards that establish noise thresholds deemed to result in adverse impacts. The noise analysis for the Project used these standards to evaluate whether the proposed development will generate sound levels that result in adverse impacts.

Under Chapter 40, Section 21 of the General Laws of the Commonwealth of Massachusetts and the City of Boston Code, Ordinances, Title 7, Section 50, the Air Pollution Control Commission of the City of Boston has adopted Regulations for the Control of Noise in the City of Boston[6]. These regulations establish maximum allowable sound levels based upon the land use affected by the proposed development. Table 5-9 summarizes the noise standard for the various land uses. These maximum allowable sound levels should not be exceeded.

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6 Regulations for the Control of Noise in the City of Boston, *City of Boston Air Pollution Control Commission.*

Table 5-9
City of Boston Zoning District Noise Standards, dB(A)

Land Use Zone District	Daytime (7:00 AM – 6:00 PM)	All Other Times (6:00 PM – 7:00 AM)
Residential	60	50
Residential/Industrial	65	55
Business	65	65
Industrial	70	70

Source: Regulations for the Control of Noise in the *City of Boston, Air Pollution Control Commission*.

For a residential zoning district, the maximum noise level affecting residential uses shall not exceed the Residential Noise Standard. The residential land use noise standard is 60 dB(A) for daytime periods (7:00 AM to 6:00 PM) and 50 dB(A) for nighttime conditions (6:00 PM to 7:00 AM).

The City of Boston's regulations on construction sound levels state that operation of any construction devices, excluding impact devices, may not exceed a L_{10} sound level of 75 dB(A) or Lmax sound level of 86 dB(A) at a residential land use during any time period.

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Noise Analysis Methodology

The noise analysis evaluated the potential sound level impacts associated with the Project's operations, such as rooftop mechanical equipment and loading activities. Based upon the size, numbers, and locations of the rooftop mechanical equipment, the noise analysis calculated the maximum sound levels that would result in the receptor locations meeting the City of Boston's noise criteria. The noise analysis included measurements of existing ambient background sound levels and an evaluation of potential project generated sound levels. The study area was evaluated and sensitive receptor locations were identified. The noise analysis assumed that all mechanical equipment would be operating at full load concurrently during the daytime and nighttime periods. The noise analysis focused on the nighttime period as it is more sensitive to sound level changes since nighttime period sound levels are lower than daytime period sound levels. If the project generator sound levels meet the nighttime noise impact criteria, then they would also meet the daytime noise impact criteria.

A noise monitoring program was developed to measure existing nighttime sound level in the vicinity of the Project site. The noise analysis evaluated sound levels associated with potential rooftop mechanical equipment, such as HVAC units, cooling towers, and emergency generators. Since the Project is in the early stages of the design process, specific technical specifications of the rooftop mechanical equipment are not available at this time of this evaluation. The noise analysis determined the maximum sound levels from the rooftop mechanical equipment that will result in sensitive receptor locations meeting City of Boston's noise standards. The maximum sound levels are based on preliminary assumptions on the size and number of units of the potential rooftop mechanical equipment.

The City of Boston's noise criteria were used as the basis for determining the maximum sound levels allowed from each set of equipment on the building rooftops. Applying the properties of sound propagation over hard ground, the noise analysis projected sound levels to sensitive receptor locations from the Project to determine the overall maximum sound level that would be allowed from the combined group of rooftop mechanical equipment. The noise analysis assumed sound level reductions due to distance and building blockages. The sensitive receptor locations included ground level apartments at nearby residential buildings along Brookline Avenue, Riverway, Medfield Street, Aberdeen Street, and Peterborough Street. The maximum sound levels from the rooftop mechanical equipment will serve as a criterion during the selection of the specific rooftop mechanical equipment. The specifications for the specific rooftop mechanical equipment, with any appropriate mitigation measures (such as acoustical noise walls, equipment locations, and enclosures), will be designed to meet the calculated maximum sound levels.

The noise analysis also evaluated noise associated with loading activities from the Project. The analysis examined the building design, such as location of the loading area, and management of deliveries at the Project Site.

Receptor Locations

The noise analysis included evaluation of the study area to identify sensitive receptor locations that have outdoor activities and that might be sensitive to noise associated with the Project. The noise analysis identified seven sensitive receptor locations in the vicinity of the Project. The analysis evaluated the following receptor locations:

- R1 – Trilogy,
- R2 – The Point,
- R3 – 100 Riverway,
- R4 – Medfield Street Residences,
- R5 – Aberdeen Street Residences,
- R6 – Harvard Vanguard Building, and
- R7 – 61 Brookline Avenue (Demeter at the Park Apartments).

These receptor locations, selected based on land use considerations and in coordination with BED, represent the most sensitive locations in the vicinity of the Project Site. Figure 5.6 depicts the receptor locations used in the noise analysis.

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Existing Conditions

A noise monitoring program was conducted to establish existing sound levels. The existing sound levels were measured using a Type 1 sound analyzer (Larson Davis 824 and 831). Measurements were conducted during the weekday late night (11:00 PM to 1:00 AM) periods at sensitive receptor areas in June 2013 and supplemented with measurements conducted in February 2012. The measured sound level data under existing conditions was dominated by noise from local roadways (such as Boylston Street, Brookline Avenue, and Riverway/Park Drive) and mechanical equipment from nearby buildings.

The measured ambient background L90 sound levels range from 51 dB(A) to 54 dB(A) during the nighttime period. These sound levels are typical of an urban area. The result of the noise monitoring program indicates that the sound levels within the study area exceed the City's nighttime standard of 50 dB(A) for Residential Districts. The existing measured sound level data are presented in Table 5-10.

Table 5-10
Measured Nighttime Existing Sound Levels, dB(A)

Monitoring Location*	Boston Noise Criteria	Measured L90 Sound Levels
M1 – Aberdeen Street	50	54
M2 – Peterborough Street	50	52
M3 – Riverway	50	51

Source: Vanasse Hangen Brustlin, Inc.
Bold values exceed noise criteria.
* See Figure 5.6 for monitoring locations.

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Predicted Changes in Noise

The noise analysis evaluated the potential noise impacts from rooftop mechanical equipment and loading activities. Since the Project is in the early stages of the design process, the analysis determined the overall total maximum sound level that the Project's rooftop mechanical equipment may generate in order to meet the City of Boston's noise standards at the sensitive receptor locations.

Project Rooftop Mechanical Equipment

The noise analysis assumed that the Project would have a combination of HVAC units, cooling towers, and emergency generators based upon its energy requirements. The maximum sound levels that the rooftop mechanical equipment may generate without violating the City of Boston's noise standards at any of the sensitive receptor locations were calculated. The sound levels from the mechanical equipment were projected to the sensitive receptor locations. The noise analysis included the impacts of sound propagation due to building blockages from the existing and proposed buildings. Since the design of the proposed building is significantly higher than surrounding buildings in the vicinity of the Project, reductions due to blockage from the proposed building's rooftop and parapet was also considered. Additionally, state of the art equipment will be selected and penthouse enclosures, and/or noise (screen) walls may be designed to achieve sound levels below the City's noise standards at the sensitive receptor locations.

The Project may require emergency generators that maybe located on the rooftop of the building. The determination of specific generator parameters, such as the number of units, size, and location will be made during the building design. The Project will apply for the appropriate Massachusetts Department of Environmental Department (DEP) air permits, which include additional noise requirements described in DEP regulations under 310 CMR 7.00. When the details of the emergency generators are developed, the proponent will submit the appropriate permit application to DEP including the noise mitigation measures (such as acoustic enclosures and exhaust silencers) necessary to meet the DEP's noise criteria.

Project Loading Activities

The Project will be designed to accommodate service and loading operations to occur off-street, internal to the main retail building. All delivery vehicles will access the loading area via the existing access roadway from Fullerton Street. Internal to the building, there will be loading docks that will accommodate various sizes of delivery trucks, including tractor trailers. The loading dock area will be managed so that service and loading operations do not impact the access roadway and abutting streets. Since loading activities will be serviced within the proposed building, noise impacts to the sensitive receptor locations will be negligible. The proposed internal loading dock is a significant improvement over the existing open-air loading dock.

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Noise Analysis Results

Since existing ambient background sound levels exceed the City's noise standards during the nighttime period, the noise analysis calculated the maximum sound levels that the rooftop noise sources (rooftop mechanical equipment and any necessary mitigation measures) needs to meet in order for the sensitive receptor locations to experience negligible noise impacts. The rooftop mechanical equipment will be state of the art, may be located in penthouse enclosures, and/or noise (screen) walls be provided to achieve sound levels below the calculated maximum noise source sound levels of 65 dB(A) measured at 50 feet.

As shown in Table 5-11, the sensitive receptor locations are projected to experience sound levels generated by the rooftop mechanical equipment ranging from 51 dB(A) to 55 dB(A). The rooftop mechanical equipment will be designed with necessary noise mitigation measures to meet the calculated maximum sound levels. Based upon the results, the sound levels associated with the Project's mechanical equipment will range from 34 dB(A) to 50 dB(A), which are equal to or below the City's nighttime standard of 50 dB(A). While the sensitive receptor locations are projected to experience sound level increases of up to two decibels, the Project's sound levels are below the City's standard and existing ambient sound levels. As discussed previously, a change of three decibel is barely perceivable by the human ear.

Table 5-11
Sensitive Receptor Location Sound Levels, dB(A)

Receptor Location*	Existing Nighttime Sound Levels	Project Mechanical Equipment	Build (Existing + Project Mechanical Equipment)	Sound Level Change
R1 – Trilogy	52	49	54	+2
R2 – The Point	52	50	54	+2
R3 – 100 Riverway	51	39	51	+0
R4 – Medfield Street	54	42	54	+0
R5 – Aberdeen Street	54	48	55	+1
R6 – Harvard Vanguard Building	52	48	54	+2
R7 – 61 Brookline Avenue	51	34	51	+0

Source: Vanasse Hangen Brustlin, Inc.
* See Figure 5.6 for receptor locations.

Conclusion

The noise analysis evaluated the sound levels associated with the Project. The analysis determined that existing nighttime ambient background sound levels in the vicinity of the Project exceeds the City of Boston's noise standard. Therefore, the analysis determined the maximum sound levels that the Project may generate to minimize the noise impacts at the sensitive receptor locations. During the selection process of the rooftop mechanical equipment, the proponent will need to select equipment, including any necessary mitigation measures, that would result in overall sound levels that do not exceed the maximum sound level of 65 dB(A) at 50 feet. The combination of state of the art rooftop mechanical equipment, mitigation measures, and building design are projected to result in sound level increases of up to two decibels at the sensitive receptor locations which is barely perceivable by the human ear. In addition, the sound levels, associated with the loading activities, will also be negligible at the sensitive receptor locations due to Project's building design and management of the loading area.

Construction

The following section describes the potential temporary impacts due to construction activities and proposed mitigation measures to reduce these impacts. Construction of the Project will be sequenced in two key phases: demolition of the existing garage and structures and construction of the below-grade garage and retail components, or base-level podium; and construction of the new upper level project components (e.g., residential, office, and cinema). The duration of construction for the Project is expected to last approximately 24 months from start of demolition through completion of the base level podium. Demolition is anticipated to begin within approximately six months following project approvals. Completion of interior fit-out work and completion of the new residential buildings above the podium and cinema reconfiguration work will extend for roughly 12 additional months. The new residential buildings above the retail base are anticipated to be built concurrent with the retail podium, but one or more of these buildings may be built in later stages depending on market conditions. Reconfiguration work within the interior of the occupied building will be implemented in a number of stages to avoid tenant disruption and the team aspires to complete this work in parallel with the new construction work.

Summary of Key Findings

Key findings related to temporary construction activities include:

- Construction impacts are temporary in nature and are typically related to air (dust), noise, and runoff.
- During construction, measures will be implemented to minimize water quality impacts and avoid impacts to abutters.
- The Proponent will work with the BTD to develop a site specific Construction Management Plan (CMP).
- Coordination with the Boston Police Department will be essential in providing safe travel routes for pedestrians during peak construction periods.

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Site Preparation, Construction Staging, and Water Quality

The Proponent will continue to work and coordinate with the utility companies to assure compliance and integrity of the Project. During construction, measures will be implemented to minimize water quality impacts and avoid impacts to abutters. A plan to control construction-related impacts including erosion, sedimentation, and other pollutant sources during construction and any land disturbance activities shall be developed and implemented, in accordance with the National Pollutant Discharge Elimination System (NPDES) General Permit requirements. Additionally, any construction dewatering discharges will be appropriately controlled and discharged in accordance with the NPDES state and local dewatering standards.

Excavation and Foundation Construction

The proposed excavation for construction of the below-grade parking garage and building foundations is expected to remove approximately 200,000 cubic yards of soil. The foundation system will consist of spread foundations bearing on the silty clay deposit underlying the Project Site with the potential for piles or caissons under the tower components of the Project. The lateral earth support system will consist of interlocked steel sheet piling with multiple levels of tiebacks and /or internal bracing to provide horizontal support. The Geotechnical Engineer and construction contractor will work closely together throughout building construction to avoid adverse impacts on adjacent structures and infrastructure.

Construction dewatering will be required within the excavation to remove groundwater from within the perimeter steel sheeting during the foundation excavation and construction period. Prior to general excavation, the soils anticipated to be excavated will be evaluated for environmental contaminants and characterized in accordance with current DEP policies and procedures and disposed of off-site at various locations dictated by the results of the soil characterization and then current environmental policies.

Hazardous Materials

In order to construct the proposed parking garage, existing site soils will be excavated to an average depth of about 35 to 37 over nearly the entire Project Site. As part of the proposed construction, the Proponent plans to perform additional due diligence and soil pre-characterization including subsurface investigations and chemical testing to manage the soils to be generated from the site during construction which involves the proper documentation, handling, and removal of the materials to maintain site compliance with the MCP. The Proponent will retain a Licensed Site Professional (LSP) to manage the environmental aspects of the project, including proper management and/or disposal of contaminated soil and groundwater encountered during construction. The LSP will also prepare required MCP regulatory submittals.

The Project Site grade increases along Park Drive, which will increase the depth of excavation to about 50 feet. This excavation will result in post-RAO remedial response actions, and is likely to maintain a Condition of No Significant Risk and MCP closure without an Activity and Use Limitation. Prior to the start of the construction excavation, a detailed soil precharacterization program will be completed to characterize the entire volume of soil and evaluate/assign disposal options for the excavated soil. Based on the current soil analytical data, it is anticipated that soil excavated during construction will fall into one of three categories:

(1) soil that is below MCP RCS-1 (residential) criteria, which therefore is not considered MCP Remediation Waste and can be disposed of without restriction; (2) soil that exceeds MCP RCS-1 criteria for one or more parameters (Remediation Waste) but is not considered hazardous waste; and (3) soil that is considered hazardous waste. It is currently anticipated that soil that is considered Remediation Waste but not hazardous waste will be recycled as daily cover or contouring material at either a lined or unlined Massachusetts landfill, or recycled at an asphalt batch plant in accordance with applicable MCP requirements. Quantitative estimates of disposal volumes will not be developed until after the soil pre-characterization program is complete.

Groundwater

Impacted groundwater encountered during construction will be managed as necessary given the analytical data available for the Project Site. A Remediation General Permit (RGP) will be obtained from the US Environmental Protection Agency (EPA) to facilitate discharge of groundwater generated during project dewatering operations into the storm drain system in the vicinity of the Project Site. Likewise, a Dewatering Permit will also be obtained from the City of Boston Water and Sewer Commission. These permits will determine the level of treatment required prior to discharge to storm.

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Construction Traffic and Parking

Construction workers and construction trucks will be properly managed to eliminate significant impacts on traffic conditions on surrounding streets during construction. The Proponent will work with the BTD to develop a site specific Construction Management Plan (CMP). The following elements are typically addressed in the CMP:

- Designation of truck routes for deliveries
- Protection of pedestrian walkways
- Location and sizing of staging areas for on-site storage of construction materials
- Definition of worker parking parameters and measures to maximize related use of public transportation
- Identification of truck waiting areas
- Police officer traffic management
- Construction graphics program
- Interim traffic operation improvements
- Definition of street and sidewalk occupancies
- Definition of work hours

Construction Trip Generation and Worker Parking

The number of workers required during the construction will vary with an estimated average daily workforce of 500 to 550 during the peak of construction. Because the workforce will arrive and depart prior to peak commuter traffic periods, these trips are not expected to have a large impact on the area’s transportation system. Construction workers will arrive at the job site either via public transportation or by personal vehicles. Limited parking will be available at the project construction site. The Proponent and the Construction Manager will work to identify off-site and shuttle bus parking opportunities for workers.

Truck Routes and Volumes

The vehicular access to the Project Site during the construction period will be from 20 to 70 trucks per day.. The construction work is not anticipated to generate a high volume during peak hours. Police details will be assigned to all active gate locations to ensure that vehicles are not impacting traffic operations.

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Construction Air Quality

Construction and demolition activities associated with redevelopment of the Landmark Center will result in a slight, short-term increase in air pollution emissions. The primary source of potential construction emissions is from fugitive dust resulting from construction operations (e.g., clearing, grading). Fugitive dust consists of soil particles that become airborne when disturbed by heavy equipment operations or through wind erosion of exposed soil after groundcover (either lawn or pavement) is removed. To minimize fugitive dust emissions, a water truck will be kept on construction sites during excavation activities. This construction-related air-quality impact (i.e., fugitive dust) would be of relatively short duration. Also, during construction, emission controls from construction vehicles and machinery would include proper maintenance and reduced idling on-site. Overall, therefore, the impacts on ambient air quality from construction activities associated with site-specific development are not expected to be significant.

Overall, air quality in the Landmark Center study area would not be expected to be substantially affected by redevelopment because of emission control procedures and the temporary nature of construction activities. Emissions from the operation of construction machinery (carbon monoxide [CO], nitrogen oxides [NOx], particulate matter [PM], volatile organic compounds [VOCs], and greenhouse gases) are short-term and not generally considered substantial. With the implementation of the various mitigation measures to minimize construction-related air quality impacts, no significant adverse impacts would be expected.

- During construction within the Landmark Center area, emission controls for construction vehicle emissions would be employed and will include, as appropriate, proper maintenance of all motor vehicles, machinery, and equipment associated with construction activities, such as, the maintenance of manufacture's muffler equipment or other regulatory-required emissions control devices.
- The Project area to be developed or redeveloped will implement dust control measures during dry or windy periods. The appropriate methods of dust control would be determined by the surfaces affected (i.e., roadways or disturbed areas) and would include, as necessary, the application of water, the use of stone in construction roads, and vegetative cover.
- Regular sweeping of pavement of adjacent roadway surfaces during construction will be conducted to minimize the potential for vehicular traffic to create airborne dust and particulate matter.

Construction Noise

The construction activity associated with the Project may temporarily increase nearby sound levels due to the use of heavy machinery. Heavy machinery is expected to be used intermittently throughout the Project's construction phases, typically during daytime periods. The construction phases that will generate the highest sound levels include the demolition of existing buildings, site excavation and grading, and construction of the foundations for the proposed buildings. The City of Boston noise control regulation considers construction sound levels to be an impact to residential land uses if the L_{10} is in excess of 75 dB(A) or the Lmax is in excess of 86 dB(A). A construction management program will be developed with the City of Boston to ensure that the noise regulation is met.

Odor Control During Construction

Initial geotechnical investigations indicate the presence of organics within the Project Site. Organic soils have the potential to create odors that may impact the project area. If these soils are encountered, the Proponent has experience with large excavation projects in this neighborhood, and will undertake appropriate mitigation measures to control the odor associated with their removal, such as:

- Removal and replacement of organic materials to provide sufficient bearing for new foundations and utilities
- Cut and cover utility trenches whenever possible
- Protection of open trench sideslopes with plastic sheathing to encapsulate odors
- Treatment of odors with environmentally-sensitive products such as sodium bi-carbonate and activated carbon to reduce odors

Rodent Control During Construction

The City has declared that the infestation of rodents in the City is a serious problem. In order to control this infestation, the City enforces the requirements established under the Massachusetts State Sanitary Code, Chapter 211, 105 CMR 410.550 and the State Building Code, Section 108.6. Policy Number 87-4 (City of Boston) established that preparation of a program for the extermination of rodents shall be required for issuance of permits for demolition, excavation, foundation, and basement rehabilitation. The Proponent will prepare and adhere to a rodent control program prior to demolition and on a regular basis throughout the duration of construction.

Public Safety During Construction

Prior to the beginning of construction, the Proponent will produce a Site Specific Safety Plan to be reviewed and approved by the City. The entire perimeter of the construction site will be protected with a six-foot high temporary chain link construction fence. Vehicular gates will be provided for construction traffic on perimeter roads to allow safe entrance and exiting for construction vehicles and personnel. Additionally, signage will be posted on fencing and construction trailers to alert all personnel to the safety requirements.

Larger deliveries of construction materials may require the use of police details to assist in managing vehicular and pedestrian traffic. Coordination with the Boston Police Department will be essential in providing safe travel routes for pedestrians during peak construction periods.

Rodent Control Post-Construction

Trash and solid waste removal will be handled by the building maintenance staff. The Proponent will maintain a service contract with a professional pest control firm to address rodent/pest control during the operational phase of the redevelopment. In addition, no open top dumpsters will be allowed as an additional precaution to deter infestation.

Green Building/Sustainability

This section provides an overview of the sustainable design elements proposed as part of the Project, at this time of project planning and early stages of conceptual design, specifically to demonstrate that the new construction associated with the Project will meet the requirements of Article 37 of the Boston Zoning Code relative to the City's Green Building policies and procedures. This section also aims to demonstrate compliance with the Massachusetts Stretch Energy Code through the incorporation of energy conservation measures.

The Proponent is deeply committed to building a livable, sustainable community in the Fenway. The proposed mixed-use, transit-oriented development plan aims to revitalize an underutilized urban site by using land efficiently, promote the use of alternative modes of transportation, encourage pedestrian activity, and improve air and water quality. The Proponent intends to build on its current sustainability initiatives, which include obtaining Gold level certification under LEED-CS for The Van Ness project by incorporating state-of-the-art sustainable features into the design of new as well as existing building space. The project design team will use the USGBC's LEED rating systems as a model for incorporating sustainable design strategies into the Project with the goal of achieving a minimum LEED Silver rating for all new construction. As project design progresses, the Proponent will continue to research and consider additional sustainable and energy efficient measures. As part of a comprehensive sustainability plan for the Project, LEED-EBOM certification is currently being pursued for the existing Landmark Center building. Additionally, in June 2013, the existing Landmark Center received EPA ENERGY STAR certification for exemplary building energy performance with a score of 87.

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Regulatory Context

Article 37 – Green Buildings of the Boston Zoning Code

Through Article 37 – Green Buildings, the City of Boston encourages buildings to decrease energy and water use and cost, improve the efficiency and useful life of building systems and infrastructure, and reduce the burdens imposed by buildings on city services, the environment, and public health. The stated purposes of the article is as follows: "The purposes of this article are to ensure that major building 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 project that is subject to Article 80, Large Project Review is also subject to the requirements of Article 37.

An interdisciplinary committee, the "Boston Interagency Green Building Committee," consisting of at least one representative of city agencies, including the BRA, BED, BTD, the Inspectional Services Department and the Mayor's Office advises the BRA on a proposed project's compliance with the provisions of the article.

Appendix A of Article 37 lists "Boston Green Building Credits," which are credits that may be included in the calculation toward achieving a LEED certifiable project. These credits were developed by the City and are intended to address local issues unique to development within Boston. The credits include the following categories: Modern Grid; Historic Preservation; Groundwater Recharge; and Modern Mobility.

At this preliminary design stage, the Project will evaluate achieving the following Boston Green Building credit (Appendix A of Article 37):

- **Modern Mobility.** Because the Project Site is in close proximity to both rapid transit and bus service strategies are proposed in order to take advantage of available transportation access. The Proponent will implement such measures, through the development of a TDM Plan. One example of a proposed TDM measure is property management to coordinate and post public transportation information (i.e., MBTA subway and bus routes and schedules). Refer to Chapter 4, *Transportation and Parking* for further detail on the proposed TDM Plan.

Massachusetts Stretch Energy Code

As part of the *Green Communities Act of 2008*, Massachusetts developed an optional building code that gives cities and towns the ability to choose stronger energy performance in buildings than the state building code (the "Stretch Energy Code").[7] Codified by the Board of Building Regulations and Standards as 780 CMR Appendix 115.AA of the 8th edition Massachusetts Building Code, the Stretch Energy Code is an appendix to the Massachusetts building code, based on further amendments to the International Energy Conservation

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7 Effective January 1, 2011, the City of Boston adopted the Stretch Energy Code (8th Edition Building Code, Appendix 115.AA); there is a concurrency period through June 30, 2011. Its adoption brings to Boston a standard that requires new commercial buildings over 5,000 square feet in size, including multi-family residential buildings over three stories, to operate at an energy efficiency level 20% better than that required under the base energy code criterion, ASHRAE 90.1-2007.

Code (IECC).[8] The Stretch Energy Code increases the energy efficiency code requirements for new construction (both residential and commercial) and for major residential renovations or additions in municipalities that adopt it.

In 2010, the City of Boston was designated a Green Community under the Green Communities Designation and Grant Program—an initiative of the DOER. In order to be designated a Green Community and, therefore, eligible for grant money available annually, communities are required to meet five rigorous qualification criteria one of which includes minimizing life-cycle costs, such as adopt and implement the Stretch Energy Code. The goal of the grant program is for a municipality to use grant money to assist residents, businesses, and the municipality departments/facilities reduce energy use or install renewable energy systems. For the City of Boston, the Stretch Energy Code was adopted and became mandatory on July 1, 2011.

The Stretch Energy Code applies to both residential and commercial buildings and, specifically, for new commercial buildings over 5,000 square feet in size, including multi-family residential buildings over three (3) stories. The Stretch Energy Code offers a streamlined and cost effective route to achieving approximately 20 percent better energy efficiency than the state's base energy code by either meeting the performance standard of 20 percent better than ASHRAE 90.1-2007, or using a prescriptive energy code.

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Overview of Potential Sustainable Design Features

The following is an outline of sustainable design features being evaluated for inclusion in the Project. This outline is organized based on the categories described by the 2009 LEED for New Construction & Major Renovations (NC) rating system. This outline is intended to demonstrate the Proponent's commitment to sustainability, rather than to precisely describe how the Project would score under the rating system at this time of project planning and early conceptual design. This is because most of the LEED credits require detailed information and specific calculations in order to determine compliance, most of which will not be available until the design progresses. The Project will comply with all LEED Prerequisites, as required to be eligible for LEED certification. The preliminary LEED-NC scorecard for the new construction is shown as Figure 5.7. This scorecard considers those point marked as 'yes' and 'maybe' as points that will most likely contribute to the goal of achieving a Silver rating level, based on the Proponent's past experience with designing and constructing LEED buildings.

LEED-NC Sustainable Sites (SS) Credits

Sustainability is a core element of the proposed development. The project's sustainability is grounded in both its location and in the mixed-use development program. The development will include a mix of uses located in direct proximity to a major regional employment center, and surrounded by a variety of mass transit

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8 The International Energy Conservation Code (IECC) is a building energy code created by the International Code Council. It is a model code adopted by many state and municipal governments in the United States for the establishment of minimum design and construction requirements for energy efficiency, and is updated on a three year cycle. Since July 1, 2010, the baseline energy conservation requirements of the MA State Building Code defaulted to the latest published edition, currently the IECC 2009, with Massachusetts amendments as approved by the Board of Building Regulations and Standards.

alternatives. Workers employed at nearby institutions and by office tenants at Landmark Center will have new opportunities to live within walking distance of their work, thereby reducing automobile dependence. Unlike many major retail developments in the region, which are essentially completely automobile dependent, the retail component will expand and revitalize a transit-accessible shopping destination serving the neighborhood, and the city. The vast majority of residents, and retail and office workers and guests are expected to use alternative means of transportation to reach the Project. This combination of uses truly embodies a "live-work-play" environment.

The project design will include features that will complement the inherently sustainable location and development program. The Project includes below grade structured parking, which conserves land area, protects stormwater, and enables development density to be clustered near transit.

The Project will incorporate stormwater management and treatment systems that will improve water quality, reduce runoff volume and control peak rates of runoff in comparison to existing conditions. The current design anticipates significantly reducing the area of existing surface parking and the inclusion of a stormwater infiltration system designed to accommodate a volume of one inch of stormwater over the Project Site impervious area. An innovative feature of the Project and an improvement over existing conditions is that the loading areas will be located within the building's footprint, further protecting stormwater quality.

The following is a list of anticipated Sustainable Sites LEED credits that may be achieved and the associated design features that could be implemented:

- **SS Prerequisite 1 – Construction Activity Pollution Prevention.** The Construction Manager will compile and submit an Erosion and Sedimentation Control (ESC) Plan for construction activities related to the demolition of existing and the construction of new buildings specific to this project. The ESC Plan will conform to the erosion and sedimentation requirements of the EPA Construction General Permit.
- **SS Credit 1 – Site Selection.** The project is on parcels that are currently developed.
- **SS Credit 2 – Development Density and Community Connectivity.** The project is on a previously developed site in a dense urban residential neighborhood. The surrounding neighborhood includes an extensive array of attractions and services. The project also includes additional retail and service destinations.
- **SS Credit 3 – Brownfield Redevelopment.** The Project Site will be remediated in an environmentally responsive manner. Environmental contaminants in buildings to be demolished (asbestos, mercury, etc.) will be abated in compliance with applicable regulations.
- **SS Credit 4.1 – Alternative Transportation – Public Transportation Access.** The project is located within ½ mile of the Fenway and Kenmore MBTA light rail/subway stations and is adjacent to the Yawkey commuter rail station. The Project is also located within ¼ mile of 8 MBTA bus lines. The Project is eligible for an Exemplary Performance Innovation in Design credit for providing >200 rides per day.
- **SS Credit 4.2 – Alternative Transportation – Bicycle Storage and Changing Rooms.** Appropriate Bicycle Storage facilities will be provided to encourage cycling as an alternate form of transportation. The building and/or tenants will provide appropriate measures to ensure that cycling is a convenient form of transportation. The Proponent is exploring providing expanding the existing showering facilities at Landmark Center, if necessary.

- **SS Credit 4.3 – Alternative Transportation – Low-emission and Fuel efficient Vehicles.** The project parking facility is anticipated to include appropriate designated preferred parking for low-emitting and fuel efficient vehicles.
- **SS Credit 4.4 – Alternative Transportation – Parking Capacity.** The Project will not increase on-site parking.
- **SS Credit 6.2 –Stormwater Design – Quality Control.** The project's partially vegetated rooftop terrace and a stormwater infiltration system is anticipated to capture and treat a significant amount of stormwater runoff (preliminary figures indicate 90% of the average annual rainfall).
- **SS Credit 7.1 – Heat Island Effect – Non Roof.** All of the proposed parking (100 percent) will be located under cover, in structured parking garages, which has several environmental benefits, including reducing heat island effects.
- **SS Credit 7.2 – Heat Island Effect – Non Roof.** A significant portion of the new project roof area that is non-vegetated is anticipated to have an SRI greater than 78 (highly reflective roof), further reducing heat island effects.

LEED-NC Water Efficiency (WE) Credits

The Project will incorporate measures to conserve water use both by building occupants and landscape features. The landscape design will include the appropriate use of indigenous plants and a high-efficiency irrigation system will reduce water use for irrigation (WE Credit 1). Low-flow plumbing fixtures will be selected for the Project to reduce the overall domestic water use by an anticipated 20-30% when compared with a baseline (WE Credit 3).

LEED-NC Energy and Atmosphere (EA) Credits

The Project will be designed to optimize building energy performance (EA Credit 1) by utilizing high efficiency building systems, where feasible and reasonable, and an enhanced independent building commissioning process (EA Credit 3). As described under the 'Compliance with the Stretch Energy Code' section below, energy conservation is a local requirement and will be a critical focus of the design team. The building performance for the new portions of the Project will demonstrate a minimum of a 20 percent improvement in energy use when compared to a baseline building performance, as calculated using the rating method in Appendix G of ANSI/ASHREA/IESNA Standard 90.1-2007. The project design team will develop a whole building energy model to demonstrate the expected performance rating of the designed building systems. Energy modeling results will be used in an iterative fashion to influence the design of the building façade and roof, and the selection of mechanical equipment and lighting. A state-of-the-art building management system, reflective roofs that reduce cooling loads of the building's HVAC system, and interior lighting control systems in all base building occupied areas are anticipated measures that will significantly reduce energy consumption. Additionally, through operations, Tenant Guidelines will be developed to encourage tenants to employ an interior lighting control system with occupancy sensors and that may use less power per square foot than a customary office environment. Tenants will also be encouraged to include provisions for turning off lighting in spaces when not occupied (at night).

In addition to achieving various points under EA Credit 1 – Optimize Energy Performance, the following is a list of anticipated Energy and Atmosphere LEED credits that may be achieved and the associated design features that could be implemented:

- **EA Credit 2 - On-Site Renewable Energy.** The Proponent will explore including renewable energy sources into the building, including solar photovoltaic panels. However, given the currently proposed massing broken up into many small roofs, all of which will have mechanical and electrical equipment, the amount of available roof space for a sufficient solar panel system will be limited.
- **EA Credit 4 - Enhanced Refrigerant Management.** The project design will include mechanical and refrigeration equipment with refrigerants that minimize contributions to ozone depletion and global warming potential. Credit achievement is pending exploration of final equipment selection and associated LEED calculations.
- **EA Credit 5 – Measurement & Verification.** The Project will be eligible for one point under this credit for creating an ENERGY STAR Portfolio Manager account to enable the USGBC to review whole building energy and water use for five years after occupancy, required as part of satisfying the LEED Minimum Program Requirement #6. The Proponent will evaluate developing a formal Measurement and Verification plan.

LEED-NC Materials and Resources (MR) Credits

Building occupant waste recycling will be encouraged through the use of a building recycling program and facility. A demolition and construction waste management plan will be implemented during construction of the proposed project to divert at least 75 percent of waste material from landfills. Building materials will contain recycled content and materials from the local region will be used. The following is a list of anticipated Materials and Resources LEED credits that may be achieved and the associated design features that could be implemented:

- **MR Credits 2.2- Construction Waste Management.** It is anticipated that over 75% of the non-hazardous construction and demolition debris will be salvaged or recycled.
- **Recycled Content (MR Credits 4.1, 4.2).** The project design is expected to include the use of materials with recycled content such that the sum of post-consumer plus one-half of the pre-consumer content constitutes at least 10% of the total value of materials used in the base building.
- **Regional Materials (MR Credits 5.1, 5.2).** The project design will explore using regionally sourced and manufactured materials (i.e., within 500 miles of the Project Site) where appropriate.
- **Certified Wood (MR Credit 7).** Project Specifications will explore the cost and availability of using wood building components that are certified in accordance with the Forest Stewardship Council's principles and criteria.

LEED-NC Indoor Environmental Quality (IEQ) Credits

The comfort and well-being of the building occupants will be paramount in regard to air quality, access to daylight and outside views and an indoor air quality management plan will be implemented during construction to enhance the well-being of construction workers and building occupants. Low-emitting materials, finishes, adhesives and sealants, will be employed through-out the building to reduce the quantity of indoor air contaminants, and promote the comfort and well-being of installers and building occupants. The following is a list of anticipated Indoor Environmental Quality (IEQ) LEED credits that may be achieved and the associated design features that could be implemented:

- **IEQ Credit 1 – Outdoor Air Delivery Monitoring.** Air handlers serving the office and retail areas of the building may include CO2 monitoring and airflow stations to monitor outside air.
- **IEQ Credit 3.1 – Construction IAQ Management Plan, During Construction.** Project specifications will include provisions for ensuring that procedures will be in place during the construction phase that will protect indoor air quality.
- **IEQ Credit 3.2 – Construction Waste Management Plan, Before Occupancy.** The Proponent will explore conducting a compliant building flush out or IAQ testing after the end of construction and before occupancy.
- **IEQ Credits 4.1, 4.2, 4.3, 4.4 - Low-Emitting Materials**. The project specifications are expected to include low-emitting materials. The Construction Manager will be required to track products used to ensure compliance.
- **IEQ Credit 5 - Indoor Chemical and Pollutant Source Control.** Measures, such as permanent entryway systems at high-volume building entrances are being explored to prevent air contaminants from entering the building. Additionally, housekeeping and laundry areas are expected to be separated and exhausted to outside to comply with the requirements of this credit, and air handling units are expected to be provided with appropriate filtration to meet the credit.
- **IEQ Credits 6.1 - Controllability of Systems - Lighting.** The team will provide a high level of individual control with the goal to achieve this credit. Individual lighting in the residential areas of the building will meet the minimum requirements of these credits. For retail spaces, providing individual lighting controls in office and administrative spaces (per the LEED BD+C Retail Supplement) will be encouraged through tenant guidelines for fit-out.
- **IEQ Credit 7.1 – Thermal Comfort – Design.** The project design is expected to be in compliance with ASHRAE Standard 55-2004.
- **IEQ Credit 8.2 – Daylight and Views – Views for 90%.** Portions of the office and residential components of the project will include sight lines to the outdoor environment. The retail component will be designed to enhance daylighting and views to the extent practicable.

LEED-NC Innovation in Design (ID) Credits

The following is a list of anticipated Innovation in Design (ID) LEED credits that may be achieved and the associated design features that could be implemented:

- **ID Credit 1.1 – Sustainable Sites – Public Transportation Access.** The Project Site location can be accessed from an extensive number of shuttle, bus, light rail, subway and commuter rail lines. The Project is eligible for an Exemplary Performance Innovation in Design credit for providing >200 rides per day.

- **ID Credit 1.2 – Sustainable Sites – Heat Island Effect– Non Roof.** The Project will include 100 percent structured parking and an enclosed loading dock area. By eliminating exterior site parking and loading, the Project eliminates a considerable source of heat island effect as well as stormwater runoff pollution.
- **ID Credit 1.3 – Sustainable Sites – Development Density.** The project site is located in a dense and vibrant neighborhood that far exceeds the LEED requirements of SS Credit 2.
- **ID Credit 1.4 - Tenant Design and Construction Guidelines.** This credit is achievable as an Innovation in Design credit.[9] The Proponent intends to develop 'green' tenant guidelines, educational programs, and resources for residents within the building (described further below).
- **ID Credit 2 - LEED Accredited Professional.** The project team brings a wealth of experience with projects requiring a high level of sustainability and energy efficiency. The design team for the Project includes several LEED Accredited Professionals (AP), including the Sustainability Consultant: Erik Ruoff, Senior Project Manager with The Green Engineer.

Tenant Guidelines

The Proponent will attach to tenant leases (both retail and residential) an exhibit with information on the sustainable/green building features of the Project and how the tenant can participate/support sustainability through their operations and/or use of the leased space. A Retail Tenant Guidelines document will include information on the sustainable aspects of the site and the base retail spaces, and will further encourage the retail tenant(s) to make their build-out as sustainable as possible. This could include recommending utilization of the LEED for Commercial Interiors (CI) rating system criteria as guidance. The Retail Tenant Guidelines may describe the LEED-CI rating program and identify aspects of the core/shell design that could be targeted to make LEED-CI certification easier for the retail tenant(s) to achieve. A Residential Tenant Guidelines will include information on the sustainable aspects of the site and the base residential units/buildings, including education on installed energy star appliances and a copy of the 'No Smoking' policy. These guidelines will further encourage the residential tenant(s) to support the sustainable features, such as tips/measures to reduce energy use, coordinate carpooling to work with other tenants, City of Boston recycling information).

LEED-NC Regional Priority Credits

The concept of Regional Priority Credits (RPCs) was introduced in the LEED 2009 rating systems to incentivize the achievement of credits that address geographically specific environmental priorities. RPCs are not new LEED credits, but are existing credits that USGBC chapters and regional councils have designated as being particularly important for their areas and are achieved in the form of a bonus point. The RPCs that may be achievable for the Project are as follows:

- SSc3: Brownfield Redevelopment
- SSc6.1: Stormwater Design Quantity Control
- SSc7.1: Heat Island Effect, Non-Roof

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9 According to the USGBC *Innovation in Design Credit Catalog* (last updated in March 2008).

- SSc7.2: Heat Island Effect, Roof

LEED-Existing Building: Operations & Maintenance Certification

Since taking ownership of the property in 2011, the Proponent has undertaken the initiative to improve the existing Landmark Center building's performance and reduce its environmental footprint. Landmark Center is currently in pursuit of LEED-EBOM certification. While not required as part of Article 80, the Proponent has invested heavily in maintaining and operating the existing Landmark Center as an energy efficient and sustainable building. The Proponent has also worked to educate new and existing tenants of the importance of conserving energy and water. The Proponent has installed metering systems and structured leases to provide tenants with an incentive to conserve utilities, and with support from building management, this has resulted in collaborative frameworks where landlord and tenant work together to make respective improvements. The Proponent is currently performing detailed engineering studies for energy efficiency projects and implementation of best green practices in the operation of the facility. The key to the success of such projects is an integrative, iterative, multi-disciplinary approach. Sustainability has become a core value shared by the entire project team and it informs work across all disciplines. Metrics, such as LEED and ENERGY STAR are incorporated as an end to themselves, but as tools in the toolbox that can be implemented to achieve energy performance goals. Refer to Figure 5.8 for the current LEED-EBOM checklist for the existing building.

The Benefits of LEED-EBOM Certification

Existing buildings provide many environmental advantages compared to new buildings. The materials and resources needed to create the new building are already in place in the existing facility. In effect, selecting an existing building is like "recycling" that building. Additionally, existing buildings can utilize existing infrastructure, tie into robust existing transportation networks, and be part of mature mix-use neighborhoods. For office buildings, the transport energy associated with commuting is, on average, about equal to the energy consumed by the building operations. A building well served by alternative transportation options, located in a walkable mixed use neighborhood, will show a much lower transportation footprint. Landmark Center, as a renovated existing building located in the mixed-use retail and residential Fenway neighborhood, is well suited to take advantage of these key benefits.

Ongoing Initiatives

Registered under LEED-EBOM (version 3), the Proponent is required to conduct a gap energy analysis and retro commissioning. An energy audit was conducted and the findings have been, or are being implemented, into current operations protocols. Additionally, a separate engineering study focused on identifying/recommending energy conservation upgrades.

In June 2013, the existing Landmark Center received EPA ENERGY STAR certification for exemplary building energy performance with a score of 87. When compared to its peers, the existing Landmark Center building is better than what is considered to be a top performer with a score of 75 or more. To earn ENERGY STAR certification, "a building must earn an ENERGY STAR score of 75 or higher, indicating that it performs better than at least 75 percent of similar buildings nationwide."[10]

The following section describes specific sustainable features already incorporated into the Landmark Center, and LEED-EBOM-related building improvements completed, improvements in progress, and ongoing measures.

Existing Features

- A location well served by multiple modes of public transit
- Robust amenities for human powered transportation including bicycles and pedestrians
- A mixed-use neighborhood that includes all manner of resources, to reduce the need for tenants to make trips off-site via automobile
- Selection of "Water Sense" plumbing fixtures to reduce water consumption by 30% or more compared to code baseline
- A building automation system that supports energy efficiency strategies for tenants responsibility for energy costs to encourage appropriate operational behavior, and protect responsible tenants from tenants less concerned with efficiency (i.e., a tenant who wastes energy only increases their own costs, rather than shared common area expenses)
- Robust infrastructure to support recycling by tenants
- Policies to encourage appropriate recycling and material procurement strategies during tenant fit-outs
- Systems design to provide appropriate levels of ventilation, with sensors and controls to confirm appropriate systems operations
- High levels of filtration on all ventilation systems

Completed Building Improvements:

- Variable Frequency Drives have been added to select pumps and fans
- Lighting retrofits in parking garage and common areas to remove inefficient lighting and replace with LEDs and other high efficiency fixtures
- Power Factor Correction
- Intelligent HVAC Controls to reduce need for mechanical cooling and short cycling during low load shoulder seasons

Improvement In Progress:

- Addition of Heat Recovery on Ventilation Systems

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10 According to the ENERGY STAR Website: http://www.energystar.gov/buildings/facility-owners-and-managers/existing-buildings/earn-recognition/energy-star-certification

- Complete replacement of the existing Building Automation System to improve functionality, capabilities and provide the latest platform to integrate building CCTV, card access systems and electric metering analysis
- Energy monitoring to analyze predicted energy consumption compared to actual energy consumption and provide real time demand and load profiles

LEED-EBOM Efforts

- Lamp-recycling and procurement of low mercury, high efficiency and LED alternatives
- Single Stream recycling
- Implementation of waste audits as a performance metric
- Availability of onsite electronic waste program
- Natural gas provider agreement with 10% carbon footprint reduction
- Electricity delivery agreement includes a percentage of renewable energy purchased.
- Evaluation of cleaning supplies & paper products with a focus on recycled content, source reduction, waste and Green Seal-certified cleaning products
- The use of low-flow plumbing fixtures, flushometers, and aerated faucets
- CFC and HCFC refrigerant upgrades

Compliance with the Stretch Energy Code

The Project includes new below-grade structured parking space, new retail space, including a grocery anchor store, and new residential rental units. These buildings will be served by a combination of three (3) mechanical systems each serving a portion of the Project. All new construction will meet the requirements of the Stretch Energy Code by reducing the use of energy in the building by a minimum of 20 percent above and beyond the requirements of ASHRAE 90.1-2007, Appendix G.

The proposed energy conservation measures will be a critical point of focus by the design team as design progresses. Computer energy modeling techniques will be used to evaluate the estimated energy demands and potential efficiencies of the new building spaces from the beginning of the design process, through final construction documentation. These energy modeling results will be used in an iterative fashion to influence the design of the building façade and roof, HVAC systems and lighting. Each project component is anticipated to contribute to the overall compliance with the Stretch Energy Code in distinct and specific ways, as described below.

Residential

The residential buildings will utilize high efficiency water source heat pump system with condensing boilers located at the roof of the residential tower. This portion of the building and its systems will contribute to the overall building complying with the requirements of the Stretch Energy Code by implementing multiple Energy Conservation Measures (ECMs) including:

- High EER water source heat pump units
- ECM motors for heat pump units
- High efficiency condensing boilers
- Energy recovery units for residential ventilation systems
- High efficiency envelope including glazing with U-Value and SHGC which exceed the minimum requirements of the energy code
- Low flow plumbing fixtures to reduce domestic water heating energy
- High efficiency condensing water heaters
- Reduced lighting densities for back of house, egress and service areas.

Grocery Store

Wegmans may be served with a new chilled water and hot water central plant, or may be served from the existing plant. If the tenant elects to provide their own plant, the Proponent will encourage them to incorporate the following systems and ECMs, including:

- High efficiency centrifugal chillers with variable frequency drive control
- High efficiency condensing boilers
- High efficiency envelope including glazing with U-Value and SHGC which exceed the minimum requirements of the energy code
- Reduced lighting densities for sales and back of house spaces

To the extent the grocery is served by the existing central plant, energy efficiency will be achieved through efficiencies gained by using one existing plant to serve the new space.

Retail

The retail spaces will be provided with chilled and hot water from the existing chiller and boiler plant. The existing plant was installed in 1998; however, the system incorporated a number of energy conservation features at that time. The existing chiller plant is based on the use of three 800-ton highly efficient centrifugal chillers with a COP of 5.76. The current requirement in ASHRAE 90.1-2007 for a chiller in this configuration (2gpm/ton condenser water, 42 F CHWS, 85F CWS) is 5.11. The current chiller plant exceeds the requirements of the current code by approximately 12 percent and the three existing 9,000 Mbh boilers meet the current base code requirements with an energy efficiency of 80 percent. The retail component and its systems will contribute to the overall building complying with the requirements of the Stretch Energy Code by implementing multiple ECMs, including:

- Reduced lighting densities for back of house, egress and service areas.
- High efficiency envelope including glazing with U-Value and SHGC which exceed the minimum requirements of the energy code

Parking Garage

The garage spaces will contribute to the overall energy efficiency of the Project by incorporating variable speed garage ventilation fan systems which will significantly reduce the required fan horsepower for the ventilation of the garage.

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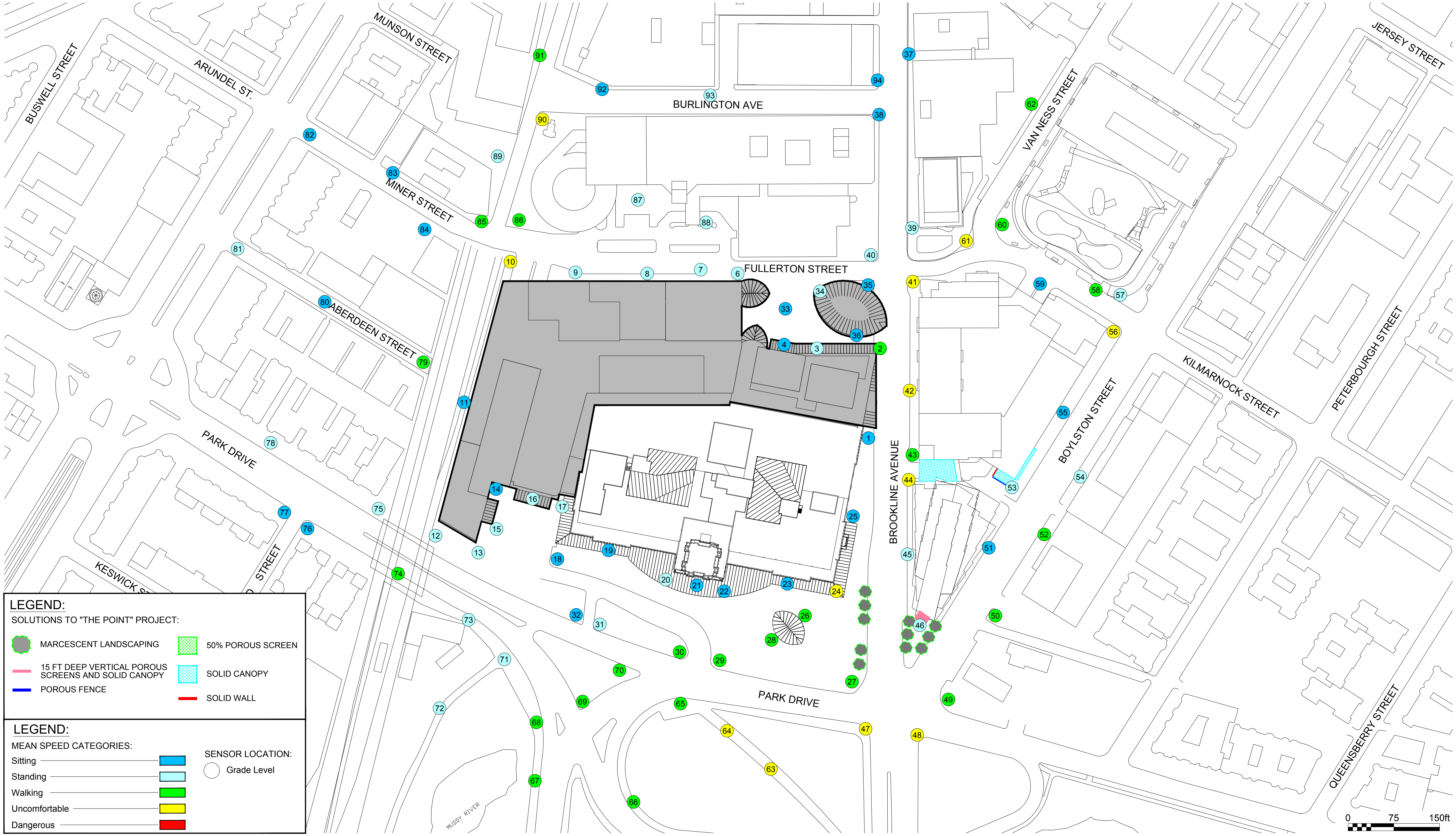
Source: Rowan Williams Davies and Irwin Inc. (RWDI)

Figure 5.1a
No-Build Pedestrian Wind Conditions



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Source: Rowan Williams Davies and Irwin Inc. (RWDI)

Figure 5.1b
Build Pedestrian Wind Conditions

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Figure 5.2a
Shadow Impacts
March 21

0 200 400 Feet

Figure 5.2b
Shadow Impacts
June 21

9am

12pm

3pm

6pm

0 200 400 Feet

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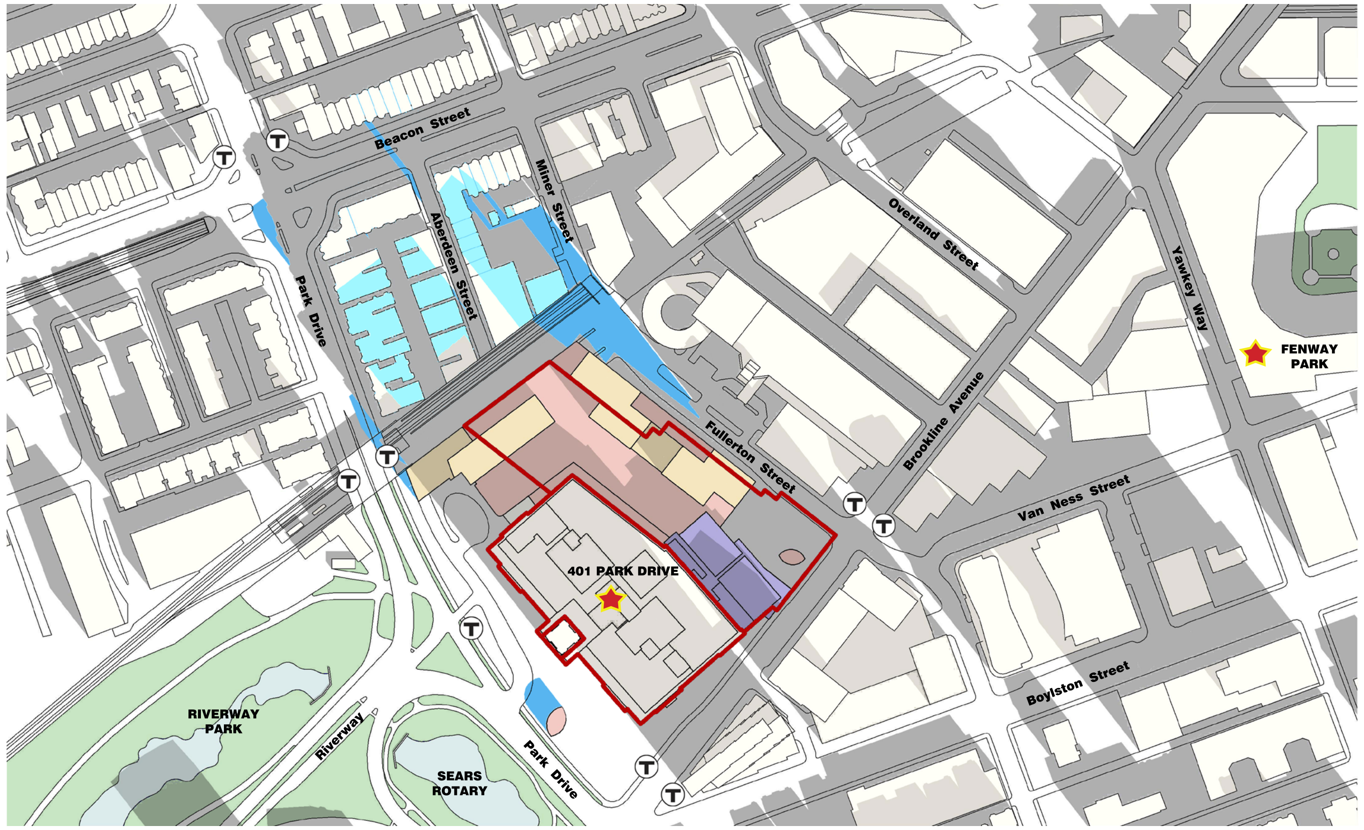
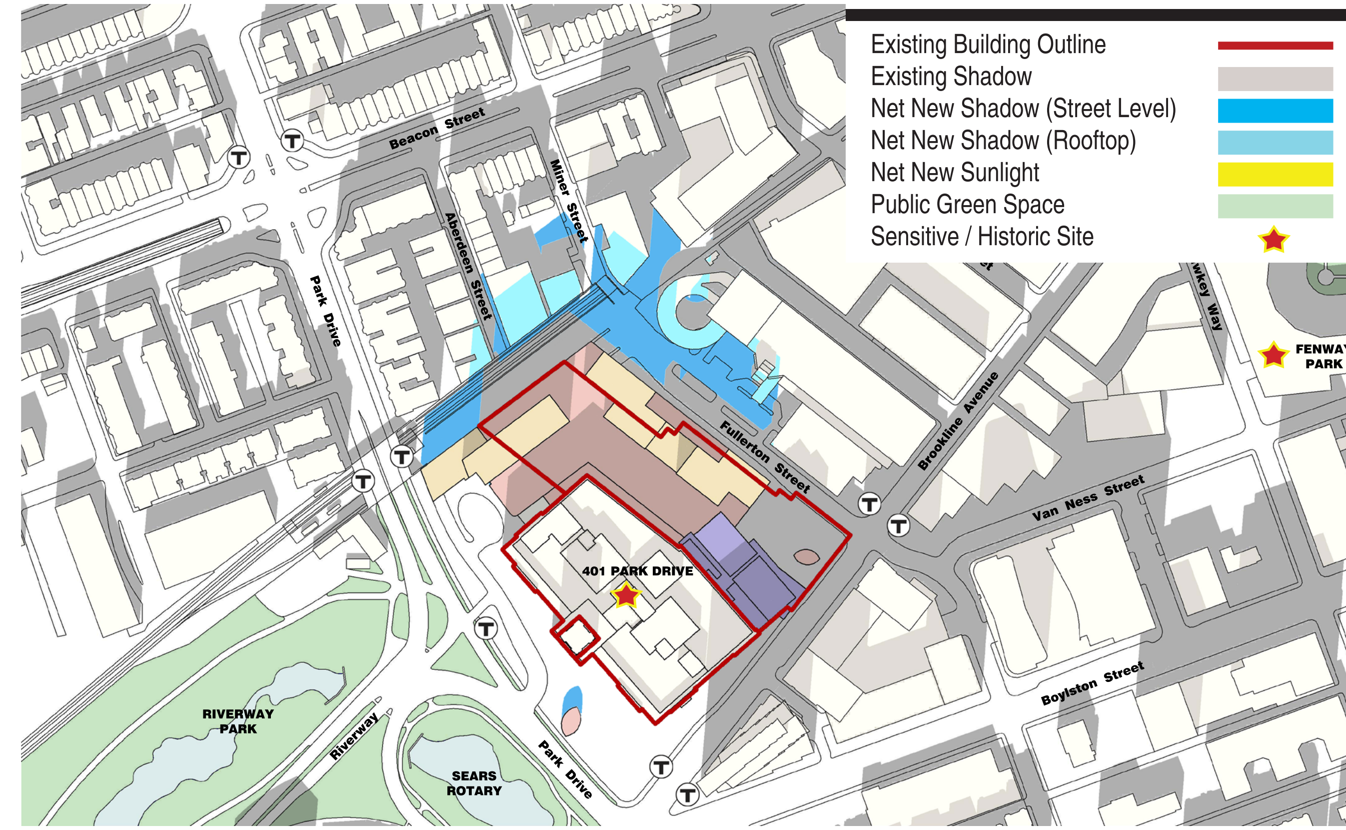
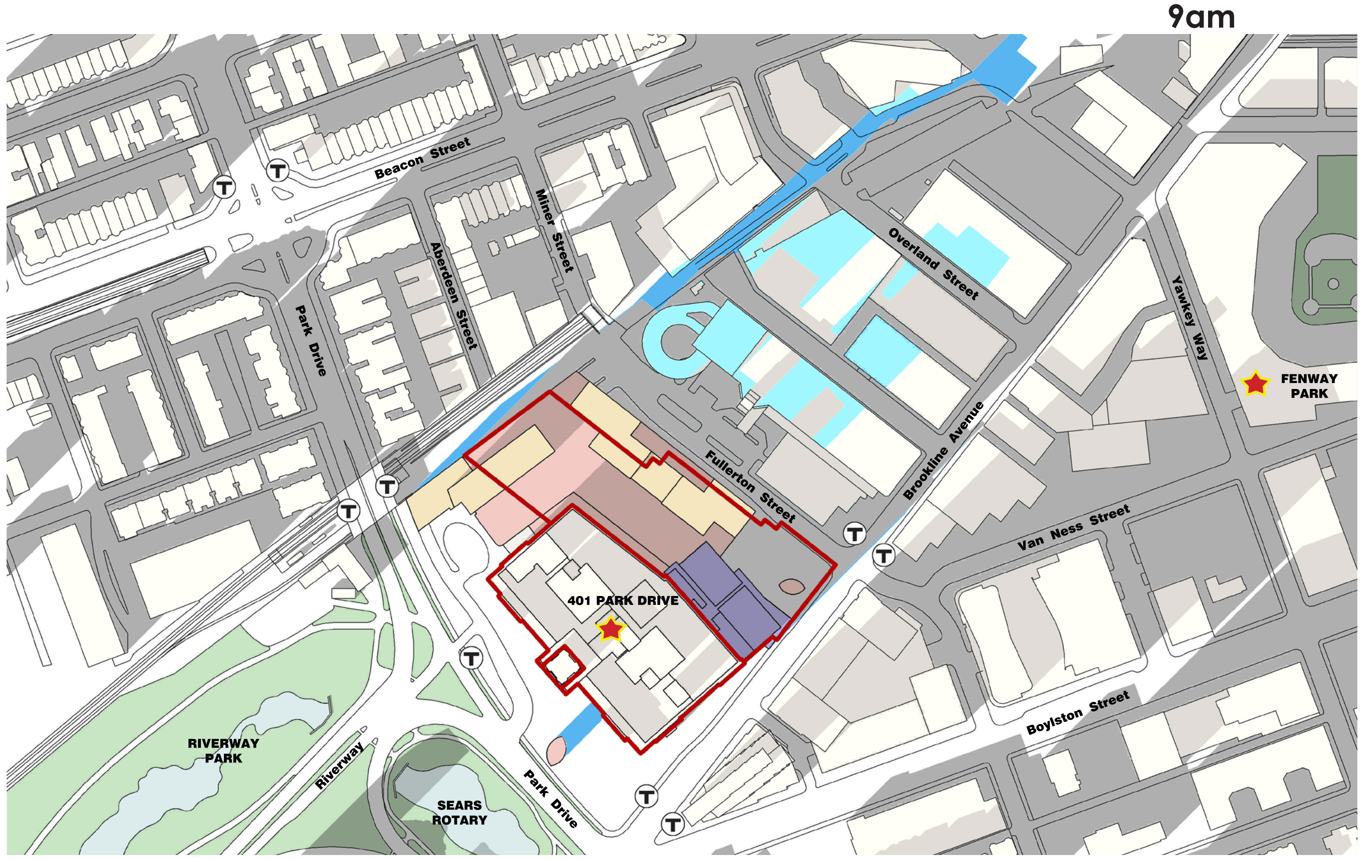
Figure 5.2c
Shadow Impacts
September 21



9am



12pm



3pm

0 200 400 Feet

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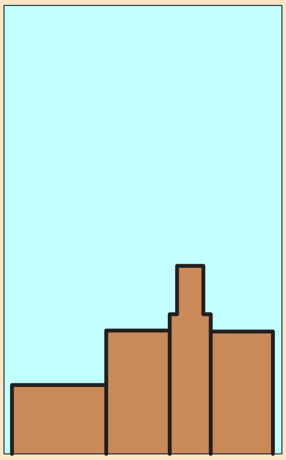
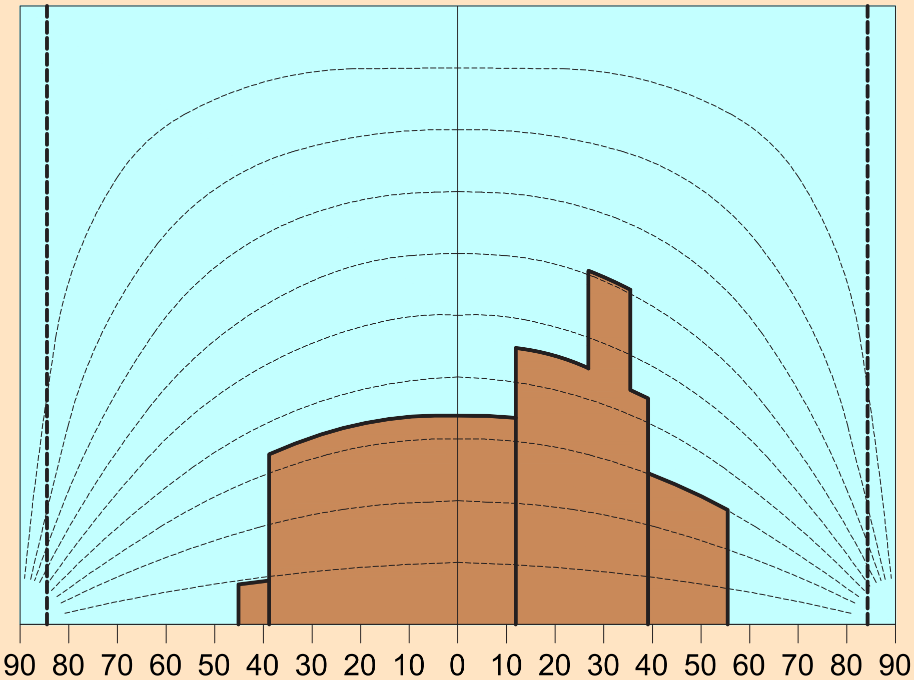
Figure 5.2d
Shadow Impacts
December 21

Existing

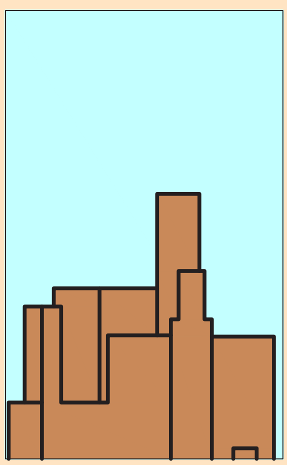
Obstruction of
Skyplane = 23.0%

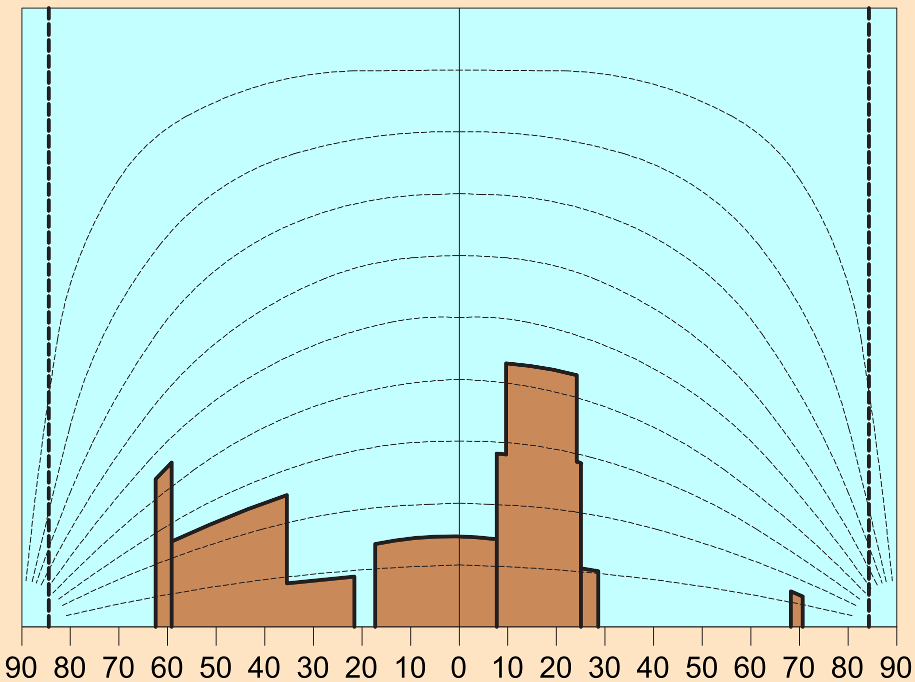




Proposed

Obstruction of
Skyplane = 19.9%





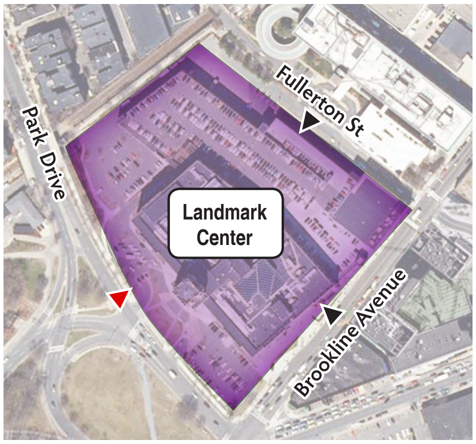
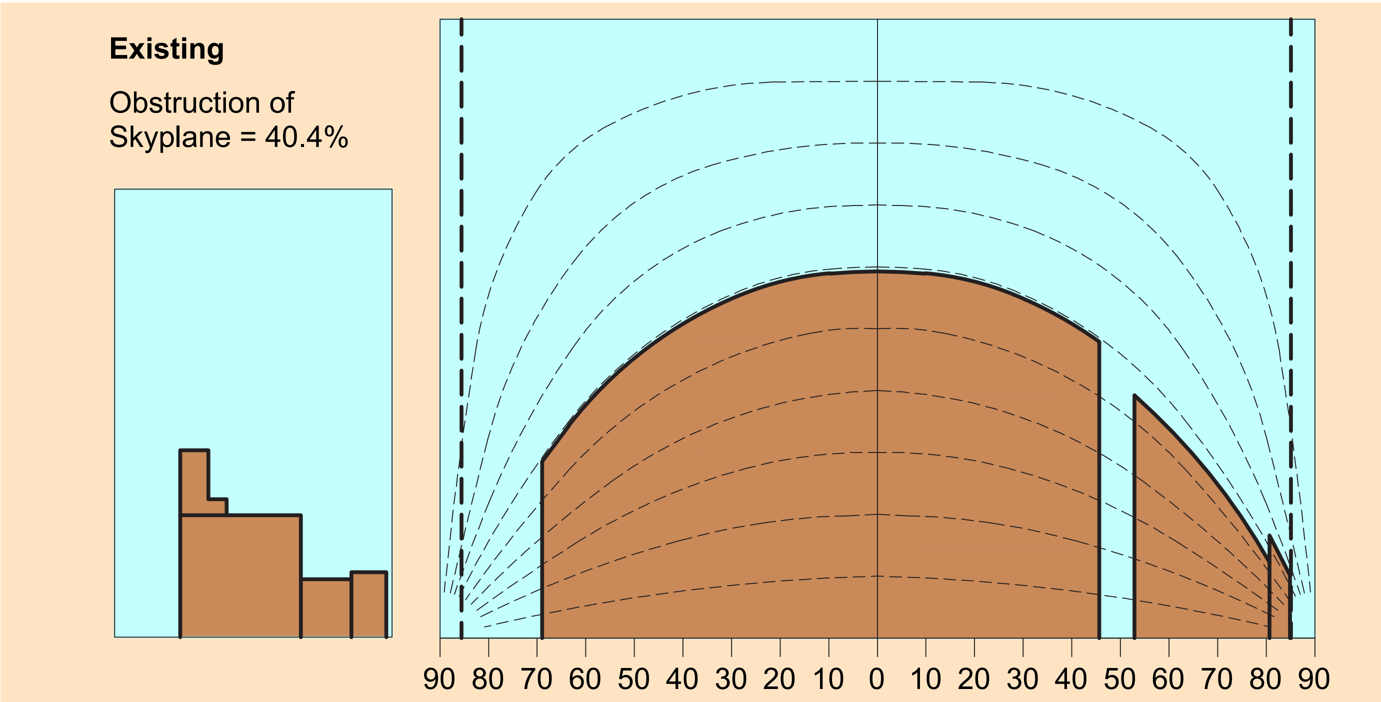
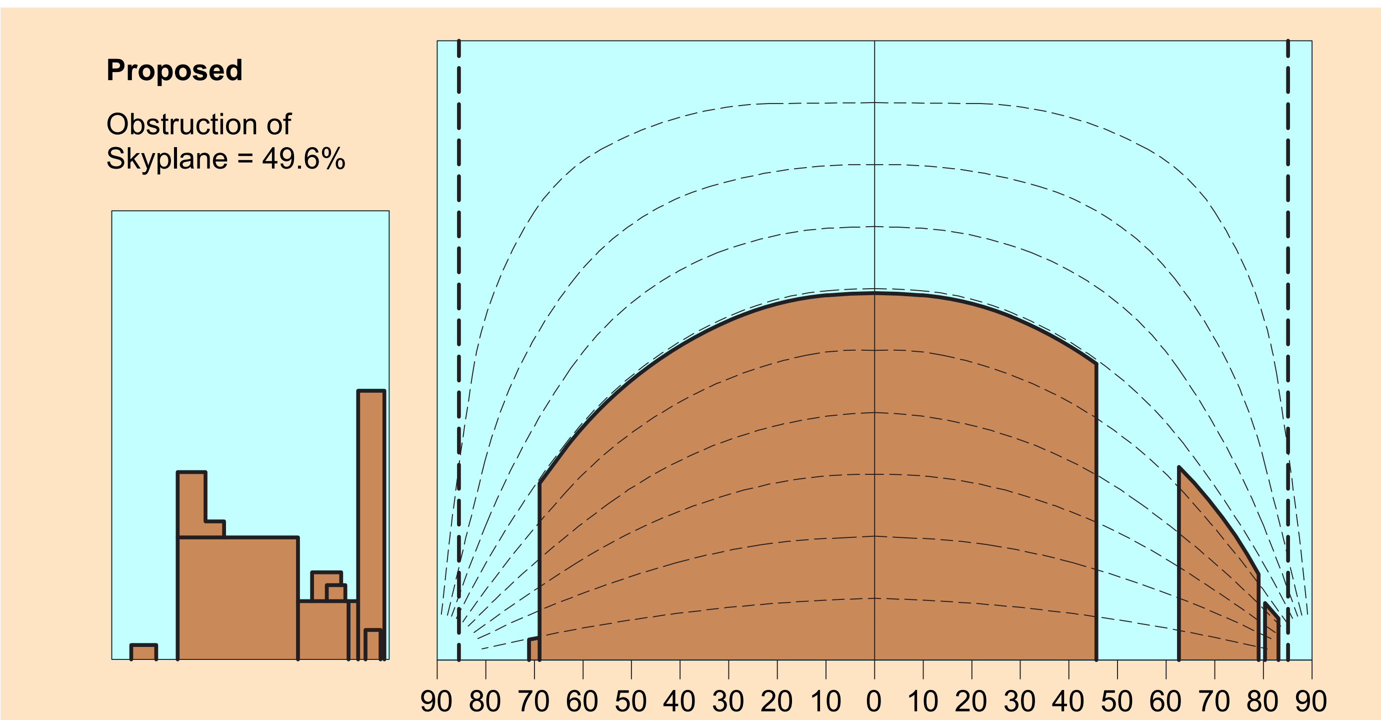


Figure 5.3a
Daylight Analysis
Center of Park Drive





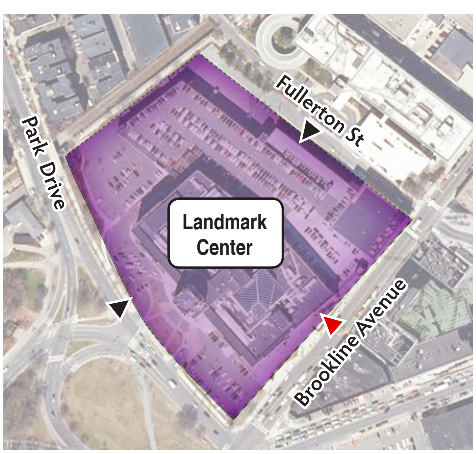
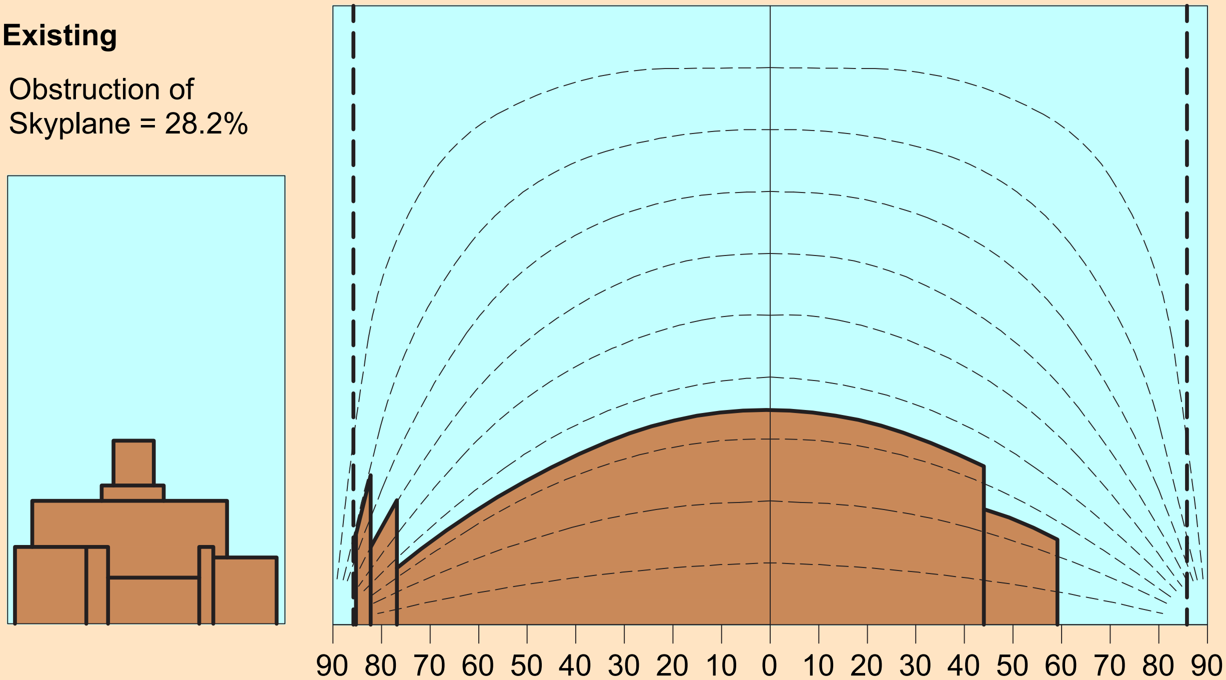


Figure 5.3b
Daylight Analysis
Center of Brookline Avenue

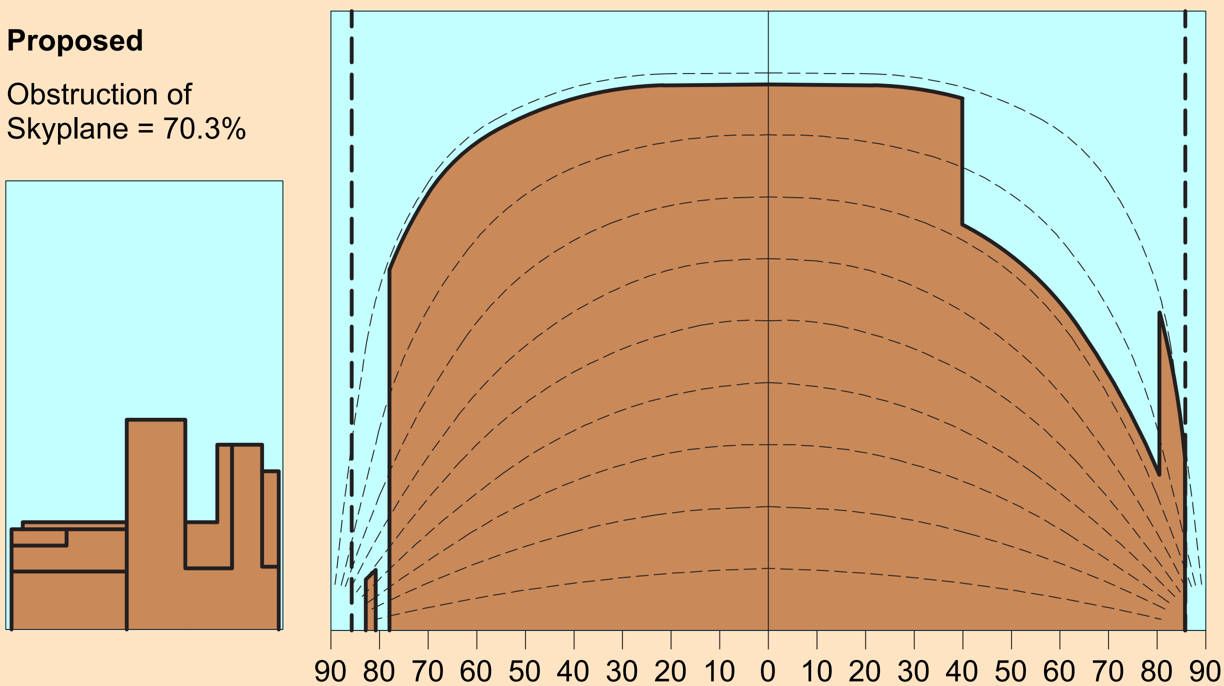
Existing

Obstruction of Skyplane = 28.2%



Proposed

Obstruction of Skyplane = 70.3%



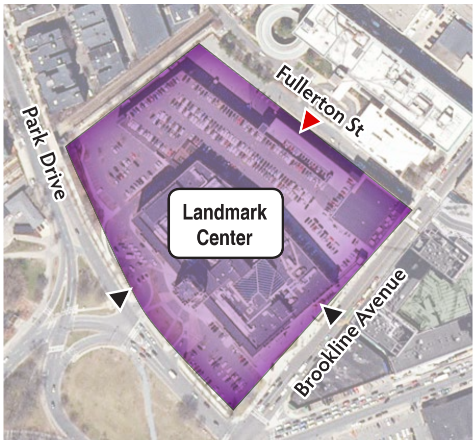
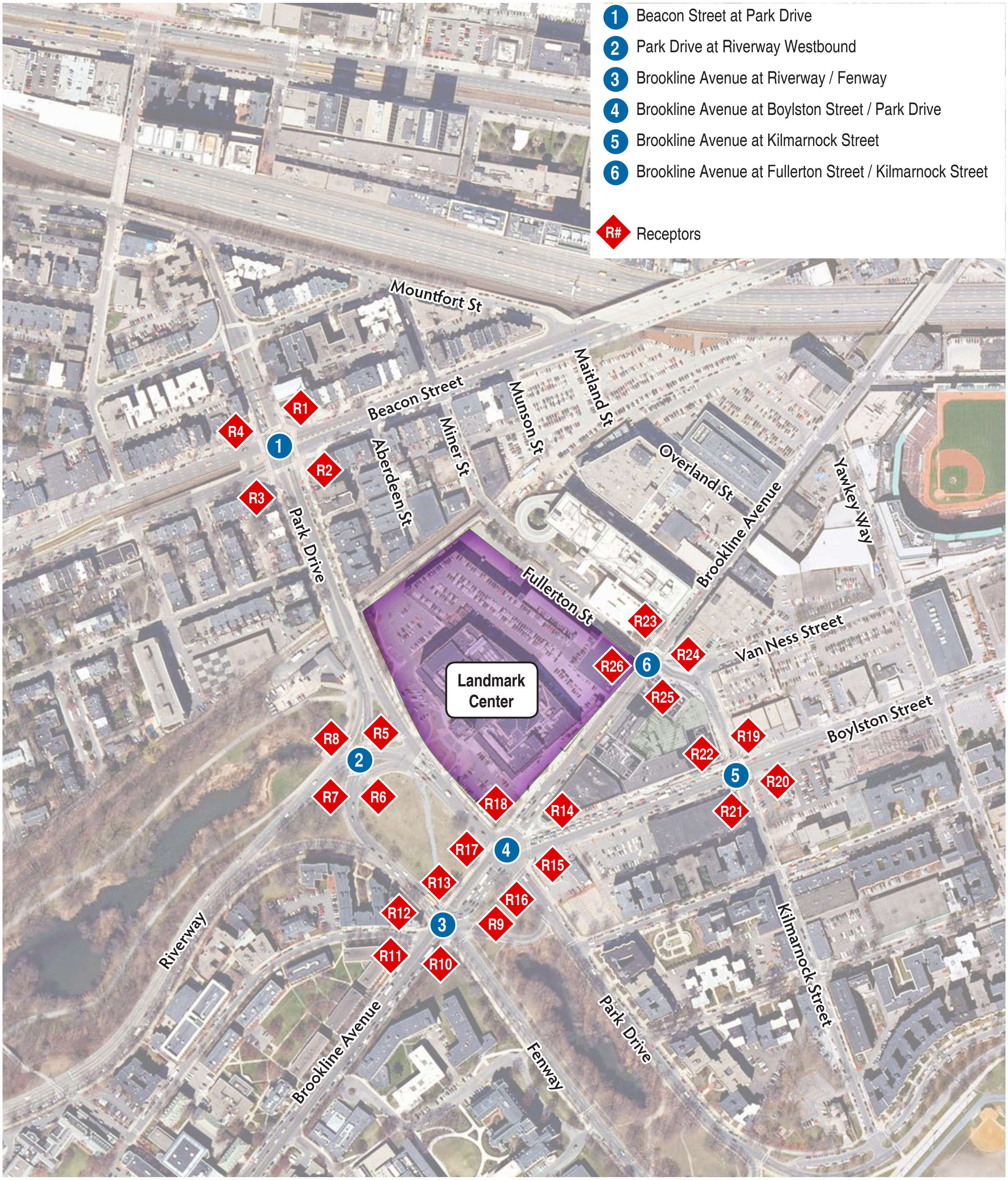


Figure 5.3c
Daylight Analysis
Center of Fullerton Street



Note: Additional parking available on Red Sox Game Days. Not shown.

0 200 400 Feet

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Figure 5.4
Microscale ("hot spot") Analysis Intersection Locations

Note: Additional parking available on Red Sox Game Days. Not shown.

0 200 400 Feet

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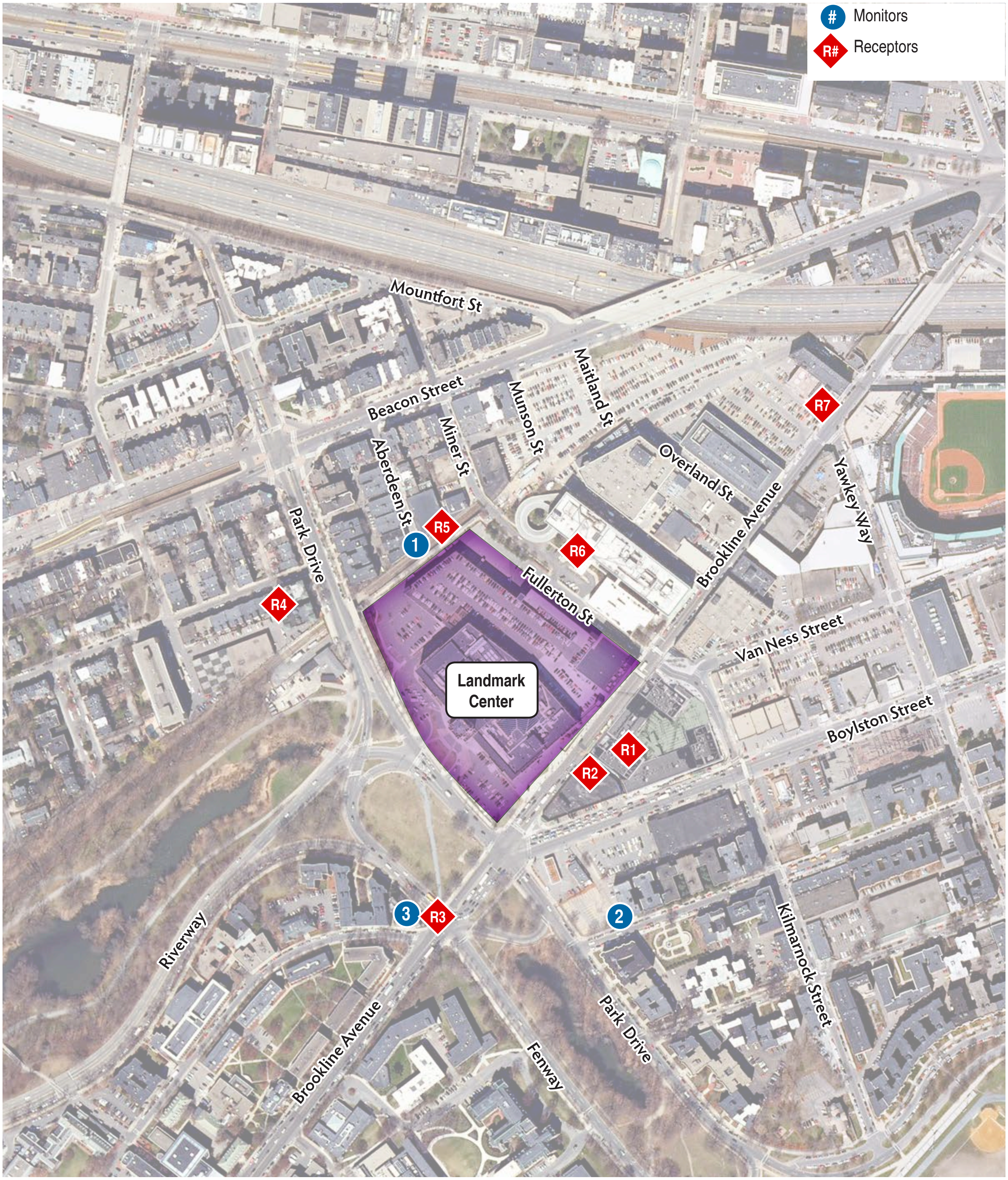
Figure 5.5
Groundwater Monitoring Wells



Note: Additional parking available on Red Sox Game Days. Not shown.

0 200 400 Feet

Figure 5.6
Noise Monitoring Locations

LEED 2009 for New Construction and Major Renovations

Project Checklist

Landmark Center Redevelopment, Boston, MA 02215

Draft July 2013

Sustainable Sites — Possible Points: 26

Y	?	N			
20	3	3		**Sustainable Sites**	**Possible Points: 26**
Y			Prereq 1	Construction Activity Pollution Prevention	
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—Non-roof	1
1			Credit 7.2	Heat Island Effect—Roof	1
	1		Credit 8	Light Pollution Reduction	1

Water Efficiency — Possible Points: 10

Y	?	N			
2	3	5		**Water Efficiency**	**Possible Points: 10**
Y			Prereq 1	Water Use Reduction—20% Reduction	
	2	2	Credit 1	Water Efficient Landscaping	2 to 4
		2	Credit 2	Innovative Wastewater Technologies	2
2	1	1	Credit 3	Water Use Reduction	2 to 4

Energy and Atmosphere — Possible Points: 35

Y	?	N			
5	13	17		**Energy and Atmosphere**	**Possible Points: 35**
Y			Prereq 1	Fundamental Commissioning of Building Energy Systems	
Y			Prereq 2	Minimum Energy Performance	
Y			Prereq 3	Fundamental Refrigerant Management	
5	4	10	Credit 1	Optimize Energy Performance	1 to 19
		7	Credit 2	On-Site Renewable Energy	1 to 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

Materials and Resources — Possible Points: 14

Y	?	N			
4	3	7		**Materials and Resources**	**Possible Points: 14**
Y			Prereq 1	Storage and Collection of Recyclables	
		3	Credit 1.1	Building Reuse—Maintain Existing Walls, Floors, and Roof	1 to 3
		1	Credit 1.2	Building Reuse—Maintain 50% of Interior Non-Structural Elements	1
2			Credit 2	Construction Waste Management	1 to 2
		2	Credit 3	Materials Reuse	1 to 2

Materials and Resources, Continued

Y	?	N			
1	1		Credit 4	Recycled Content	1 to 2
1	1		Credit 5	Regional Materials	1 to 2
		1	Credit 6	Rapidly Renewable Materials	1
	1		Credit 7	Certified Wood	1

Indoor Environmental Quality — Possible Points: 15

Y	?	N			
7	5	3		**Indoor Environmental Quality**	**Possible Points: 15**
Y			Prereq 1	Minimum Indoor Air Quality Performance	
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control	
	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 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

Innovation and Design Process — Possible Points: 6

Y	?	N			
4	2			**Innovation and Design Process**	**Possible Points: 6**
1			Credit 1.1	Innovation in Design: TDM plan (Boston Modern Mobility)	1
1			Credit 1.2	Innovation in Design: Tenant Design & Construction Guidelines	1
1			Credit 1.3	Innovation in Design: Energy Star Appliances (5% energy savings)	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

Regional Priority Credits — Possible Points: 4

Y	?	N			
2	1	1		**Regional Priority Credits**	**Possible Points: 4**
	1		Credit 1.1	Regional Priority: SSc3	1
		1	Credit 1.2	Regional Priority: SSc6.1	1
1			Credit 1.3	Regional Priority: SSC7.1	1
1			Credit 1.4	Regional Priority: SSC7.2	1

Y	?	N		
44	30	36	**Total**	**Possible Points: 110**

Certified 40 to 49 points Silver 50 to 59 points Gold 60 to 79 points Platinum 80 to 110

Figure 5.7
Preliminary LEED
New Construction Scorecard

Yes	Possible	Weak Maybe	No
44	21	10	35

Certified: 40-49 points Silver: 50-59 points Gold: 60-79 points Platinum: 80+ points

Y	?	??	N		General Project Template	
Y				PI1	Minimum Project Requirements	Required
Y				PI2	Project Summary Details	Required
Y				PI3	Occupant and Usage Data	Required
Y				PI4	Schedule and Overview Documents	Required
Y				PI5	Previously LEED Certified Details	Required

Yes	Possible	Weak Maybe	No		SUSTAINABLE SITES	26 Points
8	3	1	14			
			4	Credit 1	LEED Certified Design and Construction	4
1				Credit 2	Building Exterior and Hardscape Management Plan	1
1				Credit 3	Integrated Pest Management, Erosion Control, & Landscape Management Plan	1
5	3		7	Credit 4	Alternative Commuting Transportation - 10, 13.75, 17.5, 21.25, **25**, 31.25, 37.5, 43.75, 50, 56.25, 62.5, 68.75, 75%	3 to 15
			1	Credit 5	Site Development - Protect or Restore Open Habitat	1
			1	Credit 6	Stormwater Quantity Control	1
1				Credit 7.1	Heat Island Reduction - Nonroof	1
			1	Credit 7.2	Heat Island Reduction - Roof	1
		1		Credit 8	Light Pollution Reduction	1

Yes	Possible	Weak Maybe	No		WATER EFFICIENCY	14 Points
3	3	2	6			
Y				Prereq 1	Minimum Indoor Plumbing Fixture and Fitting Efficiency	
1				Credit 1.1	Water Performance Measurement, Whole building metering	1
1				Credit 1.2	Water Performance Measurement, Submetering	1
	2	1	2	Credit 2	Additional Indoor Plumbing Fixture and Fitting Efficiency - 10, 15, 20, 25, 30%	1 to 5
	1	1	3	Credit 3	Water Efficient Landscaping - 50, 62.5, 75, 87.5, 100%	1 to 5
1				Credit 4.1	Cooling Tower Water Management, Chemical Management	1
			1	Credit 4.2	Cooling Tower Water Management, Non-Potable Water Source Use	1

Yes	Possible	Weak Maybe	No		ENERGY & ATMOSPHERE	35 Points
22	7	0	6			
Y				Prereq 1	Energy Efficiency BMPs -Planning, Documentation, & Opportunity Assessment	Required
Y				Prereq 2	Minimum Energy Efficiency Performance	Required
Y				Prereq 3	Fundamental Refrigerant Management	Required
14	0	0	4	Credit 1	Optimize Energy Efficiency Performance - 71, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 85, **87**, 89, 91, 93, 95	1 to 18
2				Credit 2.1	Existing Building Commissioning - Investigation and Analysis	2
2				Credit 2.2	Existing Building Commissioning - Implementation	2
			2	Credit 2.3	Existing Building Commissioning - Ongoing Commissioning	2
1				Credit 3.1	Performance Measurement - Building Automation System	1
2				Credit 3.2	Performance Measurement - System-Level Metering - 40%, 80%	1 to 2
	6			Credit 4	On-site and Off-site Renewable Energy, Onsite: 3, 4.5, 6, 7.5, 9, 12% Off-site: 25, 37.5, 50, 62.5, 75, 100%	1 to 6
	1			Credit 5	Enhanced Refrigerant Management	1
1				Credit 6	Emissions Reduction Reporting	1

Yes	Possible	Weak Maybe	No		MATERIALS & RESOURCES	10 Points
2	1	1	6			
Y				Prereq 1	Sustainable Purchasing Policy	Required
Y				Prereq 2	Solid Waste Management Policy	Required
			1	Credit 1	Sustainable Purchasing - Ongoing Consumables, 60%	1
			1	Credit 2.1	Sustainable Purchasing - Durable Goods, 40% of Electric	1
			1	Credit 2.2	Sustainable Purchasing - Durable Goods, 40% of Furniture	1
			1	Credit 3	Sustainable Purchasing - Facility Alterations and Additions, 50%	1
1				Credit 4	Sustainable Purchasing - Reduced Mercury in Lamps	1
			1	Credit 5	Sustainable Purchasing - Food, 25%	1
1				Credit 6	Solid Waste Management - Waste Stream Audit	1
		1		Credit 7	Solid Waste Management - Ongoing Consumables, 50%	1
	1			Credit 8	Solid Waste Management - Durable Goods, 75%	1
			1	Credit 9	Solid Waste Management - Facility Alterations and Additions, 70%	1

Yes	Possible	Weak Maybe	No		INDOOR ENVIRONMENTAL QUALITY	15 Points
4	3	5	3			
Y				Prereq 1	Minimum Indoor Air Quality Performance	Required
Y				Prereq 2	Environmental Tobacco Smoke (ETS) Control	Required
Y				Prereq 3	Green Cleaning Policy	Required
		1		Credit 1.1	IAQ Best Management Practices - Indoor Air Quality Management Program	1
			1	Credit 1.2	IAQ Best Management Practices - Outdoor Air Delivery Monitoring	1
		1		Credit 1.3	IAQ Best Management Practices - Increased Ventilation	1
			1	Credit 1.4	IAQ Best Management Practices - Reduce Particulates in Air Distribution	1
1				Credit 1.5	IAQ Best Management Practices - IAQ Management for Facility Alterations & Additions	1
1				Credit 2.1	Occupant Comfort - Occupant Survey	1
		1		Credit 2.2	Controllability of Systems - Lighting	1
			1	Credit 2.3	Occupant Comfort -Thermal Comfort Monitoring	1
		1		Credit 2.4	Daylight and Views - Daylight 50%, Views 45%	1
		1		Credit 3.1	Green Cleaning - High-Performance Cleaning Program	1
	1			Credit 3.2	Green Cleaning - Custodial Effectiveness Assessment, <=3	1
	1			Credit 3.3	Green Cleaning - Purchase of Sustainable Cleaning Products and Materials, 30%	1
	1			Credit 3.4	Green Cleaning - Sustainable Cleaning Equipment	1
1				Credit 3.5	Green Cleaning - Indoor Chemical and Pollutant Source Control	1
1				Credit 3.6	Green Cleaning - Indoor Integrated Pest Management	1

Yes	Possible	Weak Maybe	No		INNOVATION IN OPERATIONS	6 Points
4	2	0	0			
1				Credit 1.1	Innovation or Exemplary Performance - Pending project specific strategy. Options include: Exemplary performance, attempting a Pilot credit, Building as an Educational tool, another measurable sustainable strategy not covered in LEED EBOM.	1
1				Credit 1.2	Innovation or Exemplary Performance - WEc1.1 Water Performance Measurement, Whole Building Metering EP for metering at least 2 subsystems - i.e. for indoor plumbing, irrigation, carwash.	1
	1			Credit 1.3	Innovation or Exemplary Performance	1
	1			Credit 1.4	Innovation or Exemplary Performance	1
1				Credit 2	LEED® Accredited Professional	1
1				Credit 3	Documenting Sustainable Building Cost Impacts	1

Yes	Possible	Weak Maybe	No		REGIONAL PRIORITY	4 Points
1	2	1	0			
1				Credit 1.1	For 02115: **SSc2**, SSc6, EAc4 3%on, 25%off, MRc5, MRc7, EQc1.4	1
	1			Credit 1.2	For 02115: SSc2, SSc6, **EAc4 3%on, 25%off, MRc5**, MRc7, EQc1.4	1
		1		Credit 1.3	For 02115: SSc2, SSc6, EAc4 3%on, 25%off, MRc5, MRc7, **EQc1.4**	1
	1			Credit 1.4	For 02115: SSc2, SSc6, EAc4 3%on, 25%off, MRc5, **MRc7**, EQc1.4	1

Yes	Possible	Weak Maybe	No		PROJECT TOTALS (Certification Estimates)	110 Points
44	21	10	35			

Certified: 40-49 points Silver: 50-59 points Gold: 60-79 points Platinum: 80+ points

Figure 5.8

Current LEED-Existing Building Operations and Maintenance Scorecard

6

Infrastructure

Introduction

This chapter describes the existing infrastructure systems within and surrounding the Project Site, and discusses Project capacity needs and potential impacts on utilities. The following utilities are evaluated: wastewater, water, stormwater management, natural gas, electricity, and telecommunications. Chapter 5, *Environmental Protection* discusses energy conservation measures being considered as part of the Project.

The Project will connect to existing city and utility company systems in the adjacent public streets. Based on the Proponent's extensive development experience in the neighborhood, it is expected that the increase in demand associated with the development and operation of the Project will be accepted by the existing utility infrastructure surrounding the Project. As design progresses, all required engineering analyses will be conducted and the final design will adhere to all applicable protocols and design standards ensuring that the proposed building is properly supported by and properly uses city infrastructure. Detailed design of the Project's utility systems will proceed in conjunction with the design of the building and interior mechanical systems.

The systems discussed herein include those owned or managed by the Boston Water and Sewer Commission (BWSC), private utility companies, and on-site infrastructure systems. There will be close coordination among these entities and with the project engineers and architects during the construction process for the Project. Appendix G includes a large-scale site plan that shows the existing infrastructure at the Project Site.

■

Summary of Key Findings

The key impact assessment findings related to infrastructure systems include:

- The existing city and utility infrastructure systems are expected to be adequately sized to accept the demand associated with the development and operation of the Project.
- On-site drainage generally flows towards Charles River Basin via BWSC-owned and maintained drainage infrastructure in Brookline Avenue, adjacent to the Project Site.
- The Project Site is currently serviced by the BWSC for domestic and fire protection water and sanitary sewage conveyance.

- Based upon sewage generation rates outlined in the DEP Sewer Connection and Extension Regulations, 310 CMR 15.203.f, the Project is estimated to generate approximately 118,165 gallons per day (net new) of sanitary sewage and will require approximately 129,982 gallons of water per day (net new).

The key Project-related mitigation and/or benefits associated with the infrastructure systems include:

- Construction of the Project will incorporate on-site stormwater management and treatment systems that will improve water quality, reduce runoff volume, and control peak rates of runoff in comparison to existing conditions.
- The Project will not result in the introduction of any increased peak flows, pollutants, or sediments that would potentially impact the receiving waters of the local BWSC stormwater drainage system.
- The proposed stormwater management systems will provide for groundwater recharge, in accordance with the Groundwater Conservation Overlay District (GCOD) and will comply with the 2008 DEP Stormwater Management Policy and Standards.
- Appropriate low-flow and low-consumption plumbing fixtures will be installed in all apartment units to achieve a reduction in water usage of over 20 percent over the baseline in order to comply with Article 37 of the Boston Zoning Code.

Regulatory Framework

The following discusses the regulatory framework of utility connection reviews and standards. All connections will be designed and constructed in accordance with city, state and federal standards. A complete list of the state and local permits anticipated associated with Project-related infrastructure is included in Chapter 2, *General Information and Regulatory Context*. For the Project:

- BWSC approval will be required for all water, sewer and stormwater systems.
- Sewer connection permit or self-certification (based on final flows), will be filed with the Massachusetts Department of Environmental Protection (DEP).
- The Boston Fire Department will review the Project with respect to fire protection measures such as siamese connections, hydrants, and standpipes.
- Design of the site access, hydrant locations, and energy systems (gas and electric) will also be coordinated with the respective system owners.
- Where new utility connections are needed and existing connections are to be capped, the excavation will be authorized by the Boston Public Works Department (BPWD) through the street opening permit process, as required.
- Additional information on the regulatory framework for each utility system is included in subsequent sections of this chapter.

All improvements and connections to BWSC infrastructure will be reviewed by BWSC as part of the BWSC site plan review process. This process includes a comprehensive design review of the proposed service connections, assessment of system demands and capacity, and establishment of service accounts. As design progresses, updated information on the proposed utility connections will be provided to the BRA upon request.

Drainage/Stormwater Management

Since the Project Site is already impervious, the Project will not produce significant changes in either the pattern of, or rate of, stormwater runoff. Stormwater management controls will be established in compliance with the BWSC standards. The Project will not result in the introduction of any increased peak flows, pollutants, or sediments that would potentially impact the receiving waters of the local BWSC stormwater drainage system.

Existing Drainage Conditions

On-site drainage generally flows towards Charles River Basin, as shown on BWSC maps. Brookline Avenue contains BWSC-owned and maintained drainage infrastructure adjacent to the Project Site. Roadway runoff is piped from the Project Site by the BWSC at several locations along Brookline Avenue and Fullerton Street. There is an existing 116-inch by 12-inch drain line in Brookline Avenue. The existing site catch basins are collected through a closed drainage system with standard/outdated particle separators for treatment. Refer to Appendix G for the existing drainage facilities serving the Project Site.

Proposed Drainage Conditions

Construction of the Project will incorporate on-site stormwater management and treatment systems that will improve water quality, reduce runoff volume, and control peak rates of runoff in comparison to existing conditions. The current design anticipates significantly reducing the area of existing surface parking and the inclusion of a stormwater infiltration system designed to accommodate a volume of 1inch of stormwater over the site impervious area as described below.

Compliance with Boston Zoning Code Article 32: Groundwater Conservation Overlay District

The Project is located within the Groundwater Conservation Overlay District (GCOD), as defined in Article 32 of the Zoning Code. This zoning article sets forth requirements promoting the infiltration of runoff from impervious site areas within the district. To meet the requirements of this Article, projects within the district must retain the first inch of runoff and utilize it to replenish the groundwater table. The current design provides the required volume and utilizes a gravity driven leaching bed to achieve infiltration.

The proposed infiltration system also addresses stormwater treatment per BWSC design guidelines for projects with drainage contributing to the Charles River Watershed. BWSC's policy follows DEP phosphorous treatment guidelines. Stormwater measures will be designed in accordance with DEP's Massachusetts Stormwater Management Handbook.

Sanitary Sewage

Existing Sewer System

The BWSC owns and maintains the sanitary sewer lines in the vicinity of the Project Site. BWSC record drawings show there is a MWRA Sewer, a 66-inch collector sewer along the Riverway and Fenway. The sewers adjacent to the Project Site convey flow to this sewer. These include the 24-inch line in Fullerton Street and a 24-inch by 31-inch line in Brookline Avenue. Existing site uses generate approximately 91,535 gallons per day of wastewater.

Proposed Sewage Flow and Connection

For the purposes of estimating the sewage flow rates, the overall gross square footage (including mechanical space) is assumed instead of the FAR square footage in order to present a conservative analysis. Generation rates from the Massachusetts State Environmental Code (Title 5) were used. Table 6-1 summarizes the existing and proposed sewer generation rates.

Table 6-1
Existing and Future Sewer Generation

Program Type	Units	Generation Rate	Sewer Generation (GPD)
Existing			
Residential	None	110 GPD/Bed	
Retail	172,000 SF	50 GPD/KSF	8,600
Cinema	2,922 Seats	5 GPD/Seat	14,610
Daycare	195 People	10 GPD/Person	1,950
Grocery	None	97 GPD/KSF	
Office	605,000 SF	75 GPD/KSF	45,375
Restaurant	600 seats	35 GPD/seat	21,000
Total			91,535
Proposed			
Residential	825 Bedrooms	110 GPD/Bed	90,750
Retail	282,000 SF	50 GPD/KSF	14,100
Cinema	2,922 Seats	5 GPD/Seat	14,610
Daycare	195 People	10 GPD/Person	1,950
Grocery	70,000 SF	97 GPD/KSF	6,790
Office	620,000 SF	75 GPD/KSF	46,500
Restaurant	1,000 seats	35 GPD/seat	35,000
Total			209,700
Net Change			118,165

Based on DEP Title 5 flow calculation factors.

These calculations anticipate a mix of dry retail and restaurant use. Changes to the proposed mix may vary sanitary flow. Final flows will be confirmed as the project design moves forward. At this stage of the design, options for potential sewer connections are being evaluated and will be coordinated with the BWSC. Since the Project is expected to generate new wastewater flows exceeding 100,000 gallons per day, filing of a Major Sewer Connection Permit Application with MassDEP is anticipated to support the Project.

Domestic Water and Fire Protection

Existing Water Supply System

The BWSC owns and maintains the water mains in the vicinity of the Project Site. BWSC record drawings show the streets surrounding the Site are serviced by southern low service pipes. These pipes range in size from a 12-inch main and a 48-inch main in Brookline Avenue, to 12-inch main in Park Drive and an 8-inch main in Fullerton Street. The installation dates and materials of these pipes also vary, from pit-cast iron ("PCI") pipe installed in 1905 and welded steel ("WS") installed in 1935 to a ductile iron cement lined ("DICL") pipe installed in 2005. The pipes have been relined by BWSC between 1990 and 1995. The existing water infrastructure provides a high level of service and diversity to the Fenway neighborhood. Additionally, currently eight fire hydrants are in close proximity to the Project Site.

Proposed Water Supply Demand and Connection

Domestic water demand is based on estimated sewage generation with an added factor of 10 percent for consumption, system losses, and other use. Based upon standard sewage generation rates outlined in the DEP Sewer Connection and Extension Regulations, 310 CMR 15.203.f, the Project will require approximately 129,982 gallons of water per day (net new). However, appropriate low-flow and low-consumption plumbing fixtures will be installed in all residential units to achieve a reduction in water usage of approximately 20 percent over the baseline in order to comply with Article 37 of the Boston Zoning Code , as discussed in Chapter 5, *Environmental Protection*. The Proponent will continue to consider and evaluate methods to conserve water as building design evolves.

New water connections will be designed in accordance with BWSC design standards and requirements. Water services to new buildings will be metered in accordance with BWSC's Site Plan Requirements and Site Review Process. The review includes, but is not limited to, sizing of domestic water and fire protection services, calculation of meter sizing, backflow prevention design, and location of hydrants and Siamese connections conform to BWSC and Boston Fire Department (BFD) requirements. The Proponent will provide for the connection of the meter to the BWSC's automatic meter reading system. Fire protection connections on the Project Site will also need approval of the BFD.

Utilities

Natural Gas Service

The estimated natural gas demand for the Project is approximately 24,500 cubic feet per hour. National Grid Energy owns and operates the gas mains and services in the vicinity of the Project Site. National Grid record plans indicate a 12-inch main in Brookline Avenue, a 16-inch main in Park Drive and a 6-inch mains in Fullerton Streets. Given the existing infrastructure, gas line connections could be made from Brookline Avenue or Boylston Street.

As the building energy system design is developed, the Proponent will work with National Grid to ensure adequate capacity is available to serve the Project.

Electrical Service

The estimated electricity demand for the Project is approximately 18,000 kilowatt-hours. NSTAR owns and operates the electric facilities in the vicinity of the Project Site. NSTAR record plans indicate underground power facilities along Brookline Avenue and Park Drive along the frontage of the Project Site. The existing electrical service and connections will be expanded, modified and/or relocated as determined to be necessary in accordance with NSTAR's standards.

Telephone

Verizon owns and operates the telephone facilities and services in the vicinity of the Project Site. Verizon record plans indicate that there is a lateral serving the site extending from a manhole in Brookline Avenue. Given the existing infrastructure, telephone for the Project Site is anticipated to be provided from Brookline Avenue. The configuration of the proposed service will be developed with Verizon as the project design progresses.

Telecommunications

Comcast owns and operates the telecommunications facilities and services in the vicinity of the Project Site. Comcast record plans indicate that cable is in Brookline Avenue and Park Drive. Telecommunications for the Project Site could be provided from Brookline Avenue and/or Boylston Street. The configuration of the proposed service will be developed with Comcast as the project design progresses.

■

Protection of Utilities

Existing public and private infrastructure located within the public right-of-way will be protected during construction. The installation of proposed utilities within the public way will be in accordance with BWSC, Boston Public Works Department, the Dig-Safe Program, and governing utility company requirements. All necessary permits will be obtained before the commencement of work. Specific methods for constructing proposed utilities where they are near to, or connect with, existing water, sewer, and drain facilities will be reviewed by the BWSC as part of its Site Plan Review process.

7

Historic Resources

Introduction

This section identifies and describes historic resources in the vicinity of the Project Site and evaluates potential impacts to historic resources as a result of the Landmark Center Redevelopment Project. Figure 7.1 shows the location of these resources as well as other historic resources in the general project area.

The Project Site includes the Sears, Roebuck & Company Mail Order House, which was designated a Boston Landmark Building in 1989. The Sears Building was listed on the National Register of Historic Places in 1980. The south (Park Drive) boundary of the property fronts onto Olmsted's Emerald Necklace where the Muddy River flows through the west Fens. The river is currently being exposed and the parkland restored in the former Sears Parking lot, across Park Drive from the Project Site. The Emerald Necklace is also a designated Boston Landmark and is listed on the National Register of Historic Places.

Fenway Park is a short distance up Boylston Street from the Landmark Center; and the Isabella Stewart Gardner Museum is located a similar distance way on the Fenway. Both are Boston Landmarks and listed on the National Register.

The Project is designed to preserve and enhance the historic Sears, Roebuck & Company Building. Some of the structures built on the north side of the building in the 1990s will be removed, most notably the parking structures. In the new development, the parking will be below grade. The ground floor of the historic Sears Building and the new construction will have significantly increased retail space in the new development. Residential units will be located in the new multi-story buildings located at the north and east sides of the property. The upper floors of the historic building will retain their current office use.

The Project is being designed to invigorate the historic building by sensitively integrating it with the new construction. Modifications to the interior design of the historic building will allow people to more easily and logically pass through the building, activating its interior spaces. Its connection to the Fenway MBTA station will also be enhanced so that people leaving the station will more readily pass through rather than walk around the building.

Proposed and on-going work includes comprehensive repairs to the exterior envelope of the historic Sears Building. This work includes repointing and masonry repairs that will assure its long-term preservation.

Summary of Key Findings

The key findings related to historic and cultural resources include:

- The Project Site includes the former Sears, Roebuck & Company Mail Order House, which is a designated Boston Landmark.
- The Project Site adjoins, across Park Drive, the Emerald Necklace, which is a designated Boston Landmark.
- Fenway Park and the Isabella Stewart Gardner Museum, also Boston Landmarks, are within ¼-mile of the Project Site.
- While the Project will involve the removal of modern buildings built in the 1960s and 1990s and construction of new buildings around the historic Sears building, it will maintain the integrity of the exterior of the existing historic structure.
- The Project will be designed to enhance the historic Sears Building as it will redesign the interior of the building to improve passage through the building and will improve the relationship of the historic building to the Fenway MBTA stop.
- Proponent has commenced a $10 million restoration of the historic Sears building façade.

Existing On-Site Structures

This section describes the existing buildings on the Project Site. Refer to photographs of the Project Site and surrounding properties in Figure 7.2.

Sears Roebuck & Company Mail Order Store (Landmark Center)

The Sears Roebuck & Company Mail Order House was designed in the Art Moderne style by George C. Nimmons of the firm Nimmons Carr and Wright Architects, and built in 1928-30. It is an eight-story building, with a twelve-story center tower, constructed of buff colored brick with limestone trim. The full height limestone piers give a vertically to the design of the building and the curvilinear patterns carved in the limestone characterize its Art Moderne ornamentation.

The Sears Roebuck Building is one of the few Art Moderne buildings in Boston and is a designated Boston Landmark. All alterations to the building and the Project Site must be reviewed and approved by the Boston Landmarks Commission (BLC). The building is also individually listed on the National Register of Historic Places which will require 106 Review by the Massachusetts Historical Commission.

Existing Historic Resources within the Vicinity of the Project

This section describes the existing historic buildings and districts within ¼-mile of the Project Site, as identified on Figure 7.1.

■

Emerald Necklace – Olmsted Park System

The Emerald Necklace, designed by Frederick Law Olmsted, Sr., is a 1,100 acre chain of five parks connected by parkways, waterways and open spaces. It extends from the Back Bay Fens to Franklin Park. The Project Site is where the Muddy River enters the Back Bay Fens. For years the Muddy River, where it enters the Fens has been covered over - first by the paved Sears parking lot and more recently by a grass covered plot of land. The River and its surrounding parkland are currently being restored.

The Emerald Necklace is a Boston Landmark and the BLC will closely consider the Project's potential impact on this resource. The Boston Parks Department may also review the Project because it borders on the Emerald Necklace.

Fenway Park – 24 Yawkey Way

Fenway Park, home of the Boston Red Sox, was designed by James McLaughlin and built in 1912. It is a brick and concrete structure with an asymmetrical playing field. The exterior walls of the building are constructed with traditional red brick, while the interior of the park – seats, outfield wall (Green Monster), dugouts, and box seat enclosures are all painted green.

Fenway Park is a Boston Landmark and the BLC will closely consider the Project's potential impact on this resource.

■

Isabella Stewart Gardner Museum

The Isabella Stewart Gardner Museum is an iconic historic building, designed by Willard T. Sears and built in 1903. Its design is based on a Venetian palace and its interior spaces integrate architectural fragments that were collected from Europe by Mrs. Gardner. The Museum houses Mrs. Gardner's remarkable art collection.

The Gardner Museum is one of the most important historic buildings in the Fenway.

■

Other Historic Buildings

There are a number of other historic buildings in the neighborhood around the Landmark Center. There are scattered institutional buildings and relatively intact late 19th and early 20th century residential buildings. The residential buildings are grouped at Audubon Circle and along Park Drive. The historic institutional buildings are primarily academic and religious buildings – the Main Building at Emmanuel College, 400 The Fenway; the Winsor School Building, 103 Pilgrim Road; William McKinley Preparatory School, 85 Peterborough Street; and the Seventh Day Adventists Church at 105 Jersey Street.

Existing Archaeological Resources

Given the extensive and dense urban development that has occurred in the project area over many years, it is unlikely that the Project Site would yield any significant archaeological resources. Extensive work on the Project Site in the 1990s would likely have revealed any archaeological resources that might have existed on-site.

Project Impacts to Historic Resources

■

Design Concept

The design of the new buildings in the Landmark Center Redevelopment Project responds to the Standards & Criteria of the BLC's Landmark designation for the Sear's Building property/protection area. Those standards and criteria for the protection area of the Sear's parcel state:

> *The general intent is to insure that the Sears Block remains as a prominent, free-standing structure on the parcel. New construction should not overpower the structure, diminish its stature or significantly alter its appearance.*

Two other criteria—land coverage and building height and massing—also relate to new construction on the Project Site, as follows:

1. **Land Coverage.** The character of the Project Site and surrounding area is urban. Therefore, the Project Site may accommodate additional structures. Placement and massing of new construction will be reviewed by the Commission.
2. **Building Height and Massing.** New construction should not diminish the prominence of the Sears tower. The cornice line of the Sears block should be maintained along its principal elevations which face Park Drive and Brookline Avenue. Setbacks will be considered.

The new construction on the Project Site is located along the north and east boundaries of the property. The land on which the new buildings will be erected is either currently open/undeveloped or occupied by modern buildings majority of which is a parking structure that will be demolished. The placement of the new buildings preserves the Park Drive and Brookline Avenue elevations of the building.

The heights of the new buildings that adjoin the historic Sears Building are purposely low. At roughly 45 feet, the elevations of the historic building remain exposed. Their height also allows the new towers to read as separate buildings from most perspectives.

The placement and function of the new buildings allows the historic Sears building to remain the prominent building on the Project Site. The Sear's Building presence on Park Drive will be enhanced by the road and park restoration that is in progress. New construction at the intersection of Boylston Street and Brookline Avenue will also help to integrate the historic building into a more populated and dynamic urban streetscape. Views toward the building that will be affected by the new construction are the secondary elevations.

Urban Design and Streetscape

The only street where the new buildings will be close enough to affect the streetscape directly is on Park Drive at the north boundary of the Project Site. This is also where the Project Site joins the Fenway MBTA stop. In order to blend the new building with the historic building, the height of the new structure at the street is roughly 45 feet. Between this structure and the historic Sears building, there is an open landscaped space that preserves the return of the north wall of the historic building. Surface parking in the front of the existing building will be reduced and ultimately eliminated so that this open space can be expanded along Park Drive greatly improving the streetscape along Park Drive (Figure 3.7a).

In views from the other streetscapes, the new buildings read as independent structures within the texture of the urban neighborhood. They are similar in size and scale to the buildings along Brookline Avenue and Boylston Street.

Demolition of existing parking garage and some retail will clear the way for construction of new below-grade parking and a new public plaza fronting on Brookline Avenue and Fullerton Street (Figure 3.7b). Fullerton Street will be transformed from a service access road to a true urban streetscape with new public open space and active uses (i.e., retail and residential) along its length. This streetscape will be enhanced by district-wide treatments, including signage, street furniture, lighting and landscaping. Generous sidewalk dimensions and character are proposed throughout the Project Site.

Shadow Impacts

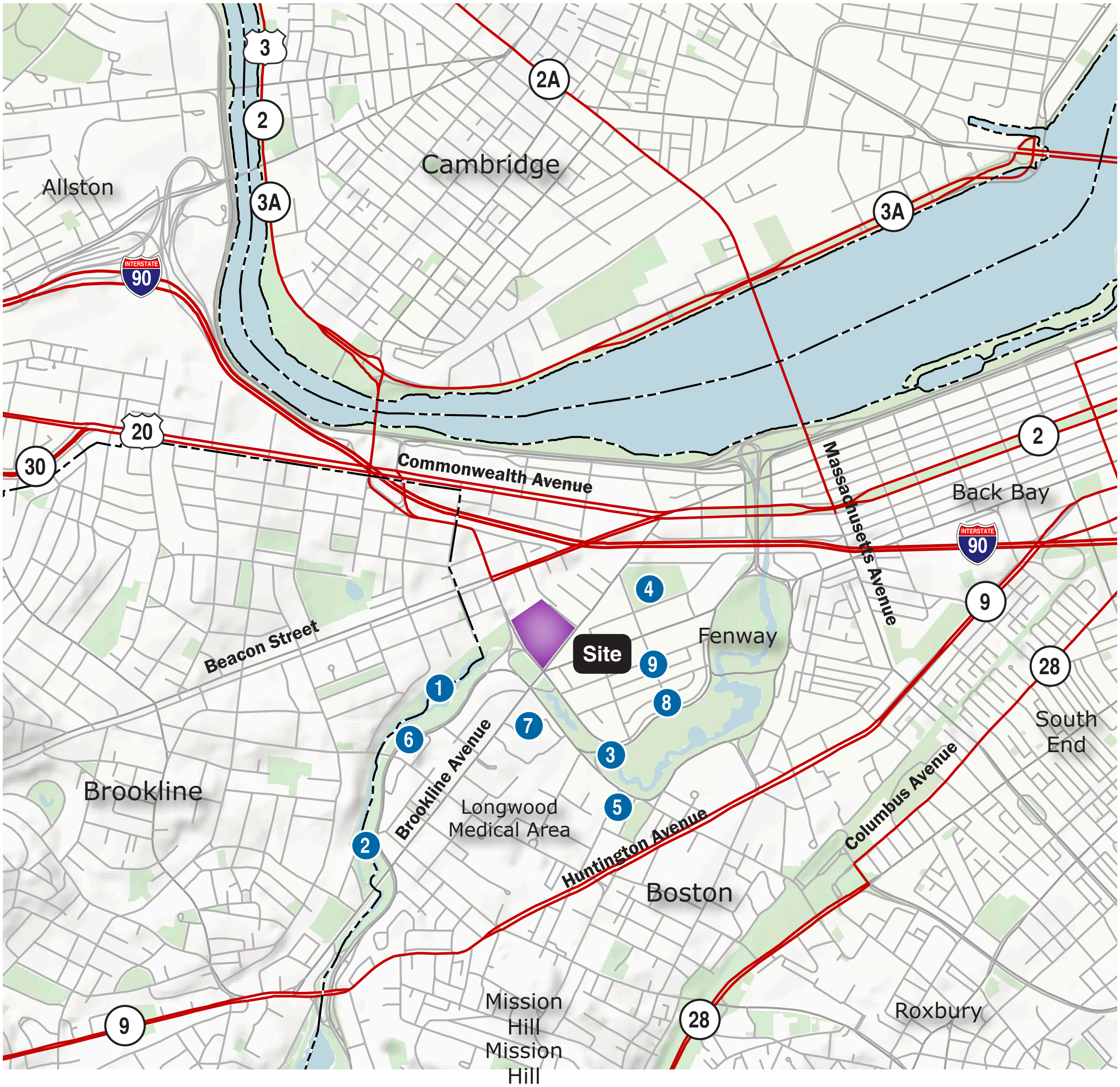
The shadow impacts of the new buildings are based on the Architect's drawings dated September 16, 2013. The shadow studies show the "Net New Shadow at Street Level" at the four seasons of the year – March 21, June 21, September 21 and December 21 (Figures 5.2a-5.d). The shadows are shown at four times on these days: 9:00am, 12:00pm, 3:00pm and 6:00pm.

Since all of the proposed new construction for the Project Site is located at its perimeter, on the north and west sides of the historic building, there are no new shadow impacts on the Sears Roebuck Building.

View Impacts

The view impacts of the new development are shown on the Architect's drawings dated September 16, 2013 (Figures 3.4a-3.4d). These elevation drawings of the historic Sears Roebuck Building show its relationship to the new buildings. The drawings are as follows:

- **Park Drive Elevation** (Figure 3.4a): The view of the historic building from Park Drive is little changed by the construction of the new buildings. The new buildings are set back from the historic building so that they read as independent buildings within the urban skyline.
- **Brookline Avenue Elevation** (Figure 3.4b): Like from Park Drive, the new buildings have very little impact on the view of the historic Sears Roebuck Building from Brookline Avenue. The full elevation of the historic building remains exposed and the new buildings are set back so that they read as independent buildings in the urban skyline.
- **Fullerton Street Elevation** (Figure 3.4c): The new construction, since it is located on the north and west sides of the property, changes the rear view of the historic Sears Roebuck Building from Fullerton Street. With the exception of a small portion of the south side of the main building, the Sears Roebuck Building is no longer visible from Fullerton Street. The new design transforms Fullerton Street from a non-descript parking garage to an urban street with commercial offerings.
- **MBTA Right of Way Elevation** (Figure 3.4d): The new construction that is located along the north property boundary blocks some of the view of the rear portion of the historic Sears Roebuck Building. The tower and the Park Drive side of the building retain their unobstructed views.



1. Emerald Necklace - The Riverway
2. Emerald Necklace - The Riverway at Pilgrim Road
3. Emerald Necklace - West Fens, under construction
4. Fenway Park
5. Isabella Stewart Gardner Museum
6. The Winsor School, 103 Pilgrim Road
7. Emmanuel College Main Building, 400 The Fenway
8. Seventh Day Adventist Church, 105 Jersey St
9. William McKinley Preparatory School, 85 Peterborough Street

\\vhb\proj\Boston\11615.00\graphics\FIGURES\Chapter7-let.indd p1 07/31/13

0 1000 2000 Feet

Figure 7.1
Location Map of Historic Buildings within 1/4-Mile

Figure 1. Emerald Necklace - The Riverway

Figure 2. Emerald Necklace - The Riverway at Pilgrim Road

Figure 3. Emerald Necklace - West Fens, under construction

Figure 4. Fenway Park

\\vhb\proj\Boston\11615.00\graphics\FIGURES\Chapter7-let.indd p3 07/31/13

Figure 5. Isabella Stewart Gardner Museum

Figure 6. The Winsor School, 103 Pilgrim Road

\\vhb\proj\Boston\11615.00\graphics\FIGURES\Chapter7-let.indd p4 07/31/13

Figure 7. Emmanuel College Main Building, 400 The Fenway

Figure 8. Seventh Day Adventist Church, 105 Jersey Street

Figure 9. William McKinley Preparatory School, 85 Peterborough Street

\\vhb\proj\Boston\11615.00\graphics\FIGURES\Chapter7-let.indd p7 07/31/13

Figure 7.2
Location Map of Site Photos

Figure 1. View from 132 Riverway looking Northeast

Figure 2. View from the entrance to the Muddy River on the Riverway looking east

\\vhb\proj\Boston\11615.00\graphics\FIGURES\Chapter7-let.indd p8 07/31/13

Figure 3. View from the bridge over the Fenway T Stop

Figure 4. View from the stairwell leading to the Fenway T Stop

Figure 5. View from the Fenway T Stop

Figure 6. View of north corner of site, looking southeast

Figure 7. View from the corner of Miner Street and Fullerton Street looking northwest

Figure 8. View from the corner of Miner Street and Fullerton Street looking southeast

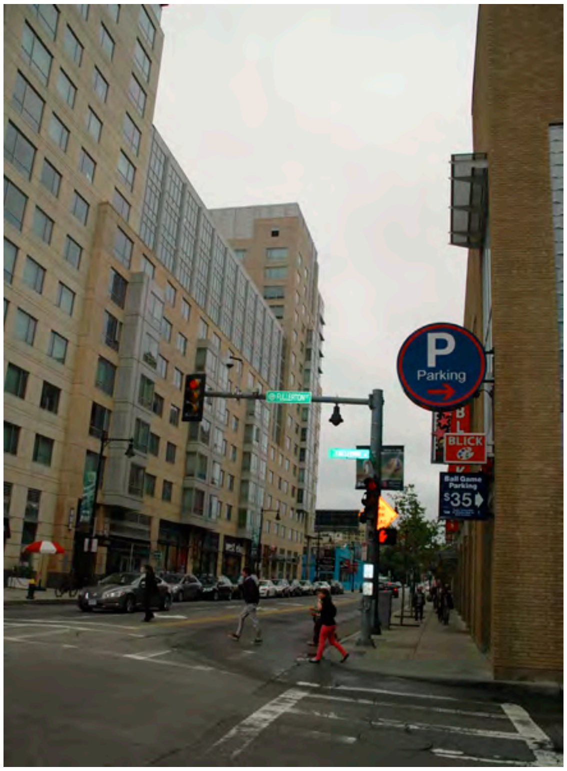


Figure 9. View from the corner of Fullerton Street and Brookline Avenue looking southwest

Figure 10. View from the corner of Fullerton Street and Brookline Avenue looking northeast

\\vhb\proj\Boston\11615.00\graphics\FIGURES\Chapter7-let.indd p12 07/31/13

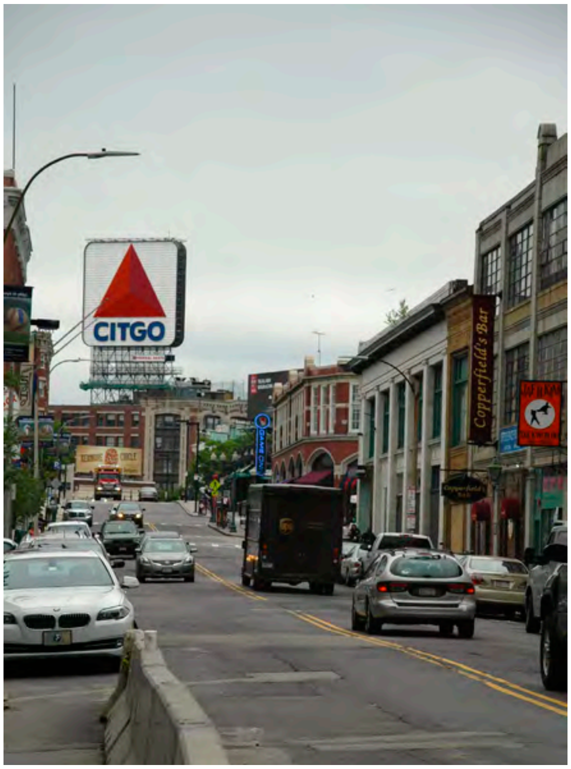


Figure 11. View from the corner of Overland Street and Brookline Avenue looking northeast

Figure 12. View from the 178 Brookline Avenue looking northeast

Figure 13. View from 186 Brookline Avenue, looking southwest

Figure 14. View from 203 Brookline Avenue, looking southwest

Figure 15. View from the corner Brookline Avenue and Park Drive facing northwest

Figure 16. View of Landmark Center from the corner of Brookline Avenue and Park Drive

Figure 17. View from the corner Brookline Avenue and Park Drive facing northwest

\\vhb\proj\Boston\11615.00\graphics\FIGURES\Chapter7-let.indd p16 07/31/13

8
Project Certification

This expanded Project Notification Form has been submitted to the Boston Redevelopment Authority, as required by Article 80 of the Zoning Code, on the 4th of October, 2013 by:

On behalf of Proponent
Fenway Enterprises LLC
By S&A Fenway Enterprises LLC, its manager

By: ______________________

Steven B. Samuels
Manager

Preparer
Vanasse Hangen Brustlin, Inc.

____

Lauren DeVoe, AICP, LEED AP BD+C
Senior Environmental Planner

Appendix A
Letter of Intent

SAMUELS & ASSOCIATES

August 8, 2013

Peter Meade, Director
Boston Redevelopment Authority
Boston City Hall, 9th Floor
Boston, MA 02201

Re: Landmark Center; Letter of Intent to File Project Notification Form

Dear Mr. Meade:

On behalf of Landmark Center Venture LLC, Fenway Enterprises LLC is pleased to submit this Letter of Intent to file a Project Notification Form for the redevelopment of a portion of the Landmark Center located at 201 Brookline Avenue, in accordance with Mayor Menino's Executive Order dated October 10, 2000, as amended April 3, 2001, relative to the provision of mitigation by development projects in Boston subject to Large Project Review under the Boston Zoning Code.

The proposed project consists of the demolition of the existing garage and the development of a new mixed-use project, integrated with the current building, and anticipated to include up to: 550 residential units, 110,000 square feet of new retail use, 75,000 square feet of grocery use, 15,000 square feet of new office use and accessory parking. The project will require Large Project Review and certain deviations from the Boston Zoning Code pursuant to M.G.L. 121A.

Under the Mayor's Executive Order, the Authority is to submit to the Mayor a recommendation for the appointment of an Impact Advisory Group to advise the Authority with respect to mitigation, to be appointed by the Mayor prior to the submission of the Project Notification Form.

We are ready to move forward with the Article 80 review process by filing a Project Notification Form, and look forward to working with the Authority, the IAG and the community in the review of this project.

If you have any questions or if any additional information would be helpful, please do not hesitate to contact me.

Sincerely,

Fenway Enterprises LLC
By S&A Fenway Enterprises LLC

By: ______________________
Steven B. Samuels

cc: Mr. Kairos Shen
Mr. James Tierney
Mr. Jonathan Greeley
Mr. John Fitzgerald

Appendix B
Transportation Supporting Documentation

- Observed Traffic Volume Data
- Capacity Analysis
  - 2013 Existing Conditions
  - 2018 No Build Conditions
  - 2018 Build Conditions
- Detailed Level of Service Tables

Observed Traffic Volume Data

PRECISION DATA INDUSTRIES, LLC
P.O. Box 301 Berlin, MA 01503
Office: 508.481.3999 Fax: 508.545.1234
Email: datarequests@pdillc.com

N/S: Kilmarnock Street
E/W: Boylston Street
City, State: Boston, MA
Client: Jacobs/ A. Fernandes

File Name : 112476 G
Site Code : 407
Start Date : 4/14/2011
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	Kilmarnock Street From North			Boylston Street From East				Kilmarnock Street From South			Boylston Street From West				
Start Time	Right	Thru	Left	Right	Thru	Left	U-Turn	Right	Thru	Left	Right	Thru	Left	U-Turn	Int. Total
07:00 AM	8	1	7	15	247	7	0	13	1	2	9	239	2	0	551
07:15 AM	8	1	14	18	257	4	0	11	2	4	5	289	7	0	620
07:30 AM	6	4	11	18	261	4	0	11	2	5	7	288	12	0	629
07:45 AM	9	4	23	24	234	4	0	13	1	5	9	229	8	0	563
Total	31	10	55	75	999	19	0	48	6	16	30	1045	29	0	2363
08:00 AM	8	0	12	16	225	5	0	11	4	3	6	291	8	0	589
08:15 AM	5	5	19	22	259	0	0	13	4	5	10	240	11	0	593
08:30 AM	7	4	9	27	270	1	0	13	4	3	6	247	7	0	598
08:45 AM	10	1	22	18	260	1	0	8	4	3	11	209	4	0	551
Total	30	10	62	83	1014	7	0	45	16	14	33	987	30	0	2331
09:00 AM	8	7	17	18	194	3	0	18	0	1	7	234	5	0	512
09:15 AM	7	2	24	11	204	6	0	16	1	4	6	222	9	0	512
09:30 AM	5	8	17	12	253	3	0	15	3	9	5	241	4	0	575
09:45 AM	4	5	14	12	262	3	0	7	1	2	10	234	4	0	558
Total	24	22	72	53	913	15	0	56	5	16	28	931	22	0	2157
10:00 AM	4	5	20	12	174	4	0	5	2	4	6	228	6	0	470
10:15 AM	12	5	14	5	185	4	0	9	2	2	10	228	5	0	481
10:30 AM	12	4	15	4	201	2	0	8	1	3	15	198	7	0	470
10:45 AM	12	2	14	8	201	6	0	11	2	8	11	251	4	1	531
Total	40	16	63	29	761	16	0	33	7	17	42	905	22	1	1952
11:00 AM	6	3	19	11	206	2	0	8	3	12	8	210	2	0	490
11:15 AM	9	2	16	10	220	0	1	11	2	15	5	245	5	0	541
11:30 AM	13	0	20	18	211	0	0	10	1	4	0	232	1	0	510
11:45 AM	11	2	24	8	191	3	0	10	3	5	0	232	7	0	496
Total	39	7	79	47	828	5	1	39	9	36	13	919	15	0	2037
12:00 PM	7	0	19	7	216	2	1	6	2	3	3	258	3	0	527
12:15 PM	11	0	26	5	223	3	0	12	3	4	0	247	6	0	540
12:30 PM	13	0	19	8	197	0	0	4	4	4	0	249	10	0	508
12:45 PM	12	0	15	21	145	0	0	5	2	3	0	269	9	0	481
Total	43	0	79	41	781	5	1	27	11	14	3	1023	28	0	2056
01:00 PM	11	3	25	5	191	1	0	12	4	4	0	220	0	0	476
01:15 PM	9	1	26	7	180	3	0	5	0	1	1	258	4	1	496
01:30 PM	10	6	28	6	227	4	0	10	2	4	0	245	9	0	551
01:45 PM	9	5	29	12	198	3	1	11	2	7	0	238	7	0	522
Total	39	15	108	30	796	11	1	38	8	16	1	961	20	1	2045
02:00 PM	4	1	26	14	191	6	0	12	7	5	11	231	1	0	509
02:15 PM	15	6	29	13	186	6	0	9	6	8	10	252	6	0	546
02:30 PM	10	6	23	16	199	5	0	10	4	7	9	245	4	0	538
02:45 PM	8	3	17	12	195	6	0	18	7	3	15	285	4	0	573
Total	37	16	95	55	771	23	0	49	24	23	45	1013	15	0	2166
03:00 PM	6	8	26	20	211	6	0	15	3	2	15	228	3	0	543
03:15 PM	9	7	17	20	174	3	0	11	6	5	10	226	5	0	493
03:30 PM	8	7	21	11	191	7	0	11	0	5	12	239	9	0	521
03:45 PM	11	3	28	19	217	5	1	13	4	5	16	288	4	0	614
Total	34	25	92	70	793	21	1	50	13	17	53	981	21	0	2171
04:00 PM	13	7	25	6	218	3	0	15	4	7	8	256	3	0	565
04:15 PM	16	5	23	11	235	4	0	11	4	6	22	270	4	0	611

PRECISION DATA INDUSTRIES, LLC
P.O. Box 301 Berlin, MA 01503
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Email: datarequests@pdillc.com

N/S: Kilmarnock Street
E/W: Boylston Street
City, State: Boston, MA
Client: Jacobs/ A. Fernandes

File Name : 112476 G
Site Code : 407
Start Date : 4/14/2011
Page No : 2

Groups Printed- Cars - Heavy Vehicles

	Kilmarnock Street From North			Boylston Street From East				Kilmarnock Street From South			Boylston Street From West				
Start Time	Right	Thru	Left	Right	Thru	Left	U-Turn	Right	Thru	Left	Right	Thru	Left	U-Turn	Int. Total
04:30 PM	21	4	34	6	230	8	0	6	5	8	13	264	5	0	604
04:45 PM	25	7	34	3	212	11	0	10	6	8	18	278	7	0	619
Total	75	23	116	26	895	26	0	42	19	29	61	1068	19	0	2399
05:00 PM	26	8	36	11	236	16	0	8	1	6	10	261	3	0	622
05:15 PM	20	2	40	5	223	10	0	17	4	3	17	272	4	0	617
05:30 PM	14	2	30	7	217	6	1	17	2	5	17	282	2	0	602
05:45 PM	13	6	39	9	202	5	0	17	4	4	10	265	4	0	578
Total	73	18	145	32	878	37	1	59	11	18	54	1080	13	0	2419
Grand Total	465	162	966	541	9429	185	5	486	129	216	363	10913	234	2	24096
Apprch %	29.2	10.2	60.6	5.3	92.8	1.8	0	58.5	15.5	26	3.2	94.8	2	0	
Total %	1.9	0.7	4	2.2	39.1	0.8	0	2	0.5	0.9	1.5	45.3	1	0	
Cars	444	151	911	534	9248	153	5	465	116	206	340	10671	212	2	23458
% Cars	95.5	93.2	94.3	98.7	98.1	82.7	100	95.7	89.9	95.4	93.7	97.8	90.6	100	97.4
Heavy Vehicles	21	11	55	7	181	32	0	21	13	10	23	242	22	0	638
% Heavy Vehicles	4.5	6.8	5.7	1.3	1.9	17.3	0	4.3	10.1	4.6	6.3	2.2	9.4	0	2.6

	Kilmarnock Street From North				Boylston Street From East					Kilmarnock Street From South				Boylston Street From West					
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 07:15 AM																			
07:15 AM	8	1	14	23	18	257	4	0	279	11	2	4	17	5	289	7	0	301	620
07:30 AM	6	**4**	11	21	18	**261**	4	0	**283**	11	2	**5**	18	7	288	**12**	0	**307**	**629**
07:45 AM	**9**	4	**23**	**36**	**24**	234	4	0	262	**13**	1	5	**19**	**9**	229	8	0	246	563
08:00 AM	8	0	12	20	16	225	**5**	0	246	11	4	3	18	6	**291**	8	0	305	589
Total Volume	31	9	60	100	76	977	17	0	1070	46	9	17	72	27	1097	35	0	1159	2401
% App. Total	31	9	60		7.1	91.3	1.6	0		63.9	12.5	23.6		2.3	94.7	3	0		
PHF	.861	.563	.652	.694	.792	.936	.850	.000	.945	.885	.563	.850	.947	.750	.942	.729	.000	.944	.954
Cars	30	8	56	94	76	950	12	0	1038	44	9	16	69	25	1076	34	0	1135	2336
% Cars	96.8	88.9	93.3	94.0	100	97.2	70.6	0	97.0	95.7	100	94.1	95.8	92.6	98.1	97.1	0	97.9	97.3
Heavy Vehicles	1	1	4	6	0	27	5	0	32	2	0	1	3	2	21	1	0	24	65
% Heavy Vehicles	3.2	11.1	6.7	6.0	0	2.8	29.4	0	3.0	4.3	0	5.9	4.2	7.4	1.9	2.9	0	2.1	2.7
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 11:15 AM																			
11:15 AM	9	**2**	16	27	10	**220**	0	**1**	**231**	**11**	2	**15**	**28**	**5**	245	5	0	255	**541**
11:30 AM	**13**	0	20	33	**18**	211	0	0	229	10	1	4	15	0	232	1	0	233	510
11:45 AM	11	2	**24**	**37**	8	191	**3**	0	202	10	**3**	5	18	0	232	**7**	0	239	496
12:00 PM	7	0	19	26	7	216	2	1	226	6	2	3	11	3	**258**	3	0	**264**	527
Total Volume	40	4	79	123	43	838	5	2	888	37	8	27	72	8	967	16	0	991	2074
% App. Total	32.5	3.3	64.2		4.8	94.4	0.6	0.2		51.4	11.1	37.5		0.8	97.6	1.6	0		
PHF	.769	.500	.823	.831	.597	.952	.417	.500	.961	.841	.667	.450	.643	.400	.937	.571	.000	.938	.958
Cars	38	3	69	110	43	819	5	2	869	36	6	27	69	8	937	13	0	958	2006
% Cars	95.0	75.0	87.3	89.4	100	97.7	100	100	97.9	97.3	75.0	100	95.8	100	96.9	81.3	0	96.7	96.7
Heavy Vehicles	2	1	10	13	0	19	0	0	19	1	2	0	3	0	30	3	0	33	68
% Heavy Vehicles	5.0	25.0	12.7	10.6	0	2.3	0	0	2.1	2.7	25.0	0	4.2	0	3.1	18.8	0	3.3	3.3

PRECISION DATA INDUSTRIES, LLC

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Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 04:30 PM																			
04:30 PM	21	4	34	59	6	230	8	0	244	6	5	8	19	13	264	5	0	282	604
04:45 PM	25	7	34	66	3	212	11	0	226	10	6	8	24	18	278	7	0	303	619
05:00 PM	26	8	36	70	11	236	16	0	263	8	1	6	15	10	261	3	0	274	622
05:15 PM	20	2	40	62	5	223	10	0	238	17	4	3	24	17	272	4	0	293	617
Total Volume	92	21	144	257	25	901	45	0	971	41	16	25	82	58	1075	19	0	1152	2462
% App. Total	35.8	8.2	56		2.6	92.8	4.6	0		50	19.5	30.5		5	93.3	1.6	0		
PHF	.885	.656	.900	.918	.568	.954	.703	.000	.923	.603	.667	.781	.854	.806	.967	.679	.000	.950	.990
Cars	91	21	137	249	25	888	41	0	954	40	14	24	78	57	1056	19	0	1132	2413
% Cars	98.9	100	95.1	96.9	100	98.6	91.1	0	98.2	97.6	87.5	96.0	95.1	98.3	98.2	100	0	98.3	98.0
Heavy Vehicles	1	0	7	8	0	13	4	0	17	1	2	1	4	1	19	0	0	20	49
% Heavy Vehicles	1.1	0	4.9	3.1	0	1.4	8.9	0	1.8	2.4	12.5	4.0	4.9	1.7	1.8	0	0	1.7	2.0

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	Kilmarnock Street From North			Boylston Street From East				Kilmarnock Street From South			Boylston Street From West				
Start Time	Right	Thru	Left	Right	Thru	Left	U-Turn	Right	Thru	Left	Right	Thru	Left	U-Turn	Int. Total
07:00 AM	7	1	7	15	245	6	0	11	1	2	8	232	2	0	537
07:15 AM	8	1	13	18	251	3	0	11	2	3	4	285	7	0	606
07:30 AM	6	4	9	18	253	3	0	11	2	5	7	284	12	0	614
07:45 AM	9	3	22	24	229	2	0	12	1	5	9	223	7	0	546
Total	30	9	51	75	978	14	0	45	6	15	28	1024	28	0	2303
08:00 AM	7	0	12	16	217	4	0	10	4	3	5	284	8	0	570
08:15 AM	5	4	19	22	255	0	0	13	4	5	10	234	9	0	580
08:30 AM	7	4	9	27	264	0	0	13	3	3	5	240	6	0	581
08:45 AM	9	1	19	18	251	0	0	8	4	3	6	207	3	0	529
Total	28	9	59	83	987	4	0	44	15	14	26	965	26	0	2260
09:00 AM	5	7	16	17	187	2	0	17	0	1	7	224	4	0	487
09:15 AM	7	2	24	11	201	5	0	16	1	4	5	215	8	0	499
09:30 AM	5	7	15	12	247	3	0	13	3	9	4	238	4	0	560
09:45 AM	4	5	14	12	258	2	0	5	1	2	10	226	4	0	543
Total	21	21	69	52	893	12	0	51	5	16	26	903	20	0	2089
10:00 AM	4	4	16	12	169	4	0	5	2	3	6	218	5	0	448
10:15 AM	10	5	13	5	183	4	0	9	2	2	7	223	3	0	466
10:30 AM	10	4	14	4	198	1	0	7	1	3	15	191	6	0	454
10:45 AM	11	2	14	8	196	5	0	10	2	7	11	244	3	1	514
Total	35	15	57	29	746	14	0	31	7	15	39	876	17	1	1882
11:00 AM	6	3	17	11	200	1	0	8	3	12	8	205	2	0	476
11:15 AM	8	2	13	10	214	0	1	11	2	15	5	238	4	0	523
11:30 AM	13	0	15	18	207	0	0	9	1	4	0	223	0	0	490
11:45 AM	11	1	23	8	186	3	0	10	1	5	0	228	6	0	482
Total	38	6	68	47	807	4	1	38	7	36	13	894	12	0	1971
12:00 PM	6	0	18	7	212	2	1	6	2	3	3	248	3	0	511
12:15 PM	9	0	26	5	217	2	0	12	3	4	0	243	6	0	527
12:30 PM	12	0	16	8	191	0	0	4	4	4	0	240	9	0	488
12:45 PM	12	0	14	21	142	0	0	5	2	2	0	268	8	0	474
Total	39	0	74	41	762	4	1	27	11	13	3	999	26	0	2000
01:00 PM	10	3	25	5	186	1	0	11	4	4	0	216	0	0	465
01:15 PM	8	1	22	7	179	3	0	5	0	1	1	253	3	1	484
01:30 PM	10	6	27	6	224	2	0	8	2	4	0	238	8	0	535
01:45 PM	9	4	28	12	194	3	1	10	2	7	0	234	6	0	510
Total	37	14	102	30	783	9	1	34	8	16	1	941	17	1	1994
02:00 PM	4	1	24	11	186	5	0	12	5	5	11	229	1	0	494
02:15 PM	15	6	28	13	184	5	0	9	6	6	10	248	5	0	535
02:30 PM	10	5	22	15	197	4	0	9	3	6	9	239	4	0	523
02:45 PM	8	3	14	12	192	5	0	18	6	2	14	279	4	0	557
Total	37	15	88	51	759	19	0	48	20	19	44	995	14	0	2109
03:00 PM	6	7	25	18	209	4	0	14	3	2	14	222	3	0	527
03:15 PM	9	7	17	20	173	3	0	10	5	4	9	221	5	0	483
03:30 PM	8	6	20	11	189	5	0	11	0	5	10	234	8	0	507
03:45 PM	11	3	28	19	212	5	1	12	3	5	14	285	4	0	602
Total	34	23	90	68	783	17	1	47	11	16	47	962	20	0	2119
04:00 PM	12	5	25	6	214	2	0	15	4	7	8	250	3	0	551
04:15 PM	16	5	23	11	235	3	0	11	3	6	21	264	4	0	602

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N/S: Kilmarnock Street
E/W: Boylston Street
City, State: Boston, MA
Client: Jacobs/ A. Fernandes

File Name : 112476 G
Site Code : 407
Start Date : 4/14/2011

Groups Printed- Cars

	Kilmarnock Street From North			Boylston Street From East				Kilmarnock Street From South			Boylston Street From West				
Start Time	Right	Thru	Left	Right	Thru	Left	U-Turn	Right	Thru	Left	Right	Thru	Left	U-Turn	Int. Total
04:30 PM	21	4	33	6	230	7	0	5	5	7	13	261	5	0	597
04:45 PM	25	7	33	3	204	11	0	10	5	8	18	273	7	0	604
Total	74	21	114	26	883	23	0	41	17	28	60	1048	19	0	2354
05:00 PM	26	8	33	11	233	14	0	8	1	6	10	254	3	0	607
05:15 PM	19	2	38	5	221	9	0	17	3	3	16	268	4	0	605
05:30 PM	13	2	30	7	214	6	1	17	2	5	17	280	2	0	596
05:45 PM	13	6	38	9	199	4	0	17	3	4	10	262	4	0	569
Total	71	18	139	32	867	33	1	59	9	18	53	1064	13	0	2377
Grand Total	444	151	911	534	9248	153	5	465	116	206	340	10671	212	2	23458
Apprch %	29.5	10	60.5	5.4	93	1.5	0.1	59.1	14.7	26.2	3	95.1	1.9	0	
Total %	1.9	0.6	3.9	2.3	39.4	0.7	0	2	0.5	0.9	1.4	45.5	0.9	0	

	Kilmarnock Street From North				Boylston Street From East					Kilmarnock Street From South				Boylston Street From West					
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 07:15 AM																			
07:15 AM	8	1	13	22	18	251	3	0	272	11	2	3	16	4	**285**	7	0	296	606
07:30 AM	6	**4**	9	19	18	**253**	3	0	**274**	11	2	**5**	**18**	7	284	**12**	0	**303**	**614**
07:45 AM	**9**	3	**22**	**34**	**24**	229	2	0	255	**12**	1	5	18	**9**	223	7	0	239	546
08:00 AM	7	0	12	19	16	217	**4**	0	237	10	**4**	3	17	5	284	8	0	297	570
Total Volume	30	8	56	94	76	950	12	0	1038	44	9	16	69	25	1076	34	0	1135	2336
% App. Total	31.9	8.5	59.6		7.3	91.5	1.2	0		63.8	13	23.2		2.2	94.8	3	0		
PHF	.833	.500	.636	.691	.792	.939	.750	.000	.947	.917	.563	.800	.958	.694	.944	.708	.000	.936	.951

Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1
Peak Hour for Entire Intersection Begins at 11:30 AM

Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
11:30 AM	**13**	0	15	28	**18**	207	0	0	**225**	9	1	4	14	0	223	0	0	223	490
11:45 AM	11	**1**	23	**35**	8	186	**3**	0	197	10	1	**5**	16	0	228	**6**	0	234	482
12:00 PM	6	0	18	24	7	212	2	**1**	222	6	2	3	11	**3**	**248**	3	0	**254**	511
12:15 PM	9	0	**26**	35	5	**217**	2	0	224	**12**	**3**	4	**19**	0	243	6	0	249	**527**
Total Volume	39	1	82	122	38	822	7	1	868	37	7	16	60	3	942	15	0	960	2010
% App. Total	32	0.8	67.2		4.4	94.7	0.8	0.1		61.7	11.7	26.7		0.3	98.1	1.6	0		
PHF	.750	.250	.788	.871	.528	.947	.583	.250	.964	.771	.583	.800	.789	.250	.950	.625	.000	.945	.954

Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Entire Intersection Begins at 04:30 PM

Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
04:30 PM	21	4	33	58	6	230	7	0	243	5	**5**	7	17	13	261	5	0	279	597
04:45 PM	25	7	33	65	3	204	11	0	218	10	5	**8**	**23**	**18**	**273**	**7**	0	**298**	604
05:00 PM	**26**	**8**	33	**67**	**11**	**233**	**14**	0	**258**	8	1	6	15	10	254	3	0	267	**607**
05:15 PM	19	2	**38**	59	5	221	9	0	235	**17**	3	3	23	16	268	4	0	288	605
Total Volume	91	21	137	249	25	888	41	0	954	40	14	24	78	57	1056	19	0	1132	2413
% App. Total	36.5	8.4	55		2.6	93.1	4.3	0		51.3	17.9	30.8		5	93.3	1.7	0		
PHF	.875	.656	.901	.929	.568	.953	.732	.000	.924	.588	.700	.750	.848	.792	.967	.679	.000	.950	.994

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N/S: Kilmarnock Street
E/W: Boylston Street
City, State: Boston, MA
Client: Jacobs/ A. Fernandes

File Name : 112476 G
Site Code : 407
Start Date : 4/14/2011

Groups Printed- Heavy Vehicles

	Kilmarnock Street From North			Boylston Street From East				Kilmarnock Street From South			Boylston Street From West				
Start Time	Right	Thru	Left	Right	Thru	Left	U-Turn	Right	Thru	Left	Right	Thru	Left	U-Turn	Int. Total
07:00 AM	1	0	0	0	2	1	0	2	0	0	1	7	0	0	14
07:15 AM	0	0	1	0	6	1	0	0	0	1	1	4	0	0	14
07:30 AM	0	0	2	0	8	1	0	0	0	0	0	4	0	0	15
07:45 AM	0	1	1	0	5	2	0	1	0	0	0	6	1	0	17
Total	1	1	4	0	21	5	0	3	0	1	2	21	1	0	60
08:00 AM	1	0	0	0	8	1	0	1	0	0	1	7	0	0	19
08:15 AM	0	1	0	0	4	0	0	0	0	0	0	6	2	0	13
08:30 AM	0	0	0	0	6	1	0	0	1	0	1	7	1	0	17
08:45 AM	1	0	3	0	9	1	0	0	0	0	5	2	1	0	22
Total	2	1	3	0	27	3	0	1	1	0	7	22	4	0	71
09:00 AM	3	0	1	1	7	1	0	1	0	0	0	10	1	0	25
09:15 AM	0	0	0	0	3	1	0	0	0	0	1	7	1	0	13
09:30 AM	0	1	2	0	6	0	0	2	0	0	1	3	0	0	15
09:45 AM	0	0	0	0	4	1	0	2	0	0	0	8	0	0	15
Total	3	1	3	1	20	3	0	5	0	0	2	28	2	0	68
10:00 AM	0	1	4	0	5	0	0	0	0	1	0	10	1	0	22
10:15 AM	2	0	1	0	2	0	0	0	0	0	3	5	2	0	15
10:30 AM	2	0	1	0	3	1	0	1	0	0	0	7	1	0	16
10:45 AM	1	0	0	0	5	1	0	1	0	1	0	7	1	0	17
Total	5	1	6	0	15	2	0	2	0	2	3	29	5	0	70
11:00 AM	0	0	2	0	6	1	0	0	0	0	0	5	0	0	14
11:15 AM	1	0	3	0	6	0	0	0	0	0	0	7	1	0	18
11:30 AM	0	0	5	0	4	0	0	1	0	0	0	9	1	0	20
11:45 AM	0	1	1	0	5	0	0	0	2	0	0	4	1	0	14
Total	1	1	11	0	21	1	0	1	2	0	0	25	3	0	66
12:00 PM	1	0	1	0	4	0	0	0	0	0	0	10	0	0	16
12:15 PM	2	0	0	0	6	1	0	0	0	0	0	4	0	0	13
12:30 PM	1	0	3	0	6	0	0	0	0	0	0	9	1	0	20
12:45 PM	0	0	1	0	3	0	0	0	0	1	0	1	1	0	7
Total	4	0	5	0	19	1	0	0	0	1	0	24	2	0	56
01:00 PM	1	0	0	0	5	0	0	1	0	0	0	4	0	0	11
01:15 PM	1	0	4	0	1	0	0	0	0	0	0	5	1	0	12
01:30 PM	0	0	1	0	3	2	0	2	0	0	0	7	1	0	16
01:45 PM	0	1	1	0	4	0	0	1	0	0	0	4	1	0	12
Total	2	1	6	0	13	2	0	4	0	0	0	20	3	0	51
02:00 PM	0	0	2	3	5	1	0	0	2	0	0	2	0	0	15
02:15 PM	0	0	1	0	2	1	0	0	0	2	0	4	1	0	11
02:30 PM	0	1	1	1	2	1	0	1	1	1	0	6	0	0	15
02:45 PM	0	0	3	0	3	1	0	0	1	1	1	6	0	0	16
Total	0	1	7	4	12	4	0	1	4	4	1	18	1	0	57
03:00 PM	0	1	1	2	2	2	0	1	0	0	1	6	0	0	16
03:15 PM	0	0	0	0	1	0	0	1	1	1	1	5	0	0	10
03:30 PM	0	1	1	0	2	2	0	0	0	0	2	5	1	0	14
03:45 PM	0	0	0	0	5	0	0	1	1	0	2	3	0	0	12
Total	0	2	2	2	10	4	0	3	2	1	6	19	1	0	52
04:00 PM	1	2	0	0	4	1	0	0	0	0	0	6	0	0	14
04:15 PM	0	0	0	0	0	1	0	0	1	0	1	6	0	0	9

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E/W: Boylston Street
City, State: Boston, MA
Client: Jacobs/ A. Fernandes

File Name : 112476 G
Site Code : 407
Start Date : 4/14/2011
Page No : 2

Groups Printed- Heavy Vehicles

	Kilmarnock Street From North			Boylston Street From East				Kilmarnock Street From South			Boylston Street From West				
Start Time	Right	Thru	Left	Right	Thru	Left	U-Turn	Right	Thru	Left	Right	Thru	Left	U-Turn	Int. Total
04:30 PM	0	0	1	0	0	1	0	1	0	1	0	3	0	0	7
04:45 PM	0	0	1	0	8	0	0	0	1	0	0	5	0	0	15
Total	1	2	2	0	12	3	0	1	2	1	1	20	0	0	45
05:00 PM	0	0	3	0	3	2	0	0	0	0	0	7	0	0	15
05:15 PM	1	0	2	0	2	1	0	0	1	0	1	4	0	0	12
05:30 PM	1	0	0	0	3	0	0	0	0	0	0	2	0	0	6
05:45 PM	0	0	1	0	3	1	0	0	1	0	0	3	0	0	9
Total	2	0	6	0	11	4	0	0	2	0	1	16	0	0	42
Grand Total	21	11	55	7	181	32	0	21	13	10	23	242	22	0	638
Apprch %	24.1	12.6	63.2	3.2	82.3	14.5	0	47.7	29.5	22.7	8	84.3	7.7	0	
Total %	3.3	1.7	8.6	1.1	28.4	5	0	3.3	2	1.6	3.6	37.9	3.4	0	

	Kilmarnock Street From North				Boylston Street From East					Kilmarnock Street From South				Boylston Street From West					
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 08:15 AM																			
08:15 AM	0	1	0	1	0	4	0	0	4	0	0	0	0	0	6	2	0	8	13
08:30 AM	0	0	0	0	0	6	1	0	7	0	1	0	1	1	7	1	0	9	17
08:45 AM	1	0	3	4	0	9	1	0	10	0	0	0	0	5	2	1	0	8	22
09:00 AM	3	0	1	4	1	7	1	0	9	1	0	0	1	0	10	1	0	11	25
Total Volume	4	1	4	9	1	26	3	0	30	1	1	0	2	6	25	5	0	36	77
% App. Total	44.4	11.1	44.4		3.3	86.7	10	0		50	50	0		16.7	69.4	13.9	0		
PHF	.333	.250	.333	.563	.250	.722	.750	.000	.750	.250	.250	.000	.500	.300	.625	.625	.000	.818	.770
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 10:00 AM																			
10:00 AM	0	1	4	5	0	5	0	0	5	0	0	1	1	0	10	1	0	11	22
10:15 AM	2	0	1	3	0	2	0	0	2	0	0	0	0	3	5	2	0	10	15
10:30 AM	2	0	1	3	0	3	1	0	4	1	0	0	1	0	7	1	0	8	16
10:45 AM	1	0	0	1	0	5	1	0	6	1	0	1	2	0	7	1	0	8	17
Total Volume	5	1	6	12	0	15	2	0	17	2	0	2	4	3	29	5	0	37	70
% App. Total	41.7	8.3	50		0	88.2	11.8	0		50	0	50		8.1	78.4	13.5	0		
PHF	.625	.250	.375	.600	.000	.750	.500	.000	.708	.500	.000	.500	.500	.250	.725	.625	.000	.841	.795
Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 02:15 PM																			
02:15 PM	0	0	1	1	0	2	1	0	3	0	0	2	2	0	4	1	0	5	11
02:30 PM	0	1	1	2	1	2	1	0	4	1	1	1	3	0	6	0	0	6	15
02:45 PM	0	0	3	3	0	3	1	0	4	0	1	1	2	1	6	0	0	7	16
03:00 PM	0	1	1	2	2	2	2	0	6	1	0	0	1	1	6	0	0	7	16
Total Volume	0	2	6	8	3	9	5	0	17	2	2	4	8	2	22	1	0	25	58
% App. Total	0	25	75		17.6	52.9	29.4	0		25	25	50		8	88	4	0		
PHF	.000	.500	.500	.667	.375	.750	.625	.000	.708	.500	.500	.500	.667	.500	.917	.250	.000	.893	.906

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City, State: Boston, MA
Client: Jacobs/ A. Fernandes

File Name : 112476 G
Site Code : 407
Start Date : 4/14/2011
Page No : 1

Groups Printed- Peds and Bicycles

	Kilmarnock Street From North				Boylston Street From East				Kilmarnock Street From South				Boylston Street From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
07:00 AM	0	0	0	0	0	3	0	8	0	0	0	5	0	0	0	7	23
07:15 AM	1	1	0	2	0	1	0	7	0	0	0	4	0	0	0	4	20
07:30 AM	0	0	0	4	0	0	0	5	0	0	0	14	0	0	1	7	31
07:45 AM	0	0	0	9	0	0	0	12	0	0	0	22	0	1	0	15	59
Total	1	1	0	15	0	4	0	32	0	0	0	45	0	1	1	33	133
08:00 AM	0	0	0	15	0	0	0	15	0	3	0	20	0	0	0	14	67
08:15 AM	0	1	0	3	0	1	0	11	1	0	0	10	0	2	0	13	42
08:30 AM	0	1	1	12	0	1	0	18	0	0	0	23	0	2	0	14	72
08:45 AM	0	0	0	19	0	0	0	30	0	2	0	27	0	5	0	9	92
Total	0	2	1	49	0	2	0	74	1	5	0	80	0	9	0	50	273
09:00 AM	0	0	1	7	0	0	0	14	1	1	0	16	0	1	0	18	59
09:15 AM	0	0	0	10	0	2	0	14	0	0	0	14	0	2	0	28	70
09:30 AM	0	1	0	17	0	0	0	16	0	0	1	26	0	3	0	12	76
09:45 AM	0	1	0	20	0	1	0	22	0	1	0	16	0	2	0	20	83
Total	0	2	1	54	0	3	0	66	1	2	1	72	0	8	0	78	288
10:00 AM	0	0	0	19	0	0	0	15	0	0	0	14	0	3	0	7	58
10:15 AM	0	2	0	9	0	0	1	8	0	0	0	21	0	1	0	17	59
10:30 AM	0	0	0	8	1	5	0	12	0	0	1	25	0	0	0	14	66
10:45 AM	0	0	0	19	0	1	0	20	0	0	0	22	0	3	0	21	86
Total	0	2	0	55	1	6	1	55	0	0	1	82	0	7	0	59	269
11:00 AM	0	0	0	12	0	0	0	11	0	0	0	20	0	1	0	16	60
11:15 AM	0	0	0	8	0	0	0	17	0	1	0	23	0	2	0	13	64
11:30 AM	0	0	0	22	1	0	0	38	0	0	0	25	0	0	0	18	104
11:45 AM	0	0	0	18	0	0	0	24	0	0	0	21	0	1	0	20	84
Total	0	0	0	60	1	0	0	90	0	1	0	89	0	4	0	67	312
12:00 PM	0	0	0	35	0	1	0	48	1	0	0	44	0	0	0	47	176
12:15 PM	0	0	0	25	0	2	0	22	0	0	0	51	0	4	1	51	156
12:30 PM	0	0	0	21	0	1	0	47	0	0	0	63	0	1	0	33	166
12:45 PM	0	0	0	27	0	3	0	19	0	0	0	60	0	1	0	51	161
Total	0	0	0	108	0	7	0	136	1	0	0	218	0	6	1	182	659
01:00 PM	0	0	0	24	0	1	0	47	0	0	0	47	0	3	0	33	155
01:15 PM	0	0	1	32	0	2	0	19	0	0	0	60	0	1	0	40	155
01:30 PM	0	0	1	31	0	2	0	41	0	1	0	42	0	3	0	33	154
01:45 PM	1	0	0	23	0	1	0	36	0	0	0	26	0	5	0	41	133
Total	1	0	2	110	0	6	0	143	0	1	0	175	0	12	0	147	597
02:00 PM	0	0	1	22	0	0	0	23	0	0	0	48	1	4	0	38	137
02:15 PM	0	3	0	24	0	0	0	13	0	0	0	41	0	3	0	36	120
02:30 PM	0	2	0	29	0	3	0	28	0	1	0	44	0	3	0	43	153
02:45 PM	0	0	0	22	0	1	0	24	0	2	0	52	0	3	0	19	123
Total	0	5	1	97	0	4	0	88	0	3	0	185	1	13	0	136	533
03:00 PM	0	1	0	23	0	0	0	22	0	1	0	38	0	1	0	22	108
03:15 PM	0	1	1	32	0	1	0	20	0	0	0	39	0	1	0	37	132
03:30 PM	0	3	0	41	0	1	0	32	0	1	0	35	0	5	0	39	157
03:45 PM	0	1	0	22	0	5	0	37	0	0	0	45	0	2	0	19	131
Total	0	6	1	118	0	7	0	111	0	2	0	157	0	9	0	117	528
04:00 PM	0	0	0	18	0	3	0	26	0	1	0	66	0	5	0	28	147
04:15 PM	0	1	0	22	0	2	0	30	0	1	1	46	0	3	0	31	137

PRECISION
D A T A
INDUSTRIES, LLC
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N/S: Kilmarnock Street
E/W: Boylston Street
City, State: Boston, MA
Client: Jacobs/ A. Fernandes

File Name : 112476 G
Site Code : 407
Start Date : 4/14/2011

Groups Printed- Peds and Bicycles

	Kilmarnock Street From North				Boylston Street From East				Kilmarnock Street From South				Boylston Street From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
04:30 PM	0	0	0	12	0	1	0	15	0	0	0	47	0	3	0	27	105
04:45 PM	0	2	0	24	0	1	0	15	0	1	0	43	0	2	0	46	134
Total	0	3	0	76	0	7	0	86	0	3	1	202	0	13	0	132	523
05:00 PM	0	0	0	45	0	1	0	23	0	0	0	68	1	1	0	33	172
05:15 PM	0	0	1	34	0	0	0	20	0	2	1	44	0	3	0	21	126
05:30 PM	0	1	0	29	0	2	0	21	1	1	0	57	1	2	0	50	165
05:45 PM	0	1	0	41	0	2	0	33	0	0	0	58	0	9	0	49	193
Total	0	2	1	149	0	5	0	97	1	3	1	227	2	15	0	153	656
Grand Total	2	23	7	891	2	51	1	978	4	20	4	1532	3	97	2	1154	4771
Apprch %	0.2	2.5	0.8	96.5	0.2	4.9	0.1	94.8	0.3	1.3	0.3	98.2	0.2	7.7	0.2	91.9	
Total %	0	0.5	0.1	18.7	0	1.1	0	20.5	0.1	0.4	0.1	32.1	0.1	2	0	24.2	

	Kilmarnock Street From North					Boylston Street From East					Kilmarnock Street From South					Boylston Street From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:45 AM																					
08:45 AM	0	0	0	**19**	**19**	0	0	0	**30**	**30**	0	**2**	0	**27**	**29**	0	**5**	0	9	14	**92**
09:00 AM	0	0	**1**	7	8	0	0	0	14	14	**1**	1	0	16	18	0	1	0	18	19	59
09:15 AM	0	0	0	10	10	0	**2**	0	14	16	0	0	0	14	14	0	2	0	**28**	**30**	70
09:30 AM	0	**1**	0	17	18	0	0	0	16	16	0	0	**1**	26	27	0	3	0	12	15	76
Total Volume	0	1	1	53	55	0	2	0	74	76	1	3	1	83	88	0	11	0	67	78	297
% App. Total	0	1.8	1.8	96.4		0	2.6	0	97.4		1.1	3.4	1.1	94.3		0	14.1	0	85.9		
PHF	.000	.250	.250	.697	.724	.000	.250	.000	.617	.633	.250	.375	.250	.769	.759	.000	.550	.000	.598	.650	.807
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 12:00 PM																					
12:00 PM	0	0	0	**35**	**35**	0	1	0	**48**	**49**	**1**	0	0	44	45	0	0	0	47	47	**176**
12:15 PM	0	0	0	25	25	0	2	0	22	24	0	0	0	51	51	0	**4**	**1**	**51**	**56**	156
12:30 PM	0	0	0	21	21	0	1	0	47	48	0	0	0	**63**	**63**	0	1	0	33	34	166
12:45 PM	0	0	0	27	27	0	**3**	0	19	22	0	0	0	60	60	0	1	0	51	52	161
Total Volume	0	0	0	108	108	0	7	0	136	143	1	0	0	218	219	0	6	1	182	189	659
% App. Total	0	0	0	100		0	4.9	0	95.1		0.5	0	0	99.5		0	3.2	0.5	96.3		
PHF	.000	.000	.000	.771	.771	.000	.583	.000	.708	.730	.250	.000	.000	.865	.869	.000	.375	.250	.892	.844	.936
Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	0	0	0	**45**	**45**	0	1	0	23	24	0	0	0	**68**	**68**	**1**	1	0	33	35	172
05:15 PM	0	0	**1**	34	35	0	0	0	20	20	0	**2**	**1**	44	47	0	3	0	21	24	126
05:30 PM	0	**1**	0	29	30	0	**2**	0	21	23	**1**	1	0	57	59	1	2	0	**50**	53	165
05:45 PM	0	1	0	41	42	0	2	0	**33**	**35**	0	0	0	58	58	0	**9**	0	49	**58**	**193**
Total Volume	0	2	1	149	152	0	5	0	97	102	1	3	1	227	232	2	15	0	153	170	656
% App. Total	0	1.3	0.7	98		0	4.9	0	95.1		0.4	1.3	0.4	97.8		1.2	8.8	0	90		
PHF	.000	.500	.250	.828	.844	.000	.625	.000	.735	.729	.250	.375	.250	.835	.853	.500	.417	.000	.765	.733	.850

PRECISION
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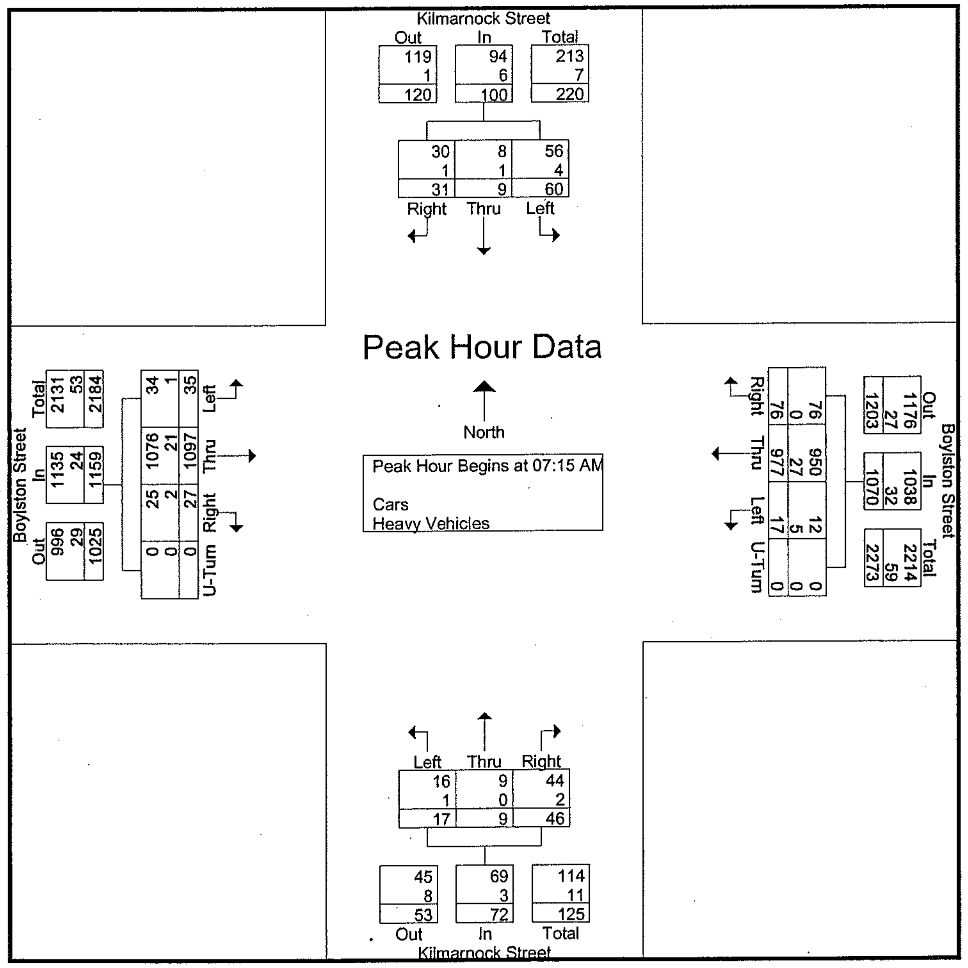
E/W: Boylston Street
City, State: Boston, MA
Client: Jacobs/ A. Fernandes

File Name : 112476 G
Site Code : 407
Start Date : 4/14/2011

	Kilmarnock Street From North				Boylston Street From East					Kilmarnock Street From South				Boylston Street From West					
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 07:15 AM																			
07:15 AM	8	1	14	23	18	257	4	0	279	11	2	4	17	5	289	7	0	301	620
07:30 AM	6	**4**	11	21	18	**261**	4	0	**283**	11	2	**5**	**18**	**7**	**288**	**12**	0	**307**	**629**
07:45 AM	**9**	4	**23**	**36**	**24**	234	4	0	262	**13**			**19**	**9**	229	8	0	246	563
08:00 AM	8	0	12	20	16	225	**5**	0	246	11	**4**	3	18	6	**291**	8	0	305	589
Total Volume	31	9	60	100	76	977	17	0	1070	46	9	17	72	27	1097	35	0	1159	2401
% App. Total	31	9	60		7.1	91.3	1.6	0		63.9	12.5	23.6		2.3	94.7	3	0		
PHF	.861	.563	.652	.694	.792	.936	.850	.000	.945	.885	.563	.850	.947	.750	.942	.729	.000	.944	.954
Cars	30	8	56	94	76	950	12	0	1038	44	9	16	69	25	1076	34	0	1135	2336
% Cars	96.8	88.9	93.3	94.0	100	97.2	70.6	0	97.0	95.7	100	94.1	95.8	92.6	98.1	97.1	0	97.9	97.3
Heavy Vehicles	1	1	4	6	0	27	5	0	32	2	0	1	3	2	21	1	0	24	65
% Heavy Vehicles	3.2	11.1	6.7	6.0	0	2.8	29.4	0	3.0	4.3	0	5.9	4.2	7.4	1.9	2.9	0	2.1	2.7



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N/S: Kilmarnock Street
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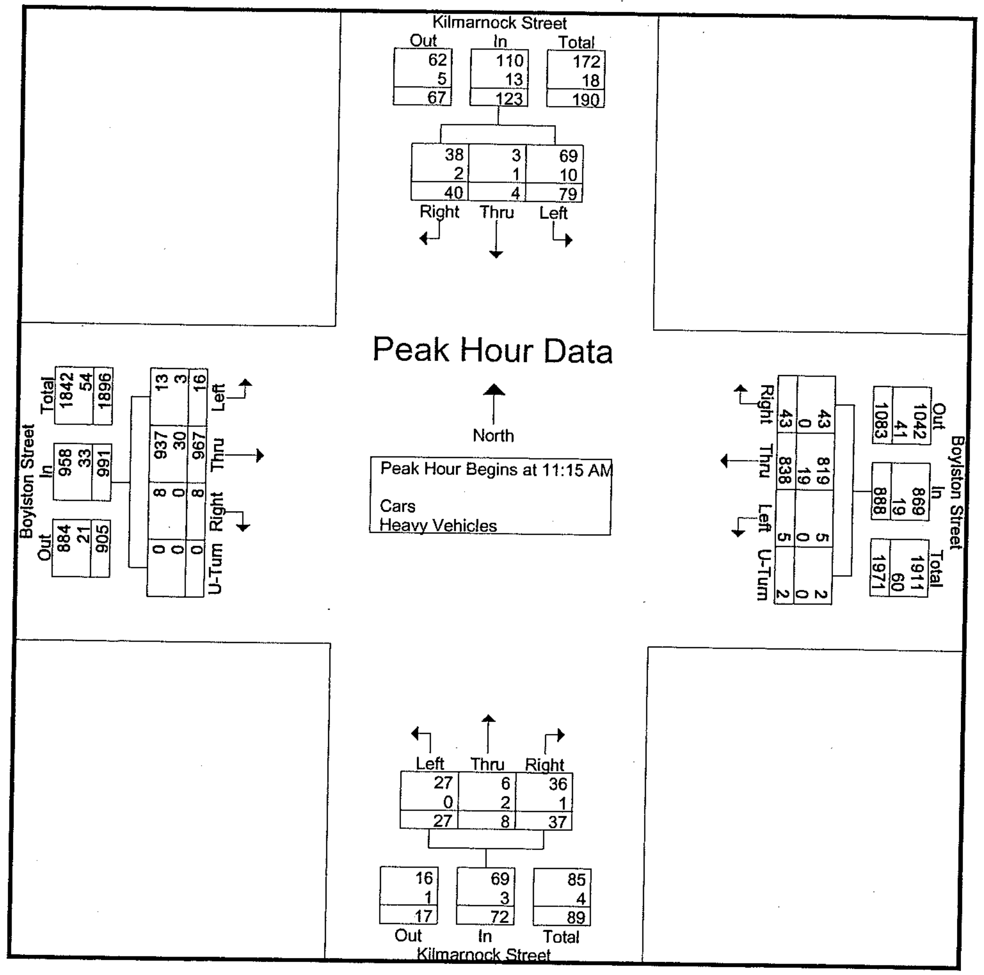
City, State: Boston, MA
Client: Jacobs/ A. Fernandes

File Name : 112476 G
Site Code : 407
Start Date : 4/14/2011
Page No : 2

	Kilmarnock Street From North				Boylston Street From East					Kilmarnock Street From South				Boylston Street From West					
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 11:15 AM																			
11:15 AM	9	**2**	16	27	10	**220**	0	**1**	**231**	**11**	**2**	**15**	**28**	**5**	245	5	0	255	**541**
11:30 AM	**13**	0	20	33	**18**	211	0	0	229	10	1	4	15	0	232	1	0	233	510
11:45 AM	11	2	**24**	**37**	8	191	**3**	0	202	10	**3**	5	18	0	232	**7**	0	239	496
12:00 PM	7	0	19	26	7	216	2	1	226	6	2	3	11	3	**258**	3	0	**264**	527
Total Volume	40	4	79	123	43	838	5	2	888	37	8	27	72	8	967	16	0	991	2074
% App. Total	32.5	3.3	64.2		4.8	94.4	0.6	0.2		51.4	11.1	37.5		0.8	97.6	1.6	0		
PHF	.769	.500	.823	.831	.597	.952	.417	.500	.961	.841	.667	.450	.643	.400	.937	.571	.000	.938	.958
Cars	38	3	69	110	43	819	5	2	869	36	6	27	69	8	937	13	0	958	2006
% Cars	95.0	75.0	87.3	89.4	100	97.7	100	100	97.9	97.3	75.0	100	95.8	100	96.9	81.3	0	96.7	96.7
Heavy Vehicles	2	1	10	13	0	19	0	0	19	1	2	0	3	0	30	3	0	33	68
% Heavy Vehicles	5.0	25.0	12.7	10.6	0	2.3	0	0	2.1	2.7	25.0	0	4.2	0	3.1	18.8	0	3.3	3.3



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N/S: Kilmarnock Street
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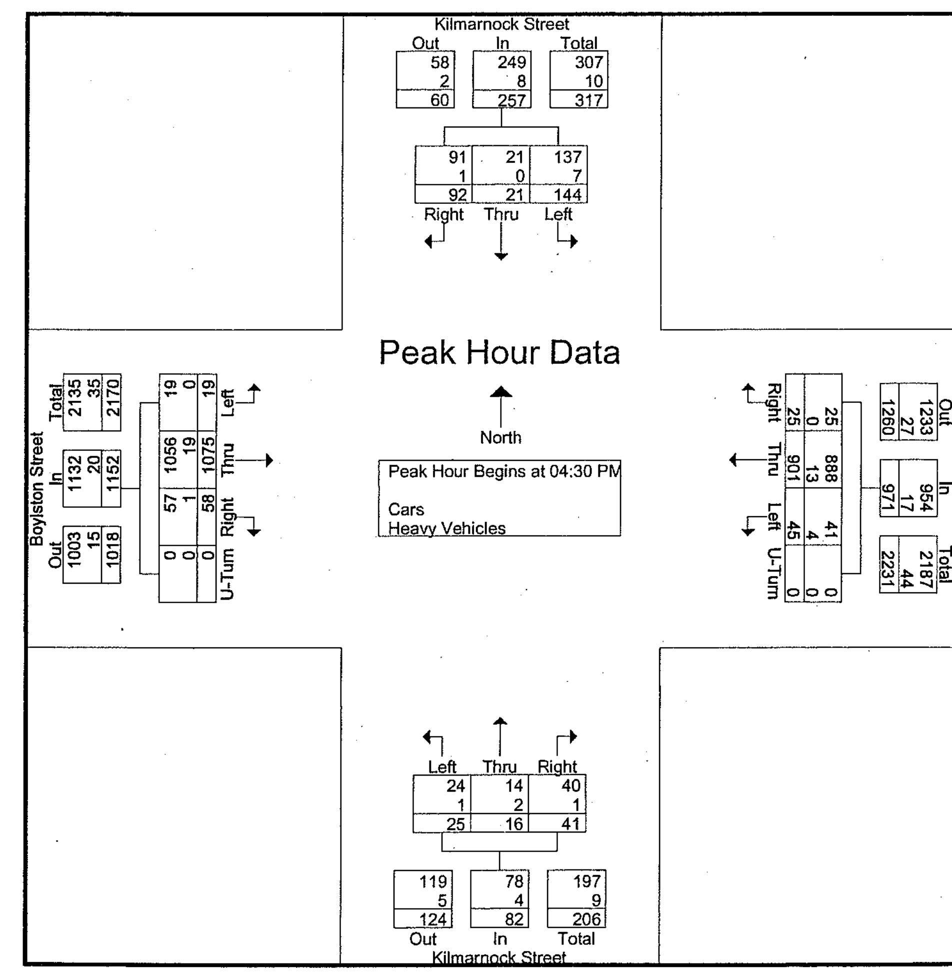
City, State: Boston, MA
Client: Jacobs/ A. Fernandes

File Name : 112476 G
Site Code : 407
Start Date : 4/14/2011
Page No : 3

	Kilmarnock Street From North				Boylston Street From East					Kilmarnock Street From South				Boylston Street From West					
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 04:30 PM																			
04:30 PM	21	4	34	59	6	230	8	0	244	6	5	**8**	**19**	**13**	**264**	**5**	**0**	**282**	**604**
04:45 PM	**25**	**7**	**34**	**66**	**3**	**212**	**11**	**0**	**226**	**10**	**6**	8	24	**18**	**278**	7	0	**303**	619
05:00 PM	**26**	**8**	36	**70**	**11**	**236**	**16**	0	**263**	8	1	6	15	10	261	3	0	274	**622**
05:15 PM	20	2	**40**	62	5	223	10	0	238	**17**									
Total Volume	92	21	144	257	25	901	45	0	971	41	16	25	82	58	1075	19	0	1152	2462
% App. Total	35.8	8.2	56		2.6	92.8	4.6	0		50	19.5	30.5		5	93.3	1.6	0		
PHF	.885	.656	.900	.918	.568	.954	.703	.000	.923	.603	.667	.781	.854	.806	.967	.679	.000	.950	.990
Cars	91	21	137	249	25	888	41	0	954	40	14	24	78	57	1056	19	0	1132	2413
% Cars	98.9	100	95.1	96.9	100	98.6	91.1	0	98.2	97.6	87.5	96.0	95.1	98.3	98.2	100	0	98.3	98.0
Heavy Vehicles	1	0	7	8	0	13	4	0	17	1	2	1	4	1	19	0	0	20	49
% Heavy Vehicles	1.1	0	4.9	3.1	0	1.4	8.9	0	1.8	2.4	12.5	4.0	4.9	1.7	1.8	0	0	1.7	2.0



PRECISION
D A T A
INDUSTRIES, LLC
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N/S: Ipswich Street/Gas Station Driveway
E/W: Boylston Street
City, State: Boston, MA
Client: Jacobs/ A. Fernandes

File Name : 112476 L
Site Code : 407
Start Date : 4/14/2011
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	Ipswich Street From North			Boylston Street From East			Gas Station Driveways From South			Boylston Street From West			
Start Time	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Int. Total
07:00 AM	21	0	8	30	285	1	2	0	0	1	250	5	603
07:15 AM	10	0	8	28	298	1	3	0	0	0	289	5	642
07:30 AM	21	0	17	26	292	1	5	0	1	3	295	12	673
07:45 AM	22	0	29	25	264	0	1	0	0	2	262	9	614
Total	74	0	62	109	1139	3	11	0	1	6	1096	31	2532
08:00 AM	17	0	18	20	263	0	0	0	1	2	300	9	630
08:15 AM	18	0	17	21	278	0	1	0	1	1	273	11	621
08:30 AM	19	0	18	17	299	0	3	0	0	4	234	8	602
08:45 AM	18	0	14	19	255	3	5	0	1	4	251	5	575
Total	72	0	67	77	1095	3	9	0	3	11	1058	33	2428
09:00 AM	12	0	14	16	231	1	3	0	1	2	246	8	534
09:15 AM	15	0	19	12	217	0	4	0	0	4	237	8	516
09:30 AM	16	1	21	10	275	1	3	0	0	3	253	9	592
09:45 AM	17	0	19	12	266	0	6	0	0	6	239	8	573
Total	60	1	73	50	989	2	16	0	1	15	975	33	2215
10:00 AM	17	1	14	9	213	0	5	0	1	3	235	3	501
10:15 AM	18	0	14	11	199	0	2	0	0	2	231	2	479
10:30 AM	12	0	18	11	191	1	3	0	2	3	200	5	446
10:45 AM	19	1	20	8	217	1	4	0	1	5	256	9	541
Total	66	2	66	39	820	2	14	0	4	13	922	19	1967
11:00 AM	20	1	24	6	187	0	2	0	0	3	213	4	460
11:15 AM	13	1	16	3	248	0	4	0	0	4	250	5	544
11:30 AM	15	1	24	4	219	1	4	0	2	2	247	12	531
11:45 AM	20	2	31	17	193	1	1	0	3	4	224	7	503
Total	68	5	95	30	847	2	11	0	5	13	934	28	2038
12:00 PM	14	0	11	5	187	0	5	0	1	4	210	6	443
12:15 PM	22	0	9	7	251	0	4	0	1	4	253	12	563
12:30 PM	16	0	20	7	240	3	5	2	1	2	229	6	531
12:45 PM	21	1	26	8	197	2	4	2	0	6	261	4	532
Total	73	1	66	27	875	5	18	4	3	16	953	28	2069
01:00 PM	17	0	30	10	190	1	3	1	1	5	232	8	498
01:15 PM	11	0	27	11	198	1	2	1	0	8	258	4	521
01:30 PM	22	0	35	9	192	1	6	1	1	10	268	11	556
01:45 PM	26	2	20	13	215	0	0	0	1	0	261	9	547
Total	76	2	112	43	795	3	11	3	3	23	1019	32	2122
02:00 PM	23	0	36	12	196	1	3	0	0	2	260	5	538
02:15 PM	18	2	36	3	223	2	6	1	1	4	282	7	585
02:30 PM	10	1	39	7	206	0	1	0	0	0	305	3	572
02:45 PM	13	0	30	6	231	0	4	0	0	1	297	1	583
Total	64	3	141	28	856	3	14	1	1	7	1144	16	2278
03:00 PM	23	1	23	4	234	2	6	0	0	2	309	6	610
03:15 PM	11	1	32	4	213	1	2	0	0	5	294	6	569
03:30 PM	19	3	39	15	202	2	5	0	0	2	280	11	578
03:45 PM	12	0	52	12	221	1	9	0	1	3	326	2	639
Total	65	5	146	35	870	6	22	0	1	12	1209	25	2396
04:00 PM	15	1	48	3	207	2	2	0	0	1	308	7	594
04:15 PM	17	0	56	1	212	1	5	0	1	3	280	2	578

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E/W: Boylston Street
City, State: Boston, MA
Client: Jacobs/ A. Fernandes

File Name : 112476 L
Site Code : 407
Start Date : 4/14/2011
Page No : 2

Groups Printed- Cars - Heavy Vehicles

	Ipswich Street From North			Boylston Street From East			Gas Station Driveways From South			Boylston Street From West			
Start Time	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Int. Total
04:30 PM	15	0	56	4	238	1	0	1	0	1	329	5	650
04:45 PM	19	1	49	5	201	3	5	0	0	2	306	1	592
Total	66	2	209	13	858	7	12	1	1	7	1223	15	2414
05:00 PM	16	1	46	6	242	4	5	0	1	1	334	3	659
05:15 PM	19	1	43	6	244	2	9	0	0	2	368	5	699
05:30 PM	15	0	46	6	230	2	8	0	0	6	344	6	663
05:45 PM	19	2	43	8	222	0	5	0	0	1	320	19	639
Total	69	4	178	26	938	8	27	0	1	10	1366	33	2660
Grand Total	753	25	1215	477	10082	44	165	9	24	133	11899	293	25119
Apprch %	37.8	1.3	61	4.5	95.1	0.4	83.3	4.5	12.1	1.1	96.5	2.4	
Total %	3	0.1	4.8	1.9	40.1	0.2	0.7	0	0.1	0.5	47.4	1.2	
Cars	613	25	1089	471	9952	44	164	9	24	131	11642	253	24417
% Cars	81.4	100	89.6	98.7	98.7	100	99.4	100	100	98.5	97.8	86.3	97.2
Heavy Vehicles	140	0	126	6	130	0	1	0	0	2	257	40	702
% Heavy Vehicles	18.6	0	10.4	1.3	1.3	0	0.6	0	0	1.5	2.2	13.7	2.8

	Ipswich Street From North				Boylston Street From East				Gas Station Driveways From South				Boylston Street From West				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	10	0	8	18	28	298	1	327	3	0	0	3	0	289	5	294	642
07:30 AM	21	0	17	38	26	292	1	319	5	0	1	6	3	295	12	310	673
07:45 AM	22	0	29	51	25	264	0	289	1	0	0	1	2	262	9	273	614
08:00 AM	17	0	18	35	20	263	0	283	0	0	1	1	2	300	9	311	630
Total Volume	70	0	72	142	99	1117	2	1218	9	0	2	11	7	1146	35	1188	2559
% App. Total	49.3	0	50.7		8.1	91.7	0.2		81.8	0	18.2		0.6	96.5	2.9		
PHF	.795	.000	.621	.696	.884	.937	.500	.931	.450	.000	.500	.458	.583	.955	.729	.955	.951
Cars	53	0	66	119	98	1098	2	1198	9	0	2	11	7	1118	29	1154	2482
% Cars	75.7	0	91.7	83.8	99.0	98.3	100	98.4	100	0	100	100	100	97.6	82.9	97.1	97.0
Heavy Vehicles	17	0	6	23	1	19	0	20	0	0	0	0	0	28	6	34	77
% Heavy Vehicles	24.3	0	8.3	16.2	1.0	1.7	0	1.6	0	0	0	0	0	2.4	17.1	2.9	3.0
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 12:15 PM																	
12:15 PM	22	0	9	31	7	251	0	258	4	0	1	5	4	253	12	269	563
12:30 PM	16	0	20	36	7	240	3	250	5	2	1	8	2	229	6	237	531
12:45 PM	21	1	26	48	8	197	2	207	4	2	0	6	6	261	4	271	532
01:00 PM	17	0	30	47	10	190	1	201	3	1	1	5	5	232	8	245	498
Total Volume	76	1	85	162	32	878	6	916	16	5	3	24	17	975	30	1022	2124
% App. Total	46.9	0.6	52.5		3.5	95.9	0.7		66.7	20.8	12.5		1.7	95.4	2.9		
PHF	.864	.250	.708	.844	.800	.875	.500	.888	.800	.625	.750	.750	.708	.934	.625	.943	.943
Cars	64	1	75	140	31	861	6	898	16	5	3	24	17	952	25	994	2056
% Cars	84.2	100	88.2	86.4	96.9	98.1	100	98.0	100	100	100	100	100	97.6	83.3	97.3	96.8
Heavy Vehicles	12	0	10	22	1	17	0	18	0	0	0	0	0	23	5	28	68
% Heavy Vehicles	15.8	0	11.8	13.6	3.1	1.9	0	2.0	0	0	0	0	0	2.4	16.7	2.7	3.2

PRECISION DATA INDUSTRIES, LLC

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N/S: Ipswich Street/Gas Station Driveway
E/W: Boylston Street
City, State: Boston, MA
Client: Jacobs/ A. Fernandes

File Name : 112476 L
Site Code : 407
Start Date : 4/14/2011

	Ipswich Street From North				Boylston Street From East				Gas Station Driveways From South				Boylston Street From West				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	16	1	**46**	63	6	242	**4**	**252**	5	0	**1**	6	1	334	3	338	659
05:15 PM	**19**	1	43	63	6	**244**	2	252	**9**	0	0	**9**	2	**368**	5	**375**	**699**
05:30 PM	15	0	46	61	6	230	2	238	8	0	0	8	**6**	344	6	356	663
05:45 PM	19	**2**	43	**64**	**8**	222	0	230	5	0	0	5	1	320	**19**	340	639
Total Volume	69	4	178	251	26	938	8	972	27	0	1	28	10	1366	33	1409	2660
% App. Total	27.5	1.6	70.9		2.7	96.5	0.8		96.4	0	3.6		0.7	96.9	2.3		
PHF	.908	.500	.967	.980	.813	.961	.500	.964	.750	.000	.250	.778	.417	.928	.434	.939	.951
Cars	60	4	168	232	26	929	8	963	27	0	1	28	10	1345	31	1386	2609
% Cars	87.0	100	94.4	92.4	100	99.0	100	99.1	100	0	100	100	100	98.5	93.9	98.4	98.1
Heavy Vehicles	9	0	10	19	0	9	0	9	0	0	0	0	0	21	2	23	51
% Heavy Vehicles	13.0	0	5.6	7.6	0	1.0	0	0.9	0	0	0	0	0	1.5	6.1	1.6	1.9

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City, State: Boston, MA
Client: Jacobs/ A. Fernandes

File Name : 112476 L
Site Code : 407
Start Date : 4/14/2011

Groups Printed- Cars

	Ipswich Street From North			Boylston Street From East			Gas Station Driveways From South			Boylston Street From West			
Start Time	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Int. Total
07:00 AM	18	0	8	30	283	1	2	0	0	1	242	3	588
07:15 AM	7	0	5	28	295	1	3	0	0	0	283	4	626
07:30 AM	17	0	16	26	286	1	5	0	1	3	291	10	656
07:45 AM	15	0	28	25	260	0	1	0	0	2	253	7	591
Total	57	0	57	109	1124	3	11	0	1	6	1069	24	2461
08:00 AM	14	0	17	19	257	0	0	0	1	2	291	8	609
08:15 AM	15	0	15	21	273	0	1	0	1	1	267	10	604
08:30 AM	13	0	14	16	293	0	3	0	0	4	228	7	578
08:45 AM	13	0	14	19	252	3	4	0	1	3	247	5	561
Total	55	0	60	75	1075	3	8	0	3	10	1033	30	2352
09:00 AM	8	0	13	16	228	1	3	0	1	2	238	7	517
09:15 AM	11	0	16	12	215	0	4	0	0	4	233	8	503
09:30 AM	11	1	15	10	272	1	3	0	0	3	249	7	572
09:45 AM	11	0	14	11	263	0	6	0	0	6	230	6	547
Total	41	1	58	49	978	2	16	0	1	15	950	28	2139
10:00 AM	15	1	12	9	206	0	5	0	1	3	229	3	484
10:15 AM	15	0	11	10	199	0	2	0	0	2	225	1	465
10:30 AM	10	0	16	11	189	1	3	0	2	3	193	4	432
10:45 AM	14	1	15	8	216	1	4	0	1	5	248	7	520
Total	54	2	54	38	810	2	14	0	4	13	895	15	1901
11:00 AM	16	1	20	6	186	0	2	0	0	3	208	4	446
11:15 AM	11	1	13	3	245	0	4	0	0	4	242	5	528
11:30 AM	14	1	20	4	217	1	4	0	2	2	235	11	511
11:45 AM	18	2	27	17	192	1	1	0	3	4	222	6	493
Total	59	5	80	30	840	2	11	0	5	13	907	26	1978
12:00 PM	12	0	8	5	185	0	5	0	1	4	206	5	431
12:15 PM	17	0	6	6	246	0	4	0	1	4	247	11	542
12:30 PM	14	0	16	7	233	3	5	2	1	2	222	3	508
12:45 PM	19	1	25	8	195	2	4	2	0	6	257	4	523
Total	62	1	55	26	859	5	18	4	3	16	932	23	2004
01:00 PM	14	0	28	10	187	1	3	1	1	5	226	7	483
01:15 PM	10	0	24	11	196	1	2	1	0	8	254	4	511
01:30 PM	18	0	30	9	190	1	6	1	1	9	261	8	534
01:45 PM	22	2	18	13	211	0	0	0	1	0	252	8	527
Total	64	2	100	43	784	3	11	3	3	22	993	27	2055
02:00 PM	19	0	33	12	193	1	3	0	0	2	253	5	521
02:15 PM	16	2	32	3	222	2	6	1	1	4	279	7	575
02:30 PM	9	1	36	7	205	0	1	0	0	0	297	2	558
02:45 PM	11	0	27	6	228	0	4	0	0	1	291	1	569
Total	55	3	128	28	848	3	14	1	1	7	1120	15	2223
03:00 PM	20	1	19	4	231	2	6	0	0	2	301	4	590
03:15 PM	8	1	32	4	212	1	2	0	0	5	288	6	559
03:30 PM	16	3	33	15	198	2	5	0	0	2	277	9	560
03:45 PM	8	0	50	12	217	1	9	0	1	3	325	2	628
Total	52	5	134	35	858	6	22	0	1	12	1191	21	2337
04:00 PM	12	1	44	3	205	2	2	0	0	1	304	6	580
04:15 PM	16	0	53	1	208	1	5	0	1	3	277	2	567

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File Name : 112476 L
Site Code : 407
Start Date : 4/14/2011

Groups Printed- Cars

	Ipswich Street From North			Boylston Street From East			Gas Station Driveways From South			Boylston Street From West			
Start Time	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Int. Total
04:30 PM	12	0	50	3	237	1	0	1	0	1	323	4	632
04:45 PM	14	1	48	5	197	3	5	0	0	2	303	1	579
Total	54	2	195	12	847	7	12	1	1	7	1207	13	2358
05:00 PM	13	1	42	6	238	4	5	0	1	1	324	2	637
05:15 PM	18	1	40	6	243	2	9	0	0	2	364	5	690
05:30 PM	12	0	45	6	228	2	8	0	0	6	341	5	653
05:45 PM	17	2	41	8	220	0	5	0	0	1	316	19	629
Total	60	4	168	26	929	8	27	0	1	10	1345	31	2609
Grand Total	613	25	1089	471	9952	44	164	9	24	131	11642	253	24417
Apprch %	35.5	1.4	63.1	4.5	95.1	0.4	83.2	4.6	12.2	1.1	96.8	2.1	
Total %	2.5	0.1	4.5	1.9	40.8	0.2	0.7	0	0.1	0.5	47.7	1	

	Ipswich Street From North				Boylston Street From East				Gas Station Driveways From South				Boylston Street From West				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	7	0	5	12	**28**	**295**	**1**	**324**	3	0	0	3	0	283	4	287	626
07:30 AM	**17**	0	16	33	26	286	1	313	**5**	0	**1**	**6**	**3**	**291**	**10**	**304**	**656**
07:45 AM	15	0	**28**	**43**	25	260	0	285	1	0	0	1	2	253	7	262	591
08:00 AM	14	0	17	31	19	257	0	276	0	0	1	1	2	291	8	301	609
Total Volume	53	0	66	119	98	1098	2	1198	9	0	2	11	7	1118	29	1154	2482
% App. Total	44.5	0	55.5		8.2	91.7	0.2		81.8	0	18.2		0.6	96.9	2.5		
PHF	.779	.000	.589	.692	.875	.931	.500	.924	.450	.000	.500	.458	.583	.960	.725	.949	.946
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 12:15 PM																	
12:15 PM	17	0	6	23	6	**246**	0	**252**	4	0	**1**	5	4	247	**11**	262	**542**
12:30 PM	14	0	16	30	7	233	**3**	243	**5**	**2**	1	**8**	2	222	3	227	508
12:45 PM	**19**	**1**	25	**45**	8	195	2	205	4	2	0	6	**6**	**257**	4	**267**	523
01:00 PM	14	0	**28**	42	**10**	187	1	198	3	1	1	5	5	226	7	238	483
Total Volume	64	1	75	140	31	861	6	898	16	5	3	24	17	952	25	994	2056
% App. Total	45.7	0.7	53.6		3.5	95.9	0.7		66.7	20.8	12.5		1.7	95.8	2.5		
PHF	.842	.250	.670	.778	.775	.875	.500	.891	.800	.625	.750	.750	.708	.926	.568	.931	.948
Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	13	1	42	56	6	238	**4**	248	5	0	**1**	6	1	324	2	327	637
05:15 PM	**18**	1	40	59	6	**243**	2	**251**	**9**	0	0	**9**	2	**364**	5	**371**	**690**
05:30 PM	12	0	**45**	57	6	228	2	236	8	0	0	8	**6**	341	5	352	653
05:45 PM	17	**2**	41	**60**	**8**	220	0	228	5	0	0	5	1	316	**19**	336	629
Total Volume	60	4	168	232	26	929	8	963	27	0	1	28	10	1345	31	1386	2609
% App. Total	25.9	1.7	72.4		2.7	96.5	0.8		96.4	0	3.6		0.7	97	2.2		
PHF	.833	.500	.933	.967	.813	.956	.500	.959	.750	.000	.250	.778	.417	.924	.408	.934	.945

N/S: Ipswich Street/Gas Station Driveway
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File Name : 112476 L
Site Code : 407
Start Date : 4/14/2011

Groups Printed- Heavy Vehicles

	Ipswich Street From North			Boylston Street From East			Gas Station Driveways From South			Boylston Street From West			
Start Time	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Int. Total
07:00 AM	3	0	0	0	2	0	0	0	0	0	8	2	15
07:15 AM	3	0	3	0	3	0	0	0	0	0	6	1	16
07:30 AM	4	0	1	0	6	0	0	0	0	0	4	2	17
07:45 AM	7	0	1	0	4	0	0	0	0	0	9	2	23
Total	17	0	5	0	15	0	0	0	0	0	27	7	71
08:00 AM	3	0	1	1	6	0	0	0	0	0	9	1	21
08:15 AM	3	0	2	0	5	0	0	0	0	0	6	1	17
08:30 AM	6	0	4	1	6	0	0	0	0	0	6	1	24
08:45 AM	5	0	0	0	3	0	1	0	0	1	4	0	14
Total	17	0	7	2	20	0	1	0	0	1	25	3	76
09:00 AM	4	0	1	0	3	0	0	0	0	0	8	1	17
09:15 AM	4	0	3	0	2	0	0	0	0	0	4	0	13
09:30 AM	5	0	6	0	3	0	0	0	0	0	4	2	20
09:45 AM	6	0	5	1	3	0	0	0	0	0	9	2	26
Total	19	0	15	1	11	0	0	0	0	0	25	5	76
10:00 AM	2	0	2	0	7	0	0	0	0	0	6	0	17
10:15 AM	3	0	3	1	0	0	0	0	0	0	6	1	14
10:30 AM	2	0	2	0	2	0	0	0	0	0	7	1	14
10:45 AM	5	0	5	0	1	0	0	0	0	0	8	2	21
Total	12	0	12	1	10	0	0	0	0	0	27	4	66
11:00 AM	4	0	4	0	1	0	0	0	0	0	5	0	14
11:15 AM	2	0	3	0	3	0	0	0	0	0	8	0	16
11:30 AM	1	0	4	0	2	0	0	0	0	0	12	1	20
11:45 AM	2	0	4	0	1	0	0	0	0	0	2	1	10
Total	9	0	15	0	7	0	0	0	0	0	27	2	60
12:00 PM	2	0	3	0	2	0	0	0	0	0	4	1	12
12:15 PM	5	0	3	1	5	0	0	0	0	0	6	1	21
12:30 PM	2	0	4	0	7	0	0	0	0	0	7	3	23
12:45 PM	2	0	1	0	2	0	0	0	0	0	4	0	9
Total	11	0	11	1	16	0	0	0	0	0	21	5	65
01:00 PM	3	0	2	0	3	0	0	0	0	0	6	1	15
01:15 PM	1	0	3	0	2	0	0	0	0	0	4	0	10
01:30 PM	4	0	5	0	2	0	0	0	0	1	7	3	22
01:45 PM	4	0	2	0	4	0	0	0	0	0	9	1	20
Total	12	0	12	0	11	0	0	0	0	1	26	5	67
02:00 PM	4	0	3	0	3	0	0	0	0	0	7	0	17
02:15 PM	2	0	4	0	1	0	0	0	0	0	3	0	10
02:30 PM	1	0	3	0	1	0	0	0	0	0	8	1	14
02:45 PM	2	0	3	0	3	0	0	0	0	0	6	0	14
Total	9	0	13	0	8	0	0	0	0	0	24	1	55
03:00 PM	3	0	4	0	3	0	0	0	0	0	8	2	20
03:15 PM	3	0	0	0	1	0	0	0	0	0	6	0	10
03:30 PM	3	0	6	0	4	0	0	0	0	0	3	2	18
03:45 PM	4	0	2	0	4	0	0	0	0	0	1	0	11
Total	13	0	12	0	12	0	0	0	0	0	18	4	59
04:00 PM	3	0	4	0	2	0	0	0	0	0	4	1	14
04:15 PM	1	0	3	0	4	0	0	0	0	0	3	0	11

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File Name : 112476 L
Site Code : 407
Start Date : 4/14/2011
Page No : 2

Groups Printed- Heavy Vehicles

	Ipswich Street From North			Boylston Street From East			Gas Station Driveways From South			Boylston Street From West			
Start Time	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Int. Total
04:30 PM	3	0	6	1	1	0	0	0	0	0	6	1	18
04:45 PM	5	0	1	0	4	0	0	0	0	0	3	0	13
Total	12	0	14	1	11	0	0	0	0	0	16	2	56
05:00 PM	3	0	4	0	4	0	0	0	0	0	10	1	22
05:15 PM	1	0	3	0	1	0	0	0	0	0	4	0	9
05:30 PM	3	0	1	0	2	0	0	0	0	0	3	1	10
05:45 PM	2	0	2	0	2	0	0	0	0	0	4	0	10
Total	9	0	10	0	9	0	0	0	0	0	21	2	51
Grand Total	140	0	126	6	130	0	1	0	0	2	257	40	702
Apprch %	52.6	0	47.4	4.4	95.6	0	100	0	0	0.7	86	13.4	
Total %	19.9	0	17.9	0.9	18.5	0	0.1	0	0	0.3	36.6	5.7	

	Ipswich Street From North				Boylston Street From East				Gas Station Driveways From South				Boylston Street From West				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	**7**	0	1	8	0	4	0	4	0	0	0	0	0	**9**	**2**	**11**	23
08:00 AM	3	0	1	4	**1**	**6**	0	**7**	0	0	0	0	0	9	1	10	21
08:15 AM	3	0	2	5	0	5	0	5	0	0	0	0	0	6	1	7	17
08:30 AM	6	0	**4**	**10**	1	6	0	7	0	0	0	0	0	6	1	7	**24**
Total Volume	19	0	8	27	2	21	0	23	0	0	0	0	0	30	5	35	85
% App. Total	70.4	0	29.6		8.7	91.3	0		0	0	0		0	85.7	14.3		
PHF	.679	.000	.500	.675	.500	.875	.000	.821	.000	.000	.000	.000	.000	.833	.625	.795	.885
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 10:45 AM																	
10:45 AM	**5**	0	**5**	**10**	0	1	0	1	0	0	0	0	0	8	**2**	10	**21**
11:00 AM	4	0	4	8	0	1	0	1	0	0	0	0	0	5	0	5	14
11:15 AM	2	0	3	5	0	**3**	0	**3**	0	0	0	0	0	8	0	8	16
11:30 AM	1	0	4	5	0	2	0	2	0	0	0	0	0	**12**	1	**13**	20
Total Volume	12	0	16	28	0	7	0	7	0	0	0	0	0	33	3	36	71
% App. Total	42.9	0	57.1		0	100	0		0	0	0		0	91.7	8.3		
PHF	.600	.000	.800	.700	.000	.583	.000	.583	.000	.000	.000	.000	.000	.688	.375	.692	.845
Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	1	0	3	4	0	**4**	0	**4**	0	0	0	0	0	3	0	3	11
04:30 PM	3	0	**6**	**9**	**1**	1	0	2	0	0	0	0	0	6	**1**	7	18
04:45 PM	**5**	0	1	6	0	4	0	4	0	0	0	0	0	3	0	3	13
05:00 PM	3	0	4	7	0	4	0	4	0	0	0	0	0	**10**	1	**11**	**22**
Total Volume	12	0	14	26	1	13	0	14	0	0	0	0	0	22	2	24	64
% App. Total	46.2	0	53.8		7.1	92.9	0		0	0	0		0	91.7	8.3		
PHF	.600	.000	.583	.722	.250	.813	.000	.875	.000	.000	.000	.000	.000	.550	.500	.545	.727

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E/W: Boylston Street
City, State: Boston, MA
Client: Jacobs/ A. Fernandes

File Name : 112476 L
Site Code : 407
Start Date : 4/14/2011
Page No : 1

Groups Printed- Peds and Bicycles

	Ipswich Street From North				Boylston Street From East				Gas Station Driveways From South				Boylston Street From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
07:00 AM	0	0	0	5	0	0	0	6	0	0	0	8	0	0	1	3	23
07:15 AM	0	0	0	9	1	2	0	16	0	0	0	8	0	0	0	3	39
07:30 AM	0	0	0	2	0	1	0	34	0	0	1	11	0	3	0	3	55
07:45 AM	0	0	0	9	0	0	0	21	0	0	0	5	0	1	0	0	36
Total	0	0	0	25	1	3	0	77	0	0	1	32	0	4	1	9	153
08:00 AM	0	0	0	5	0	2	0	19	0	0	0	21	0	0	0	12	59
08:15 AM	0	0	0	9	0	1	0	10	0	0	0	9	0	3	0	5	37
08:30 AM	0	0	0	5	0	3	0	15	0	0	0	11	0	1	0	11	46
08:45 AM	0	0	0	13	0	0	0	17	0	0	0	20	0	3	0	7	60
Total	0	0	0	32	0	6	0	61	0	0	0	61	0	7	0	35	202
09:00 AM	0	0	0	7	0	0	0	19	0	0	0	12	0	2	0	3	43
09:15 AM	0	0	0	11	1	1	0	12	0	0	0	5	0	1	0	0	31
09:30 AM	0	0	0	8	0	0	0	20	0	0	0	12	0	0	0	2	42
09:45 AM	1	0	0	7	0	0	0	11	0	0	0	13	0	1	0	3	36
Total	1	0	0	33	1	1	0	62	0	0	0	42	0	4	0	8	152
10:00 AM	0	0	1	10	0	0	0	8	0	0	1	26	0	4	0	4	54
10:15 AM	0	0	0	14	0	0	0	7	0	0	0	36	0	2	0	4	63
10:30 AM	0	0	0	13	0	3	0	16	0	0	0	16	0	0	0	7	55
10:45 AM	0	0	0	7	0	0	0	6	0	0	0	6	0	1	0	10	30
Total	0	0	1	44	0	3	0	37	0	0	1	84	0	7	0	25	202
11:00 AM	0	0	0	11	0	0	0	5	0	0	0	15	0	1	0	9	41
11:15 AM	0	0	0	12	0	0	0	122	0	0	0	109	0	2	0	7	252
11:30 AM	0	0	0	8	0	0	0	8	0	0	0	53	0	0	0	1	70
11:45 AM	0	0	0	13	0	0	0	17	0	0	0	5	0	2	0	5	42
Total	0	0	0	44	0	0	0	152	0	0	0	182	0	5	0	22	405
12:00 PM	0	0	0	18	0	0	0	44	0	0	0	14	0	0	1	9	86
12:15 PM	0	0	0	10	1	2	0	9	0	0	0	17	0	5	0	8	52
12:30 PM	0	0	0	9	0	2	0	8	0	0	0	39	0	3	0	9	70
12:45 PM	1	0	0	23	0	3	0	10	0	0	0	25	0	5	0	7	74
Total	1	0	0	60	1	7	0	71	0	0	0	95	0	13	1	33	282
01:00 PM	0	0	0	16	0	1	0	15	0	0	0	19	0	2	0	5	58
01:15 PM	0	0	0	24	0	1	0	18	0	0	0	26	0	3	0	9	81
01:30 PM	0	0	0	12	1	0	0	21	0	0	0	22	0	2	0	15	73
01:45 PM	0	0	0	10	0	0	0	9	0	0	0	16	0	4	0	11	50
Total	0	0	0	62	1	2	0	63	0	0	0	83	0	11	0	40	262
02:00 PM	0	0	0	17	0	0	0	10	0	0	0	18	0	3	0	7	55
02:15 PM	0	0	0	12	0	1	0	15	0	0	0	23	0	1	0	15	67
02:30 PM	0	0	0	19	0	0	0	15	0	0	0	18	0	2	0	12	66
02:45 PM	2	0	0	11	0	0	0	19	0	0	0	25	0	1	0	10	68
Total	2	0	0	59	0	1	0	59	0	0	0	84	0	7	0	44	256
03:00 PM	2	0	0	14	0	2	0	25	0	0	0	32	0	3	0	15	93
03:15 PM	0	0	1	14	0	0	0	23	0	0	0	8	0	0	1	17	64
03:30 PM	0	0	15	31	2	0	0	42	0	0	0	17	0	4	0	6	117
03:45 PM	0	0	0	24	0	0	0	35	0	0	0	26	0	1	0	15	101
Total	2	0	16	83	2	2	0	125	0	0	0	83	0	8	1	53	375
04:00 PM	0	0	0	21	0	2	0	28	0	0	0	35	0	5	0	18	109
04:15 PM	0	0	1	24	0	2	0	15	0	0	0	27	0	4	0	23	96

N/S: Ipswich Street/Gas Station Driveway
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File Name : 112476 L
Site Code : 407
Start Date : 4/14/2011

Groups Printed- Peds and Bicycles

	Ipswich Street From North				Boylston Street From East				Gas Station Driveways From South				Boylston Street From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
04:30 PM	1	0	0	17	0	0	0	24	0	0	0	19	0	1	0	18	80
04:45 PM	0	0	0	29	0	1	0	29	0	0	0	25	0	3	0	27	114
Total	1	0	1	91	0	5	0	96	0	0	0	106	0	13	0	86	399
05:00 PM	0	0	0	22	0	1	0	24	0	0	0	25	0	2	0	10	84
05:15 PM	1	0	0	25	0	1	0	20	0	0	0	19	0	4	0	13	83
05:30 PM	0	0	0	35	0	0	0	18	0	0	0	33	0	1	0	20	107
05:45 PM	0	0	0	27	0	2	0	34	0	0	0	22	0	8	0	15	108
Total	1	0	0	109	0	4	0	96	0	0	0	99	0	15	0	58	382
Grand Total	8	0	18	642	6	34	0	899	0	0	2	951	0	94	3	413	3070
Apprch %	1.2	0	2.7	96.1	0.6	3.6	0	95.7	0	0	0.2	99.8	0	18.4	0.6	81	
Total %	0.3	0	0.6	20.9	0.2	1.1	0	29.3	0	0	0.1	31	0	3.1	0.1	13.5	

	Ipswich Street From North					Boylston Street From East					Gas Station Driveways From South					Boylston Street From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:00 AM																					
08:00 AM	0	0	0	5	5	0	2	0	**19**	**21**	0	0	0	**21**	**21**	0	0	0	**12**	**12**	59
08:15 AM	0	0	0	9	9	0	1	0	10	11	0	0	0	9	9	0	**3**	0	5	8	37
08:30 AM	0	0	0	5	5	0	**3**	0	15	18	0	0	0	11	11	0	1	0	11	12	46
08:45 AM	0	0	0	**13**	**13**	0	0	0	17	17	0	0	0	20	20	0	3	0	7	10	**60**
Total Volume	0	0	0	32	32	0	6	0	61	67	0	0	0	61	61	0	7	0	35	42	202
% App. Total	0	0	0	100		0	9	0	91		0	0	0	100		0	16.7	0	83.3		
PHF	.000	.000	.000	.615	.615	.000	.500	.000	.803	.798	.000	.000	.000	.726	.726	.000	.583	.000	.729	.875	.842
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 11:15 AM																					
11:15 AM	0	0	0	12	12	0	0	0	**122**	**122**	0	0	0	**109**	**109**	0	**2**	0	7	9	**252**
11:30 AM	0	0	0	8	8	0	0	0	8	8	0	0	0	53	53	0	0	0	1	1	70
11:45 AM	0	0	0	13	13	0	0	0	17	17	0	0	0	5	5	0	2	0	5	7	42
12:00 PM	0	0	0	**18**	**18**	0	0	0	44	44	0	0	0	14	14	0	0	**1**	**9**	**10**	86
Total Volume	0	0	0	51	51	0	0	0	191	191	0	0	0	181	181	0	4	1	22	27	450
% App. Total	0	0	0	100		0	0	0	100		0	0	0	100		0	14.8	3.7	81.5		
PHF	.000	.000	.000	.708	.708	.000	.000	.000	.391	.391	.000	.000	.000	.415	.415	.000	.500	.250	.611	.675	.446
Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 03:30 PM																					
03:30 PM	0	0	**15**	**31**	**46**	**2**	0	0	**42**	**44**	0	0	0	17	17	0	4	0	6	10	**117**
03:45 PM	0	0	0	24	24	0	0	0	35	35	0	0	0	26	26	0	1	0	15	16	101
04:00 PM	0	0	0	21	21	0	**2**	0	28	30	0	0	0	**35**	**35**	0	**5**	0	18	23	109
04:15 PM	0	0	1	24	25	0	2	0	15	17	0	0	0	27	27	0	4	0	**23**	**27**	96
Total Volume	0	0	16	100	116	2	4	0	120	126	0	0	0	105	105	0	14	0	62	76	423
% App. Total	0	0	13.8	86.2		1.6	3.2	0	95.2		0	0	0	100		0	18.4	0	81.6		
PHF	.000	.000	.267	.806	.630	.250	.500	.000	.714	.716	.000	.000	.000	.750	.750	.000	.700	.000	.674	.704	.904

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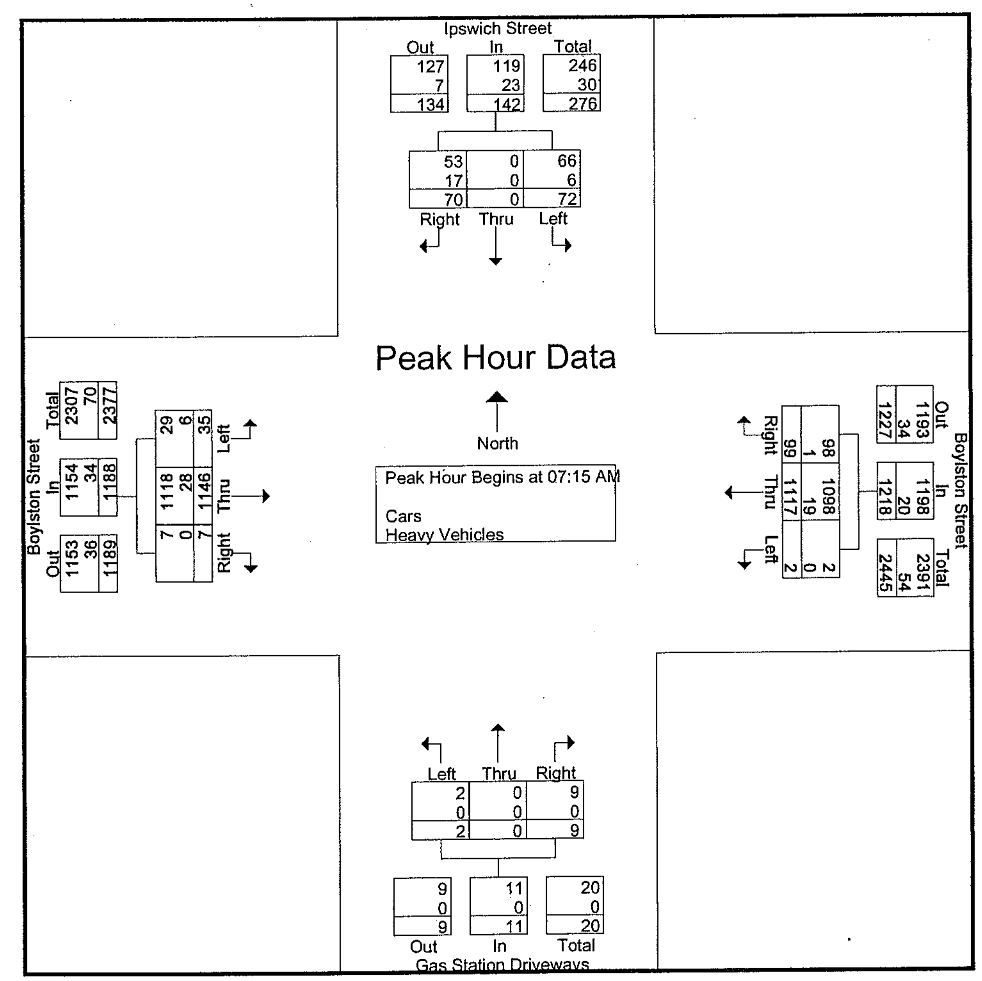
Start Date : 4/14/2011

	Ipswich Street From North				Boylston Street From East				Gas Station Driveways From South				Boylston Street From West				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	10	0	8	18	**28**	**298**	**1**	**327**	3	0	0	3	0	289	5	294	642
07:30 AM	21	0	17	38	26	292	1	319	**5**	0	**1**	**6**	**3**	295	**12**	310	**673**
07:45 AM	**22**	0	**29**	**51**	25	264	0	289	1	0	0	1	2	262	9	273	614
08:00 AM	17	0	18	35	20	263	0	283	0	0	1	1	2	**300**	9	**311**	630
Total Volume	70	0	72	142	99	1117	2	1218	9	0	2	11	7	1146	35	1188	2559
% App. Total	49.3	0	50.7		8.1	91.7	0.2		81.8	0	18.2		0.6	96.5	2.9		
PHF	.795	.000	.621	.696	.884	.937	.500	.931	.450	.000	.500	.458	.583	.955	.729	.955	.951
Cars	53	0	66	119	98	1098	2	1198	9	0	2	11	7	1118	29	1154	2482
% Cars	75.7	0	91.7	83.8	99.0	98.3	100	98.4	100	0	100	100	100	97.6	82.9	97.1	97.0
Heavy Vehicles	17	0	6	23	1	19	0	20	0	0	0	0	0	28	6	34	77
% Heavy Vehicles	24.3	0	8.3	16.2	1.0	1.7	0	1.6	0	0	0	0	0	2.4	17.1	2.9	3.0



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Start Date : 4/14/2011
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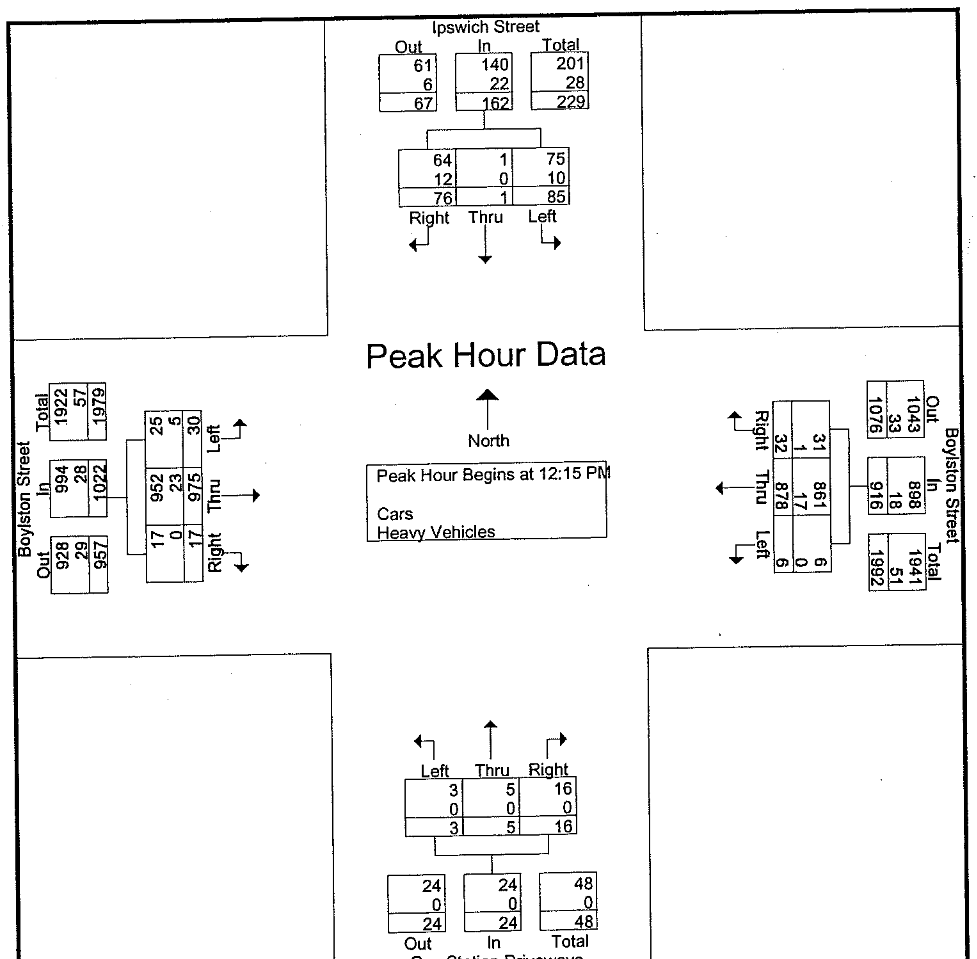
	Ipswich Street From North				Boylston Street From East				Gas Station Driveways From South				Boylston Street From West				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 12:15 PM																	
12:15 PM	**22**	0	9	31	7	**251**	0	**258**	4	0	**1**	5	4	253	**12**	269	**563**
12:30 PM	16	0	20	36	7	240	**3**	250	**5**	**2**	1	**8**	2	229	6	237	531
12:45 PM	21	**1**	26	**48**	8	197	2	207	4	2	0	6	**6**	**261**	4	**271**	532
01:00 PM	17	0	**30**	47	**10**	190	1	201	3	**1**	1	5	5	232	8	245	498
Total Volume	76	1	85	162	32	878	6	916	16	5	3	24	17	975	30	1022	2124
% App. Total	46.9	0.6	52.5		3.5	95.9	0.7		66.7	20.8	12.5		1.7	95.4	2.9		
PHF	.864	.250	.708	.844	.800	.875	.500	.888	.800	.625	.750	.750	.708	.934	.625	.943	.943
Cars	64	1	75	140	31	861	6	898	16	5	3	24	17	952	25	994	2056
% Cars	84.2	100	88.2	86.4	96.9	98.1	100	98.0	100	100	100	100	100	97.6	83.3	97.3	96.8
Heavy Vehicles	12	0	10	22	1	17	0	18	0	0	0	0	0	23	5	28	68
% Heavy Vehicles	15.8	0	11.8	13.6	3.1	1.9	0	2.0	0	0	0	0	0	2.4	16.7	2.7	3.2



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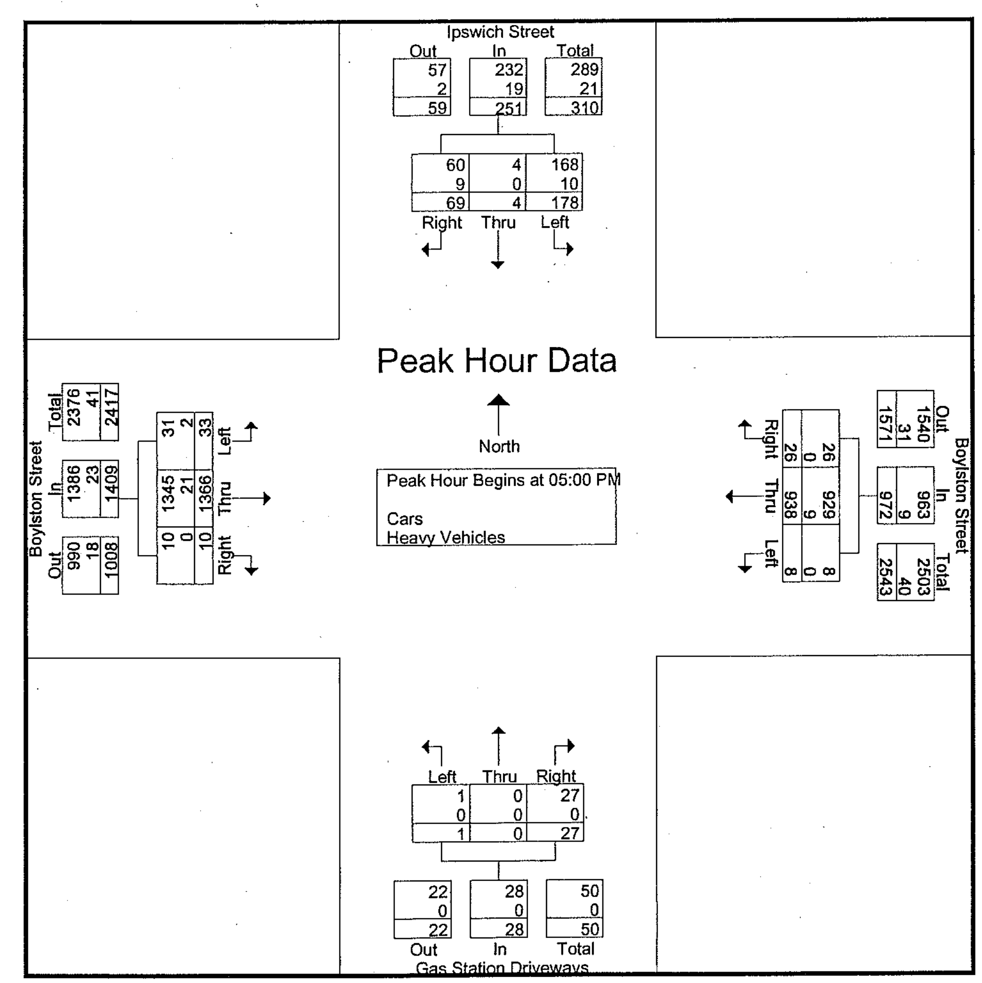
	Ipswich Street From North				Boylston Street From East				Gas Station Driveways From South				Boylston Street From West				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	16	1	**46**	63	6	242	**4**	**252**	5	0	**1**	6	1	334	3	338	659
05:15 PM	**19**	1	43	63	6	**244**	2	252	**9**	0	0	**9**	2	**368**	5	**375**	**699**
05:30 PM	15	0	46	61	6	230	2	238	8	0	0	8	**6**	344	6	356	663
05:45 PM	19	**2**	43	**64**	**8**	222	0	230	5	0	0	5	1	320	**19**	340	639
Total Volume	69	4	178	251	26	938	8	972	27	0	1	28	10	1366	33	1409	2660
% App. Total	27.5	1.6	70.9		2.7	96.5	0.8		96.4	0	3.6		0.7	96.9	2.3		
PHF	.908	.500	.967	.980	.813	.961	.500	.964	.750	.000	.250	.778	.417	.928	.434	.939	.951
Cars	60	4	168	232	26	929	8	963	27	0	1	28	10	1345	31	1386	2609
% Cars	87.0	100	94.4	92.4	100	99.0	100	99.1	100	0	100	100	100	98.5	93.9	98.4	98.1
Heavy Vehicles	9	0	10	19	0	9	0	9	0	0	0	0	0	21	2	23	51
% Heavy Vehicles	13.0	0	5.6	7.6	0	1.0	0	0.9	0	0	0	0	0	1.5	6.1	1.6	1.9



N/S: Yawkey Way/ Jersey Street
E/W: Boylston Street
City, State: Boston, MA
Client: Jacobs/ A. Fernandes

PRECISION
D A T A
INDUSTRIES, LLC
P.O. Box 301 Berlin, MA 01503
Office: 508.481.3999 Fax: 508.545.1234
Email: datarequests@pdillc.com

File Name : 112476 N
Site Code : 407
Start Date : 4/14/2011

Groups Printed- Cars - Heavy Vehicles

	Yawkey Way From North			Boylston Street From East				Jersey Street From South			Boylston Street From West				
Start Time	Right	Thru	Left	Right	Thru	Left	U-Turn	Right	Thru	Left	Right	Thru	Left	U-Turn	Int. Total
07:00 AM	0	0	0	8	282	5	0	14	1	5	6	236	4	0	561
07:15 AM	0	0	0	18	271	8	0	21	4	4	5	293	9	0	633
07:30 AM	0	0	0	17	271	3	0	19	8	4	10	282	10	0	624
07:45 AM	0	0	0	16	245	13	1	26	7	5	6	241	9	0	569
Total	0	0	0	59	1069	29	1	80	20	18	27	1052	32	0	2387
08:00 AM	0	0	1	6	240	8	0	16	8	2	9	280	9	0	579
08:15 AM	0	0	0	11	259	9	0	23	0	6	3	242	10	0	563
08:30 AM	0	0	0	18	283	5	0	16	1	3	5	224	6	0	561
08:45 AM	0	0	0	13	252	4	0	9	0	5	5	238	7	0	533
Total	0	0	1	48	1034	26	0	64	9	16	22	984	32	0	2236
09:00 AM	0	0	0	16	229	2	0	13	4	4	7	237	9	0	521
09:15 AM	0	0	0	13	219	7	0	10	6	3	6	238	6	0	508
09:30 AM	0	0	0	17	285	6	0	10	0	1	9	254	9	0	591
09:45 AM	0	0	0	12	259	5	0	10	2	2	8	239	15	0	552
Total	0	0	0	58	992	20	0	43	12	10	30	968	39	0	2172
10:00 AM	0	0	0	15	209	5	0	7	2	1	6	225	12	0	482
10:15 AM	0	0	0	11	187	8	0	9	2	3	4	214	13	0	451
10:30 AM	0	0	0	11	200	4	0	9	1	1	1	186	7	0	420
10:45 AM	0	0	0	13	203	9	0	13	4	3	8	233	12	0	498
Total	0	0	0	50	799	26	0	38	9	8	19	858	44	0	1851
11:00 AM	0	0	0	9	195	10	0	11	5	2	8	204	7	0	451
11:15 AM	0	1	0	13	218	5	0	4	3	5	14	249	8	0	520
11:30 AM	0	0	0	16	219	3	0	8	1	2	8	240	9	0	506
11:45 AM	0	0	0	16	187	6	1	5	1	1	10	219	7	1	454
Total	0	1	0	54	819	24	1	28	10	10	40	912	31	1	1931
12:00 PM	1	0	0	6	207	9	0	11	0	1	25	203	5	0	468
12:15 PM	0	0	0	13	240	7	0	11	7	3	10	250	12	0	553
12:30 PM	0	0	1	13	215	9	0	7	1	2	16	224	8	4	500
12:45 PM	0	0	0	9	177	7	0	11	4	1	20	241	4	0	474
Total	1	0	1	41	839	32	0	40	12	7	71	918	29	4	1995
01:00 PM	1	0	1	14	188	8	0	11	4	2	8	222	11	0	470
01:15 PM	0	0	0	14	173	10	0	20	4	3	13	237	11	0	485
01:30 PM	0	0	0	12	211	7	0	16	3	2	10	262	8	0	531
01:45 PM	1	0	1	8	215	11	0	12	2	2	10	238	11	0	511
Total	2	0	2	48	787	36	0	59	13	9	41	959	41	0	1997
02:00 PM	0	0	0	10	203	10	0	9	4	2	7	239	9	0	493
02:15 PM	0	0	0	10	207	7	1	14	1	2	6	272	4	0	524
02:30 PM	0	0	0	10	207	6	0	13	3	2	9	282	5	0	537
02:45 PM	0	0	0	20	212	9	0	14	2	1	9	287	4	0	558
Total	0	0	0	50	829	32	1	50	10	7	31	1080	22	0	2112
03:00 PM	0	0	0	9	242	10	2	18	2	2	6	273	3	0	567
03:15 PM	0	0	0	6	193	6	0	12	1	1	11	251	5	0	486
03:30 PM	1	0	0	8	204	11	0	18	7	2	10	270	5	0	536
03:45 PM	0	0	0	10	220	9	1	14	3	3	8	294	5	0	567
Total	1	0	0	33	859	36	3	62	13	8	35	1088	18	0	2156
04:00 PM	0	0	0	11	216	6	0	17	3	2	7	288	5	0	555
04:15 PM	0	0	0	10	209	15	1	17	1	3	4	265	3	0	528

N/S: Yawkey Way/ Jersey Street
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PRECISION
D A T A
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Office: 508.481.3999 Fax: 508.545.1234
Email: datarequests@pdillc.com

File Name : 112476 N
Site Code : 407
Start Date : 4/14/2011

Groups Printed- Cars - Heavy Vehicles

	Yawkey Way From North			Boylston Street From East				Jersey Street From South			Boylston Street From West				
Start Time	Right	Thru	Left	Right	Thru	Left	U-Turn	Right	Thru	Left	Right	Thru	Left	U-Turn	Int. Total
04:30 PM	0	0	0	15	231	7	1	15	4	6	12	301	7	0	599
04:45 PM	0	0	0	9	204	9	0	21	5	2	9	280	7	0	546
Total	0	0	0	45	860	37	2	70	13	13	32	1134	22	0	2228
05:00 PM	0	0	0	8	244	9	1	29	1	5	6	301	9	0	613
05:15 PM	1	0	0	8	218	13	1	34	4	2	7	295	6	0	589
05:30 PM	0	0	0	4	217	7	0	20	0	7	10	304	5	0	574
05:45 PM	0	0	0	8	200	10	0	17	4	4	7	284	7	0	541
Total	1	0	0	28	879	39	2	100	9	18	30	1184	27	0	2317
Grand Total	5	1	4	514	9766	337	10	634	130	124	378	11137	337	5	23382
Apprch %	50	10	40	4.8	91.9	3.2	0.1	71.4	14.6	14	3.2	93.9	2.8	0	
Total %	0	0	0	2.2	41.8	1.4	0	2.7	0.6	0.5	1.6	47.6	1.4	0	
Cars	5	1	4	475	9558	321	10	587	115	116	368	10882	289	5	22736
% Cars	100	100	100	92.4	97.9	95.3	100	92.6	88.5	93.5	97.4	97.7	85.8	100	97.2
Heavy Vehicles	0	0	0	39	208	16	0	47	15	8	10	255	48	0	646
% Heavy Vehicles	0	0	0	7.6	2.1	4.7	0	7.4	11.5	6.5	2.6	2.3	14.2	0	2.8

	Yawkey Way From North				Boylston Street From East					Jersey Street From South				Boylston Street From West					
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 07:15 AM																			
07:15 AM	0	0	0	0	**18**	**271**	8	0	**297**	21	4	4	29	5	**293**	9	0	**307**	**633**
07:30 AM	0	0	0	0	17	271	3	0	291	19	**8**	4	31	**10**	282	**10**	0	302	624
07:45 AM	0	0	0	0	16	245	**13**	**1**	275	**26**	7	**5**	**38**	6	241	9	0	256	569
08:00 AM	0	0	**1**	**1**	6	240	8	0	254	16	8	2	26	9	280	9	0	298	579
Total Volume	0	0	1	1	57	1027	32	1	1117	82	27	15	124	30	1096	37	0	1163	2405
% App. Total	0	0	100		5.1	91.9	2.9	0.1		66.1	21.8	12.1		2.6	94.2	3.2	0		
PHF	.000	.000	.250	.250	.792	.947	.615	.250	.940	.788	.844	.750	.816	.750	.935	.925	.000	.947	.950
Cars	0	0	1	1	55	994	31	1	1081	75	25	14	114	30	1072	32	0	1134	2330
% Cars	0	0	100	100	96.5	96.8	96.9	100	96.8	91.5	92.6	93.3	91.9	100	97.8	86.5	0	97.5	96.9
Heavy Vehicles	0	0	0	0	2	33	1	0	36	7	2	1	10	0	24	5	0	29	75
% Heavy Vehicles	0	0	0	0	3.5	3.2	3.1	0	3.2	8.5	7.4	6.7	8.1	0	2.2	13.5	0	2.5	3.1
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 12:15 PM																			
12:15 PM	0	0	0	0	13	**240**	7	0	**260**	**11**	**7**	**3**	**21**	10	**250**	**12**	0	**272**	**553**
12:30 PM	0	0	**1**	1	13	215	**9**	0	237	7	1	2	10	16	224	8	**4**	252	500
12:45 PM	0	0	0	0	9	177	7	0	193	11	4	1	16	**20**	241	4	0	265	474
01:00 PM	**1**	0	1	**2**	**14**	188	8	0	210	11	4	2	17	8	222	11	0	241	470
Total Volume	1	0	2	3	49	820	31	0	900	40	16	8	64	54	937	35	4	1030	1997
% App. Total	33.3	0	66.7		5.4	91.1	3.4	0		62.5	25	12.5		5.2	91	3.4	0.4		
PHF	.250	.000	.500	.375	.875	.854	.861	.000	.865	.909	.571	.667	.762	.675	.937	.729	.250	.947	.903
Cars	1	0	2	3	45	798	29	0	872	31	14	6	51	54	914	31	4	1003	1929
% Cars	100	0	100	100	91.8	97.3	93.5	0	96.9	77.5	87.5	75.0	79.7	100	97.5	88.6	100	97.4	96.6
Heavy Vehicles	0	0	0	0	4	22	2	0	28	9	2	2	13	0	23	4	0	27	68
% Heavy Vehicles	0	0	0	0	8.2	2.7	6.5	0	3.1	22.5	12.5	25.0	20.3	0	2.5	11.4	0	2.6	3.4

PRECISION
DATA
INDUSTRIES, LLC

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N/S: Yawkey Way/ Jersey Street
E/W: Boylston Street
City, State: Boston, MA
Client: Jacobs/ A. Fernandes

File Name : 112476 N
Site Code : 407
Start Date : 4/14/2011

	Yawkey Way From North				Boylston Street From East					Jersey Street From South				Boylston Street From West					
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 04:30 PM																			
04:30 PM	0	0	0	0	**15**	231	7	**1**	254	15	4	**6**	25	**12**	**301**	7	0	**320**	599
04:45 PM	0	0	0	0	9	204	9	0	222	21	**5**	2	28	9	280	7	0	296	546
05:00 PM	0	0	0	0	8	**244**	9	1	**262**	29	1	5	35	6	301	**9**	0	316	**613**
05:15 PM	**1**	0	0	**1**	8	218	**13**	1	240	**34**	4	2	**40**	7	295	6	0	308	589
Total Volume	1	0	0	1	40	897	38	3	978	99	14	15	128	34	1177	29	0	1240	2347
% App. Total	100	0	0		4.1	91.7	3.9	0.3		77.3	10.9	11.7		2.7	94.9	2.3	0		
PHF	.250	.000	.000	.250	.667	.919	.731	.750	.933	.728	.700	.625	.800	.708	.978	.806	.000	.969	.957
Cars	1	0	0	1	36	881	38	3	958	94	14	14	122	34	1156	24	0	1214	2295
% Cars	100	0	0	100	90.0	98.2	100	100	98.0	94.9	100	93.3	95.3	100	98.2	82.8	0	97.9	97.8
Heavy Vehicles	0	0	0	0	4	16	0	0	20	5	0	1	6	0	21	5	0	26	52
% Heavy Vehicles	0	0	0	0	10.0	1.8	0	0	2.0	5.1	0	6.7	4.7	0	1.8	17.2	0	2.1	2.2

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City, State: Boston, MA
Client: Jacobs/ A. Fernandes

File Name : 112476 N
Site Code : 407
Start Date : 4/14/2011

Groups Printed- Cars

	Yawkey Way From North			Boylston Street From East				Jersey Street From South			Boylston Street From West				
Start Time	Right	Thru	Left	Right	Thru	Left	U-Turn	Right	Thru	Left	Right	Thru	Left	U-Turn	Int. Total
07:00 AM	0	0	0	8	279	4	0	12	1	5	5	229	4	0	547
07:15 AM	0	0	0	18	266	8	0	19	4	4	5	289	8	0	621
07:30 AM	0	0	0	17	261	3	0	18	7	3	10	277	8	0	604
07:45 AM	0	0	0	14	237	12	1	23	7	5	6	235	8	0	548
Total	0	0	0	57	1043	27	1	72	19	17	26	1030	28	0	2320
08:00 AM	0	0	1	6	230	8	0	15	7	2	9	271	8	0	557
08:15 AM	0	0	0	10	254	9	0	23	0	6	3	236	10	0	551
08:30 AM	0	0	0	17	275	4	0	14	1	3	5	220	5	0	544
08:45 AM	0	0	0	11	246	3	0	8	0	3	5	234	6	0	516
Total	0	0	1	44	1005	24	0	60	8	14	22	961	29	0	2168
09:00 AM	0	0	0	16	221	2	0	12	4	4	7	228	8	0	502
09:15 AM	0	0	0	13	212	7	0	10	6	3	6	234	4	0	495
09:30 AM	0	0	0	17	277	6	0	9	0	1	8	250	8	0	576
09:45 AM	0	0	0	11	253	5	0	10	2	2	8	230	12	0	533
Total	0	0	0	57	963	20	0	41	12	10	29	942	32	0	2106
10:00 AM	0	0	0	13	202	5	0	6	2	1	6	217	9	0	461
10:15 AM	0	0	0	11	185	7	0	8	1	3	4	208	13	0	440
10:30 AM	0	0	0	10	196	4	0	8	0	1	1	179	4	0	403
10:45 AM	0	0	0	12	199	8	0	13	4	2	8	224	11	0	481
Total	0	0	0	46	782	24	0	35	7	7	19	828	37	0	1785
11:00 AM	0	0	0	7	193	10	0	11	5	1	8	198	5	0	438
11:15 AM	0	1	0	13	213	4	0	3	3	5	13	241	6	0	502
11:30 AM	0	0	0	14	218	3	0	7	1	2	8	228	7	0	488
11:45 AM	0	0	0	16	184	6	1	4	1	1	9	216	7	1	446
Total	0	1	0	50	808	23	1	25	10	9	38	883	25	1	1874
12:00 PM	1	0	0	5	203	9	0	10	0	1	23	197	4	0	453
12:15 PM	0	0	0	12	232	7	0	8	7	3	10	244	11	0	534
12:30 PM	0	0	1	12	209	7	0	4	0	1	16	216	7	4	477
12:45 PM	0	0	0	8	174	7	0	9	4	1	20	239	3	0	465
Total	1	0	1	37	818	30	0	31	11	6	69	896	25	4	1929
01:00 PM	1	0	1	13	183	8	0	10	3	1	8	215	10	0	453
01:15 PM	0	0	0	14	171	10	0	20	3	3	13	233	9	0	476
01:30 PM	0	0	0	11	206	7	0	15	2	2	10	252	7	0	512
01:45 PM	1	0	1	7	211	10	0	11	1	2	9	231	11	0	495
Total	2	0	2	45	771	35	0	56	9	8	40	931	37	0	1936
02:00 PM	0	0	0	9	198	10	0	7	1	2	7	235	9	0	478
02:15 PM	0	0	0	10	205	7	1	14	1	2	5	268	3	0	516
02:30 PM	0	0	0	9	204	6	0	12	3	2	9	274	5	0	524
02:45 PM	0	0	0	19	209	9	0	14	2	1	8	281	3	0	546
Total	0	0	0	47	816	32	1	47	7	7	29	1058	20	0	2064
03:00 PM	0	0	0	8	236	10	2	16	2	2	6	266	2	0	550
03:15 PM	0	0	0	6	192	4	0	12	1	1	11	246	5	0	478
03:30 PM	1	0	0	5	200	11	0	17	5	2	10	265	4	0	520
03:45 PM	0	0	0	8	215	8	1	13	3	3	8	291	4	0	554
Total	1	0	0	27	843	33	3	58	11	8	35	1068	15	0	2102
04:00 PM	0	0	0	10	211	5	0	16	3	2	6	285	5	0	543
04:15 PM	0	0	0	9	208	13	1	17	0	3	4	262	2	0	519

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Groups Printed- Cars

	Yawkey Way From North			Boylston Street From East				Jersey Street From South			Boylston Street From West				
Start Time	Right	Thru	Left	Right	Thru	Left	U-Turn	Right	Thru	Left	Right	Thru	Left	U-Turn	Int. Total
04:30 PM	0	0	0	14	229	7	1	13	4	6	12	299	5	0	590
04:45 PM	0	0	0	8	197	9	0	20	5	2	9	275	7	0	532
Total	0	0	0	41	845	34	2	66	12	13	31	1121	19	0	2184
05:00 PM	0	0	0	7	239	9	1	28	1	5	6	292	7	0	595
05:15 PM	1	0	0	7	216	13	1	33	4	1	7	290	5	0	578
05:30 PM	0	0	0	3	213	7	0	18	0	7	10	302	5	0	565
05:45 PM	0	0	0	7	196	10	0	17	4	4	7	280	5	0	530
Total	1	0	0	24	864	39	2	96	9	17	30	1164	22	0	2268
Grand Total	5	1	4	475	9558	321	10	587	115	116	368	10882	289	5	22736
Apprch %	50	10	40	4.6	92.2	3.1	0.1	71.8	14.1	14.2	3.2	94.3	2.5	0	
Total %	0	0	0	2.1	42	1.4	0	2.6	0.5	0.5	1.6	47.9	1.3	0	

	Yawkey Way From North				Boylston Street From East					Jersey Street From South				Boylston Street From West					
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 07:15 AM																			
07:15 AM	0	0	0	0	**18**	**266**	8	0	**292**	19	4	4	27	5	**289**	**8**	0	**302**	**621**
07:30 AM	0	0	0	0	17	261	3	0	281	18	**7**	3	28	**10**	277	8	0	295	604
07:45 AM	0	0	0	0	14	237	**12**	**1**	264	**23**	7	**5**	**35**	6	235	8	0	249	548
08:00 AM	0	0	**1**	**1**	6	230	8	0	244	15	7	2	24	9	271	8	0	288	557
Total Volume	0	0	1	1	55	994	31	1	1081	75	25	14	114	30	1072	32	0	1134	2330
% App. Total	0	0	100		5.1	92	2.9	0.1		65.8	21.9	12.3		2.6	94.5	2.8	0		
PHF	.000	.000	.250	.250	.764	.934	.646	.250	.926	.815	.893	.700	.814	.750	.927	1.000	.000	.939	.938
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 01:00 PM																			
01:00 PM	**1**	0	**1**	**2**	13	183	8	0	204	10	**3**	1	14	8	215	10	0	233	453
01:15 PM	0	0	0	0	**14**	171	**10**	0	195	**20**	3	**3**	**26**	**13**	233	9	0	255	476
01:30 PM	0	0	0	0	11	206	7	0	224	15	2	2	19	10	**252**	7	0	**269**	**512**
01:45 PM	1	0	1	2	7	**211**	10	0	**228**	11	1	2	14	9	231	**11**	0	251	495
Total Volume	2	0	2	4	45	771	35	0	851	56	9	8	73	40	931	37	0	1008	1936
% App. Total	50	0	50		5.3	90.6	4.1	0		76.7	12.3	11		4	92.4	3.7	0		
PHF	.500	.000	.500	.500	.804	.914	.875	.000	.933	.700	.750	.667	.702	.769	.924	.841	.000	.937	.945
Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 04:30 PM																			
04:30 PM	0	0	0	0	**14**	229	7	**1**	251	13	4	**6**	23	**12**	**299**	5	0	**316**	590
04:45 PM	0	0	0	0	8	197	9	0	214	20	**5**	2	27	9	275	**7**	0	291	532
05:00 PM	0	0	0	0	7	**239**	9	1	**256**	28	1	5	34	6	292	7	0	305	**595**
05:15 PM	**1**	0	0	**1**	7	216	**13**	1	237	**33**	4	1	**38**	7	290	5	0	302	578
Total Volume	1	0	0	1	36	881	38	3	958	94	14	14	122	34	1156	24	0	1214	2295
% App. Total	100	0	0		3.8	92	4	0.3		77	11.5	11.5		2.8	95.2	2	0		
PHF	.250	.000	.000	.250	.643	.922	.731	.750	.936	.712	.700	.583	.803	.708	.967	.857	.000	.960	.964

N/S: Yawkey Way/ Jersey Street
E/W: Boylston Street
City, State: Boston, MA
Client: Jacobs/ A. Fernandes

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File Name : 112476 N
Site Code : 407
Start Date : 4/14/2011

Groups Printed- Heavy Vehicles

	Yawkey Way From North			Boylston Street From East				Jersey Street From South			Boylston Street From West				
Start Time	Right	Thru	Left	Right	Thru	Left	U-Turn	Right	Thru	Left	Right	Thru	Left	U-Turn	Int. Total
07:00 AM	0	0	0	0	3	1	0	2	0	0	1	7	0	0	14
07:15 AM	0	0	0	0	5	0	0	2	0	0	0	4	1	0	12
07:30 AM	0	0	0	0	10	0	0	1	1	1	0	5	2	0	20
07:45 AM	0	0	0	2	8	1	0	3	0	0	0	6	1	0	21
Total	0	0	0	2	26	2	0	8	1	1	1	22	4	0	67
08:00 AM	0	0	0	0	10	0	0	1	1	0	0	9	1	0	22
08:15 AM	0	0	0	1	5	0	0	0	0	0	0	6	0	0	12
08:30 AM	0	0	0	1	8	1	0	2	0	0	0	4	1	0	17
08:45 AM	0	0	0	2	6	1	0	1	0	2	0	4	1	0	17
Total	0	0	0	4	29	2	0	4	1	2	0	23	3	0	68
09:00 AM	0	0	0	0	8	0	0	1	0	0	0	9	1	0	19
09:15 AM	0	0	0	0	7	0	0	0	0	0	0	4	2	0	13
09:30 AM	0	0	0	0	8	0	0	1	0	0	1	4	1	0	15
09:45 AM	0	0	0	1	6	0	0	0	0	0	0	9	3	0	19
Total	0	0	0	1	29	0	0	2	0	0	1	26	7	0	66
10:00 AM	0	0	0	2	7	0	0	1	0	0	0	8	3	0	21
10:15 AM	0	0	0	0	2	1	0	1	1	0	0	6	0	0	11
10:30 AM	0	0	0	1	4	0	0	1	1	0	0	7	3	0	17
10:45 AM	0	0	0	1	4	1	0	0	0	1	0	9	1	0	17
Total	0	0	0	4	17	2	0	3	2	1	0	30	7	0	66
11:00 AM	0	0	0	2	2	0	0	0	0	1	0	6	2	0	13
11:15 AM	0	0	0	0	5	1	0	1	0	0	1	8	2	0	18
11:30 AM	0	0	0	2	1	0	0	1	0	0	0	12	2	0	18
11:45 AM	0	0	0	0	3	0	0	1	0	0	1	3	0	0	8
Total	0	0	0	4	11	1	0	3	0	1	2	29	6	0	57
12:00 PM	0	0	0	1	4	0	0	1	0	0	2	6	1	0	15
12:15 PM	0	0	0	1	8	0	0	3	0	0	0	6	1	0	19
12:30 PM	0	0	0	1	6	2	0	3	1	1	0	8	1	0	23
12:45 PM	0	0	0	1	3	0	0	2	0	0	0	2	1	0	9
Total	0	0	0	4	21	2	0	9	1	1	2	22	4	0	66
01:00 PM	0	0	0	1	5	0	0	1	1	1	0	7	1	0	17
01:15 PM	0	0	0	0	2	0	0	0	1	0	0	4	2	0	9
01:30 PM	0	0	0	1	5	0	0	1	1	0	0	10	1	0	19
01:45 PM	0	0	0	1	4	1	0	1	1	0	1	7	0	0	16
Total	0	0	0	3	16	1	0	3	4	1	1	28	4	0	61
02:00 PM	0	0	0	1	5	0	0	2	3	0	0	4	0	0	15
02:15 PM	0	0	0	0	2	0	0	0	0	0	1	4	1	0	8
02:30 PM	0	0	0	1	3	0	0	1	0	0	0	8	0	0	13
02:45 PM	0	0	0	1	3	0	0	0	0	0	1	6	1	0	12
Total	0	0	0	3	13	0	0	3	3	0	2	22	2	0	48
03:00 PM	0	0	0	1	6	0	0	2	0	0	0	7	1	0	17
03:15 PM	0	0	0	0	1	2	0	0	0	0	0	5	0	0	8
03:30 PM	0	0	0	3	4	0	0	1	2	0	0	5	1	0	16
03:45 PM	0	0	0	2	5	1	0	1	0	0	0	3	1	0	13
Total	0	0	0	6	16	3	0	4	2	0	0	20	3	0	54
04:00 PM	0	0	0	1	5	1	0	1	0	0	1	3	0	0	12
04:15 PM	0	0	0	1	1	2	0	0	1	0	0	3	1	0	9

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N/S: Yawkey Way/ Jersey Street
E/W: Boylston Street
City, State: Boston, MA
Client: Jacobs/ A. Fernandes

File Name : 112476 N
Site Code : 407
Start Date : 4/14/2011

Groups Printed- Heavy Vehicles

	Yawkey Way From North			Boylston Street From East				Jersey Street From South			Boylston Street From West				
Start Time	Right	Thru	Left	Right	Thru	Left	U-Turn	Right	Thru	Left	Right	Thru	Left	U-Turn	Int. Total
04:30 PM	0	0	0	1	2	0	0	2	0	0	0	2	2	0	9
04:45 PM	0	0	0	1	7	0	0	1	0	0	0	5	0	0	14
Total	0	0	0	4	15	3	0	4	1	0	1	13	3	0	44
05:00 PM	0	0	0	1	5	0	0	1	0	0	0	9	2	0	18
05:15 PM	0	0	0	1	2	0	0	1	0	1	0	5	1	0	11
05:30 PM	0	0	0	1	4	0	0	2	0	0	0	2	0	0	9
05:45 PM	0	0	0	1	4	0	0	0	0	0	0	4	2	0	11
Total	0	0	0	4	15	0	0	4	0	1	0	20	5	0	49
Grand Total	0	0	0	39	208	16	0	47	15	8	10	255	48	0	646
Apprch %	0	0	0	14.8	79.1	6.1	0	67.1	21.4	11.4	3.2	81.5	15.3	0	
Total %	0	0	0	6	32.2	2.5	0	7.3	2.3	1.2	1.5	39.5	7.4	0	

	Yawkey Way From North				Boylston Street From East					Jersey Street From South				Boylston Street From West					
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 07:15 AM																			
07:15 AM	0	0	0	0	0	5	0	0	5	2	0	0	2	0	4	1	0	5	12
07:30 AM	0	0	0	0	0	**10**	0	0	10	1	**1**	**1**	**3**	0	5	**2**	0	7	20
07:45 AM	0	0	0	0	**2**	8	**1**	0	**11**	**3**	0	0	3	0	6	1	0	7	21
08:00 AM	0	0	0	0	0	10	0	0	10	1	1	0	2	0	**9**	1	0	**10**	**22**
Total Volume	0	0	0	0	2	33	1	0	36	7	2	1	10	0	24	5	0	29	75
% App. Total	0	0	0		5.6	91.7	2.8	0		70	20	10		0	82.8	17.2	0		
PHF	.000	.000	.000	.000	.250	.825	.250	.000	.818	.583	.500	.250	.833	.000	.667	.625	.000	.725	.852
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 12:15 PM																			
12:15 PM	0	0	0	0	**1**	**8**	0	0	**9**	**3**	0	0	3	0	6	**1**	0	7	19
12:30 PM	0	0	0	0	1	6	**2**	0	9	3	**1**	**1**	**5**	0	**8**	1	0	**9**	**23**
12:45 PM	0	0	0	0	1	3	0	0	4	2	0	0	2	0	2	1	0	3	9
01:00 PM	0	0	0	0	1	5	0	0	6	1	1	1	3	0	7	1	0	8	17
Total Volume	0	0	0	0	4	22	2	0	28	9	2	2	13	0	23	4	0	27	68
% App. Total	0	0	0		14.3	78.6	7.1	0		69.2	15.4	15.4		0	85.2	14.8	0		
PHF	.000	.000	.000	.000	1.000	.688	.250	.000	.778	.750	.500	.500	.650	.000	.719	1.000	.000	.750	.739
Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 03:00 PM																			
03:00 PM	0	0	0	0	1	**6**	0	0	7	**2**	0	0	2	0	**7**	**1**	0	**8**	**17**
03:15 PM	0	0	0	0	0	1	**2**	0	3	0	0	0	0	0	5	0	0	5	8
03:30 PM	0	0	0	0	**3**	4	0	0	7	1	**2**	0	**3**	0	5	1	0	6	16
03:45 PM	0	0	0	0	2	5	1	0	**8**	1	0	0	1	0	3	1	0	4	13
Total Volume	0	0	0	0	6	16	3	0	25	4	2	0	6	0	20	3	0	23	54
% App. Total	0	0	0		24	64	12	0		66.7	33.3	0		0	87	13	0		
PHF	.000	.000	.000	.000	.500	.667	.375	.000	.781	.500	.250	.000	.500	.000	.714	.750	.000	.719	.794

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N/S: Yawkey Way/ Jersey Street
E/W: Boylston Street
City, State: Boston, MA
Client: Jacobs/ A. Fernandes

File Name : 112476 N
Site Code : 407
Start Date : 4/14/2011

Groups Printed- Peds and Bicycles

	Yawkey Way From North				Boylston Street From East				Jersey Street From South				Boylston Street From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
07:00 AM	0	0	0	4	0	0	0	9	0	0	0	7	0	1	0	11	32
07:15 AM	1	1	0	7	0	1	0	21	0	0	0	14	0	0	0	9	54
07:30 AM	0	0	1	18	0	1	1	24	0	1	0	10	0	3	0	17	76
07:45 AM	0	0	0	12	0	0	0	29	1	0	0	16	0	0	0	19	77
Total	1	1	1	41	0	2	1	83	1	1	0	47	0	4	0	56	239
08:00 AM	0	1	0	14	0	0	0	38	0	2	0	21	0	0	0	11	87
08:15 AM	0	0	0	11	0	2	0	23	1	2	0	16	0	1	0	15	71
08:30 AM	0	0	0	8	0	4	1	24	0	0	0	10	0	3	0	15	65
08:45 AM	0	0	0	18	0	0	0	25	1	1	0	25	1	2	0	22	95
Total	0	1	0	51	0	6	1	110	2	5	0	72	1	6	0	63	318
09:00 AM	0	2	0	8	1	3	0	24	0	1	0	10	0	2	0	9	60
09:15 AM	0	0	0	8	0	1	0	16	0	0	0	16	0	1	0	17	59
09:30 AM	0	0	0	17	0	0	0	13	0	1	0	14	0	1	0	13	59
09:45 AM	0	0	0	10	0	1	0	21	0	0	0	21	0	3	0	24	80
Total	0	2	0	43	1	5	0	74	0	2	0	61	0	7	0	63	258
10:00 AM	0	0	0	16	0	1	0	12	0	0	0	19	0	4	0	27	79
10:15 AM	0	0	0	8	0	0	0	16	0	0	0	14	0	11	0	21	70
10:30 AM	0	0	0	8	1	3	0	10	0	0	0	21	0	1	0	22	66
10:45 AM	0	0	0	5	0	0	0	6	0	0	0	8	0	1	0	17	37
Total	0	0	0	37	1	4	0	44	0	0	0	62	0	17	0	87	252
11:00 AM	0	0	0	6	0	1	0	10	0	0	0	11	0	1	0	11	40
11:15 AM	0	0	0	12	0	1	0	14	0	0	0	11	0	1	0	12	51
11:30 AM	0	1	0	6	0	1	0	9	0	0	0	6	0	0	0	8	31
11:45 AM	0	0	0	13	0	3	0	19	0	0	0	4	0	2	0	19	60
Total	0	1	0	37	0	6	0	52	0	0	0	32	0	4	0	50	182
12:00 PM	0	0	0	23	0	1	0	68	0	0	0	14	0	1	0	23	130
12:15 PM	0	1	0	27	0	0	0	20	0	0	0	17	0	3	0	34	102
12:30 PM	0	0	0	30	0	1	0	25	0	0	1	29	0	3	0	41	130
12:45 PM	0	0	0	41	0	2	0	32	2	0	0	27	0	4	0	34	142
Total	0	1	0	121	0	4	0	145	2	0	1	87	0	11	0	132	504
01:00 PM	0	0	0	23	0	1	0	33	0	1	0	25	0	4	0	25	112
01:15 PM	0	0	0	22	0	1	0	33	0	0	0	36	1	3	0	32	128
01:30 PM	0	0	0	29	0	0	0	20	0	0	0	19	0	2	0	24	94
01:45 PM	1	0	0	38	0	0	0	27	0	2	0	29	1	2	0	33	133
Total	1	0	0	112	0	2	0	113	0	3	0	109	2	11	0	114	467
02:00 PM	0	2	0	27	0	0	0	23	0	0	0	31	0	4	0	19	106
02:15 PM	0	1	0	19	0	0	0	17	0	0	0	29	0	0	0	35	101
02:30 PM	0	0	1	25	0	3	0	19	0	0	0	17	0	2	0	26	93
02:45 PM	0	0	0	20	0	2	0	21	0	0	0	28	0	1	0	23	95
Total	0	3	1	91	0	5	0	80	0	0	0	105	0	7	0	103	395
03:00 PM	0	1	0	23	1	2	0	16	0	1	0	36	0	1	0	45	126
03:15 PM	1	3	0	24	0	1	0	23	0	0	0	19	1	1	0	22	95
03:30 PM	0	1	0	31	0	0	0	44	0	1	0	40	0	3	0	35	155
03:45 PM	0	0	0	25	0	1	0	33	0	1	0	24	0	2	0	19	105
Total	1	5	0	103	1	4	0	116	0	3	0	119	1	7	0	121	481
04:00 PM	0	1	0	15	0	1	1	26	0	1	0	25	0	3	2	26	101
04:15 PM	0	1	0	14	0	2	0	38	1	0	0	35	0	2	0	27	120

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Groups Printed- Peds and Bicycles

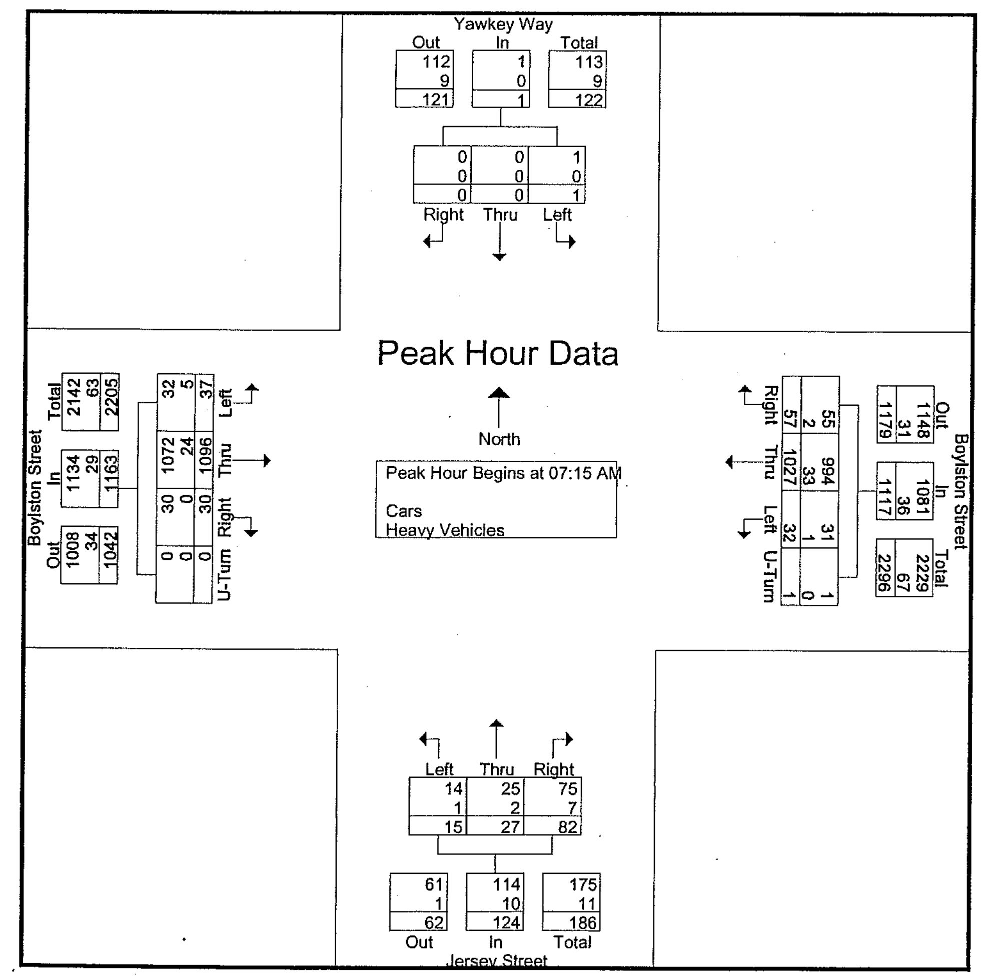
	Yawkey Way From North				Boylston Street From East				Jersey Street From South				Boylston Street From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
04:30 PM	0	0	0	30	2	1	0	47	0	0	0	29	0	5	0	40	154
04:45 PM	0	2	0	36	0	1	0	50	1	0	0	35	0	4	0	28	157
Total	0	4	0	95	2	5	1	161	2	1	0	124	0	14	2	121	532
05:00 PM	0	1	0	36	0	1	0	64	0	2	0	28	0	2	1	38	173
05:15 PM	0	1	0	21	0	5	0	33	1	3	0	42	0	2	0	31	139
05:30 PM	0	1	0	34	0	1	0	49	0	0	0	33	0	1	0	50	169
05:45 PM	0	0	0	26	0	2	2	36	0	0	0	36	0	7	0	30	139
Total	0	3	0	117	0	9	2	182	1	5	0	139	0	12	1	149	620
Grand Total	3	21	2	848	5	52	5	1160	8	20	1	957	4	100	3	1059	4248
Apprch %	0.3	2.4	0.2	97	0.4	4.3	0.4	94.9	0.8	2	0.1	97.1	0.3	8.6	0.3	90.8	
Total %	0.1	0.5	0	20	0.1	1.2	0.1	27.3	0.2	0.5	0	22.5	0.1	2.4	0.1	24.9	

	Yawkey Way From North					Boylston Street From East					Jersey Street From South					Boylston Street From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:00 AM																					
08:00 AM	0	**1**	0	14	15	0	0	0	**38**	**38**	0	**2**	0	21	23	0	0	0	11	11	87
08:15 AM	0	0	0	11	11	0	2	0	23	25	**1**	2	0	16	19	0	1	0	15	16	71
08:30 AM	0	0	0	8	8	0	**4**	**1**	24	29	0	0	0	10	10	0	**3**	0	15	18	65
08:45 AM	0	0	0	**18**	**18**	0	0	0	25	25	1	1	0	**25**	**27**	**1**	2	0	**22**	**25**	**95**
Total Volume	0	1	0	51	52	0	6	1	110	117	2	5	0	72	79	1	6	0	63	70	318
% App. Total	0	1.9	0	98.1		0	5.1	0.9	94		2.5	6.3	0	91.1		1.4	8.6	0	90		
PHF	.000	.250	.000	.708	.722	.000	.375	.250	.724	.770	.500	.625	.000	.720	.731	.250	.500	.000	.716	.700	.837
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 12:30 PM																					
12:30 PM	0	0	0	30	30	0	1	0	25	26	0	0	**1**	29	30	0	3	0	**41**	**44**	130
12:45 PM	0	0	0	**41**	**41**	0	**2**	0	32	**34**	**2**	0	0	27	29	0	**4**	0	34	38	**142**
01:00 PM	0	0	0	23	23	0	1	0	**33**	34	0	**1**	0	25	26	0	4	0	25	29	112
01:15 PM	0	0	0	22	22	0	1	0	33	34	0	0	0	**36**	**36**	**1**	3	0	32	36	128
Total Volume	0	0	0	116	116	0	5	0	123	128	2	1	1	117	121	1	14	0	132	147	512
% App. Total	0	0	0	100		0	3.9	0	96.1		1.7	0.8	0.8	96.7		0.7	9.5	0	89.8		
PHF	.000	.000	.000	.707	.707	.000	.625	.000	.932	.941	.250	.250	.250	.813	.840	.250	.875	.000	.805	.835	.901
Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	0	**2**	0	**36**	**38**	0	1	0	50	51	**1**	0	0	35	36	0	**4**	0	28	32	157
05:00 PM	0	1	0	36	37	0	1	0	**64**	**65**	0	2	0	28	30	0	2	**1**	38	41	**173**
05:15 PM	0	1	0	21	22	0	**5**	0	33	38	1	**3**	0	**42**	**46**	0	2	0	31	33	139
05:30 PM	0	1	0	34	35	0	1	0	49	50	0	0	0	33	33	0	1	0	**50**	**51**	169
Total Volume	0	5	0	127	132	0	8	0	196	204	2	5	0	138	145	0	9	1	147	157	638
% App. Total	0	3.8	0	96.2		0	3.9	0	96.1		1.4	3.4	0	95.2		0	5.7	0.6	93.6		
PHF	.000	.625	.000	.882	.868	.000	.400	.000	.766	.785	.500	.417	.000	.821	.788	.000	.563	.250	.735	.770	.922

N/S: Yawkey Way/ Jersey Street
E/W: Boylston Street
City, State: Boston, MA
Client: Jacobs/ A. Fernandes

PRECISION DATA INDUSTRIES, LLC
P.O. Box 301 Berlin, MA 01503
Office: 508.481.3999 Fax: 508.545.1234
Email: datarequests@pdillc.com

	Yawkey Way From North				Boylston Street From East					Jersey Street From South				Boylston Street From West					
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 07:15 AM																			
07:15 AM	0	0	0	0	**18**	**271**	8	0	**297**	21	4	4	29	5	**293**	9	0	**307**	**633**
07:30 AM	0	0	0	0	17	271	3	0	291	19	**8**	4	31	**10**	282	**10**	0	302	624
07:45 AM	0	0	0	0	16	245	**13**	**1**	275	**26**	7	**5**	**38**	6	241	9	0	256	569
08:00 AM	0	0	**1**	**1**	6	240	8	0	254	16	8	2	26	9	280	9	0	298	579
Total Volume	0	0	1	1	57	1027	32	1	1117	82	27	15	124	30	1096	37	0	1163	2405
% App. Total	0	0	100		5.1	91.9	2.9	0.1		66.1	21.8	12.1		2.6	94.2	3.2	0		
PHF	.000	.000	.250	.250	.792	.947	.615	.250	.940	.788	.844	.750	.816	.750	.935	.925	.000	.947	.950
Cars	0	0	1	1	55	994	31	1	1081	75	25	14	114	30	1072	32	0	1134	2330
% Cars	0	0	100	100	96.5	96.8	96.9	100	96.8	91.5	92.6	93.3	91.9	100	97.8	86.5	0	97.5	96.9
Heavy Vehicles	0	0	0	0	2	33	1	0	36	7	2	1	10	0	24	5	0	29	75
% Heavy Vehicles	0	0	0	0	3.5	3.2	3.1	0	3.2	8.5	7.4	6.7	8.1	0	2.2	13.5	0	2.5	3.1



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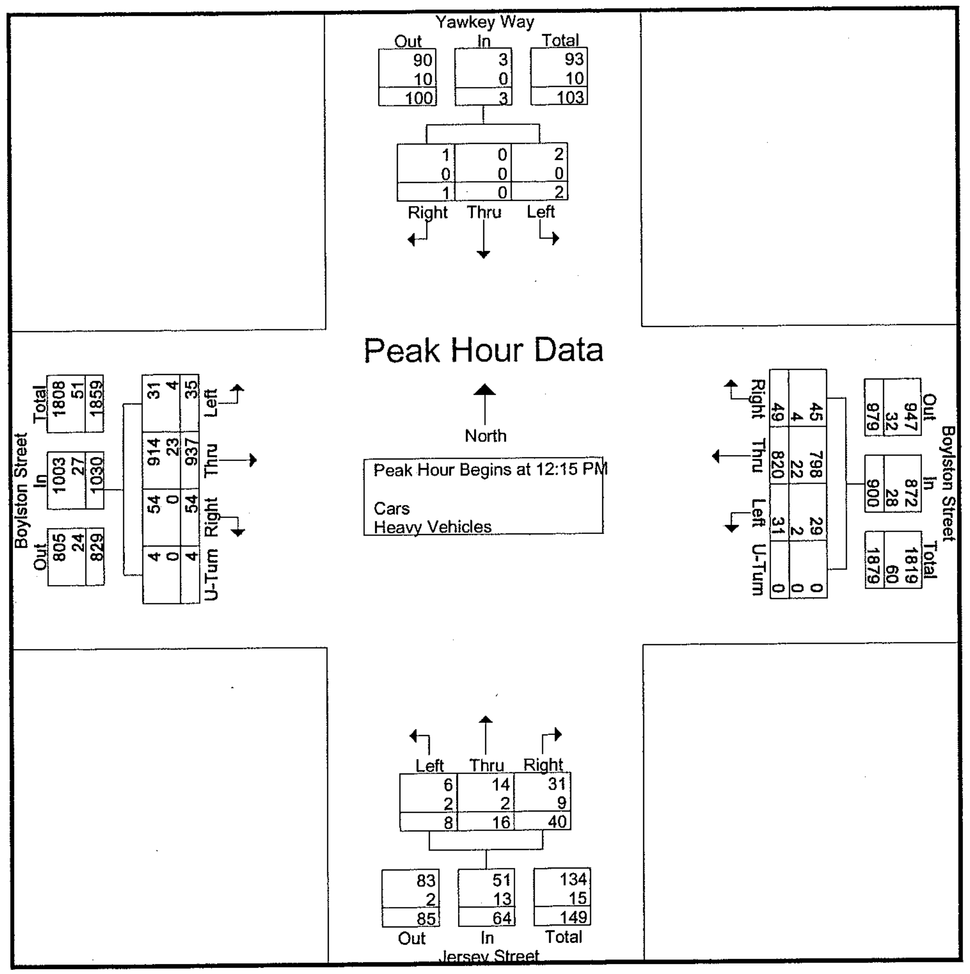
Email: datarequests@pdillc.com

N/S: Yawkey Way/ Jersey Street
E/W: Boylston Street
City, State: Boston, MA
Client: Jacobs/ A. Fernandes

File Name : 112476 N
Site Code : 407
Start Date : 4/14/2011

	Yawkey Way From North				Boylston Street From East					Jersey Street From South				Boylston Street From West					
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 12:15 PM																			
12:15 PM	0	0	0	0	13	**240**	7	0	**260**	**11**	**7**	**3**	**21**	10	**250**	**12**	0	**272**	**553**
12:30 PM	0	0	**1**	1	13	215	**9**	0	237	7	1	2	10	16	224	8	**4**	252	500
12:45 PM	0	0	0	0	9	177	7	0	193	11	4	1	16	**20**	241	4	0	265	474
01:00 PM	**1**	0	1	**2**	**14**	188	8	0	210	11	4	2	17	8	222	11	0	241	470
Total Volume	1	0	2	3	49	820	31	0	900	40	16	8	64	54	937	35	4	1030	1997
% App. Total	33.3	0	66.7		5.4	91.1	3.4	0		62.5	25	12.5		5.2	91	3.4	0.4		
PHF	.250	.000	.500	.375	.875	.854	.861	.000	.865	.909	.571	.667	.762	.675	.937	.729	.250	.947	.903
Cars	1	0	2	3	45	798	29	0	872	31	14	6	51	54	914	31	4	1003	1929
% Cars	100	0	100	100	91.8	97.3	93.5	0	96.9	77.5	87.5	75.0	79.7	100	97.5	88.6	100	97.4	96.6
Heavy Vehicles	0	0	0	0	4	22	2	0	28	9	2	2	13	0	23	4	0	27	68
% Heavy Vehicles	0	0	0	0	8.2	2.7	6.5	0	3.1	22.5	12.5	25.0	20.3	0	2.5	11.4	0	2.6	3.4

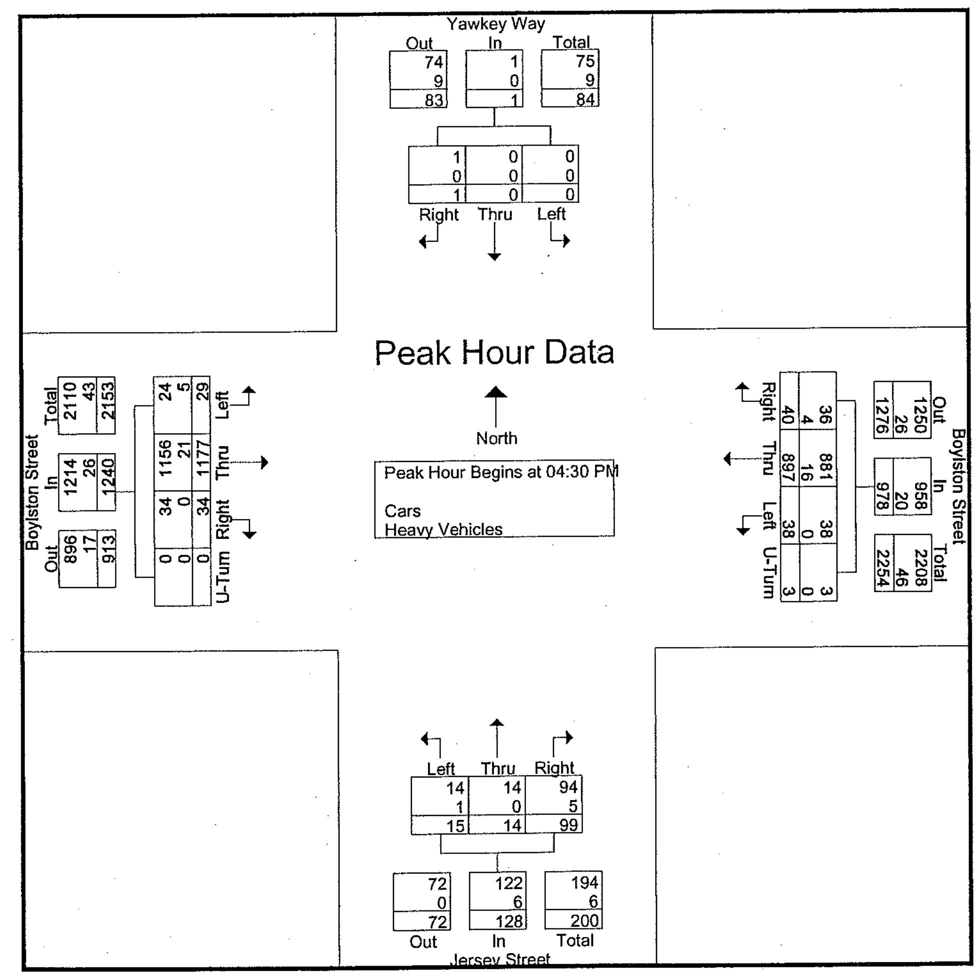


PRECISION DATA INDUSTRIES, LLC
P.O. Box 301 Berlin, MA 01503
Office: 508.481.3999 Fax: 508.545.1234
Email: datarequests@pdillc.com

N/S: Yawkey Way/ Jersey Street
E/W: Boylston Street
City, State: Boston, MA
Client: Jacobs/ A. Fernandes

File Name : 112476 N
Site Code : 407
Start Date : 4/14/2011

	Yawkey Way From North				Boylston Street From East					Jersey Street From South				Boylston Street From West					
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 04:30 PM																			
04:30 PM	0	0	0	0	**15**	231	7	**1**	254	15	4	**6**	25	**12**	**301**	7	0	**320**	599
04:45 PM	0	0	0	0	9	204	9	0	222	21	**5**	2	28	9	280	7	0	296	546
05:00 PM	0	0	0	0	8	**244**	9	1	**262**	29	1	5	35	6	301	**9**	0	316	**613**
05:15 PM	**1**	0	0	**1**	8	218	**13**	1	240	**34**	4	2	**40**	7	295	6	0	308	589
Total Volume	1	0	0	1	40	897	38	3	978	99	14	15	128	34	1177	29	0	1240	2347
% App. Total	100	0	0		4.1	91.7	3.9	0.3		77.3	10.9	11.7		2.7	94.9	2.3	0		
PHF	.250	.000	.000	.250	.667	.919	.731	.750	.933	.728	.700	.625	.800	.708	.978	.806	.000	.969	.957
Cars	1	0	0	1	36	881	38	3	958	94	14	14	122	34	1156	24	0	1214	2295
% Cars	100	0	0	100	90.0	98.2	100	100	98.0	94.9	100	93.3	95.3	100	98.2	82.8	0	97.9	97.8
Heavy Vehicles	0	0	0	0	4	16	0	0	20	5	0	1	6	0	21	5	0	26	52
% Heavy Vehicles	0	0	0	0	10.0	1.8	0	0	2.0	5.1	0	6.7	4.7	0	1.8	17.2	0	2.1	2.2



Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970011
Site Code : 94970011
Start Date : 5/16/2012
Page No : 1

Groups Printed- Cars - Trucks

	Longwood Ave From North			Brookline Ave From East			Longwood Ave From South			Brookline Ave From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	25	54	6	31	114	30	14	33	20	7	121	48	503
07:15 AM	23	50	3	40	120	39	20	50	31	5	129	52	562
07:30 AM	22	65	5	44	122	39	20	70	59	5	154	50	655
07:45 AM	28	71	9	33	135	32	21	59	37	5	174	39	643
Total	98	240	23	148	491	140	75	212	147	22	578	189	2363
08:00 AM	31	71	5	41	119	32	13	25	38	11	155	47	588
08:15 AM	22	76	8	57	97	28	10	34	36	8	148	44	568
08:30 AM	30	74	4	53	112	35	6	36	36	9	108	34	537
08:45 AM	28	71	4	42	107	37	19	36	34	11	128	64	581
Total	111	292	21	193	435	132	48	131	144	39	539	189	2274
Grand Total	209	532	44	341	926	272	123	343	291	61	1117	378	4637
Apprch %	26.6	67.8	5.6	22.2	60.2	17.7	16.2	45.3	38.4	3.9	71.8	24.3	
Total %	4.5	11.5	0.9	7.4	20	5.9	2.7	7.4	6.3	1.3	24.1	8.2	
Cars	181	437	39	338	915	269	120	331	291	59	1098	373	4451
% Cars	86.6	82.1	88.6	99.1	98.8	98.9	97.6	96.5	100	96.7	98.3	98.7	96
Trucks	28	95	5	3	11	3	3	12	0	2	19	5	186
% Trucks	13.4	17.9	11.4	0.9	1.2	1.1	2.4	3.5	0	3.3	1.7	1.3	4

	Longwood Ave From North				Brookline Ave From East				Longwood Ave From South				Brookline Ave From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	22	65	5	92	44	122	**39**	**205**	20	**70**	**59**	**149**	5	154	**50**	209	**655**
07:45 AM	28	71	**9**	**108**	33	**135**	32	200	**21**	59	37	117	5	**174**	39	**218**	643
08:00 AM	**31**	71	5	107	41	119	32	192	13	25	38	76	**11**	155	47	213	588
08:15 AM	22	**76**	8	106	**57**	97	28	182	10	34	36	80	8	148	44	200	568
Total Volume	103	283	27	413	175	473	131	779	64	188	170	422	29	631	180	840	2454
% App. Total	24.9	68.5	6.5		22.5	60.7	16.8		15.2	44.5	40.3		3.5	75.1	21.4		
PHF	.831	.931	.750	.956	.768	.876	.840	.950	.762	.671	.720	.708	.659	.907	.900	.963	.937
Cars	86	227	23	336	174	467	130	771	62	184	170	416	28	620	179	827	2350
% Cars	83.5	80.2	85.2	81.4	99.4	98.7	99.2	99.0	96.9	97.9	100	98.6	96.6	98.3	99.4	98.5	95.8
Trucks	17	56	4	77	1	6	1	8	2	4	0	6	1	11	1	13	104
% Trucks	16.5	19.8	14.8	18.6	0.6	1.3	0.8	1.0	3.1	2.1	0	1.4	3.4	1.7	0.6	1.5	4.2

Accurate Counts
978-664-2565

N/S Street : Longwood Avenue
E/W Street: Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970011
Site Code : 94970011
Start Date : 5/16/2012

Groups Printed- Cars - Trucks

	Longwood Ave From North			Brookline Ave From East			Longwood Ave From South			Brookline Ave From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	14	39	5	45	123	13	63	49	59	10	131	43	594
04:15 PM	20	47	5	50	131	19	38	56	57	16	150	34	623
04:30 PM	13	37	11	57	137	13	53	72	65	14	118	37	627
04:45 PM	19	44	6	41	157	16	49	50	61	13	137	31	624
Total	66	167	27	193	548	61	203	227	242	53	536	145	2468
05:00 PM	10	39	8	41	110	12	54	52	63	11	107	36	543
05:15 PM	19	33	5	47	167	20	56	65	50	15	146	39	662
05:30 PM	10	48	5	31	136	19	47	70	62	9	127	31	595
05:45 PM	18	44	6	38	176	13	46	45	46	12	161	38	643
Total	57	164	24	157	589	64	203	232	221	47	541	144	2443
Grand Total	123	331	51	350	1137	125	406	459	463	100	1077	289	4911
Apprch %	24.4	65.5	10.1	21.7	70.5	7.8	30.6	34.6	34.9	6.8	73.5	19.7	
Total %	2.5	6.7	1	7.1	23.2	2.5	8.3	9.3	9.4	2	21.9	5.9	
Cars	118	327	50	330	1096	124	376	441	432	95	1039	274	4702
% Cars	95.9	98.8	98	94.3	96.4	99.2	92.6	96.1	93.3	95	96.5	94.8	95.7
Trucks	5	4	1	20	41	1	30	18	31	5	38	15	209
% Trucks	4.1	1.2	2	5.7	3.6	0.8	7.4	3.9	6.7	5	3.5	5.2	4.3

	Longwood Ave From North				Brookline Ave From East				Longwood Ave From South				Brookline Ave From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	14	39	5	58	45	123	13	181	**63**	49	59	171	10	131	**43**	184	594
04:15 PM	**20**	**47**	5	**72**	50	131	**19**	200	38	56	57	151	**16**	**150**	34	**200**	623
04:30 PM	13	37	**11**	61	**57**	137	13	207	53	**72**	**65**	**190**	14	118	37	169	**627**
04:45 PM	19	44	6	69	41	**157**	16	**214**	49	50	61	160	13	137	31	181	624
Total Volume	66	167	27	260	193	548	61	802	203	227	242	672	53	536	145	734	2468
% App. Total	25.4	64.2	10.4		24.1	68.3	7.6		30.2	33.8	36		7.2	73	19.8		
PHF	.825	.888	.614	.903	.846	.873	.803	.937	.806	.788	.931	.884	.828	.893	.843	.918	.984
Cars	66	164	26	256	183	525	61	769	189	220	226	635	50	517	137	704	2364
% Cars	100	98.2	96.3	98.5	94.8	95.8	100	95.9	93.1	96.9	93.4	94.5	94.3	96.5	94.5	95.9	95.8
Trucks	0	3	1	4	10	23	0	33	14	7	16	37	3	19	8	30	104
% Trucks	0	1.8	3.7	1.5	5.2	4.2	0	4.1	6.9	3.1	6.6	5.5	5.7	3.5	5.5	4.1	4.2

Accurate Counts
978-664-2565

N/S Street : Mountfort St / Overland St
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970002
Site Code : 94970002
Start Date : 5/17/2012
Page No : 1

Groups Printed- Cars - Trucks

	Mountfort St From North			Beacon St From East			Overland St From South			Beacon St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	2	0	0	16	110	1	1	0	0	0	96	7	233
07:15 AM	4	0	0	7	154	2	0	1	0	0	97	10	275
07:30 AM	5	0	0	8	156	6	1	0	1	0	131	9	317
07:45 AM	0	0	1	10	160	3	0	0	0	0	152	13	339
Total	11	0	1	41	580	12	2	1	1	0	476	39	1164
08:00 AM	0	0	1	7	147	11	0	0	1	2	187	8	364
08:15 AM	3	0	0	8	167	8	1	1	0	0	195	8	391
08:30 AM	4	0	0	6	152	5	2	0	0	0	203	7	379
08:45 AM	4	0	5	5	142	6	0	0	0	0	161	11	334
Total	11	0	6	26	608	30	3	1	1	2	746	34	1468
Grand Total	22	0	7	67	1188	42	5	2	2	2	1222	73	2632
Apprch %	75.9	0	24.1	5.2	91.6	3.2	55.6	22.2	22.2	0.2	94.2	5.6	
Total %	0.8	0	0.3	2.5	45.1	1.6	0.2	0.1	0.1	0.1	46.4	2.8	
Cars	21	0	7	66	1152	39	5	2	2	2	1209	59	2564
% Cars	95.5	0	100	98.5	97	92.9	100	100	100	100	98.9	80.8	97.4
Trucks	1	0	0	1	36	3	0	0	0	0	13	14	68
% Trucks	4.5	0	0	1.5	3	7.1	0	0	0	0	1.1	19.2	2.6

	Mountfort St From North				Beacon St From East				Overland St From South				Beacon St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	0	0	**1**	1	**10**	160	3	173	0	0	0	0	0	152	**13**	165	339
08:00 AM	0	0	1	1	7	147	**11**	165	0	0	**1**	1	**2**	187	8	197	364
08:15 AM	3	0	0	3	8	**167**	8	**183**	1	**1**	0	**2**	0	195	8	203	**391**
08:30 AM	**4**	0	0	**4**	6	152	5	163	**2**	0	0	2	0	**203**	7	**210**	379
Total Volume	7	0	2	9	31	626	27	684	3	1	1	5	2	737	36	775	1473
% App. Total	77.8	0	22.2		4.5	91.5	3.9		60	20	20		0.3	95.1	4.6		
PHF	.438	.000	.500	.563	.775	.937	.614	.934	.375	.250	.250	.625	.250	.908	.692	.923	.942
Cars	7	0	2	9	31	608	25	664	3	1	1	5	2	728	29	759	1437
% Cars	100	0	100	100	100	97.1	92.6	97.1	100	100	100	100	100	98.8	80.6	97.9	97.6
Trucks	0	0	0	0	0	18	2	20	0	0	0	0	0	9	7	16	36
% Trucks	0	0	0	0	0	2.9	7.4	2.9	0	0	0	0	0	1.2	19.4	2.1	2.4

Accurate Counts
978-664-2565

N/S Street : Mountfort St / Overland St
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970002
Site Code : 94970002
Start Date : 5/17/2012
Page No : 1

Groups Printed- Cars - Trucks

	Mountfort St From North			Beacon St From East			Overland St From South			Beacon St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	2	1	1	1	180	3	16	3	12	0	124	2	345
04:15 PM	1	0	0	0	198	3	11	2	14	1	125	1	356
04:30 PM	4	0	1	0	206	3	11	5	8	2	131	2	373
04:45 PM	4	0	1	1	235	5	7	2	12	1	128	3	399
Total	11	1	3	2	819	14	45	12	46	4	508	8	1473
05:00 PM	5	0	0	0	228	3	8	4	13	2	135	1	399
05:15 PM	2	0	0	0	198	2	12	1	9	1	140	2	367
05:30 PM	5	0	2	1	213	6	4	3	7	1	133	2	377
05:45 PM	4	0	4	0	207	4	7	1	12	1	128	2	370
Total	16	0	6	1	846	15	31	9	41	5	536	7	1513
Grand Total	27	1	9	3	1665	29	76	21	87	9	1044	15	2986
Apprch %	73	2.7	24.3	0.2	98.1	1.7	41.3	11.4	47.3	0.8	97.8	1.4	
Total %	0.9	0	0.3	0.1	55.8	1	2.5	0.7	2.9	0.3	35	0.5	
Cars	26	1	9	3	1651	29	76	21	87	9	1036	15	2963
% Cars	96.3	100	100	100	99.2	100	100	100	100	100	99.2	100	99.2
Trucks	1	0	0	0	14	0	0	0	0	0	8	0	23
% Trucks	3.7	0	0	0	0.8	0	0	0	0	0	0.8	0	0.8

	Mountfort St From North				Beacon St From East				Overland St From South				Beacon St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	4	0	1	5	**1**	**235**	5	**241**	7	2	12	21	1	128	**3**	132	**399**
05:00 PM	**5**	0	0	5	0	228	3	231	8	**4**	**13**	**25**	**2**	135	1	138	399
05:15 PM	2	0	0	2	0	198	2	200	**12**	1	9	22	1	**140**	2	**143**	367
05:30 PM	5	0	**2**	**7**	1	213	**6**	220	4	3	7	14	1	133	2	136	377
Total Volume	16	0	3	19	2	874	16	892	31	10	41	82	5	536	8	549	1542
% App. Total	84.2	0	15.8		0.2	98	1.8		37.8	12.2	50		0.9	97.6	1.5		
PHF	.800	.000	.375	.679	.500	.930	.667	.925	.646	.625	.788	.820	.625	.957	.667	.960	.966
Cars	16	0	3	19	2	868	16	886	31	10	41	82	5	532	8	545	1532
% Cars	100	0	100	100	100	99.3	100	99.3	100	100	100	100	100	99.3	100	99.3	99.4
Trucks	0	0	0	0	0	6	0	6	0	0	0	0	0	4	0	4	10
% Trucks	0	0	0	0	0	0.7	0	0.7	0	0	0	0	0	0.7	0	0.7	0.6

Accurate Counts
978-664-2565

N/S Street : Arundel St / Miner St
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970004
Site Code : 94970004
Start Date : 5/17/2012
Page No : 1

Groups Printed- Cars - Trucks

	Arundle St From North			Beacon St From East			Miner St From South			Beacon St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	1	2	0	6	110	1	4	1	2	2	99	7	235
07:15 AM	0	1	0	3	146	1	1	2	2	1	106	12	275
07:30 AM	1	0	4	4	149	0	2	1	3	0	143	16	323
07:45 AM	0	0	0	6	166	0	4	3	2	0	155	22	358
Total	2	3	4	19	571	2	11	7	9	3	503	57	1191
08:00 AM	0	7	2	6	144	0	5	6	4	1	195	21	391
08:15 AM	0	4	2	4	153	1	3	1	3	0	196	17	384
08:30 AM	0	5	1	5	153	0	3	4	3	1	211	10	396
08:45 AM	0	4	1	4	141	3	4	3	5	1	174	23	363
Total	0	20	6	19	591	4	15	14	15	3	776	71	1534
Grand Total	2	23	10	38	1162	6	26	21	24	6	1279	128	2725
Apprch %	5.7	65.7	28.6	3.2	96.4	0.5	36.6	29.6	33.8	0.4	90.5	9.1	
Total %	0.1	0.8	0.4	1.4	42.6	0.2	1	0.8	0.9	0.2	46.9	4.7	
Cars	2	22	10	38	1126	5	26	21	24	6	1252	128	2660
% Cars	100	95.7	100	100	96.9	83.3	100	100	100	100	97.9	100	97.6
Trucks	0	1	0	0	36	1	0	0	0	0	27	0	65
% Trucks	0	4.3	0	0	3.1	16.7	0	0	0	0	2.1	0	2.4

	Arundle St From North				Beacon St From East				Miner St From South				Beacon St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	0	**7**	**2**	**9**	**6**	144	0	150	**5**	**6**	4	**15**	**1**	195	21	217	391
08:15 AM	0	4	2	6	4	**153**	1	**158**	3	1	3	7	0	196	17	213	384
08:30 AM	0	5	1	6	5	153	0	158	3	4	3	10	1	**211**	10	**222**	**396**
08:45 AM	0	4	1	5	4	141	**3**	148	4	3	**5**	12	1	174	**23**	198	363
Total Volume	0	20	6	26	19	591	4	614	15	14	15	44	3	776	71	850	1534
% App. Total	0	76.9	23.1		3.1	96.3	0.7		34.1	31.8	34.1		0.4	91.3	8.4		
PHF	.000	.714	.750	.722	.792	.966	.333	.972	.750	.583	.750	.733	.750	.919	.772	.957	.968
Cars	0	19	6	25	19	573	3	595	15	14	15	44	3	762	71	836	1500
% Cars	0	95.0	100	96.2	100	97.0	75.0	96.9	100	100	100	100	100	98.2	100	98.4	97.8
Trucks	0	1	0	1	0	18	1	19	0	0	0	0	0	14	0	14	34
% Trucks	0	5.0	0	3.8	0	3.0	25.0	3.1	0	0	0	0	0	1.8	0	1.6	2.2

Accurate Counts
978-664-2565

N/S Street : Arundel St / Miner St
E/W Street : Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970004
Site Code : 94970004
Start Date : 5/17/2012
Page No : 1

Groups Printed- Cars - Trucks

	Arundle St From North			Beacon St From East			Miner St From South			Beacon St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	1	1	3	1	186	1	5	6	12	3	114	8	341
04:15 PM	1	2	1	5	206	2	4	3	13	1	104	3	345
04:30 PM	2	1	1	6	189	3	7	6	15	0	128	6	364
04:45 PM	0	1	1	3	260	1	8	2	6	1	125	3	411
Total	4	5	6	15	841	7	24	17	46	5	471	20	1461
05:00 PM	1	1	1	3	209	1	13	3	10	0	120	6	368
05:15 PM	1	2	1	2	224	1	11	7	9	0	141	4	403
05:30 PM	0	0	2	4	213	3	7	4	11	1	125	8	378
05:45 PM	0	1	1	4	202	0	9	6	8	0	117	6	354
Total	2	4	5	13	848	5	40	20	38	1	503	24	1503
Grand Total	6	9	11	28	1689	12	64	37	84	6	974	44	2964
Apprch %	23.1	34.6	42.3	1.6	97.7	0.7	34.6	20	45.4	0.6	95.1	4.3	
Total %	0.2	0.3	0.4	0.9	57	0.4	2.2	1.2	2.8	0.2	32.9	1.5	
Cars	6	9	11	27	1676	12	64	37	83	6	967	43	2941
% Cars	100	100	100	96.4	99.2	100	100	100	98.8	100	99.3	97.7	99.2
Trucks	0	0	0	1	13	0	0	0	1	0	7	1	23
% Trucks	0	0	0	3.6	0.8	0	0	0	1.2	0	0.7	2.3	0.8

	Arundle St From North				Beacon St From East				Miner St From South				Beacon St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	0	1	1	2	3	**260**	1	**264**	8	2	6	16	**1**	125	3	129	**411**
05:00 PM	**1**	1	1	3	3	209	1	213	**13**	3	10	26	0	120	6	126	368
05:15 PM	1	**2**	1	**4**	2	224	1	227	11	**7**	9	**27**	0	**141**	4	**145**	403
05:30 PM	0	0	**2**	2	**4**	213	**3**	220	7	4	**11**	22	1	125	**8**	134	378
Total Volume	2	4	5	11	12	906	6	924	39	16	36	91	2	511	21	534	1560
% App. Total	18.2	36.4	45.5		1.3	98.1	0.6		42.9	17.6	39.6		0.4	95.7	3.9		
PHF	.500	.500	.625	.688	.750	.871	.500	.875	.750	.571	.818	.843	.500	.906	.656	.921	.949
Cars	2	4	5	11	12	900	6	918	39	16	35	90	2	508	20	530	1549
% Cars	100	100	100	100	100	99.3	100	99.4	100	100	97.2	98.9	100	99.4	95.2	99.3	99.3
Trucks	0	0	0	0	0	6	0	6	0	0	1	1	0	3	1	4	11
% Trucks	0	0	0	0	0	0.7	0	0.6	0	0	2.8	1.1	0	0.6	4.8	0.7	0.7

Accurate Counts
978-664-2565

N/S Street : Park Drive
E/W Street: Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970006
Site Code : 94970006
Start Date : 5/17/2012
Page No : 1

Groups Printed- Cars - Trucks

	Park Dr From North				**Beacon St From East**				**Park Dr From South**				**Beacon St From West**				
Start Time	Left	Thru	Right	U-TR	Left	Thru	Right	U-TR	Left	Thru	Right	U-TR	Left	Thru	Right	U-TR	Int. Total
07:00 AM	6	114	6	0	27	83	5	0	15	44	7	0	7	94	24	4	436
07:15 AM	12	127	4	0	49	103	3	0	8	51	12	0	5	92	48	6	520
07:30 AM	8	148	2	0	52	93	3	2	19	57	11	0	4	139	36	0	574
07:45 AM	13	107	9	0	61	102	3	1	16	72	8	0	8	162	51	2	615
Total	39	496	21	0	189	381	14	3	58	224	38	0	24	487	159	12	2145
08:00 AM	11	125	8	0	47	103	4	1	6	75	12	0	3	180	48	0	623
08:15 AM	13	101	3	0	36	114	2	0	5	66	9	0	10	182	37	9	587
08:30 AM	14	126	9	0	49	105	4	1	18	56	13	0	5	203	61	3	667
08:45 AM	14	163	7	0	44	96	5	0	17	54	10	0	4	178	51	9	652
Total	52	515	27	0	176	418	15	2	46	251	44	0	22	743	197	21	2529
Grand Total	91	1011	48	0	365	799	29	5	104	475	82	0	46	1230	356	33	4674
Apprch %	7.9	87.9	4.2	0	30.5	66.7	2.4	0.4	15.7	71.9	12.4	0	2.8	73.9	21.4	2	
Total %	1.9	21.6	1	0	7.8	17.1	0.6	0.1	2.2	10.2	1.8	0	1	26.3	7.6	0.7	
Cars	86	981	46	0	350	779	26	5	103	453	69	0	41	1222	352	33	4546
% Cars	94.5	97	95.8	0	95.9	97.5	89.7	100	99	95.4	84.1	0	89.1	99.3	98.9	100	97.3
Trucks	5	30	2	0	15	20	3	0	1	22	13	0	5	8	4	0	128
% Trucks	5.5	3	4.2	0	4.1	2.5	10.3	0	1	4.6	15.9	0	10.9	0.7	1.1	0	2.7

	Park Dr From North					**Beacon St From East**					**Park Dr From South**					**Beacon St From West**					
Start Time	Left	Thru	Right	U-TR	App. Total	Left	Thru	Right	U-TR	App. Total	Left	Thru	Right	U-TR	App. Total	Left	Thru	Right	U-TR	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:00 AM																					
08:00 AM	11	125	8	0	144	47	103	4	**1**	155	6	**75**	12	0	**93**	3	180	48	0	231	623
08:15 AM	13	101	3	0	117	36	**114**	2	0	152	5	66	9	0	80	**10**	182	37	**9**	238	587
08:30 AM	**14**	126	**9**	0	149	**49**	105	4	1	**159**	**18**	56	**13**	0	87	5	**203**	**61**	3	**272**	**667**
08:45 AM	14	**163**	7	0	**184**	44	96	**5**	0	145	17	54	10	0	81	4	178	51	9	242	652
Total Volume	52	515	27	0	594	176	418	15	2	611	46	251	44	0	341	22	743	197	21	983	2529
% App. Total	8.8	86.7	4.5	0		28.8	68.4	2.5	0.3		13.5	73.6	12.9	0		2.2	75.6	20	2.1		
PHF	.929	.790	.750	.000	.807	.898	.917	.750	.500	.961	.639	.837	.846	.000	.917	.550	.915	.807	.583	.903	.948
Cars	50	502	27	0	579	166	411	13	2	592	45	239	40	0	324	21	738	195	21	975	2470
% Cars	96.2	97.5	100	0	97.5	94.3	98.3	86.7	100	96.9	97.8	95.2	90.9	0	95.0	95.5	99.3	99.0	100	99.2	97.7
Trucks	2	13	0	0	15	10	7	2	0	19	1	12	4	0	17	1	5	2	0	8	59
% Trucks	3.8	2.5	0	0	2.5	5.7	1.7	13.3	0	3.1	2.2	4.8	9.1	0	5.0	4.5	0.7	1.0	0	0.8	2.3

Accurate Counts
978-664-2565

N/S Street : Park Drive
E/W Street: Beacon Street
City/State : Boston, MA
Weather : Drizzle

File Name : 94970006
Site Code : 94970006
Start Date : 5/17/2012
Page No : 1

Groups Printed- Cars - Trucks

	Park Dr From North				Beacon St From East				Park Dr From South				Beacon St From West				
Start Time	Left	Thru	Right	U-TR	Left	Thru	Right	U-TR	Left	Thru	Right	U-TR	Left	Thru	Right	U-TR	Int. Total
04:00 PM	9	141	8	0	84	126	1	1	22	95	15	0	3	79	12	8	604
04:15 PM	8	126	4	0	53	137	4	0	29	90	15	0	8	105	28	6	613
04:30 PM	5	140	3	0	65	133	9	0	15	100	15	0	6	90	44	5	630
04:45 PM	7	138	3	0	73	156	3	1	19	112	12	0	4	111	35	9	683
Total	29	545	18	0	275	552	17	2	85	397	57	0	21	385	119	28	2530
05:00 PM	5	150	5	0	66	160	4	0	33	95	16	0	9	91	26	6	666
05:15 PM	4	150	2	0	62	160	2	1	39	119	17	0	6	111	37	4	714
05:30 PM	8	130	6	0	67	152	4	1	31	89	13	0	10	124	32	5	672
05:45 PM	11	146	4	0	52	146	3	0	33	90	12	0	6	112	27	7	649
Total	28	576	17	0	247	618	13	2	136	393	58	0	31	438	122	22	2701
Grand Total	57	1121	35	0	522	1170	30	4	221	790	115	0	52	823	241	50	5231
Apprch %	4.7	92.4	2.9	0	30.2	67.8	1.7	0.2	19.6	70.2	10.2	0	4.5	70.6	20.7	4.3	
Total %	1.1	21.4	0.7	0	10	22.4	0.6	0.1	4.2	15.1	2.2	0	1	15.7	4.6	1	
Cars	56	1105	35	0	511	1169	30	4	221	775	114	0	51	819	240	50	5180
% Cars	98.2	98.6	100	0	97.9	99.9	100	100	100	98.1	99.1	0	98.1	99.5	99.6	100	99
Trucks	1	16	0	0	11	1	0	0	0	15	1	0	1	4	1	0	51
% Trucks	1.8	1.4	0	0	2.1	0.1	0	0	0	1.9	0.9	0	1.9	0.5	0.4	0	1

	Park Dr From North					Beacon St From East					Park Dr From South					Beacon St From West					
Start Time	Left	Thru	Right	U-TR	App. Total	Left	Thru	Right	U-TR	App. Total	Left	Thru	Right	U-TR	App. Total	Left	Thru	Right	U-TR	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	7	138	3	0	148	**73**	156	3	**1**	**233**	19	112	12	0	143	4	111	35	**9**	159	683
05:00 PM	5	**150**	5	0	**160**	66	**160**	**4**	0	230	33	95	16	0	144	9	91	26	6	132	666
05:15 PM	4	150	2	0	156	62	160	2	1	225	**39**	**119**	**17**	0	**175**	6	111	**37**	4	158	**714**
05:30 PM	**8**	130	**6**	0	144	67	152	4	1	224	31	89	13	0	133	**10**	**124**	32	5	**171**	672
Total Volume	24	568	16	0	608	268	628	13	3	912	122	415	58	0	595	29	437	130	24	620	2735
% App. Total	3.9	93.4	2.6	0		29.4	68.9	1.4	0.3		20.5	69.7	9.7	0		4.7	70.5	21	3.9		
PHF	.750	.947	.667	.000	.950	.918	.981	.813	.750	.979	.782	.872	.853	.000	.850	.725	.881	.878	.667	.906	.958
Cars	24	562	16	0	602	262	628	13	3	906	122	409	57	0	588	29	436	129	24	618	2714
% Cars	100	98.9	100	0	99.0	97.8	100	100	100	99.3	100	98.6	98.3	0	98.8	100	99.8	99.2	100	99.7	99.2
Trucks	0	6	0	0	6	6	0	0	0	6	0	6	1	0	7	0	1	1	0	2	21
% Trucks	0	1.1	0	0	1.0	2.2	0	0	0	0.7	0	1.4	1.7	0	1.2	0	0.2	0.8	0	0.3	0.8

Accurate Counts
978-664-2565

N/S Street : Park Drive
E/W Street: Brookline Ave / Boylston St
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008a
Site Code : 9497008A
Start Date : 5/22/2012
Page No : 1

Groups Printed- Cars - Trucks

	Park Dr From North				Brookline Ave From East				Boylston St From Southeast				Park Dr From South				Brookline Ave From West				
Start Time	Left	BrLt	Thru	Right	HdLt	Left	Thru	Right	HdLt	BrLt	BrRt	HdRt	Left	Thru	Right	HdRt	Left	Thru	BrRt	Right	Int. Total
07:00 AM	0	0	0	0	0	0	40	21	0	146	93	3	10	82	15	19	1	74	239	0	743
07:15 AM	0	0	0	0	0	0	52	30	0	144	109	1	23	116	15	24	0	63	229	0	806
07:30 AM	0	0	0	0	0	0	63	32	0	150	117	4	23	118	24	24	0	99	246	0	900
07:45 AM	0	0	0	0	0	0	68	52	0	164	114	2	32	134	32	31	0	106	260	0	995
Total	0	0	0	0	0	0	223	135	0	604	433	10	88	450	86	98	1	342	974	0	3444
08:00 AM	0	0	0	0	0	0	74	52	0	149	98	0	30	133	32	19	0	100	261	0	948
08:15 AM	0	0	0	0	0	0	52	26	0	142	88	3	18	124	31	18	1	91	244	0	838
08:30 AM	0	0	0	0	0	0	65	38	0	135	81	5	21	123	36	14	0	112	223	0	853
08:45 AM	0	0	0	0	0	0	61	61	0	147	112	1	21	134	30	21	2	99	206	0	895
Total	0	0	0	0	0	0	252	177	0	573	379	9	90	514	129	72	3	402	934	0	3534
Grand Total	0	0	0	0	0	0	475	312	0	1177	812	19	178	964	215	170	4	744	1908	0	6978
Apprch %	0	0	0	0	0	0	60.4	39.6	0	58.6	40.4	0.9	11.7	63.1	14.1	11.1	0.2	28	71.8	0	
Total %	0	0	0	0	0	0	6.8	4.5	0	16.9	11.6	0.3	2.6	13.8	3.1	2.4	0.1	10.7	27.3	0	
Cars	0	0	0	0	0	0	399	305	0	1166	810	18	175	934	211	165	4	685	1895	0	6767
% Cars	0	0	0	0	0	0	84	97.8	0	99.1	99.8	94.7	98.3	96.9	98.1	97.1	100	92.1	99.3	0	97
Trucks	0	0	0	0	0	0	76	7	0	11	2	1	3	30	4	5	0	59	13	0	211
% Trucks	0	0	0	0	0	0	16	2.2	0	0.9	0.2	5.3	1.7	3.1	1.9	2.9	0	7.9	0.7	0	3

	Park Dr From North					Brookline Ave From East					Boylston St From Southeast					Park Dr From South					Brookline Ave From West					
Start Time	Left	BrLt	Thru	Right	App. Total	HdLt	Left	Thru	Right	App. Total	HdLt	BrLt	BrRt	HdRt	App. Total	Left	Thru	Right	HdRt	App. Total	Left	Thru	BrRt	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																										
Peak Hour for Entire Intersection Begins at 07:30 AM																										
07:30 AM	0	0	0	0	0	0	0	63	32	95	0	150	**117**	**4**	271	23	118	24	24	189	0	99	246	0	345	900
07:45 AM	0	0	0	0	0	0	0	68	**52**	120	0	**164**	114	2	**280**	**32**	**134**	**32**	**31**	**229**	0	**106**	260	0	**366**	**995**
08:00 AM	0	0	0	0	0	0	0	**74**	52	**126**	0	149	98	0	247	30	133	32	19	214	0	100	**261**	0	361	948
08:15 AM	0	0	0	0	0	0	0	52	26	78	0	142	88	3	233	18	124	31	18	191	**1**	91	244	0	336	838
Total Volume	0	0	0	0	0	0	0	257	162	419	0	605	417	9	1031	103	509	119	92	823	1	396	1011	0	1408	3681
% App. Total	0	0	0	0		0	0	61.3	38.7		0	58.7	40.4	0.9		12.5	61.8	14.5	11.2		0.1	28.1	71.8	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.868	.779	.831	.000	.922	.891	.563	.921	.805	.950	.930	.742	.898	.250	.934	.968	.000	.962	.925
Cars	0	0	0	0	0	0	0	222	159	381	0	599	415	9	1023	100	492	118	90	800	1	371	1003	0	1375	3579
% Cars	0	0	0	0	0	0	0	86.4	98.1	90.9	0	99.0	99.5	100	99.2	97.1	96.7	99.2	97.8	97.2	100	93.7	99.2	0	97.7	97.2
Trucks	0	0	0	0	0	0	0	35	3	38	0	6	2	0	8	3	17	1	2	23	0	25	8	0	33	102
% Trucks	0	0	0	0	0	0	0	13.6	1.9	9.1	0	1.0	0.5	0	0.8	2.9	3.3	0.8	2.2	2.8	0	6.3	0.8	0	2.3	2.8

Accurate Counts
978-664-2565

N/S Street : Park Drive
E/W Street: Brookline Ave / Boylston St
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008a
Site Code : 9497008A
Start Date : 5/22/2012
Page No : 1

Groups Printed- Cars - Trucks

	Park Dr From North				**Brookline Ave From East**				**Boylston St From Southeast**				**Park Dr From South**				**Brookline Ave From West**				
Start Time	Left	BrLt	Thru	Right	HdLt	Left	Thru	Right	HdLt	BrLt	BrRt	HdRt	Left	Thru	Right	HdRt	Left	Thru	BrRt	Right	Int. Total
04:00 PM	0	0	0	0	0	0	70	73	0	105	132	3	21	179	11	27	2	92	216	0	931
04:15 PM	0	0	0	0	0	0	69	70	0	113	137	2	14	175	18	17	1	102	234	0	952
04:30 PM	0	0	0	0	0	0	77	69	0	100	141	4	12	153	20	20	1	98	230	0	925
04:45 PM	0	0	0	0	0	0	58	74	0	108	137	8	19	217	19	34	1	78	238	0	991
Total	0	0	0	0	0	0	274	286	0	426	547	17	66	724	68	98	5	370	918	0	3799
05:00 PM	0	0	0	0	0	0	51	89	0	103	155	6	28	163	20	18	0	92	203	0	928
05:15 PM	0	0	0	0	0	0	68	76	0	129	158	5	26	178	15	18	1	94	262	0	1030
05:30 PM	0	0	0	0	0	0	56	74	0	112	147	5	18	196	24	23	1	80	215	0	951
05:45 PM	0	0	0	0	0	0	52	78	0	118	125	6	14	180	22	18	1	82	208	0	904
Total	0	0	0	0	0	0	227	317	0	462	585	22	86	717	81	77	3	348	888	0	3813
Grand Total	0	0	0	0	0	0	501	603	0	888	1132	39	152	1441	149	175	8	718	1806	0	7612
Apprch %	0	0	0	0	0	0	45.4	54.6	0	43.1	55	1.9	7.9	75.2	7.8	9.1	0.3	28.4	71.3	0	
Total %	0	0	0	0	0	0	6.6	7.9	0	11.7	14.9	0.5	2	18.9	2	2.3	0.1	9.4	23.7	0	
Cars	0	0	0	0	0	0	458	602	0	881	1129	38	151	1422	143	173	8	676	1800	0	7481
% Cars	0	0	0	0	0	0	91.4	99.8	0	99.2	99.7	97.4	99.3	98.7	96	98.9	100	94.2	99.7	0	98.3
Trucks	0	0	0	0	0	0	43	1	0	7	3	1	1	19	6	2	0	42	6	0	131
% Trucks	0	0	0	0	0	0	8.6	0.2	0	0.8	0.3	2.6	0.7	1.3	4	1.1	0	5.8	0.3	0	1.7

	Park Dr From North					**Brookline Ave From East**					**Boylston St From Southeast**					**Park Dr From South**					**Brookline Ave From West**					
Start Time	Left	BrLt	Thru	Right	App. Total	HdLt	Left	Thru	Right	App. Total	HdLt	BrLt	BrRt	HdRt	App. Total	Left	Thru	Right	HdRt	App. Total	Left	Thru	BrRt	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																										
Peak Hour for Entire Intersection Begins at 04:45 PM																										
04:45 PM	0	0	0	0	0	0	0	58	74	132	0	108	137	**8**	253	19	**217**	19	**34**	**289**	**1**	78	238	0	317	991
05:00 PM	0	0	0	0	0	0	0	51	**89**	140	0	103	155	6	264	**28**	163	20	18	229	0	92	203	0	295	928
05:15 PM	0	0	0	0	0	0	0	**68**	76	**144**	0	**129**	**158**	5	**292**	26	178	15	18	237	1	**94**	**262**	0	**357**	**1030**
05:30 PM	0	0	0	0	0	0	0	56	74	130	0	112	147	5	264	18	196	**24**	23	261	1	80	215	0	296	951
Total Volume	0	0	0	0	0	0	0	233	313	546	0	452	597	24	1073	91	754	78	93	1016	3	344	918	0	1265	3900
% App. Total	0	0	0	0		0	0	42.7	57.3		0	42.1	55.6	2.2		9	74.2	7.7	9.2		0.2	27.2	72.6	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.857	.879	.948	.000	.876	.945	.750	.919	.813	.869	.813	.684	.879	.750	.915	.876	.000	.886	.947
Cars	0	0	0	0	0	0	0	213	313	526	0	449	596	24	1069	90	744	73	91	998	3	327	915	0	1245	3838
% Cars	0	0	0	0	0	0	0	91.4	100	96.3	0	99.3	99.8	100	99.6	98.9	98.7	93.6	97.8	98.2	100	95.1	99.7	0	98.4	98.4
Trucks	0	0	0	0	0	0	0	20	0	20	0	3	1	0	4	1	10	5	2	18	0	17	3	0	20	62
% Trucks	0	0	0	0	0	0	0	8.6	0	3.7	0	0.7	0.2	0	0.4	1.1	1.3	6.4	2.2	1.8	0	4.9	0.3	0	1.6	1.6

Accurate Counts
978-664-2565

N/S Street : Fullerton St/Kilmarnock St
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970010
Site Code : 94970010
Start Date : 5/17/2012
Page No : 1

Groups Printed- Cars - Trucks

	Fullerton St From North			Brookline Ave From East			Kilmarnock St From South			Brookline Ave From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	2	6	2	6	69	26	1	15	8	25	66	7	233
07:15 AM	3	7	11	7	72	20	9	21	3	41	57	6	257
07:30 AM	5	8	6	13	77	22	10	23	8	38	60	10	280
07:45 AM	4	10	8	14	77	16	14	16	3	36	89	12	299
Total	14	31	27	40	295	84	34	75	22	140	272	35	1069
08:00 AM	5	8	13	8	60	24	19	13	7	28	66	5	256
08:15 AM	10	11	16	10	85	29	12	20	7	38	81	23	342
08:30 AM	2	8	16	13	59	14	8	12	2	32	47	6	219
08:45 AM	9	14	11	8	71	20	6	19	3	43	57	8	269
Total	26	41	56	39	275	87	45	64	19	141	251	42	1086
Grand Total	40	72	83	79	570	171	79	139	41	281	523	77	2155
Apprch %	20.5	36.9	42.6	9.6	69.5	20.9	30.5	53.7	15.8	31.9	59.4	8.7	
Total %	1.9	3.3	3.9	3.7	26.5	7.9	3.7	6.5	1.9	13	24.3	3.6	
Cars	40	68	80	78	492	168	78	138	37	279	472	77	2007
% Cars	100	94.4	96.4	98.7	86.3	98.2	98.7	99.3	90.2	99.3	90.2	100	93.1
Trucks	0	4	3	1	78	3	1	1	4	2	51	0	148
% Trucks	0	5.6	3.6	1.3	13.7	1.8	1.3	0.7	9.8	0.7	9.8	0	6.9

	Fullerton St From North				Brookline Ave From East				Kilmarnock St From South				Brookline Ave From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	5	8	6	19	13	77	22	112	10	**23**	**8**	**41**	**38**	60	10	108	280
07:45 AM	4	10	8	22	**14**	77	16	107	14	16	3	33	36	**89**	12	137	299
08:00 AM	5	8	13	26	8	60	24	92	**19**	13	7	39	28	66	5	99	256
08:15 AM	**10**	**11**	**16**	**37**	10	**85**	**29**	**124**	12	20	7	39	38	81	**23**	**142**	**342**
Total Volume	24	37	43	104	45	299	91	435	55	72	25	152	140	296	50	486	1177
% App. Total	23.1	35.6	41.3		10.3	68.7	20.9		36.2	47.4	16.4		28.8	60.9	10.3		
PHF	.600	.841	.672	.703	.804	.879	.784	.877	.724	.783	.781	.927	.921	.831	.543	.856	.860
Cars	24	34	43	101	45	265	91	401	55	72	22	149	138	271	50	459	1110
% Cars	100	91.9	100	97.1	100	88.6	100	92.2	100	100	88.0	98.0	98.6	91.6	100	94.4	94.3
Trucks	0	3	0	3	0	34	0	34	0	0	3	3	2	25	0	27	67
% Trucks	0	8.1	0	2.9	0	11.4	0	7.8	0	0	12.0	2.0	1.4	8.4	0	5.6	5.7

Accurate Counts
978-664-2565

N/S Street : Fullerton St/Kilmarnock St
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970010
Site Code : 94970010
Start Date : 5/17/2012
Page No : 1

Groups Printed- Cars - Trucks

	Fullerton St From North			Brookline Ave From East			Kilmarnock St From South			Brookline Ave From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	16	3	28	6	70	15	32	6	9	27	70	8	290
04:15 PM	12	8	26	13	81	6	24	11	8	34	77	2	302
04:30 PM	23	9	27	10	100	12	17	10	10	32	89	7	346
04:45 PM	13	16	27	7	57	9	21	10	7	24	78	12	281
Total	64	36	108	36	308	42	94	37	34	117	314	29	1219
05:00 PM	16	14	46	6	79	7	20	9	13	27	72	6	315
05:15 PM	17	15	41	15	98	11	24	8	11	25	71	6	342
05:30 PM	15	19	21	12	81	9	25	7	16	14	69	7	295
05:45 PM	12	14	28	16	73	4	22	8	11	12	82	8	290
Total	60	62	136	49	331	31	91	32	51	78	294	27	1242
Grand Total	124	98	244	85	639	73	185	69	85	195	608	56	2461
Apprch %	26.6	21	52.4	10.7	80.2	9.2	54.6	20.4	25.1	22.7	70.8	6.5	
Total %	5	4	9.9	3.5	26	3	7.5	2.8	3.5	7.9	24.7	2.3	
Cars	124	98	243	82	601	73	184	69	85	195	562	55	2371
% Cars	100	100	99.6	96.5	94.1	100	99.5	100	100	100	92.4	98.2	96.3
Trucks	0	0	1	3	38	0	1	0	0	0	46	1	90
% Trucks	0	0	0.4	3.5	5.9	0	0.5	0	0	0	7.6	1.8	3.7

	Fullerton St From North				Brookline Ave From East				Kilmarnock St From South				Brookline Ave From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	**23**	9	27	59	10	**100**	**12**	122	17	**10**	10	37	**32**	**89**	7	**128**	**346**
04:45 PM	13	**16**	27	56	7	57	9	73	21	10	7	38	24	78	**12**	114	281
05:00 PM	16	14	**46**	**76**	6	79	7	92	20	9	**13**	42	27	72	6	105	315
05:15 PM	17	15	41	73	**15**	98	11	**124**	**24**	8	11	**43**	25	71	6	102	342
Total Volume	69	54	141	264	38	334	39	411	82	37	41	160	108	310	31	449	1284
% App. Total	26.1	20.5	53.4		9.2	81.3	9.5		51.2	23.1	25.6		24.1	69	6.9		
PHF	.750	.844	.766	.868	.633	.835	.813	.829	.854	.925	.788	.930	.844	.871	.646	.877	.928
Cars	69	54	141	264	37	311	39	387	81	37	41	159	108	286	30	424	1234
% Cars	100	100	100	100	97.4	93.1	100	94.2	98.8	100	100	99.4	100	92.3	96.8	94.4	96.1
Trucks	0	0	0	0	1	23	0	24	1	0	0	1	0	24	1	25	50
% Trucks	0	0	0	0	2.6	6.9	0	5.8	1.2	0	0	0.6	0	7.7	3.2	5.6	3.9

Accurate Counts
978-664-2565

N/S Street : Park Drive
E/W Street: Brookline Ave / Boylston St
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008a
Site Code : 9497008A
Start Date : 5/16/2012
Page No : 1

Groups Printed- Cars - Trucks

	Park Dr From North				Brookline Ave From East				Boylston St From Southeast				Park Dr From South				Brookline Ave From West				
Start Time	Left	BrLt	Thru	Right	HdLt	Left	Thru	Right	HdLt	BrLt	BrRt	HdRt	Left	Thru	Right	HdRt	Left	Thru	BrRt	Right	Int. Total
07:00 AM	0	0	0	0	0	0	40	21	0	146	93	3	10	82	15	19	1	74	239	0	743
07:15 AM	0	0	0	0	0	0	52	30	0	144	109	1	23	116	15	24	0	63	229	0	806
07:30 AM	0	0	0	0	0	0	63	32	0	150	117	4	23	118	24	24	0	99	246	0	900
07:45 AM	0	0	0	0	0	0	68	52	0	164	114	2	32	134	32	31	0	106	260	0	995
Total	0	0	0	0	0	0	223	135	0	604	433	10	88	450	86	98	1	342	974	0	3444
08:00 AM	0	0	0	0	0	0	74	52	0	149	98	0	30	133	32	19	0	100	261	0	948
08:15 AM	0	0	0	0	0	0	52	26	0	142	88	3	18	124	31	18	1	91	244	0	838
08:30 AM	0	0	0	0	0	0	65	38	0	135	81	5	21	123	36	14	0	112	223	0	853
08:45 AM	0	0	0	0	0	0	61	61	0	147	112	1	21	134	30	21	2	99	206	0	895
Total	0	0	0	0	0	0	252	177	0	573	379	9	90	514	129	72	3	402	934	0	3534
Grand Total	0	0	0	0	0	0	475	312	0	1177	812	19	178	964	215	170	4	744	1908	0	6978
Apprch %	0	0	0	0	0	0	60.4	39.6	0	58.6	40.4	0.9	11.7	63.1	14.1	11.1	0.2	28	71.8	0	
Total %	0	0	0	0	0	0	6.8	4.5	0	16.9	11.6	0.3	2.6	13.8	3.1	2.4	0.1	10.7	27.3	0	
Cars	0	0	0	0	0	0	399	305	0	1166	810	18	175	934	211	165	4	685	1895	0	6767
% Cars	0	0	0	0	0	0	84	97.8	0	99.1	99.8	94.7	98.3	96.9	98.1	97.1	100	92.1	99.3	0	97
Trucks	0	0	0	0	0	0	76	7	0	11	2	1	3	30	4	5	0	59	13	0	211
% Trucks	0	0	0	0	0	0	16	2.2	0	0.9	0.2	5.3	1.7	3.1	1.9	2.9	0	7.9	0.7	0	3

	Park Dr From North					Brookline Ave From East					Boylston St From Southeast					Park Dr From South					Brookline Ave From West					
Start Time	Left	BrLt	Thru	Right	App. Total	HdLt	Left	Thru	Right	App. Total	HdLt	BrLt	BrRt	HdRt	App. Total	Left	Thru	Right	HdRt	App. Total	Left	Thru	BrRt	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																										
Peak Hour for Entire Intersection Begins at 07:30 AM																										
07:30 AM	0	0	0	0	0	0	0	63	32	95	0	150	**117**	**4**	271	23	118	24	24	189	0	99	246	0	345	900
07:45 AM	0	0	0	0	0	0	0	68	**52**	120	0	**164**	114	2	**280**	**32**	**134**	**32**	**31**	**229**	0	**106**	260	0	**366**	**995**
08:00 AM	0	0	0	0	0	0	0	**74**	52	**126**	0	149	98	0	247	30	133	32	19	214	0	100	**261**	0	361	948
08:15 AM	0	0	0	0	0	0	0	52	26	78	0	142	88	3	233	18	124	31	18	191	**1**	91	244	0	336	838
Total Volume	0	0	0	0	0	0	0	257	162	419	0	605	417	9	1031	103	509	119	92	823	1	396	1011	0	1408	3681
% App. Total	0	0	0	0		0	0	61.3	38.7		0	58.7	40.4	0.9		12.5	61.8	14.5	11.2		0.1	28.1	71.8	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.868	.779	.831	.000	.922	.891	.563	.921	.805	.950	.930	.742	.898	.250	.934	.968	.000	.962	.925
Cars	0	0	0	0	0	0	0	222	159	381	0	599	415	9	1023	100	492	118	90	800	1	371	1003	0	1375	3579
% Cars	0	0	0	0	0	0	0	86.4	98.1	90.9	0	99.0	99.5	100	99.2	97.1	96.7	99.2	97.8	97.2	100	93.7	99.2	0	97.7	97.2
Trucks	0	0	0	0	0	0	0	35	3	38	0	6	2	0	8	3	17	1	2	23	0	25	8	0	33	102
% Trucks	0	0	0	0	0	0	0	13.6	1.9	9.1	0	1.0	0.5	0	0.8	2.9	3.3	0.8	2.2	2.8	0	6.3	0.8	0	2.3	2.8

Accurate Counts
978-664-2565

N/S Street : Park Drive
E/W Street: Brookline Ave / Boylston St
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008a
Site Code : 9497008A
Start Date : 5/16/2012
Page No : 1

Groups Printed- Cars - Trucks

	Park Dr From North				Brookline Ave From East				Boylston St From Southeast				Park Dr From South				Brookline Ave From West				
Start Time	Left	BrLt	Thru	Right	HdLt	Left	Thru	Right	HdLt	BrLt	BrRt	HdRt	Left	Thru	Right	HdRt	Left	Thru	BrRt	Right	Int. Total
04:00 PM	0	0	0	0	0	0	70	73	0	105	132	3	21	179	11	27	2	92	216	0	931
04:15 PM	0	0	0	0	0	0	69	70	0	113	137	2	14	175	18	17	1	102	234	0	952
04:30 PM	0	0	0	0	0	0	77	69	0	100	141	4	12	153	20	20	1	98	230	0	925
04:45 PM	0	0	0	0	0	0	58	74	0	108	137	8	19	217	19	34	1	78	238	0	991
Total	0	0	0	0	0	0	274	286	0	426	547	17	66	724	68	98	5	370	918	0	3799
05:00 PM	0	0	0	0	0	0	51	89	0	103	155	6	28	163	20	18	0	92	203	0	928
05:15 PM	0	0	0	0	0	0	68	76	0	129	158	5	26	178	15	18	1	94	262	0	1030
05:30 PM	0	0	0	0	0	0	56	74	0	112	147	5	18	196	24	23	1	80	215	0	951
05:45 PM	0	0	0	0	0	0	52	78	0	118	125	6	14	180	22	18	1	82	208	0	904
Total	0	0	0	0	0	0	227	317	0	462	585	22	86	717	81	77	3	348	888	0	3813
Grand Total	0	0	0	0	0	0	501	603	0	888	1132	39	152	1441	149	175	8	718	1806	0	7612
Apprch %	0	0	0	0	0	0	45.4	54.6	0	43.1	55	1.9	7.9	75.2	7.8	9.1	0.3	28.4	71.3	0	
Total %	0	0	0	0	0	0	6.6	7.9	0	11.7	14.9	0.5	2	18.9	2	2.3	0.1	9.4	23.7	0	
Cars	0	0	0	0	0	0	458	602	0	881	1129	38	151	1422	143	173	8	676	1800	0	7481
% Cars	0	0	0	0	0	0	91.4	99.8	0	99.2	99.7	97.4	99.3	98.7	96	98.9	100	94.2	99.7	0	98.3
Trucks	0	0	0	0	0	0	43	1	0	7	3	1	1	19	6	2	0	42	6	0	131
% Trucks	0	0	0	0	0	0	8.6	0.2	0	0.8	0.3	2.6	0.7	1.3	4	1.1	0	5.8	0.3	0	1.7

	Park Dr From North					Brookline Ave From East					Boylston St From Southeast					Park Dr From South					Brookline Ave From West					
Start Time	Left	BrLt	Thru	Right	App. Total	HdLt	Left	Thru	Right	App. Total	HdLt	BrLt	BrRt	HdRt	App. Total	Left	Thru	Right	HdRt	App. Total	Left	Thru	BrRt	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																										
Peak Hour for Entire Intersection Begins at 04:45 PM																										
04:45 PM	0	0	0	0	0	0	0	58	74	132	0	108	137	**8**	253	19	**217**	19	**34**	**289**	**1**	78	238	0	317	991
05:00 PM	0	0	0	0	0	0	0	51	**89**	140	0	103	155	6	264	**28**	163	20	18	229	0	92	203	0	295	928
05:15 PM	0	0	0	0	0	0	0	**68**	76	**144**	0	**129**	**158**	5	**292**	26	178	15	18	237	1	**94**	**262**	0	**357**	**1030**
05:30 PM	0	0	0	0	0	0	0	56	74	130	0	112	147	5	264	18	196	**24**	23	261	1	80	215	0	296	951
Total Volume	0	0	0	0	0	0	0	233	313	546	0	452	597	24	1073	91	754	78	93	1016	3	344	918	0	1265	3900
% App. Total	0	0	0	0		0	0	42.7	57.3		0	42.1	55.6	2.2		9	74.2	7.7	9.2		0.2	27.2	72.6	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.857	.879	.948	.000	.876	.945	.750	.919	.813	.869	.813	.684	.879	.750	.915	.876	.000	.886	.947
Cars	0	0	0	0	0	0	0	213	313	526	0	449	596	24	1069	90	744	73	91	998	3	327	915	0	1245	3838
% Cars	0	0	0	0	0	0	0	91.4	100	96.3	0	99.3	99.8	100	99.6	98.9	98.7	93.6	97.8	98.2	100	95.1	99.7	0	98.4	98.4
Trucks	0	0	0	0	0	0	0	20	0	20	0	3	1	0	4	1	10	5	2	18	0	17	3	0	20	62
% Trucks	0	0	0	0	0	0	0	8.6	0	3.7	0	0.7	0.2	0	0.4	1.1	1.3	6.4	2.2	1.8	0	4.9	0.3	0	1.6	1.6

Accurate Counts
978-664-2565

N/S Street : Fenway / Park Dr
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008b
Site Code : 9497008B
Start Date : 5/16/2012
Page No : 1

Groups Printed- Cars - Trucks

	Park Dr From North				Brookline Ave From East				U-TR to Park From Southeast				Fenway From South				Brookline Ave From West				
Start Time	Left	BrLt	Thru	Right	HdLt	Left	Thru	Right	HdLt	BrLt	BrRt	HdRt	Left	Thru	Right	HdRt	Left	Thru	BrRt	Right	Int. Total
07:00 AM	152	14	176	24	0	0	203	0	0	0	0	0	0	0	0	0	0	154	10	9	742
07:15 AM	168	12	208	33	0	1	210	0	0	0	0	0	0	0	0	0	0	136	6	8	782
07:30 AM	155	17	192	39	0	0	241	0	0	0	0	0	0	0	0	0	0	184	7	12	847
07:45 AM	180	13	134	46	0	0	241	0	0	0	0	0	0	0	0	0	0	196	12	16	838
Total	655	56	710	142	0	1	895	0	0	0	0	0	0	0	0	0	0	670	35	45	3209
08:00 AM	187	20	144	49	0	1	270	0	0	0	0	0	0	0	0	0	0	178	13	15	877
08:15 AM	160	20	190	29	0	1	220	0	0	0	0	0	0	0	0	0	0	185	14	14	833
08:30 AM	147	18	188	44	0	0	212	0	0	0	0	0	0	0	0	0	0	175	11	12	807
08:45 AM	133	14	195	30	0	0	241	0	0	0	0	0	0	0	0	0	0	181	9	10	813
Total	627	72	717	152	0	2	943	0	0	0	0	0	0	0	0	0	0	719	47	51	3330
Grand Total	1282	128	1427	294	0	3	1838	0	0	0	0	0	0	0	0	0	0	1389	82	96	6539
Apprch %	40.9	4.1	45.6	9.4	0	0.2	99.8	0	0	0	0	0	0	0	0	0	0	88.6	5.2	6.1	
Total %	19.6	2	21.8	4.5	0	0	28.1	0	0	0	0	0	0	0	0	0	0	21.2	1.3	1.5	
Cars	1276	128	1395	278	0	2	1749	0	0	0	0	0	0	0	0	0	0	1322	58	76	6284
% Cars	99.5	100	97.8	94.6	0	66.7	95.2	0	0	0	0	0	0	0	0	0	0	95.2	70.7	79.2	96.1
Trucks	6	0	32	16	0	1	89	0	0	0	0	0	0	0	0	0	0	67	24	20	255
% Trucks	0.5	0	2.2	5.4	0	33.3	4.8	0	0	0	0	0	0	0	0	0	0	4.8	29.3	20.8	3.9

	Park Dr From North					Brookline Ave From East					U-TR to Park From Southeast					Fenway From South					Brookline Ave From West					
Start Time	Left	BrLt	Thru	Right	App. Total	HdLt	Left	Thru	Right	App. Total	HdLt	BrLt	BrRt	HdRt	App. Total	Left	Thru	Right	HdRt	App. Total	Left	Thru	BrRt	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																										
Peak Hour for Entire Intersection Begins at 07:30 AM																										
07:30 AM	155	17	**192**	39	**403**	0	0	241	0	241	0	0	0	0	0	0	0	0	0	0	0	184	7	12	203	847
07:45 AM	180	13	134	46	373	0	0	241	0	241	0	0	0	0	0	0	0	0	0	0	0	**196**	12	**16**	**224**	838
08:00 AM	**187**	**20**	144	**49**	400	0	**1**	**270**	0	**271**	0	0	0	0	0	0	0	0	0	0	0	178	13	15	206	**877**
08:15 AM	160	20	190	29	399	0	1	220	0	221	0	0	0	0	0	0	0	0	0	0	0	185	**14**	14	213	833
Total Volume	682	70	660	163	1575	0	2	972	0	974	0	0	0	0	0	0	0	0	0	0	0	743	46	57	846	3395
% App. Total	43.3	4.4	41.9	10.3		0	0.2	99.8	0		0	0	0	0		0	0	0	0		0	87.8	5.4	6.7		
PHF	.912	.875	.859	.832	.977	.000	.500	.900	.000	.899	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.948	.821	.891	.944	.968
Cars	678	70	644	155	1547	0	1	929	0	930	0	0	0	0	0	0	0	0	0	0	0	713	32	46	791	3268
% Cars	99.4	100	97.6	95.1	98.2	0	50.0	95.6	0	95.5	0	0	0	0	0	0	0	0	0	0	0	96.0	69.6	80.7	93.5	96.3
Trucks	4	0	16	8	28	0	1	43	0	44	0	0	0	0	0	0	0	0	0	0	0	30	14	11	55	127
% Trucks	0.6	0	2.4	4.9	1.8	0	50.0	4.4	0	4.5	0	0	0	0	0	0	0	0	0	0	0	4.0	30.4	19.3	6.5	3.7

Accurate Counts
978-664-2565

N/S Street : Fenway / Park Dr
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008b
Site Code : 9497008B
Start Date : 5/16/2012
Page No : 1

Groups Printed- Cars - Trucks

	Park Dr From North				Brookline Ave From East				U-TR to Park From Southeast				Fenway From South				Brookline Ave From West				
Start Time	Left	BrLt	Thru	Right	HdLt	Left	Thru	Right	HdLt	BrLt	BrRt	HdRt	Left	Thru	Right	HdRt	Left	Thru	BrRt	Right	Int. Total
04:00 PM	165	23	100	38	0	0	202	0	0	0	0	0	0	0	0	0	0	154	12	13	707
04:15 PM	182	36	104	36	0	0	193	0	0	0	0	0	0	0	0	0	0	143	22	21	737
04:30 PM	126	25	114	35	0	0	178	0	0	0	0	0	0	0	0	0	0	192	8	13	691
04:45 PM	157	32	135	31	0	0	196	0	0	0	0	0	0	0	0	0	0	179	18	12	760
Total	630	116	453	140	0	0	769	0	0	0	0	0	0	0	0	0	0	668	60	59	2895
05:00 PM	115	27	188	25	0	0	189	0	0	0	0	0	0	0	0	0	0	156	11	14	725
05:15 PM	135	22	164	29	0	0	210	0	0	0	0	0	0	0	0	0	0	234	18	19	831
05:30 PM	122	29	205	27	0	0	193	0	0	0	0	0	0	0	0	0	0	182	13	13	784
05:45 PM	119	26	146	35	0	0	188	0	0	0	0	0	0	0	0	0	0	176	10	14	714
Total	491	104	703	116	0	0	780	0	0	0	0	0	0	0	0	0	0	748	52	60	3054
Grand Total	1121	220	1156	256	0	0	1549	0	0	0	0	0	0	0	0	0	0	1416	112	119	5949
Apprch %	40.7	8	42	9.3	0	0	100	0	0	0	0	0	0	0	0	0	0	86	6.8	7.2	
Total %	18.8	3.7	19.4	4.3	0	0	26	0	0	0	0	0	0	0	0	0	0	23.8	1.9	2	
Cars	1120	218	1139	242	0	0	1498	0	0	0	0	0	0	0	0	0	0	1368	104	113	5802
% Cars	99.9	99.1	98.5	94.5	0	0	96.7	0	0	0	0	0	0	0	0	0	0	96.6	92.9	95	97.5
Trucks	1	2	17	14	0	0	51	0	0	0	0	0	0	0	0	0	0	48	8	6	147
% Trucks	0.1	0.9	1.5	5.5	0	0	3.3	0	0	0	0	0	0	0	0	0	0	3.4	7.1	5	2.5

	Park Dr From North					Brookline Ave From East					U-TR to Park From Southeast					Fenway From South					Brookline Ave From West					
Start Time	Left	BrLt	Thru	Right	App. Total	HdLt	Left	Thru	Right	App. Total	HdLt	BrLt	BrRt	HdRt	App. Total	Left	Thru	Right	HdRt	App. Total	Left	Thru	BrRt	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																										
Peak Hour for Entire Intersection Begins at 04:45 PM																										
04:45 PM	**157**	**32**	135	**31**	355	0	0	196	0	196	0	0	0	0	0	0	0	0	0	0	0	179	**18**	12	209	760
05:00 PM	115	27	188	25	355	0	0	189	0	189	0	0	0	0	0	0	0	0	0	0	0	156	11	14	181	725
05:15 PM	135	22	164	29	350	0	0	**210**	0	**210**	0	0	0	0	0	0	0	0	0	0	0	**234**	18	**19**	**271**	**831**
05:30 PM	122	29	**205**	27	**383**	0	0	193	0	193	0	0	0	0	0	0	0	0	0	0	0	182	13	13	208	784
Total Volume	529	110	692	112	1443	0	0	788	0	788	0	0	0	0	0	0	0	0	0	0	0	751	60	58	869	3100
% App. Total	36.7	7.6	48	7.8		0	0	100	0		0	0	0	0		0	0	0	0		0	86.4	6.9	6.7		
PHF	.842	.859	.844	.903	.942	.000	.000	.938	.000	.938	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.802	.833	.763	.802	.933
Cars	529	110	681	106	1426	0	0	764	0	764	0	0	0	0	0	0	0	0	0	0	0	728	55	56	839	3029
% Cars	100	100	98.4	94.6	98.8	0	0	97.0	0	97.0	0	0	0	0	0	0	0	0	0	0	0	96.9	91.7	96.6	96.5	97.7
Trucks	0	0	11	6	17	0	0	24	0	24	0	0	0	0	0	0	0	0	0	0	0	23	5	2	30	71
% Trucks	0	0	1.6	5.4	1.2	0	0	3.0	0	3.0	0	0	0	0	0	0	0	0	0	0	0	3.1	8.3	3.4	3.5	2.3

Accurate Counts
978-664-2565

N/S Street : Riverway to Brookline
E/W Street : Riverway / Park Dr
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008c
Site Code : 9497008C
Start Date : 5/16/2012
Page No : 1

Groups Printed- Cars - Trucks

	Park Dr From East		Riverway to Brookline From South		Riverway From West		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
07:00 AM	157	0	0	0	0	217	374
07:15 AM	192	0	0	0	0	234	426
07:30 AM	159	0	0	0	0	248	407
07:45 AM	168	0	0	0	0	212	380
Total	676	0	0	0	0	911	1587
08:00 AM	188	0	0	0	0	218	406
08:15 AM	191	0	0	0	0	201	392
08:30 AM	197	0	0	0	0	188	385
08:45 AM	204	0	0	0	0	198	402
Total	780	0	0	0	0	805	1585
Grand Total	1456	0	0	0	0	1716	3172
Apprch %	100	0	0	0	0	100	
Total %	45.9	0	0	0	0	54.1	
Cars	1405	0	0	0	0	1711	3116
% Cars	96.5	0	0	0	0	99.7	98.2
Trucks	51	0	0	0	0	5	56
% Trucks	3.5	0	0	0	0	0.3	1.8

	Park Dr From East			Riverway to Brookline From South			Riverway From West			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:15 AM										
07:15 AM	**192**	0	**192**	0	0	0	0	234	234	**426**
07:30 AM	159	0	159	0	0	0	0	**248**	**248**	407
07:45 AM	168	0	168	0	0	0	0	212	212	380
08:00 AM	188	0	188	0	0	0	0	218	218	406
Total Volume	707	0	707	0	0	0	0	912	912	1619
% App. Total	100	0		0	0		0	100		
PHF	.921	.000	.921	.000	.000	.000	.000	.919	.919	.950
Cars	686	0	686	0	0	0	0	910	910	1596
% Cars	97.0	0	97.0	0	0	0	0	99.8	99.8	98.6
Trucks	21	0	21	0	0	0	0	2	2	23
% Trucks	3.0	0	3.0	0	0	0	0	0.2	0.2	1.4

Accurate Counts
978-664-2565

N/S Street : Riverway to Brookline
E/W Street : Riverway / Park Dr
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008c
Site Code : 9497008C
Start Date : 5/16/2012
Page No : 1

Groups Printed- Cars - Trucks

	Park Dr From East		Riverway to Brookline From South		Riverway From West		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
04:00 PM	162	0	0	0	0	169	331
04:15 PM	122	0	0	0	0	199	321
04:30 PM	146	0	0	0	0	178	324
04:45 PM	174	0	0	0	0	170	344
Total	604	0	0	0	0	716	1320
05:00 PM	171	0	0	0	0	198	369
05:15 PM	187	0	0	0	0	179	366
05:30 PM	183	0	0	0	0	193	376
05:45 PM	160	0	0	0	0	151	311
Total	701	0	0	0	0	721	1422
Grand Total	1305	0	0	0	0	1437	2742
Apprch %	100	0	0	0	0	100	
Total %	47.6	0	0	0	0	52.4	
Cars	1276	0	0	0	0	1434	2710
% Cars	97.8	0	0	0	0	99.8	98.8
Trucks	29	0	0	0	0	3	32
% Trucks	2.2	0	0	0	0	0.2	1.2

	Park Dr From East			Riverway to Brookline From South			Riverway From West			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:45 PM										
04:45 PM	174	0	174	0	0	0	0	170	170	344
05:00 PM	171	0	171	0	0	0	0	**198**	**198**	369
05:15 PM	**187**	0	**187**	0	0	0	0	179	179	366
05:30 PM	183	0	183	0	0	0	0	193	193	**376**
Total Volume	715	0	715	0	0	0	0	740	740	1455
% App. Total	100	0		0	0		0	100		
PHF	.956	.000	.956	.000	.000	.000	.000	.934	.934	.967
Cars	702	0	702	0	0	0	0	738	738	1440
% Cars	98.2	0	98.2	0	0	0	0	99.7	99.7	99.0
Trucks	13	0	13	0	0	0	0	2	2	15
% Trucks	1.8	0	1.8	0	0	0	0	0.3	0.3	1.0

Accurate Counts
978-664-2565

N/S Street : Park Dr
E/W Street : Riverway
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008D
Site Code : 9497008D
Start Date : 5/16/2012
Page No : 1

Groups Printed- Cars - Trucks

	Park Dr From North			Park Dr From South			To Brookline From Southwest			Riverway From West			
Start Time	Thru	BrRt	Right	HdLt	Left	Thru	HdLt	BrLt	HdRt	Left	Right	HdRt	Int. Total
07:00 AM	0	96	62	57	107	60	0	0	0	0	0	0	382
07:15 AM	0	128	74	64	98	70	0	0	0	0	0	0	434
07:30 AM	0	138	94	45	116	99	0	0	0	0	0	0	492
07:45 AM	0	106	92	55	138	78	0	0	0	0	0	0	469
Total	0	468	322	221	459	307	0	0	0	0	0	0	1777
08:00 AM	0	139	84	63	127	110	0	0	0	0	0	0	523
08:15 AM	0	126	82	54	89	105	0	0	0	0	0	0	456
08:30 AM	0	146	80	64	96	96	0	0	0	0	0	0	482
08:45 AM	0	141	69	67	133	94	0	0	0	0	0	0	504
Total	0	552	315	248	445	405	0	0	0	0	0	0	1965
Grand Total	0	1020	637	469	904	712	0	0	0	0	0	0	3742
Apprch %	0	61.6	38.4	22.5	43.4	34.1	0	0	0	0	0	0	
Total %	0	27.3	17	12.5	24.2	19	0	0	0	0	0	0	
Cars	0	975	635	460	903	681	0	0	0	0	0	0	3654
% Cars	0	95.6	99.7	98.1	99.9	95.6	0	0	0	0	0	0	97.6
Trucks	0	45	2	9	1	31	0	0	0	0	0	0	88
% Trucks	0	4.4	0.3	1.9	0.1	4.4	0	0	0	0	0	0	2.4

	Park Dr From North				Park Dr From South				To Brookline From Southwest				Riverway From West				
Start Time	Thru	BrRt	Right	App. Total	HdLt	Left	Thru	App. Total	HdLt	BrLt	HdRt	App. Total	Left	Right	HdRt	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	0	139	**84**	223	63	127	**110**	**300**	0	0	0	0	0	0	0	0	**523**
08:15 AM	0	126	82	208	54	89	105	248	0	0	0	0	0	0	0	0	456
08:30 AM	0	**146**	80	**226**	64	96	96	256	0	0	0	0	0	0	0	0	482
08:45 AM	0	141	69	210	**67**	**133**	94	294	0	0	0	0	0	0	0	0	504
Total Volume	0	552	315	867	248	445	405	1098	0	0	0	0	0	0	0	0	1965
% App. Total	0	63.7	36.3		22.6	40.5	36.9		0	0	0		0	0	0		
PHF	.000	.945	.938	.959	.925	.836	.920	.915	.000	.000	.000	.000	.000	.000	.000	.000	.939
Cars	0	525	315	840	243	445	389	1077	0	0	0	0	0	0	0	0	1917
% Cars	0	95.1	100	96.9	98.0	100	96.0	98.1	0	0	0	0	0	0	0	0	97.6
Trucks	0	27	0	27	5	0	16	21	0	0	0	0	0	0	0	0	48
% Trucks	0	4.9	0	3.1	2.0	0	4.0	1.9	0	0	0	0	0	0	0	0	2.4

Accurate Counts
978-664-2565

N/S Street : Park Dr
E/W Street : Riverway
City/State : Boston, MA
Weather : Drizzle

File Name : 9497008D
Site Code : 9497008D
Start Date : 5/16/2012
Page No : 1

Groups Printed- Cars - Trucks

	Park Dr From North			Park Dr From South			To Brookline From Southwest			Riverway From West			
Start Time	Thru	BrRt	Right	HdLt	Left	Thru	HdLt	BrLt	HdRt	Left	Right	HdRt	Int. Total
04:00 PM	0	111	107	48	213	126	0	0	0	0	0	0	605
04:15 PM	0	96	136	49	192	132	0	0	0	0	0	0	605
04:30 PM	0	95	93	54	196	117	0	0	0	0	0	0	555
04:45 PM	0	83	119	65	199	154	0	0	0	0	0	0	620
Total	0	385	455	216	800	529	0	0	0	0	0	0	2385
05:00 PM	0	131	132	71	196	146	0	0	0	0	0	0	676
05:15 PM	0	108	131	74	204	146	0	0	0	0	0	0	663
05:30 PM	0	118	118	60	178	159	0	0	0	0	0	0	633
05:45 PM	0	84	94	69	186	146	0	0	0	0	0	0	579
Total	0	441	475	274	764	597	0	0	0	0	0	0	2551
Grand Total	0	826	930	490	1564	1126	0	0	0	0	0	0	4936
Apprch %	0	47	53	15.4	49.2	35.4	0	0	0	0	0	0	
Total %	0	16.7	18.8	9.9	31.7	22.8	0	0	0	0	0	0	
Cars	0	799	929	487	1564	1107	0	0	0	0	0	0	4886
% Cars	0	96.7	99.9	99.4	100	98.3	0	0	0	0	0	0	99
Trucks	0	27	1	3	0	19	0	0	0	0	0	0	50
% Trucks	0	3.3	0.1	0.6	0	1.7	0	0	0	0	0	0	1

	Park Dr From North				Park Dr From South				To Brookline From Southwest				Riverway From West				
Start Time	Thru	BrRt	Right	App. Total	HdLt	Left	Thru	App. Total	HdLt	BrLt	HdRt	App. Total	Left	Right	HdRt	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	0	83	119	202	65	199	154	418	0	0	0	0	0	0	0	0	620
05:00 PM	0	**131**	**132**	**263**	71	196	146	413	0	0	0	0	0	0	0	0	**676**
05:15 PM	0	108	131	239	**74**	**204**	146	**424**	0	0	0	0	0	0	0	0	663
05:30 PM	0	118	118	236	60	178	**159**	397	0	0	0	0	0	0	0	0	633
Total Volume	0	440	500	940	270	777	605	1652	0	0	0	0	0	0	0	0	2592
% App. Total	0	46.8	53.2		16.3	47	36.6		0	0	0		0	0	0		
PHF	.000	.840	.947	.894	.912	.952	.951	.974	.000	.000	.000	.000	.000	.000	.000	.000	.959
Cars	0	427	499	926	269	777	595	1641	0	0	0	0	0	0	0	0	2567
% Cars	0	97.0	99.8	98.5	99.6	100	98.3	99.3	0	0	0	0	0	0	0	0	99.0
Trucks	0	13	1	14	1	0	10	11	0	0	0	0	0	0	0	0	25
% Trucks	0	3.0	0.2	1.5	0.4	0	1.7	0.7	0	0	0	0	0	0	0	0	1.0

Accurate Counts
978-664-2565

N/S Street : Overland Street
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970009
Site Code : 94970009
Start Date : 5/16/2012
Page No : 1

Groups Printed- Cars - Trucks

	Overland St From North			Brookline Ave From East			Private Dr From South			Brookline Ave From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	1	0	10	0	90	5	0	0	0	11	68	0	185
07:15 AM	1	0	8	0	97	2	0	0	0	5	65	0	178
07:30 AM	0	0	4	0	110	3	0	0	1	14	64	0	196
07:45 AM	2	0	5	0	90	2	1	0	0	12	76	0	188
Total	4	0	27	0	387	12	1	0	1	42	273	0	747
08:00 AM	3	0	6	1	97	3	0	0	0	11	69	1	191
08:15 AM	3	0	7	0	104	4	0	0	0	10	82	0	210
08:30 AM	1	0	6	0	102	5	0	0	0	8	55	1	178
08:45 AM	3	0	8	0	88	6	0	0	0	2	72	0	179
Total	10	0	27	1	391	18	0	0	0	31	278	2	758
Grand Total	14	0	54	1	778	30	1	0	1	73	551	2	1505
Apprch %	20.6	0	79.4	0.1	96.2	3.7	50	0	50	11.7	88	0.3	
Total %	0.9	0	3.6	0.1	51.7	2	0.1	0	0.1	4.9	36.6	0.1	
Cars	14	0	39	1	709	30	1	0	1	72	495	2	1364
% Cars	100	0	72.2	100	91.1	100	100	0	100	98.6	89.8	100	90.6
Trucks	0	0	15	0	69	0	0	0	0	1	56	0	141
% Trucks	0	0	27.8	0	8.9	0	0	0	0	1.4	10.2	0	9.4

	Overland St From North				Brookline Ave From East				Private Dr From South				Brookline Ave From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	0	4	4	0	**110**	3	**113**	0	0	**1**	**1**	**14**	64	0	78	196
07:45 AM	2	0	5	7	0	90	2	92	**1**	0	0	1	12	76	0	88	188
08:00 AM	**3**	0	6	9	**1**	97	3	101	0	0	0	0	11	69	**1**	81	191
08:15 AM	3	0	**7**	**10**	0	104	**4**	108	0	0	0	0	10	**82**	0	**92**	**210**
Total Volume	8	0	22	30	1	401	12	414	1	0	1	2	47	291	1	339	785
% App. Total	26.7	0	73.3		0.2	96.9	2.9		50	0	50		13.9	85.8	0.3		
PHF	.667	.000	.786	.750	.250	.911	.750	.916	.250	.000	.250	.500	.839	.887	.250	.921	.935
Cars	8	0	15	23	1	374	12	387	1	0	1	2	47	263	1	311	723
% Cars	100	0	68.2	76.7	100	93.3	100	93.5	100	0	100	100	100	90.4	100	91.7	92.1
Trucks	0	0	7	7	0	27	0	27	0	0	0	0	0	28	0	28	62
% Trucks	0	0	31.8	23.3	0	6.7	0	6.5	0	0	0	0	0	9.6	0	8.3	7.9

Accurate Counts
978-664-2565

N/S Street : Overland Street
E/W Street : Brookline Avenue
City/State : Boston, MA
Weather : Drizzle

File Name : 94970009
Site Code : 94970009
Start Date : 5/16/2012
Page No : 1

Groups Printed- Cars - Trucks

	Overland St From North			Brookline Ave From East			Private Dr From South			Brookline Ave From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	0	0	14	1	79	3	0	0	0	10	97	0	204
04:15 PM	3	0	8	0	103	2	0	0	0	9	97	0	222
04:30 PM	3	0	19	0	84	3	3	0	0	7	97	0	216
04:45 PM	5	0	16	0	77	2	1	1	0	13	104	0	219
Total	11	0	57	1	343	10	4	1	0	39	395	0	861
05:00 PM	5	0	14	0	83	5	0	0	0	7	75	0	189
05:15 PM	3	0	10	0	97	5	0	0	0	6	110	0	231
05:30 PM	3	0	12	0	69	2	1	0	0	7	97	0	191
05:45 PM	5	0	9	0	64	3	1	0	0	6	61	0	149
Total	16	0	45	0	313	15	2	0	0	26	343	0	760
Grand Total	27	0	102	1	656	25	6	1	0	65	738	0	1621
Apprch %	20.9	0	79.1	0.1	96.2	3.7	85.7	14.3	0	8.1	91.9	0	
Total %	1.7	0	6.3	0.1	40.5	1.5	0.4	0.1	0	4	45.5	0	
Cars	27	0	84	1	629	25	6	1	0	48	709	0	1530
% Cars	100	0	82.4	100	95.9	100	100	100	0	73.8	96.1	0	94.4
Trucks	0	0	18	0	27	0	0	0	0	17	29	0	91
% Trucks	0	0	17.6	0	4.1	0	0	0	0	26.2	3.9	0	5.6

	Overland St From North				Brookline Ave From East				Private Dr From South				Brookline Ave From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	0	14	14	**1**	79	**3**	83	0	0	0	0	10	97	0	107	204
04:15 PM	3	0	8	11	0	**103**	2	**105**	0	0	0	0	9	97	0	106	**222**
04:30 PM	3	0	**19**	**22**	0	84	3	87	**3**	0	0	**3**	7	97	0	104	216
04:45 PM	**5**	0	16	21	0	77	2	79	1	**1**	0	2	**13**	**104**	0	**117**	219
Total Volume	11	0	57	68	1	343	10	354	4	1	0	5	39	395	0	434	861
% App. Total	16.2	0	83.8		0.3	96.9	2.8		80	20	0		9	91	0		
PHF	.550	.000	.750	.773	.250	.833	.833	.843	.333	.250	.000	.417	.750	.950	.000	.927	.970
Cars	11	0	48	59	1	329	10	340	4	1	0	5	29	380	0	409	813
% Cars	100	0	84.2	86.8	100	95.9	100	96.0	100	100	0	100	74.4	96.2	0	94.2	94.4
Trucks	0	0	9	9	0	14	0	14	0	0	0	0	10	15	0	25	48
% Trucks	0	0	15.8	13.2	0	4.1	0	4.0	0	0	0	0	25.6	3.8	0	5.8	5.6

Accurate Counts
978-664-2565

N/S Street : Kilmarnock Street
E/W Street: Van Ness Street
City/State : Boston, MA
Weather : Clear

File Name : 03990003
Site Code : 03990003
Start Date : 9/23/2010
Page No : 1

Groups Printed- Cars - Trucks

	Kilmarnock St From North			**Van Ness St From East**			**Kilmarnock St From South**					
Start Time	Left	Thru	Peds	Left	Right	Peds	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
16:00	0	0	1	15	21	35	0	0	0	36	36	72
16:15	0	0	5	13	24	15	0	0	0	20	37	57
16:30	0	0	1	15	23	34	0	0	0	35	38	73
16:45	0	0	8	22	22	24	0	0	0	32	44	76
Total	0	0	15	65	90	108	0	0	0	123	155	278
17:00	0	0	4	23	34	37	0	0	0	41	57	98
17:15	0	0	1	15	42	18	0	0	0	19	57	76
17:30	0	0	4	14	15	21	0	0	0	25	29	54
17:45	0	0	1	21	23	31	0	0	0	32	44	76
Total	0	0	10	73	114	107	0	0	0	117	187	304
Grand Total	0	0	25	138	204	215	0	0	0	240	342	582
Apprch %	0	0		40.4	59.6		0	0				
Total %	0	0		40.4	59.6		0	0		41.2	58.8	
Cars	0	0		135	185		0	0		0	0	560
% Cars	0	0	100	97.8	90.7	100	0	0	0	0	0	96.2
Trucks	0	0		3	19		0	0		0	0	22
% Trucks	0	0	0	2.2	9.3	0	0	0	0	0	0	3.8

	Kilmarnock St From North			**Van Ness St From East**			**Kilmarnock St From South**			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 16:30										
16:30	0	0	0	15	23	38	0	0	0	38
16:45	0	0	0	22	22	44	0	0	0	44
17:00	0	0	0	**23**	34	**57**	0	0	0	**57**
17:15	0	0	0	15	**42**	57	0	0	0	57
Total Volume	0	0	0	75	121	196	0	0	0	196
% App. Total	0	0		38.3	61.7		0	0		
PHF	.000	.000	.000	.815	.720	.860	.000	.000	.000	.860

Accurate Counts
978-664-2565

N/S Street : Kilmarnock Street
E/W Street: Van Ness Street
City/State : Boston, MA
Weather : Clear

File Name : 03990003
Site Code : 03990003
Start Date : 9/23/2010
Page No : 1

Groups Printed- Trucks

	Kilmarnock St From North			**Van Ness St From East**			**Kilmarnock St From South**					
Start Time	Left	Thru	Peds	Left	Right	Peds	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
16:00	0	0	0	1	2	0	0	0	0	0	3	3
16:15	0	0	0	0	2	0	0	0	0	0	2	2
16:30	0	0	0	0	1	0	0	0	0	0	1	1
16:45	0	0	0	2	1	0	0	0	0	0	3	3
Total	0	0	0	3	6	0	0	0	0	0	9	9
17:00	0	0	0	0	1	0	0	0	0	0	1	1
17:15	0	0	0	0	12	0	0	0	0	0	12	12
17:30	0	0	0	0	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	13	0	0	0	0	0	13	13
Grand Total	0	0	0	3	19	0	0	0	0	0	22	22
Apprch %	0	0		13.6	86.4		0	0				
Total %	0	0		13.6	86.4		0	0		0	100	

	Kilmarnock St From North			**Van Ness St From East**			**Kilmarnock St From South**			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 16:30										
16:30	0	0	0	0	1	1	0	0	0	1
16:45	0	0	0	**2**	1	3	0	0	0	3
17:00	0	0	0	0	1	1	0	0	0	1
17:15	0	0	0	0	**12**	**12**	0	0	0	**12**
Total Volume	0	0	0	2	15	17	0	0	0	17
% App. Total	0	0		11.8	88.2		0	0		
PHF	.000	.000	.000	.250	.313	.354	.000	.000	.000	.354

Accurate Counts
978-664-2565

N/S Street : Kilmarnock Street
E/W Street: Van Ness Street
City/State : Boston, MA
Weather : Clear

File Name : 03990003
Site Code : 03990003
Start Date : 9/23/2010
Page No : 1

Groups Printed- Bikes

	Kilmarnock St From North			**Van Ness St From East**			**Kilmarnock St From South**					
Start Time	Left	Thru	Peds	Left	Right	Peds	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
16:00	0	0	0	0	1	0	0	0	0	0	1	1
16:15	0	0	0	0	0	0	0	0	0	0	0	0
16:30	0	0	0	1	0	0	0	0	0	0	1	1
16:45	2	0	0	0	1	0	0	0	0	0	3	3
Total	2	0	0	1	2	0	0	0	0	0	5	5
17:00	0	0	0	0	2	0	0	0	0	0	2	2
17:15	0	0	0	1	2	0	0	1	0	0	4	4
17:30	2	0	0	1	5	0	0	1	0	0	9	9
17:45	0	0	0	0	1	0	0	0	0	0	1	1
Total	2	0	0	2	10	0	0	2	0	0	16	16
Grand Total	4	0	0	3	12	0	0	2	0	0	21	21
Apprch %	100	0		20	80		0	100				
Total %	19	0		14.3	57.1		0	9.5		0	100	

	Kilmarnock St From North			**Van Ness St From East**			**Kilmarnock St From South**			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 16:45										
16:45	**2**	0	**2**	0	1	1	0	0	0	3
17:00	0	0	0	0	2	2	0	0	0	2
17:15	0	0	0	**1**	2	3	0	**1**	**1**	4
17:30	2	0	2	1	**5**	**6**	0	1	1	**9**
Total Volume	4	0	4	2	10	12	0	2	2	18
% App. Total	100	0		16.7	83.3		0	100		
PHF	.500	.000	.500	.500	.500	.500	.000	.500	.500	.500

Accurate Counts
978-664-2565

N/S Street : Kilmarnock Street
E/W Street: Van Ness Street
City/State : Boston, MA
Weather : Clear

File Name : 03990003
Site Code : 03990003
Start Date : 9/23/2010
Page No : 1

Groups Printed- Cars - Trucks

	Kilmarnock St From North			Van Ness St From East			Kilmarnock St From South					
Start Time	Left	Thru	Peds	Left	Right	Peds	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00	0	0	4	7	5	16	0	0	0	20	12	32
07:15	0	0	2	4	5	11	0	0	0	13	9	22
07:30	0	0	7	6	10	10	0	0	0	17	16	33
07:45	0	0	5	9	14	34	0	0	0	39	23	62
Total	0	0	18	26	34	71	0	0	0	89	60	149
08:00	0	0	3	12	20	26	0	0	0	29	32	61
08:15	0	0	5	9	15	25	0	0	0	30	24	54
08:30	0	0	2	11	14	26	0	0	0	28	25	53
08:45	0	0	5	5	8	19	0	0	0	24	13	37
Total	0	0	15	37	57	96	0	0	0	111	94	205
Grand Total	0	0	33	63	91	167	0	0	0	200	154	354
Apprch %	0	0		40.9	59.1		0	0				
Total %	0	0		40.9	59.1		0	0		56.5	43.5	
Cars	0	0		60	82		0	0		0	0	342
% Cars	0	0	100	95.2	90.1	100	0	0	0	0	0	96.6
Trucks	0	0		3	9		0	0		0	0	12
% Trucks	0	0	0	4.8	9.9	0	0	0	0	0	0	3.4

	Kilmarnock St From North			Van Ness St From East			Kilmarnock St From South			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:45										
07:45	0	0	0	9	14	23	0	0	0	23
08:00	0	0	0	**12**	**20**	**32**	0	0	0	**32**
08:15	0	0	0	9	15	24	0	0	0	24
08:30	0	0	0	11	14	25	0	0	0	25
Total Volume	0	0	0	41	63	104	0	0	0	104
% App. Total	0	0		39.4	60.6		0	0		
PHF	.000	.000	.000	.854	.788	.813	.000	.000	.000	.813

Accurate Counts
978-664-2565

N/S Street : Kilmarnock Street
E/W Street: Van Ness Street
City/State : Boston, MA
Weather : Clear

File Name : 03990003
Site Code : 03990003
Start Date : 9/23/2010
Page No : 1

Groups Printed- Trucks

	Kilmarnock St From North			**Van Ness St From East**			**Kilmarnock St From South**					
Start Time	Left	Thru	Peds	Left	Right	Peds	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00	0	0	0	0	1	0	0	0	0	0	1	1
07:15	0	0	0	0	0	0	0	0	0	0	0	0
07:30	0	0	0	0	1	0	0	0	0	0	1	1
07:45	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	2	0	0	0	0	0	2	2
08:00	0	0	0	1	2	0	0	0	0	0	3	3
08:15	0	0	0	1	2	0	0	0	0	0	3	3
08:30	0	0	0	0	1	0	0	0	0	0	1	1
08:45	0	0	0	1	2	0	0	0	0	0	3	3
Total	0	0	0	3	7	0	0	0	0	0	10	10
Grand Total	0	0	0	3	9	0	0	0	0	0	12	12
Apprch %	0	0		25	75		0	0				
Total %	0	0		25	75		0	0		0	100	

	Kilmarnock St From North			**Van Ness St From East**			**Kilmarnock St From South**			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 08:00										
08:00	0	0	0	**1**	**2**	**3**	0	0	0	**3**
08:15	0	0	0	1	2	3	0	0	0	3
08:30	0	0	0	0	1	1	0	0	0	1
08:45	0	0	0	1	2	3	0	0	0	3
Total Volume	0	0	0	3	7	10	0	0	0	10
% App. Total	0	0		30	70		0	0		
PHF	.000	.000	.000	.750	.875	.833	.000	.000	.000	.833

Accurate Counts
978-664-2565

N/S Street : Kilmarnock Street
E/W Street: Van Ness Street
City/State : Boston, MA
Weather : Clear

File Name : 03990003
Site Code : 03990003
Start Date : 9/23/2010
Page No : 1

Groups Printed- Bikes

	Kilmarnock St From North			**Van Ness St From East**			**Kilmarnock St From South**					
Start Time	Left	Thru	Peds	Left	Right	Peds	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00	0	0	0	0	0	0	0	0	0	0	0	0
07:15	1	0	0	0	0	0	0	0	0	0	1	1
07:30	4	0	0	0	0	0	0	0	0	0	4	4
07:45	1	0	0	0	0	0	0	0	0	0	1	1
Total	6	0	0	0	0	0	0	0	0	0	6	6
08:00	0	0	0	0	0	0	0	1	0	0	1	1
08:15	1	0	0	0	2	0	0	0	0	0	3	3
08:30	0	0	0	0	0	0	0	0	0	0	0	0
08:45	0	0	0	0	0	0	0	0	0	0	0	0
Total	1	0	0	0	2	0	0	1	0	0	4	4
Grand Total	7	0	0	0	2	0	0	1	0	0	10	10
Apprch %	100	0		0	100		0	100				
Total %	70	0		0	20		0	10		0	100	

	Kilmarnock St From North			**Van Ness St From East**			**Kilmarnock St From South**			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:30										
07:30	**4**	0	**4**	0	0	0	0	0	0	**4**
07:45	1	0	1	0	0	0	0	0	0	1
08:00	0	0	0	0	0	0	0	**1**	**1**	1
08:15	1	0	1	0	**2**	**2**	0	0	0	3
Total Volume	6	0	6	0	2	2	0	1	1	9
% App. Total	100	0		0	100		0	100		
PHF	.375	.000	.375	.000	.250	.250	.000	.250	.250	.563

Capacity Analysis

2013 Existing Conditions
2018 No Build Conditions
2018 Build Conditions

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	5	740	35	30	630	25	5	5	5	5	0	5
Peak Hour Factor	0.92	0.92	0.92	0.93	0.93	0.93	0.63	0.63	0.63	0.56	0.56	0.56
Hourly flow rate (vph)	5	804	38	32	677	27	8	8	8	9	0	9
Pedestrians		60			60			60			55	
Lane Width (ft)		11.0			11.0			13.0			11.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		5			5			5			4	
Right turn flare (veh)												1
Median type								Raised			Raised	
Median storage veh)								0			0	
Upstream signal (ft)		929										
pX, platoon unblocked				0.83			0.83	0.83	0.83	0.83	0.83	
vC, conflicting volume	759			902			1357	1718	541	1295	1724	467
vC1, stage 1 conf vol							894	894		810	810	
vC2, stage 2 conf vol							463	824		485	913	
vCu, unblocked vol	759			677			1225	1660	242	1151	1667	467
tC, single (s)	4.1			4.2			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			95			95	95	99	95	100	98
cM capacity (veh/h)	812			709			162	145	573	169	139	501

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	408	440	371	366	24	18
Volume Left	5	0	32	0	8	9
Volume Right	0	38	0	27	8	9
cSH	812	1700	709	1700	202	338
Volume to Capacity	0.01	0.26	0.05	0.22	0.12	0.05
Queue Length 95th (ft)	1	0	4	0	10	4
Control Delay (s)	0.2	0.0	1.4	0.0	25.2	19.9
Lane LOS	A		A		D	C
Approach Delay (s)	0.1		0.7		25.2	19.9
Approach LOS					D	C

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	64.3%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	5	765	70	20	620	5	15	15	10	0	15	5
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.68	0.68	0.68	0.58	0.58	0.58
Hourly flow rate (vph)	5	823	75	22	667	5	22	22	15	0	26	9
Pedestrians		110			70			70			60	
Lane Width (ft)		12.0			12.0			10.0			10.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		9			6			5			4	
Right turn flare (veh)												
Median type								Raised			Raised	
Median storage veh)								0			0	
Upstream signal (ft)		488										
pX, platoon unblocked				0.81			0.81	0.81	0.81	0.81	0.81	
vC, conflicting volume	732			968			1449	1716	589	1290	1751	506
vC1, stage 1 conf vol							941	941		772	772	
vC2, stage 2 conf vol							508	775		518	979	
vCu, unblocked vol	732			728			1321	1650	261	1125	1693	506
tC, single (s)	4.1			4.2			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			97			84	85	97	100	81	98
cM capacity (veh/h)	832			668			141	146	540	171	138	450

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	417	487	355	339	59	34
Volume Left	5	0	22	0	22	0
Volume Right	0	75	0	5	15	9
cSH	832	1700	668	1700	176	167
Volume to Capacity	0.01	0.29	0.03	0.20	0.33	0.21
Queue Length 95th (ft)	0	0	2	0	34	19
Control Delay (s)	0.2	0.0	1.0	0.0	35.5	32.2
Lane LOS	A		A		E	D
Approach Delay (s)	0.1		0.5		35.5	32.2
Approach LOS					E	D

Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	55.1%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBT	WBR	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	882	211	657	16	338	43	567	33
v/c Ratio	0.79	0.59	0.80	0.03	0.41	0.13	0.86	0.10
Control Delay	38.1	37.4	14.6	1.7	18.8	7.1	66.3	33.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.1	37.4	14.6	1.7	18.8	7.1	66.3	33.1
Queue Length 50th (ft)	183	111	62	1	68	1	~196	9
Queue Length 95th (ft)	229	188	m69	m1	94	19	#324	m25
Internal Link Dist (ft)	968		408		639		270	
Turn Bay Length (ft)		100		100		100		100
Base Capacity (vph)	1205	386	860	564	822	339	661	323
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.73	0.55	0.76	0.03	0.41	0.13	0.86	0.10

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	10	11	11	12	12	12	12	12	14	12	11
Total Lost time (s)			4.0	4.0			4.0	4.0		4.0	4.0	
Lane Util. Factor			0.91	1.00			0.95	1.00		0.95	1.00	
Frpb, ped/bikes			1.00	1.00			1.00	0.97		1.00	0.97	
Flpb, ped/bikes			1.00	1.00			1.00	1.00		1.00	1.00	
Frt			1.00	0.85			1.00	0.85		1.00	0.85	
Flt Protected			1.00	1.00			0.98	1.00		0.99	1.00	
Satd. Flow (prot)			4457	1245			3105	1229		3246	1185	
Flt Permitted			0.87	1.00			0.54	1.00		0.78	1.00	
Satd. Flow (perm)			3885	1245			1691	1229		2555	1185	
Volume (vph)	15	25	745	200	5	195	425	15	45	270	40	50
Peak-hour factor, PHF	0.89	0.89	0.89	0.95	0.95	0.95	0.95	0.95	0.93	0.93	0.93	0.90
Adj. Flow (vph)	17	28	837	211	5	205	447	16	48	290	43	56
RTOR Reduction (vph)	0	0	0	0	0	0	0	8	0	0	32	0
Lane Group Flow (vph)	0	0	882	211	0	0	657	8	0	338	11	0
Confl. Bikes (#/hr)				82				8			26	
Heavy Vehicles (%)	0%	1%	1%	1%	0%	3%	3%	3%	6%	6%	6%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)				1				1			1	
Turn Type		Perm		Prot	Perm	D.P+P		Perm	D.P+P		custom	Perm
Protected Phases			4	4		3	3 4		8	1 8		
Permitted Phases		4			3 4	4		3 4	1		1	1
Actuated Green, G (s)			28.9	28.9			40.8	43.8		32.8	25.7	
Effective Green, g (s)			28.9	28.9			39.8	43.8		31.8	25.7	
Actuated g/C Ratio			0.29	0.29			0.40	0.44		0.32	0.26	
Clearance Time (s)			4.0	4.0							4.0	
Vehicle Extension (s)			2.0	2.0							2.0	
Lane Grp Cap (vph)			1123	360			827	538		855	305	
v/s Ratio Prot				0.17			c0.09			c0.02		
v/s Ratio Perm			0.23				c0.23	0.01		0.10	0.01	
v/c Ratio			0.79	0.59			0.79	0.01		0.40	0.04	
Uniform Delay, d1			32.7	30.4			26.5	15.9		26.6	27.9	
Progression Factor			1.00	1.00			0.51	0.23		0.66	0.63	
Incremental Delay, d2			3.4	1.6			2.1	0.0		0.3	0.2	
Delay (s)			36.1	32.0			15.5	3.7		17.8	17.8	
Level of Service			D	C			B	A		B	B	
Approach Delay (s)			35.3				15.2			17.8		
Approach LOS			D				B			B		

Intersection Summary

HCM Average Control Delay	34.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	28.4
Intersection Capacity Utilization	75.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBT	SBR
Lane Configurations		
Ideal Flow (vphpl)	1900	1900
Lane Width	11	12
Total Lost time (s)	4.0	4.0
Lane Util. Factor	0.95	1.00
Frpb, ped/bikes	1.00	0.96
Flpb, ped/bikes	1.00	1.00
Frt	1.00	0.85
Flt Protected	1.00	1.00
Satd. Flow (prot)	2986	1171
Flt Permitted	0.87	1.00
Satd. Flow (perm)	2624	1171
Volume (vph)	460	30
Peak-hour factor, PHF	0.90	0.90
Adj. Flow (vph)	511	33
RTOR Reduction (vph)	0	19
Lane Group Flow (vph)	567	14
Confl. Bikes (#/hr)		35
Heavy Vehicles (%)	3%	3%
Bus Blockages (#/hr)	8	8
Parking (#/hr)		1
Turn Type		Perm
Protected Phases	1	
Permitted Phases		1
Actuated Green, G (s)	25.7	25.7
Effective Green, g (s)	25.7	25.7
Actuated g/C Ratio	0.26	0.26
Clearance Time (s)	4.0	4.0
Vehicle Extension (s)	2.0	2.0
Lane Grp Cap (vph)	674	301
v/s Ratio Prot		
v/s Ratio Perm	c0.22	0.01
v/c Ratio	0.84	0.05
Uniform Delay, d1	35.2	27.9
Progression Factor	1.53	2.20
Incremental Delay, d2	9.9	0.2
Delay (s)	63.7	61.6
Level of Service	E	E
Approach Delay (s)	63.5	
Approach LOS	E	

Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	NBT	SBT	SBR
Lane Group Flow (vph)	165	470	55	445	160	74	73
v/c Ratio	0.34	0.47	0.92	0.59	0.77	0.34	0.20
Control Delay	9.6	11.3	113.3	10.3	60.5	39.8	7.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.6	11.3	113.3	10.3	60.5	39.8	7.7
Queue Length 50th (ft)	17	84	21	86	93	42	0
Queue Length 95th (ft)	m51	m162	m#69	m99	147	66	20
Internal Link Dist (ft)		648		198	37	352	
Turn Bay Length (ft)	200		50				100
Base Capacity (vph)	480	1007	60	749	263	275	365
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.34	0.47	0.92	0.59	0.61	0.27	0.20

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	11	11	10	10	10	12	12	12	11	11	11
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Frpb, ped/bikes	1.00	0.97		1.00	0.90			0.94			1.00	0.87
Flpb, ped/bikes	0.94	1.00		1.00	1.00			0.93			0.92	1.00
Frt	1.00	0.98		1.00	0.96			0.98			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98	1.00
Satd. Flow (prot)	1341	1328		1391	1196			1409			1456	1187
Flt Permitted	0.43	1.00		0.06	1.00			0.84			0.85	1.00
Satd. Flow (perm)	614	1328		95	1196			1211			1263	1187
Volume (vph)	135	340	45	45	280	85	55	60	20	20	35	55
Peak-hour factor, PHF	0.82	0.82	0.82	0.82	0.82	0.82	0.85	0.85	0.85	0.75	0.75	0.75
Adj. Flow (vph)	165	415	55	55	341	104	65	71	24	27	47	73
RTOR Reduction (vph)	0	4	0	0	11	0	0	7	0	0	0	54
Lane Group Flow (vph)	165	466	0	55	434	0	0	153	0	0	74	19
Confl. Peds. (#/hr)	125		80	80		125	105		115	115		105
Confl. Bikes (#/hr)			7			15			3			4
Heavy Vehicles (%)	6%	6%	6%	9%	9%	9%	2%	2%	2%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	16	16	0	0	0	0	0	0
Parking (#/hr)		1	1									
Turn Type	D.P+P			Perm			Perm			Perm		pm+ov
Protected Phases	3	1 3			1			2			2	3
Permitted Phases	1			1			2			2		2
Actuated Green, G (s)	69.5	75.5		61.7	61.7			16.5			16.5	24.3
Effective Green, g (s)	71.5	75.5		61.7	61.7			16.5			16.5	26.3
Actuated g/C Ratio	0.72	0.76		0.62	0.62			0.16			0.16	0.26
Clearance Time (s)	6.0			4.0	4.0			4.0			4.0	6.0
Vehicle Extension (s)	3.0			3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	510	1003		59	738			200			208	360
v/s Ratio Prot	0.03	c0.35			0.36							0.01
v/s Ratio Perm	0.20			c0.58				c0.13			0.06	0.01
v/c Ratio	0.32	0.46		0.93	0.59			0.77			0.36	0.05
Uniform Delay, d1	5.1	4.6		17.3	11.5			39.9			37.0	27.5
Progression Factor	1.90	1.88		0.67	0.62			1.00			1.00	1.00
Incremental Delay, d2	0.3	0.3		92.9	3.1			16.0			1.0	0.1
Delay (s)	10.0	9.0		104.4	10.2			55.9			38.1	27.6
Level of Service	A	A		F	B			E			D	C
Approach Delay (s)		9.2			20.6			55.9			32.9	
Approach LOS		A			C			E			C	

Intersection Summary			
HCM Average Control Delay	20.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	60.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	35	65	70	0	0	130
Peak Hour Factor	0.81	0.81	0.93	0.93	0.88	0.88
Hourly flow rate (vph)	43	80	75	0	0	148
Pedestrians	115		120			135
Lane Width (ft)	15.0		13.0			13.0
Walking Speed (ft/s)	4.0		4.0			4.0
Percent Blockage	12		11			12
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)			297			117
pX, platoon unblocked						
vC, conflicting volume	458	325			190	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	458	325			190	
tC, single (s)	6.5	6.3			4.1	
tC, 2 stage (s)						
tF (s)	3.6	3.4			2.2	
p0 queue free %	90	85			100	
cM capacity (veh/h)	433	544			1218	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	123	75	148
Volume Left	43	0	0
Volume Right	80	0	0
cSH	499	1700	1700
Volume to Capacity	0.25	0.04	0.09
Queue Length 95th (ft)	24	0	0
Control Delay (s)	14.6	0.0	0.0
Lane LOS	B		
Approach Delay (s)	14.6	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	5.2		
Intersection Capacity Utilization	33.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	1329	1180	78	82	55
v/c Ratio	0.72	0.60	0.28	0.50	0.24
Control Delay	11.2	4.1	16.3	42.2	14.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	11.2	4.1	16.3	42.2	14.7
Queue Length 50th (ft)	155	40	15	45	7
Queue Length 95th (ft)	371	m42	48	62	24
Internal Link Dist (ft)	668	553	267		217
Turn Bay Length (ft)				100	
Base Capacity (vph)	1856	1963	458	297	387
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.72	0.60	0.17	0.28	0.14

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1600	1600	1600	1600	1600	1600	1900	1900	1900	1900	1900	1900
Lane Width	12	13	12	12	13	12	12	14	12	10	10	12
Total Lost time (s)		4.0			4.0			4.0		4.0	4.0	
Lane Util. Factor		0.95			0.95			1.00		1.00	1.00	
Frpb, ped/bikes		0.99			0.99			0.94		1.00	0.94	
Flpb, ped/bikes		1.00			1.00			0.99		0.94	1.00	
Frt		1.00			0.99			0.91		1.00	0.89	
Flt Protected		1.00			1.00			0.99		0.95	1.00	
Satd. Flow (prot)		2716			2714			1473		1282	1195	
Flt Permitted		0.88			0.93			0.93		0.71	1.00	
Satd. Flow (perm)		2386			2518			1391		959	1195	
Volume (vph)	35	1110	25	15	985	75	15	10	45	60	10	30
Peak-hour factor, PHF	0.88	0.88	0.88	0.91	0.91	0.91	0.90	0.90	0.90	0.73	0.73	0.73
Adj. Flow (vph)	40	1261	28	16	1082	82	17	11	50	82	14	41
RTOR Reduction (vph)	0	1	0	0	4	0	0	41	0	0	35	0
Lane Group Flow (vph)	0	1328	0	0	1176	0	0	37	0	82	20	0
Confl. Peds. (#/hr)	40		80	80		40	60		60	60		60
Confl. Bikes (#/hr)			4			2			3			2
Heavy Vehicles (%)	3%	3%	3%	2%	2%	2%	4%	4%	4%	11%	11%	11%
Parking (#/hr)			1			1						
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		1			1			5			5	
Permitted Phases	1			1			5			5		
Actuated Green, G (s)		67.2			67.2			12.8		12.8	12.8	
Effective Green, g (s)		68.2			68.2			13.8		13.8	13.8	
Actuated g/C Ratio		0.76			0.76			0.15		0.15	0.15	
Clearance Time (s)		5.0			5.0			5.0		5.0	5.0	
Vehicle Extension (s)		4.0			4.0			2.0		2.0	2.0	
Lane Grp Cap (vph)		1808			1908			213		147	183	
v/s Ratio Prot											0.02	
v/s Ratio Perm		c0.56			0.47			0.03		c0.09		
v/c Ratio		0.73			0.62			0.18		0.56	0.11	
Uniform Delay, d1		6.0			5.0			33.1		35.3	32.8	
Progression Factor		1.00			0.59			1.00		1.00	1.00	
Incremental Delay, d2		2.7			0.1			0.1		2.6	0.1	
Delay (s)		8.6			3.1			33.3		37.9	32.9	
Level of Service		A			A			C		D	C	
Approach Delay (s)		8.6			3.1			33.3			35.9	
Approach LOS		A			A			C			D	

Intersection Summary			
HCM Average Control Delay	8.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	99.6%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBT	NBT
Lane Group Flow (vph)	1330	1236	169
v/c Ratio	0.80	1.23	0.65
Control Delay	13.4	134.3	34.1
Queue Delay	0.0	0.0	0.0
Total Delay	13.4	134.3	34.1
Queue Length 50th (ft)	132	~453	64
Queue Length 95th (ft)	#511	#648	80
Internal Link Dist (ft)	553	630	256
Turn Bay Length (ft)			
Base Capacity (vph)	1653	1001	444
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.80	1.23	0.38

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1600	1600	1600	1600	1600	1600	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	12	12	12	12	16	12
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		0.95			0.95			1.00				
Frpb, ped/bikes		1.00			0.99			0.95				
Flpb, ped/bikes		1.00			1.00			0.99				
Frt		1.00			0.99			0.91				
Flt Protected		1.00			1.00			0.99				
Satd. Flow (prot)		2544			2523			1313				
Flt Permitted		0.87			0.65			0.99				
Satd. Flow (perm)		2223			1634			1313				
Volume (vph)	35	1105	30	30	1035	60	15	25	85	0	0	0
Peak-hour factor, PHF	0.88	0.88	0.88	0.91	0.91	0.91	0.74	0.74	0.74	0.25	0.25	0.25
Adj. Flow (vph)	40	1256	34	33	1137	66	20	34	115	0	0	0
RTOR Reduction (vph)	0	1	0	0	3	0	0	43	0	0	0	0
Lane Group Flow (vph)	0	1329	0	0	1233	0	0	126	0	0	0	0
Confl. Peds. (#/hr)	65		50	50		65	115		65			
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	8%	8%	8%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	4	4	4	0	0	0
Parking (#/hr)			1			1						
Turn Type	Perm			Perm			Perm					
Protected Phases		1 4			1			3				
Permitted Phases	1 4			1			3					
Actuated Green, G (s)		66.0			55.0			14.0				
Effective Green, g (s)		67.0			56.0			15.0				
Actuated g/C Ratio		0.74			0.62			0.17				
Clearance Time (s)					5.0			5.0				
Vehicle Extension (s)					3.0			2.0				
Lane Grp Cap (vph)		1655			1017			219				
v/s Ratio Prot												
v/s Ratio Perm		c0.60			c0.75			0.10				
v/c Ratio		0.80			1.21			0.57				
Uniform Delay, d1		7.3			17.0			34.6				
Progression Factor		0.99			1.19			1.00				
Incremental Delay, d2		3.1			102.1			2.3				
Delay (s)		10.3			122.4			36.8				
Level of Service		B			F			D				
Approach Delay (s)		10.3			122.4			36.8			0.0	
Approach LOS		B			F			D			A	

Intersection Summary

HCM Average Control Delay	62.6	HCM Level of Service	E
HCM Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	102.3%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	1337	1308	97	91
v/c Ratio	0.86	0.72	0.29	0.24
Control Delay	17.4	16.5	29.2	10.0
Queue Delay	123.8	95.5	0.7	0.0
Total Delay	141.2	112.0	29.8	10.0
Queue Length 50th (ft)	270	259	44	5
Queue Length 95th (ft)	193	340	73	30
Internal Link Dist (ft)	630	157	254	
Turn Bay Length (ft)			50	
Base Capacity (vph)	1553	1811	334	373
Starvation Cap Reductn	0	728	0	0
Spillback Cap Reductn	504	0	82	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.27	1.21	0.38	0.24

Intersection Summary

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0
Lane Util. Factor		0.95	0.95		1.00	1.00
Frpb, ped/bikes		1.00	0.99		1.00	0.94
Flpb, ped/bikes		1.00	1.00		0.90	1.00
Frt		1.00	0.99		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		3150	3122		1253	1183
Flt Permitted		0.85	1.00		0.95	1.00
Satd. Flow (perm)		2687	3122		1253	1183
Volume (vph)	35	1155	1130	100	75	70
Peak-hour factor, PHF	0.89	0.89	0.94	0.94	0.77	0.77
Adj. Flow (vph)	39	1298	1202	106	97	91
RTOR Reduction (vph)	0	0	7	0	0	57
Lane Group Flow (vph)	0	1337	1301	0	97	34
Confl. Peds. (#/hr)	30			30	70	30
Confl. Bikes (#/hr)				6		
Heavy Vehicles (%)	3%	3%	2%	2%	16%	16%
Turn Type	Perm					custom
Protected Phases		1	1			
Permitted Phases	1				5	5
Actuated Green, G (s)		51.0	51.0		23.0	23.0
Effective Green, g (s)		52.0	52.0		24.0	24.0
Actuated g/C Ratio		0.58	0.58		0.27	0.27
Clearance Time (s)		5.0	5.0		5.0	5.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1552	1804		334	315
v/s Ratio Prot			0.42			
v/s Ratio Perm		c0.50			c0.08	0.03
v/c Ratio		0.86	0.72		0.29	0.11
Uniform Delay, d1		16.0	13.8		26.2	24.9
Progression Factor		0.79	1.00		1.00	1.00
Incremental Delay, d2		4.0	2.5		2.2	0.7
Delay (s)		16.6	16.3		28.4	25.6
Level of Service		B	B		C	C
Approach Delay (s)		16.6	16.3		27.1	
Approach LOS		B	B		C	

Intersection Summary

HCM Average Control Delay	17.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	85.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	0	0	0	360	0	860
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	0	379	0	905
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)				282	719	
pX, platoon unblocked						
vC, conflicting volume	189	0	905			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	189	0	905			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	787	1091	760			

Direction, Lane #	NB 1	NB 2	SB 1	SB 2
Volume Total	189	189	453	453
Volume Left	0	0	0	0
Volume Right	0	0	453	453
cSH	1700	1700	1700	1700
Volume to Capacity	0.11	0.11	0.27	0.27
Queue Length 95th (ft)	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0
Lane LOS				
Approach Delay (s)	0.0		0.0	
Approach LOS				

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	36.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	272	444	547	358
v/c Ratio	0.18	0.20	0.40	0.66
Control Delay	11.9	11.9	13.7	18.8
Queue Delay	0.4	0.3	0.0	0.0
Total Delay	12.4	12.2	13.7	18.8
Queue Length 50th (ft)	50	58	89	112
Queue Length 95th (ft)	29	32	m108	m138
Internal Link Dist (ft)		105	199	
Turn Bay Length (ft)				100
Base Capacity (vph)	1517	2247	1987	798
Starvation Cap Reductn	817	1179	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.39	0.42	0.28	0.45

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	4.0
Lane Util. Factor				0.97	0.91						0.95	1.00
Frpb, ped/bikes				1.00	1.00						1.00	0.90
Flpb, ped/bikes				1.00	1.00						1.00	1.00
Frt				1.00	1.00						1.00	0.85
Flt Protected				0.95	1.00						1.00	1.00
Satd. Flow (prot)				3090	4577						3154	1267
Flt Permitted				0.95	1.00						1.00	1.00
Satd. Flow (perm)				3090	4577						3154	1267
Volume (vph)	0	0	0	245	400	0	0	0	0	0	520	340
Peak-hour factor, PHF	0.95	0.95	0.95	0.90	0.90	0.90	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	272	444	0	0	0	0	0	547	358
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	272	444	0	0	0	0	0	547	358
Confl. Peds. (#/hr)												55
Heavy Vehicles (%)	0%	0%	0%	2%	2%	2%	0%	0%	0%	3%	3%	3%
Turn Type				Split								Perm
Protected Phases				1	1						5	
Permitted Phases												5
Actuated Green, G (s)				48.1	48.1						41.9	41.9
Effective Green, g (s)				49.1	49.1						42.9	42.9
Actuated g/C Ratio				0.49	0.49						0.43	0.43
Clearance Time (s)				5.0	5.0						5.0	5.0
Vehicle Extension (s)				2.0	2.0						2.0	2.0
Lane Grp Cap (vph)				1517	2247						1353	544
v/s Ratio Prot				0.09	c0.10						0.17	
v/s Ratio Perm												c0.28
v/c Ratio				0.18	0.20						0.40	0.66
Uniform Delay, d1				14.2	14.3						19.7	22.7
Progression Factor				0.71	0.72						0.69	0.68
Incremental Delay, d2				0.3	0.2						0.0	1.3
Delay (s)				10.4	10.6						13.6	16.8
Level of Service				B	B						B	B
Approach Delay (s)		0.0			10.5			0.0			14.8	
Approach LOS		A			B			A			B	

Intersection Summary			
HCM Average Control Delay	12.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	72.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	SET	SER	NWL	NWT
Lane Configurations						
Sign Control	Yield		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	0	825	775	0	0	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.95	0.95
Hourly flow rate (vph)	0	878	824	0	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)			238			345
pX, platoon unblocked	0.96	0.96			0.96	
vC, conflicting volume	824	275			824	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	730	157			730	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	0			100	
cM capacity (veh/h)	345	828			846	

Direction, Lane #	EB 1	EB 2	SE 1	SE 2	SE 3
Volume Total	439	439	275	275	275
Volume Left	0	0	0	0	0
Volume Right	439	439	0	0	0
cSH	828	828	1700	1700	1700
Volume to Capacity	0.53	0.53	0.16	0.16	0.16
Queue Length 95th (ft)	79	79	0	0	0
Control Delay (s)	14.1	14.1	0.0	0.0	0.0
Lane LOS	B	B			
Approach Delay (s)	14.1		0.0		
Approach LOS	B				

Intersection Summary			
Average Delay	7.3		
Intersection Capacity Utilization	55.4%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBT	WBT	SBL	SBT	SBR
Lane Group Flow (vph)	899	1098	689	760	179
v/c Ratio	0.60	0.82	1.11	0.58	0.29
Control Delay	13.3	27.2	97.2	23.1	19.3
Queue Delay	0.1	8.7	13.6	0.0	0.0
Total Delay	13.4	35.8	110.9	23.1	19.3
Queue Length 50th (ft)	38	152	~537	196	69
Queue Length 95th (ft)	115	#511	#806	273	140
Internal Link Dist (ft)	23	182		265	
Turn Bay Length (ft)					
Base Capacity (vph)	1500	1331	623	1305	613
Starvation Cap Reductn	0	209	0	0	0
Spillback Cap Reductn	63	0	18	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.63	0.98	1.14	0.58	0.29

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBT	EBR	EBR2	WBT	SBL2	SBL	SBT	SBR
Lane Configurations								
Ideal Flow (vphpl)	1600	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0		4.0	4.0	4.0
Lane Util. Factor	0.91			0.95		0.91	0.91	1.00
Frpb, ped/bikes	1.00			1.00		1.00	1.00	1.00
Flpb, ped/bikes	1.00			1.00		1.00	1.00	1.00
Frt	0.98			1.00		1.00	1.00	0.85
Flt Protected	1.00			1.00		0.95	1.00	1.00
Satd. Flow (prot)	3509			3124		1449	3037	1425
Flt Permitted	1.00			1.00		0.95	1.00	1.00
Satd. Flow (perm)	3509			3124		1449	3037	1425
Volume (vph)	740	50	55	955	675	70	675	175
Peak-hour factor, PHF	0.94	0.94	0.94	0.87	0.98	0.98	0.98	0.98
Adj. Flow (vph)	787	53	59	1098	689	71	689	179
RTOR Reduction (vph)	7	0	0	0	0	0	0	0
Lane Group Flow (vph)	892	0	0	1098	0	689	760	179
Confl. Bikes (#/hr)		9	9					17
Heavy Vehicles (%)	6%	6%	6%	4%	2%	2%	2%	2%
Bus Blockages (#/hr)	25	25	25	0	0	0	0	0
Turn Type					Split	Split		Prot
Protected Phases	1			1	5	5	5	5
Permitted Phases								
Actuated Green, G (s)	40.4			40.4		42.0	42.0	42.0
Effective Green, g (s)	41.4			41.4		43.0	43.0	43.0
Actuated g/C Ratio	0.41			0.41		0.43	0.43	0.43
Clearance Time (s)	5.0			5.0		5.0	5.0	5.0
Vehicle Extension (s)	2.0			2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	1453			1293		623	1306	613
v/s Ratio Prot	0.25			c0.35		c0.48	0.25	0.13
v/s Ratio Perm								
v/c Ratio	0.61			0.85		1.11	0.58	0.29
Uniform Delay, d1	23.0			26.5		28.5	21.7	18.6
Progression Factor	0.50			0.77		0.98	0.97	0.95
Incremental Delay, d2	1.4			5.2		68.5	1.9	1.2
Delay (s)	13.0			25.5		96.5	22.8	18.9
Level of Service	B			C		F	C	B
Approach Delay (s)	13.0			25.5			53.5	
Approach LOS	B			C			D	

Intersection Summary

HCM Average Control Delay	35.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.6
Intersection Capacity Utilization	70.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	EBR	WBT	WBR	NBT	NBR	NWL	NWR
Lane Group Flow (vph)	437	1053	310	202	694	233	792	333
v/c Ratio	0.56	0.83	0.44	0.57	0.56	1.00	0.83	0.82
Control Delay	34.1	19.0	28.7	34.1	33.5	96.5	40.2	48.9
Queue Delay	3.4	0.8	0.0	0.0	0.1	0.0	16.2	0.0
Total Delay	37.5	19.9	28.7	34.1	33.6	96.5	56.4	48.9
Queue Length 50th (ft)	127	176	66	91	139	148	239	212
Queue Length 95th (ft)	m180	m389	m96	m146	180	#305	305	#361
Internal Link Dist (ft)	182		648		176		668	
Turn Bay Length (ft)				150				300
Base Capacity (vph)	778	1274	705	356	1238	234	957	408
Starvation Cap Reductn	244	62	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	49	0	169	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.82	0.87	0.44	0.57	0.58	1.00	1.01	0.82

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBT	EBR	WBT	WBR	NBL	NBT	NBR	NBR2	NWL	NWR	NWR2
Lane Configurations											
Ideal Flow (vphpl)	1600	1600	1600	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	0.95	0.88	0.95	1.00		0.91	1.00		0.97	0.91	
Frpb, ped/bikes	1.00	0.99	1.00	0.98		1.00	0.60		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.85	1.00	0.85		1.00	0.85		0.98	0.85	
Flt Protected	1.00	1.00	1.00	1.00		0.99	1.00		0.96	1.00	
Satd. Flow (prot)	2682	2088	2430	1226		4585	868		2992	1272	
Flt Permitted	1.00	1.00	1.00	1.00		0.99	1.00		0.96	1.00	
Satd. Flow (perm)	2682	2088	2430	1226		4585	868		2992	1272	
Volume (vph)	415	1000	260	170	100	525	130	80	595	385	10
Peak-hour factor, PHF	0.95	0.95	0.84	0.84	0.90	0.90	0.90	0.90	0.88	0.88	0.88
Adj. Flow (vph)	437	1053	310	202	111	583	144	89	676	438	11
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	437	1053	310	202	0	694	233	0	792	332	0
Confl. Peds. (#/hr)							136	240			
Confl. Bikes (#/hr)		6		8			3	6			
Heavy Vehicles (%)	2%	2%	9%	9%	1%	1%	1%	1%	4%	4%	4%
Bus Blockages (#/hr)	0	0	16	16	0	0	0	0	0	0	0
Turn Type		pm+ov		Perm	Split		Perm			Perm	
Protected Phases	2	1	2		3	3			1		
Permitted Phases		2		2			3			1	
Actuated Green, G (s)	27.0	57.0	27.0	27.0		25.0	25.0		30.0	30.0	
Effective Green, g (s)	29.0	61.0	29.0	29.0		27.0	27.0		32.0	32.0	
Actuated g/C Ratio	0.29	0.61	0.29	0.29		0.27	0.27		0.32	0.32	
Clearance Time (s)	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	778	1357	705	356		1238	234		957	407	
v/s Ratio Prot	0.16	c0.25	0.13			0.15			c0.26		
v/s Ratio Perm		0.26		0.16			c0.27			0.26	
v/c Ratio	0.56	0.78	0.44	0.57		0.56	1.00		0.83	0.81	
Uniform Delay, d1	30.1	14.4	28.9	30.2		31.4	36.4		31.4	31.3	
Progression Factor	1.07	1.14	0.92	0.92		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.6	2.4	1.7	5.6		1.8	57.8		8.2	16.3	
Delay (s)	33.6	18.8	28.3	33.2		33.2	94.2		39.6	47.6	
Level of Service	C	B	C	C		C	F		D	D	
Approach Delay (s)	23.2		30.3			48.6			42.0		
Approach LOS	C		C			D			D		

Intersection Summary

HCM Average Control Delay	35.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	74.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
14: Landmark Entrance & Park Dr

2013 Existing Conditions - Landmark
Weekday Morning Peak Hour

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	0	0	995	85	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	1082	92	0	0
Pedestrians	10					
Lane Width (ft)	0.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	0					
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)			204			201
pX, platoon unblocked						
vC, conflicting volume	1138	327			1184	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1138	327			1184	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	195	669			586	

Direction, Lane #	NB 1	NB 2	NB 3	NB 4
Volume Total	309	309	309	247
Volume Left	0	0	0	0
Volume Right	0	0	0	92
cSH	1700	1700	1700	1700
Volume to Capacity	0.18	0.18	0.18	0.15
Queue Length 95th (ft)	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0
Lane LOS				
Approach Delay (s)	0.0			
Approach LOS				

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	38.5%	ICU Level of Service	A
Analysis Period (min)	15		

Queues
15: Park Dr & Landmark Center Driveway

2013 Existing Conditions - Landmark
Weekday Morning Peak Hour

Lane Group	WBT	WBR	NBL	NBT
Lane Group Flow (vph)	21	11	717	389
v/c Ratio	0.06	0.04	0.28	0.15
Control Delay	32.9	16.3	3.9	3.5
Queue Delay	0.0	0.0	0.1	0.0
Total Delay	32.9	16.3	4.0	3.5
Queue Length 50th (ft)	11	0	71	37
Queue Length 95th (ft)	30	15	m86	m45
Internal Link Dist (ft)	48			121
Turn Bay Length (ft)				
Base Capacity (vph)	581	502	2577	2656
Starvation Cap Reductn	0	0	649	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.04	0.02	0.37	0.15

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0	4.0	4.0	4.0				
Lane Util. Factor					1.00	1.00	0.97	0.95				
Frt					1.00	0.85	1.00	1.00				
Flt Protected					1.00	1.00	0.95	1.00				
Satd. Flow (prot)					1710	1454	3090	3185				
Flt Permitted					1.00	1.00	0.95	1.00				
Satd. Flow (perm)					1710	1454	3090	3185				
Volume (vph)	0	0	0	0	20	10	645	350	0	0	0	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.90	0.90	0.90	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	0	21	11	717	389	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	10	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	21	1	717	389	0	0	0	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	2%	2%	2%	0%	0%	0%
Turn Type						Perm	Split					
Protected Phases					2		1	1				
Permitted Phases						2						
Actuated Green, G (s)					11.2	11.2	78.8	78.8				
Effective Green, g (s)					12.2	12.2	79.8	79.8				
Actuated g/C Ratio					0.12	0.12	0.80	0.80				
Clearance Time (s)					5.0	5.0	5.0	5.0				
Vehicle Extension (s)					2.0	2.0	2.0	2.0				
Lane Grp Cap (vph)					209	177	2466	2542				
v/s Ratio Prot					c0.01		c0.23	0.12				
v/s Ratio Perm						0.00						
v/c Ratio					0.10	0.01	0.29	0.15				
Uniform Delay, d1					39.0	38.6	2.7	2.3				
Progression Factor					1.00	1.00	1.00	1.05				
Incremental Delay, d2					0.1	0.0	0.2	0.1				
Delay (s)					39.1	38.6	2.9	2.5				
Level of Service					D	D	A	A				
Approach Delay (s)		0.0			38.9			2.8			0.0	
Approach LOS		A			D			A			A	

Intersection Summary			
HCM Average Control Delay	3.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.27		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	63.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	40	285	395	15	10	25
Peak Hour Factor	0.88	0.88	0.94	0.94	0.83	0.83
Hourly flow rate (vph)	45	324	420	16	12	30
Pedestrians		115	115		115	
Lane Width (ft)		12.0	10.0		14.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		10	8		11	
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)		594	1176			
pX, platoon unblocked						
vC, conflicting volume	551				1073	658
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	551				1073	658
tC, single (s)	4.2				6.6	6.4
tC, 2 stage (s)						
tF (s)	2.3				3.7	3.5
p0 queue free %	95				93	91
cM capacity (veh/h)	874				174	347

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	369	436	42
Volume Left	45	0	12
Volume Right	0	16	30
cSH	874	1700	270
Volume to Capacity	0.05	0.26	0.16
Queue Length 95th (ft)	4	0	14
Control Delay (s)	1.7	0.0	20.8
Lane LOS	A		C
Approach Delay (s)	1.7	0.0	20.8
Approach LOS			C

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	66.7%	ICU Level of Service	C
Analysis Period (min)	15		

1: Beacon St & Mountfort St

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	5	540	10	5	880	15	30	10	40	15	0	5
Peak Hour Factor	0.96	0.96	0.96	0.93	0.93	0.93	0.68	0.68	0.82	0.82	0.82	0.82
Hourly flow rate (vph)	5	562	10	5	946	16	44	15	49	18	0	6
Pedestrians		155			155			95			155	
Lane Width (ft)		11.0			11.0			13.0			11.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		12			12			9			12	
Right turn flare (veh)												1
Median type								Raised			Raised	
Median storage veh)								0			0	
Upstream signal (ft)		929										
pX, platoon unblocked				0.94			0.94	0.94	0.94	0.94	0.94	
vC, conflicting volume	1117			668			1312	1801	536	1623	1798	791
vC1, stage 1 conf vol							673	673		1120	1120	
vC2, stage 2 conf vol							639	1128		503	678	
vCu, unblocked vol	1117			583			1268	1789	444	1599	1786	791
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			72	88	89	82	100	98
cM capacity (veh/h)	552			855			157	124	430	101	125	262

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	286	292	478	489	108	24
Volume Left	5	0	5	0	44	18
Volume Right	0	10	0	16	49	6
cSH	552	1700	855	1700	209	134
Volume to Capacity	0.01	0.17	0.01	0.29	0.51	0.18
Queue Length 95th (ft)	1	0	0	0	66	16
Control Delay (s)	0.3	0.0	0.2	0.0	39.1	41.1
Lane LOS	A		A		E	E
Approach Delay (s)	0.2		0.1		39.1	41.1
Approach LOS					E	E

Intersection Summary			
Average Delay	3.2		
Intersection Capacity Utilization	64.3%	ICU Level of Service	C
Analysis Period (min)	15		

2: Beacon St & Arundel St

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	5	515	20	10	910	5	40	15	35	5	5	5
Peak Hour Factor	0.92	0.92	0.92	0.88	0.88	0.88	0.84	0.84	0.84	0.69	0.69	0.69
Hourly flow rate (vph)	5	560	22	11	1034	6	48	18	42	7	7	7
Pedestrians		235			145			120			145	
Lane Width (ft)		12.0			12.0			10.0			10.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		20			12			8			10	
Right turn flare (veh)												
Median type								Raised			Raised	
Median storage veh)								0			0	
Upstream signal (ft)		488										
pX, platoon unblocked				0.90			0.90	0.90	0.90	0.90	0.90	
vC, conflicting volume	1185			702			1487	1909	556	1691	1917	900
vC1, stage 1 conf vol							702	702		1205	1205	
vC2, stage 2 conf vol							786	1208		486	712	
vCu, unblocked vol	1185			565			1433	1899	404	1658	1908	900
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			61	84	90	92	94	96
cM capacity (veh/h)	531			838			122	114	437	94	115	206

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	285	302	528	523	107	22
Volume Left	5	0	11	0	48	7
Volume Right	0	22	0	6	42	7
cSH	531	1700	838	1700	167	124
Volume to Capacity	0.01	0.18	0.01	0.31	0.64	0.17
Queue Length 95th (ft)	1	0	1	0	91	15
Control Delay (s)	0.4	0.0	0.4	0.0	59.1	40.0
Lane LOS	A		A		F	E
Approach Delay (s)	0.2		0.2		59.1	40.0
Approach LOS					F	E

Intersection Summary			
Average Delay	4.2		
Intersection Capacity Utilization	56.0%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBT	WBR	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	543	143	949	15	682	71	626	16
v/c Ratio	0.50	0.35	1.02	0.03	1.02	0.15	1.05	0.05
Control Delay	31.6	31.1	54.3	12.7	76.8	12.2	65.6	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.6	31.1	54.3	12.7	76.8	12.2	65.6	5.0
Queue Length 50th (ft)	112	76	~182	2	~262	11	~248	4
Queue Length 95th (ft)	149	133	m#241	m4	#361	40	#366	m3
Internal Link Dist (ft)	968		408		638		275	
Turn Bay Length (ft)		100		100		100		100
Base Capacity (vph)	1096	412	929	551	670	467	599	302
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.50	0.35	1.02	0.03	1.02	0.15	1.05	0.05

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	10	11	11	12	12	12	12	12	14	12	11
Total Lost time (s)			4.0	4.0			4.0	4.0		4.0	4.0	
Lane Util. Factor			0.91	1.00			0.95	1.00		0.95	1.00	
Frpb, ped/bikes			1.00	1.00			1.00	0.91		1.00	0.96	
Flpb, ped/bikes			1.00	1.00			1.00	1.00		1.00	1.00	
Frt			1.00	0.85			1.00	0.85		1.00	0.85	
Flt Protected			0.99	1.00			0.99	1.00		0.99	1.00	
Satd. Flow (prot)			4327	1258			3003	1178		3215	1233	
Flt Permitted			0.77	1.00			0.63	1.00		0.54	1.00	
Satd. Flow (perm)			3351	1258			1920	1178		1766	1233	
Volume (vph)	25	30	440	130	5	270	655	15	130	450	60	25
Peak-hour factor, PHF	0.95	0.91	0.91	0.91	0.98	0.98	0.98	0.98	0.85	0.85	0.85	0.95
Adj. Flow (vph)	26	33	484	143	5	276	668	15	153	529	71	26
RTOR Reduction (vph)	0	0	0	0	0	0	0	5	0	0	31	0
Lane Group Flow (vph)	0	0	543	143	0	0	949	10	0	682	40	0
Confl. Bikes (#/hr)				22				82			48	
Heavy Vehicles (%)	2%	0%	0%	0%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)			1	1			1	1		1	1	
Turn Type		Perm		Prot	custom	D.P+P		Perm	D.P+P		Perm	Perm
Protected Phases			4	4		3	3 4		8	1 8		
Permitted Phases		4			3	4		3 4	1		1 8	1
Actuated Green, G (s)			36.0	36.0			48.0	51.0		35.6	38.6	
Effective Green, g (s)			36.0	36.0			47.0	51.0		34.6	38.6	
Actuated g/C Ratio			0.33	0.33			0.43	0.46		0.31	0.35	
Clearance Time (s)			4.0	4.0								
Vehicle Extension (s)			2.0	2.0								
Lane Grp Cap (vph)			1097	412			929	546		661	433	
v/s Ratio Prot				0.11			c0.10			c0.08		
v/s Ratio Perm			0.16				c0.33	0.01		0.25	0.03	
v/c Ratio			0.49	0.35			1.02	0.02		1.03	0.09	
Uniform Delay, d1			29.7	28.1			31.5	16.0		37.7	23.9	
Progression Factor			1.00	1.00			0.91	1.19		1.00	1.00	
Incremental Delay, d2			0.1	0.2			27.6	0.0		43.4	0.1	
Delay (s)			29.8	28.3			56.1	18.9		81.1	24.0	
Level of Service			C	C			E	B		F	C	
Approach Delay (s)			29.5				55.6			75.7		
Approach LOS			C				E			E		

Intersection Summary

HCM Average Control Delay	56.7	HCM Level of Service	E
HCM Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	28.4
Intersection Capacity Utilization	89.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBT	SBR
Lane Configurations		
Ideal Flow (vphpl)	1900	1900
Lane Width	11	12
Total Lost time (s)	4.0	4.0
Lane Util. Factor	0.95	1.00
Frpb, ped/bikes	1.00	0.96
Flpb, ped/bikes	1.00	1.00
Frt	1.00	0.85
Flt Protected	1.00	1.00
Satd. Flow (prot)	3054	1194
Flt Permitted	0.80	1.00
Satd. Flow (perm)	2454	1194
Volume (vph)	570	15
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	600	16
RTOR Reduction (vph)	0	8
Lane Group Flow (vph)	626	8
Confl. Bikes (#/hr)		33
Heavy Vehicles (%)	1%	1%
Bus Blockages (#/hr)	8	8
Parking (#/hr)		1
Turn Type		Perm
Protected Phases	1	
Permitted Phases		1
Actuated Green, G (s)	26.6	26.6
Effective Green, g (s)	26.6	26.6
Actuated g/C Ratio	0.24	0.24
Clearance Time (s)	4.0	4.0
Vehicle Extension (s)	2.0	2.0
Lane Grp Cap (vph)	593	289
v/s Ratio Prot		
v/s Ratio Perm	c0.26	0.01
v/c Ratio	1.06	0.03
Uniform Delay, d1	41.7	31.8
Progression Factor	0.51	0.25
Incremental Delay, d2	45.1	0.1
Delay (s)	66.5	8.0
Level of Service	E	A
Approach Delay (s)	65.0	
Approach LOS	E	

Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	NBT	SBT	SBR
Lane Group Flow (vph)	100	389	51	443	192	146	155
v/c Ratio	0.25	0.41	0.77	0.58	0.86	0.60	0.41
Control Delay	9.6	13.1	87.1	18.1	65.3	44.8	18.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.6	13.1	87.1	18.1	65.3	44.8	18.1
Queue Length 50th (ft)	7	94	26	182	105	84	42
Queue Length 95th (ft)	m39	m142	#88	237	m169	128	84
Internal Link Dist (ft)		648		198	46	352	
Turn Bay Length (ft)	200		50				100
Base Capacity (vph)	397	950	66	768	302	339	379
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.41	0.77	0.58	0.64	0.43	0.41

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	11	11	10	10	10	12	12	12	11	11	11
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Frpb, ped/bikes	1.00	0.96		1.00	0.94			0.89			1.00	0.83
Flpb, ped/bikes	0.90	1.00		1.00	1.00			0.91			0.90	1.00
Frt	1.00	0.99		1.00	0.99			0.96			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.97			0.98	1.00
Satd. Flow (prot)	1304	1330		1430	1302			1290			1453	1164
Flt Permitted	0.42	1.00		0.07	1.00			0.65			0.76	1.00
Satd. Flow (perm)	583	1330		103	1302			860			1129	1164
Volume (vph)	90	320	30	40	315	35	90	35	45	60	65	135
Peak-hour factor, PHF	0.90	0.90	0.90	0.79	0.79	0.79	0.89	0.89	0.86	0.86	0.86	0.87
Adj. Flow (vph)	100	356	33	51	399	44	101	39	52	70	76	155
RTOR Reduction (vph)	0	3	0	0	3	0	0	15	0	0	0	39
Lane Group Flow (vph)	100	386	0	51	440	0	0	177	0	0	146	116
Confl. Peds. (#/hr)	390		190	190		390	140		135	135		140
Confl. Bikes (#/hr)			6			9			5			3
Heavy Vehicles (%)	5%	5%	5%	6%	6%	6%	1%	1%	1%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	16	16	0	0	0	0	0	0
Parking (#/hr)		1	1									
Turn Type	D.P+P			Perm			Perm			Perm		pm+ov
Protected Phases	3	1 3			1			2			2	3
Permitted Phases	1			1			2			2		2
Actuated Green, G (s)	68.2	71.2		58.7	58.7			20.8			20.8	30.3
Effective Green, g (s)	67.2	71.2		58.7	58.7			20.8			20.8	29.3
Actuated g/C Ratio	0.67	0.71		0.59	0.59			0.21			0.21	0.29
Clearance Time (s)	3.0			4.0	4.0			4.0			4.0	3.0
Vehicle Extension (s)	3.0			3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	453	947		60	764			179			235	388
v/s Ratio Prot	0.02	c0.29			0.34							0.03
v/s Ratio Perm	0.13			c0.50				c0.21			0.13	0.07
v/c Ratio	0.22	0.41		0.85	0.58			0.99			0.62	0.30
Uniform Delay, d1	6.4	5.8		17.0	12.9			39.5			36.0	27.4
Progression Factor	1.41	1.67		1.00	1.00			0.96			1.00	1.00
Incremental Delay, d2	0.2	0.2		78.6	3.1			63.0			5.0	0.4
Delay (s)	9.1	10.0		95.6	16.0			100.8			41.0	27.8
Level of Service	A	A		F	B			F			D	C
Approach Delay (s)		9.8			24.2			100.8			34.2	
Approach LOS		A			C			F			C	

Intersection Summary			
HCM Average Control Delay	31.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	62.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	75	115	65	0	0	135
Peak Hour Factor	0.82	0.82	0.87	0.87	0.90	0.90
Hourly flow rate (vph)	91	140	75	0	0	150
Pedestrians	105		110			125
Lane Width (ft)	15.0		13.0			13.0
Walking Speed (ft/s)	4.0		4.0			4.0
Percent Blockage	11		10			11
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)			292			126
pX, platoon unblocked						
vC, conflicting volume	440	305			180	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	440	305			180	
tC, single (s)	6.5	6.3			4.1	
tC, 2 stage (s)						
tF (s)	3.6	3.4			2.2	
p0 queue free %	80	75			100	
cM capacity (veh/h)	452	570			1243	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	232	75	150
Volume Left	91	0	0
Volume Right	140	0	0
cSH	517	1700	1700
Volume to Capacity	0.45	0.04	0.09
Queue Length 95th (ft)	57	0	0
Control Delay (s)	17.5	0.0	0.0
Lane LOS	C		
Approach Delay (s)	17.5	0.0	0.0
Approach LOS	C		

Intersection Summary			
Average Delay	8.9		
Intersection Capacity Utilization	36.2%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	1202	1076	87	167	132
v/c Ratio	0.69	0.68	0.28	0.86	0.42
Control Delay	20.5	8.0	19.2	73.0	16.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	20.5	8.0	19.2	73.0	16.8
Queue Length 50th (ft)	392	93	21	105	30
Queue Length 95th (ft)	m388	m100	62	m#186	m73
Internal Link Dist (ft)	668	553	267		212
Turn Bay Length (ft)				150	
Base Capacity (vph)	1735	1586	355	223	349
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.69	0.68	0.25	0.75	0.38

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1600	1600	1600	1600	1600	1600	1900	1900	1900	1600	1600	1900
Lane Width	12	13	12	12	13	12	12	14	12	12	16	12
Total Lost time (s)		4.0			4.0			4.0		4.0	4.0	
Lane Util. Factor		0.95			0.95			1.00		1.00	1.00	
Frpb, ped/bikes		0.97			0.99			0.94		1.00	0.82	
Flpb, ped/bikes		1.00			1.00			0.95		0.91	1.00	
Frt		0.99			1.00			0.93		1.00	0.88	
Flt Protected		1.00			1.00			0.98		0.95	1.00	
Satd. Flow (prot)		2666			2716			1418		1210	1135	
Flt Permitted		0.92			0.83			0.89		0.69	1.00	
Satd. Flow (perm)		2463			2255			1281		883	1135	
Volume (vph)	20	1085	60	45	910	25	25	15	40	145	20	95
Peak-hour factor, PHF	0.97	0.97	0.97	0.91	0.91	0.91	0.91	0.91	0.91	0.87	0.87	0.87
Adj. Flow (vph)	21	1119	62	49	1000	27	27	16	44	167	23	109
RTOR Reduction (vph)	0	4	0	0	1	0	0	34	0	0	68	0
Lane Group Flow (vph)	0	1198	0	0	1075	0	0	53	0	167	64	0
Confl. Peds. (#/hr)	135		215	215		135	155		80	80		155
Confl. Bikes (#/hr)			8			4			4			3
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	5%	5%	5%	3%	3%	3%
Parking (#/hr)			1			1						
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		1			1			5			5	
Permitted Phases	1			1			5			5		
Actuated Green, G (s)		69.3			69.3			20.7		20.7	20.7	
Effective Green, g (s)		70.3			70.3			21.7		21.7	21.7	
Actuated g/C Ratio		0.70			0.70			0.22		0.22	0.22	
Clearance Time (s)		5.0			5.0			5.0		5.0	5.0	
Vehicle Extension (s)		4.0			4.0			2.0		2.0	2.0	
Lane Grp Cap (vph)		1731			1585			278		192	246	
v/s Ratio Prot											0.06	
v/s Ratio Perm		c0.49			0.48			0.04		c0.19		
v/c Ratio		0.69			0.68			0.19		0.87	0.26	
Uniform Delay, d1		8.6			8.4			32.0		37.8	32.5	
Progression Factor		2.06			0.81			1.00		0.98	1.01	
Incremental Delay, d2		0.6			0.2			0.1		30.0	0.2	
Delay (s)		18.3			7.1			32.1		66.9	33.1	
Level of Service		B			A			C		E	C	
Approach Delay (s)		18.3			7.1			32.1			52.0	
Approach LOS		B			A			C			D	

Intersection Summary

HCM Average Control Delay	18.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	103.4%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBT	NBT
Lane Group Flow (vph)	1294	1083	161
v/c Ratio	0.76	1.13	0.66
Control Delay	6.8	91.6	38.5
Queue Delay	0.0	0.0	0.0
Total Delay	6.8	91.6	38.5
Queue Length 50th (ft)	30	~292	71
Queue Length 95th (ft)	182	#609	106
Internal Link Dist (ft)	553	630	256
Turn Bay Length (ft)			
Base Capacity (vph)	1707	955	354
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.76	1.13	0.45

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1600	1600	1600	1600	1600	1600	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	12	12	12	12	16	12
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		0.95			0.95			1.00				
Frpb, ped/bikes		0.99			0.99			0.82				
Flpb, ped/bikes		1.00			1.00			0.98				
Frt		1.00			0.99			0.90				
Flt Protected		1.00			1.00			0.99				
Satd. Flow (prot)		2550			2538			1146				
Flt Permitted		0.90			0.60			0.99				
Satd. Flow (perm)		2303			1528			1146				
Volume (vph)	30	1190	35	40	905	40	15	15	100	0	0	0
Peak-hour factor, PHF	0.97	0.97	0.97	0.91	0.91	0.91	0.81	0.81	0.81	0.25	0.25	0.25
Adj. Flow (vph)	31	1227	36	44	995	44	19	19	123	0	0	0
RTOR Reduction (vph)	0	2	0	0	2	0	0	38	0	0	0	0
Lane Group Flow (vph)	0	1292	0	0	1081	0	0	123	0	0	0	0
Confl. Peds. (#/hr)	130		140	140		130	150		200			
Confl. Bikes (#/hr)			9			8			5			5
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	5%	5%	5%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	3	3	3	0	0	0
Parking (#/hr)			1			1						
Turn Type	Perm			Perm			Perm					
Protected Phases		1 4			1			3				
Permitted Phases	1 4			1			3					
Actuated Green, G (s)		73.1			62.1			16.9				
Effective Green, g (s)		74.1			63.1			17.9				
Actuated g/C Ratio		0.74			0.63			0.18				
Clearance Time (s)					5.0			5.0				
Vehicle Extension (s)					3.0			2.0				
Lane Grp Cap (vph)		1707			964			205				
v/s Ratio Prot												
v/s Ratio Perm		c0.56			c0.71			0.11				
v/c Ratio		0.76			1.12			0.60				
Uniform Delay, d1		7.6			18.4			37.8				
Progression Factor		0.39			0.85			1.00				
Incremental Delay, d2		1.2			66.7			3.4				
Delay (s)		4.2			82.5			41.1				
Level of Service		A			F			D				
Approach Delay (s)		4.2			82.5			41.1			0.0	
Approach LOS		A			F			D			A	

Intersection Summary			
HCM Average Control Delay	39.9	HCM Level of Service	D
HCM Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	102.2%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	1483	955	210	97
v/c Ratio	0.96	0.58	0.56	0.24
Control Delay	27.3	13.5	39.4	7.9
Queue Delay	458.9	35.6	198.4	0.0
Total Delay	486.2	49.0	237.7	7.9
Queue Length 50th (ft)	305	177	117	0
Queue Length 95th (ft)	#631	235	193	40
Internal Link Dist (ft)	630	157	254	
Turn Bay Length (ft)			50	
Base Capacity (vph)	1537	1649	376	409
Starvation Cap Reductn	0	750	0	0
Spillback Cap Reductn	807	0	228	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	2.03	1.06	1.42	0.24

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1600	1600	1600	1600	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0
Lane Util. Factor		0.95	0.95		1.00	1.00
Frpb, ped/bikes		1.00	1.00		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		2681	2699		1504	1346
Flt Permitted		0.94	1.00		0.95	1.00
Satd. Flow (perm)		2520	2699		1504	1346
Volume (vph)	15	1350	935	20	195	90
Peak-hour factor, PHF	0.92	0.92	1.00	1.00	0.93	0.93
Adj. Flow (vph)	16	1467	935	20	210	97
RTOR Reduction (vph)	0	0	2	0	0	73
Lane Group Flow (vph)	0	1483	953	0	210	24
Confl. Bikes (#/hr)				3		
Heavy Vehicles (%)	2%	2%	1%	1%	8%	8%
Turn Type	Perm					custom
Protected Phases		1	1			
Permitted Phases	1				5	5
Actuated Green, G (s)		59.0	59.0		24.0	24.0
Effective Green, g (s)		61.0	61.0		25.0	25.0
Actuated g/C Ratio		0.61	0.61		0.25	0.25
Clearance Time (s)		6.0	6.0		5.0	5.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1537	1646		376	337
v/s Ratio Prot			0.35			
v/s Ratio Perm		c0.59			c0.14	0.02
v/c Ratio		0.96	0.58		0.56	0.07
Uniform Delay, d1		18.5	11.8		32.7	28.6
Progression Factor		0.70	1.00		1.00	1.00
Incremental Delay, d2		12.8	1.5		5.9	0.4
Delay (s)		25.8	13.3		38.6	29.1
Level of Service		C	B		D	C
Approach Delay (s)		25.8	13.3		35.6	
Approach LOS		C	B		D	

Intersection Summary

HCM Average Control Delay	22.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	81.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
9: Park Dr &

2013 Existing Conditions - Landmark
Weekday Evening Peak Hour

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	0	0	0	670	0	940
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	0	705	0	989
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)				281	718	
pX, platoon unblocked	0.95					
vC, conflicting volume	353	0	989			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	272	0	989			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	667	1091	707			

Direction, Lane #	NB 1	NB 2	SB 1	SB 2
Volume Total	353	353	495	495
Volume Left	0	0	0	0
Volume Right	0	0	495	495
cSH	1700	1700	1700	1700
Volume to Capacity	0.21	0.21	0.29	0.29
Queue Length 95th (ft)	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0
Lane LOS				
Approach Delay (s)	0.0		0.0	
Approach LOS				

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	39.9%	ICU Level of Service	A
Analysis Period (min)	15		

Queues
10: Riverway & Park Dr

2013 Existing Conditions - Landmark
Weekday Evening Peak Hour

Lane Group	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	309	861	494	562
v/c Ratio	0.31	0.59	0.26	0.75
Control Delay	22.5	25.6	9.3	21.4
Queue Delay	0.1	0.2	0.0	0.0
Total Delay	22.6	25.8	9.3	21.4
Queue Length 50th (ft)	65	164	57	193
Queue Length 95th (ft)	100	205	93	369
Internal Link Dist (ft)		105	209	
Turn Bay Length (ft)				100
Base Capacity (vph)	1435	2126	1925	748
Starvation Cap Reductn	403	431	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.30	0.51	0.26	0.75

Intersection Summary

HCM Signalized Intersection Capacity Analysis
10: Riverway & Park Dr

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	4.0
Lane Util. Factor				0.97	0.91						0.95	1.00
Frpb, ped/bikes				1.00	1.00						1.00	0.87
Flpb, ped/bikes				1.00	1.00						1.00	1.00
Frt				1.00	1.00						1.00	0.85
Flt Protected				0.95	1.00						1.00	1.00
Satd. Flow (prot)				3120	4622						3185	1240
Flt Permitted				0.95	1.00						1.00	1.00
Satd. Flow (perm)				3120	4622						3185	1240
Volume (vph)	0	0	0	300	835	0	0	0	0	0	440	500
Peak-hour factor, PHF	0.95	0.95	0.95	0.97	0.97	0.97	0.95	0.95	0.95	0.89	0.89	0.89
Adj. Flow (vph)	0	0	0	309	861	0	0	0	0	0	494	562
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	309	861	0	0	0	0	0	494	562
Confl. Peds. (#/hr)												70
Confl. Bikes (#/hr)												11
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	0%	0%	0%	2%	2%	2%
Turn Type				Split								Perm
Protected Phases				1	1						5	
Permitted Phases												5
Actuated Green, G (s)				30.6	30.6						59.4	59.4
Effective Green, g (s)				31.6	31.6						60.4	60.4
Actuated g/C Ratio				0.32	0.32						0.60	0.60
Clearance Time (s)				5.0	5.0						5.0	5.0
Vehicle Extension (s)				2.0	2.0						2.0	2.0
Lane Grp Cap (vph)				986	1461						1924	749
v/s Ratio Prot				0.10	c0.19						0.16	
v/s Ratio Perm												c0.45
v/c Ratio				0.31	0.59						0.26	0.75
Uniform Delay, d1				26.0	28.7						9.3	14.3
Progression Factor				0.79	0.80						1.00	1.00
Incremental Delay, d2				0.8	1.6						0.0	3.8
Delay (s)				21.2	24.5						9.3	18.1
Level of Service				C	C						A	B
Approach Delay (s)		0.0			23.6			0.0			14.0	
Approach LOS		A			C			A			B	

Intersection Summary			
HCM Average Control Delay	19.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	95.5%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
11: Riverway & Park Dr

Movement	EBL	EBR	SET	SER	NWL	NWT
Lane Configurations						
Sign Control	Yield		Free			Stop
Grade	0%		0%			0%
Volume (veh/h)	0	745	740	0	0	0
Peak Hour Factor	0.96	0.96	0.93	0.93	0.95	0.95
Hourly flow rate (vph)	0	776	796	0	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					None
Median storage veh)						
Upstream signal (ft)			253			
pX, platoon unblocked						
vC, conflicting volume	1591	1591	0		1591	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1591	1591	0		1591	0
tC, single (s)	7.1	6.5	4.1		6.5	6.2
tC, 2 stage (s)						
tF (s)	3.5	4.0	2.2		4.0	3.3
p0 queue free %	100	0	51		100	100
cM capacity (veh/h)	54	55	1636		56	1091

Direction, Lane #	EB 1	EB 2	EB 3	SE 1	SE 2	SE 3
Volume Total	259	259	259	265	265	265
Volume Left	0	0	0	265	265	265
Volume Right	0	0	0	0	0	0
cSH	55	55	55	1636	1636	1636
Volume to Capacity	4.69	4.69	4.69	0.49	0.49	0.49
Queue Length 95th (ft)	Err	Err	Err	69	69	69
Control Delay (s)	Err	Err	Err	9.3	9.3	9.3
Lane LOS	F	F	F	A	A	A
Approach Delay (s)	Err			9.3		
Approach LOS	F					

Intersection Summary			
Average Delay	4941.7		
Intersection Capacity Utilization	63.9%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBT	WBT	SBL2	SBT	SBR
Lane Group Flow (vph)	1094	840	472	986	122
v/c Ratio	0.76	0.79	0.83	0.83	0.22
Control Delay	30.7	20.3	41.8	35.1	22.8
Queue Delay	0.0	18.0	0.0	0.0	0.0
Total Delay	30.7	38.2	41.8	35.1	22.8
Queue Length 50th (ft)	226	237	258	270	49
Queue Length 95th (ft)	238	#333	#470	380	96
Internal Link Dist (ft)	23	183		268	
Turn Bay Length (ft)					
Base Capacity (vph)	1442	1068	571	1188	561
Starvation Cap Reductn	0	237	0	0	0
Spillback Cap Reductn	5	0	0	1	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.76	1.01	0.83	0.83	0.22

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBT	EBR	EBR2	WBT	SBL2	SBL	SBT	SBR
Lane Configurations								
Ideal Flow (vphpl)	1600	1900	1900	1600	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0	4.0		4.0	4.0
Lane Util. Factor	0.91			0.95	0.91		0.91	1.00
Frpb, ped/bikes	1.00			1.00	1.00		1.00	1.00
Flpb, ped/bikes	1.00			1.00	1.00		1.00	1.00
Frt	0.98			1.00	1.00		1.00	0.85
Flt Protected	1.00			1.00	0.95		0.99	1.00
Satd. Flow (prot)	3569			2656	1464		3047	1439
Flt Permitted	1.00			1.00	0.95		0.99	1.00
Satd. Flow (perm)	3569			2656	1464		3047	1439
Volume (vph)	755	60	60	790	545	110	715	115
Peak-hour factor, PHF	0.80	0.80	0.80	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	944	75	75	840	580	117	761	122
RTOR Reduction (vph)	8	0	0	0	0	0	0	0
Lane Group Flow (vph)	1086	0	0	840	472	0	986	122
Confl. Bikes (#/hr)		7	7					2
Heavy Vehicles (%)	4%	4%	4%	3%	1%	1%	1%	1%
Bus Blockages (#/hr)	25	25	25	0	0	0	0	0
Turn Type					Split	Split		Prot
Protected Phases	1			1	5	5	5	5
Permitted Phases								
Actuated Green, G (s)	38.8			38.8	38.0		38.0	38.0
Effective Green, g (s)	39.8			39.8	39.0		39.0	39.0
Actuated g/C Ratio	0.40			0.40	0.39		0.39	0.39
Clearance Time (s)	5.0			5.0	5.0		5.0	5.0
Vehicle Extension (s)	2.0			2.0	2.0		2.0	2.0
Lane Grp Cap (vph)	1420			1057	571		1188	561
v/s Ratio Prot	0.30			c0.32	0.32		c0.32	0.08
v/s Ratio Perm								
v/c Ratio	0.76			0.79	0.83		0.83	0.22
Uniform Delay, d1	26.1			26.5	27.5		27.5	20.3
Progression Factor	1.00			0.55	1.01		1.01	1.05
Incremental Delay, d2	4.0			4.6	12.9		6.8	0.9
Delay (s)	30.0			19.1	40.5		34.5	22.3
Level of Service	C			B	D		C	C
Approach Delay (s)	30.0			19.1			35.3	
Approach LOS	C			B			D	

Intersection Summary			
HCM Average Control Delay	29.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	21.2
Intersection Capacity Utilization	64.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	EBR	WBT	WBR	NBT	NBR	NWL	NWR
Lane Group Flow (vph)	399	1073	247	332	972	199	839	340
v/c Ratio	0.45	1.01	0.31	1.57	0.82	1.03	0.82	1.66
Control Delay	25.6	43.5	27.9	300.2	41.7	112.0	26.3	335.2
Queue Delay	2.3	24.9	0.0	0.0	0.0	0.0	12.4	0.0
Total Delay	27.8	68.4	27.9	300.2	41.7	112.0	38.7	335.2
Queue Length 50th (ft)	117	~232	50	~298	213	~136	230	~351
Queue Length 95th (ft)	m143	#443	m88	m#459	258	#267	306	#409
Internal Link Dist (ft)	183		648		176		668	
Turn Bay Length (ft)				150				300
Base Capacity (vph)	892	1066	800	212	1183	193	1029	205
Starvation Cap Reductn	351	71	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	181	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.74	1.08	0.31	1.57	0.82	1.03	0.99	1.66

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBT	EBR	WBT	WBR	NBL	NBT	NBR	NBR2	NWL	NWR	NWR2
Lane Configurations											
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	0.95	0.88	0.95	1.00		0.91	1.00		0.97	0.91	
Frpb, ped/bikes	1.00	0.69	1.00	0.65		1.00	0.52		1.00	0.45	
Flpb, ped/bikes	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.85	1.00	0.85		1.00	0.85		0.94	0.85	
Flt Protected	1.00	1.00	1.00	1.00		0.99	1.00		0.97	1.00	
Satd. Flow (prot)	3185	1719	2858	758		4551	744		3026	592	
Flt Permitted	1.00	1.00	1.00	1.00		0.99	1.00		0.97	1.00	
Satd. Flow (perm)	3185	1719	2858	758		4551	744		3026	592	
Volume (vph)	355	955	235	315	95	760	80	95	460	600	25
Peak-hour factor, PHF	0.89	0.89	0.95	0.95	0.88	0.88	0.88	0.88	0.92	0.92	0.92
Adj. Flow (vph)	399	1073	247	332	108	864	91	108	500	652	27
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	3	0
Lane Group Flow (vph)	399	1073	247	332	0	972	199	0	839	337	0
Confl. Peds. (#/hr)		375		215	5		185	375			185
Confl. Bikes (#/hr)		8		12			25	34			2
Heavy Vehicles (%)	2%	2%	4%	4%	2%	2%	2%	2%	0%	0%	0%
Bus Blockages (#/hr)	0	0	16	16	0	0	0	0	0	0	0
Parking (#/hr)			2	2							
Turn Type		pm+ov		Perm	Split		Perm			Perm	
Protected Phases	2	1	2		3	3			1		
Permitted Phases		2		2			3			1	
Actuated Green, G (s)	26.0	58.0	26.0	26.0		24.0	24.0		32.0	32.0	
Effective Green, g (s)	28.0	62.0	28.0	28.0		26.0	26.0		34.0	34.0	
Actuated g/C Ratio	0.28	0.62	0.28	0.28		0.26	0.26		0.34	0.34	
Clearance Time (s)	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	892	1135	800	212		1183	193		1029	201	
v/s Ratio Prot	0.13	0.32	0.09			0.21			0.28		
v/s Ratio Perm		0.30		c0.44			c0.27			c0.57	
v/c Ratio	0.45	0.95	0.31	1.57		0.82	1.03		0.82	1.68	
Uniform Delay, d1	29.6	17.4	28.4	36.0		34.8	37.0		30.1	33.0	
Progression Factor	0.82	0.97	0.94	0.92		1.00	1.00		0.67	0.68	
Incremental Delay, d2	1.0	11.2	0.8	272.7		6.5	73.1		5.7	320.3	
Delay (s)	25.3	28.2	27.6	305.8		41.3	110.1		25.8	342.9	
Level of Service	C	C	C	F		D	F		C	F	
Approach Delay (s)	27.4		187.1			53.0			117.2		
Approach LOS	C		F			D			F		

Intersection Summary

HCM Average Control Delay	79.3	HCM Level of Service	E
HCM Volume to Capacity ratio	1.45		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	86.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	0	0	1595	80	0	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	1679	84	0	0
Pedestrians	10					
Lane Width (ft)	0.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	0					
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)			204			201
pX, platoon unblocked						
vC, conflicting volume	1731	472			1773	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1731	472			1773	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	81	544			356	

Direction, Lane #	NB 1	NB 2	NB 3	NB 4
Volume Total	480	480	480	324
Volume Left	0	0	0	0
Volume Right	0	0	0	84
cSH	1700	1700	1700	1700
Volume to Capacity	0.28	0.28	0.28	0.19
Queue Length 95th (ft)	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0
Lane LOS				
Approach Delay (s)	0.0			
Approach LOS				

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	48.0%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBT	WBR	NBL	NBT
Lane Group Flow (vph)	132	63	1041	603
v/c Ratio	0.41	0.19	0.45	0.25
Control Delay	39.3	10.0	5.4	4.6
Queue Delay	0.0	0.0	0.4	0.0
Total Delay	39.3	10.0	5.8	4.6
Queue Length 50th (ft)	75	0	113	60
Queue Length 95th (ft)	125	33	m97	m53
Internal Link Dist (ft)	48			121
Turn Bay Length (ft)				
Base Capacity (vph)	564	522	2301	2372
Starvation Cap Reductn	0	0	700	0
Spillback Cap Reductn	0	0	535	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.23	0.12	0.65	0.25

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0	4.0	4.0	4.0				
Lane Util. Factor					1.00	1.00	0.97	0.95				
Frt					1.00	0.85	1.00	1.00				
Flt Protected					1.00	1.00	0.95	1.00				
Satd. Flow (prot)					1710	1454	3152	3249				
Flt Permitted					1.00	1.00	0.95	1.00				
Satd. Flow (perm)					1710	1454	3152	3249				
Volume (vph)	0	0	0	0	125	60	1010	585	0	0	0	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.97	0.97	0.97	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	0	132	63	1041	603	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	51	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	132	12	1041	603	0	0	0	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type						Perm	Split					
Protected Phases					5		1	1				
Permitted Phases						5						
Actuated Green, G (s)					18.0	18.0	72.0	72.0				
Effective Green, g (s)					19.0	19.0	73.0	73.0				
Actuated g/C Ratio					0.19	0.19	0.73	0.73				
Clearance Time (s)					5.0	5.0	5.0	5.0				
Vehicle Extension (s)					2.0	2.0	2.0	2.0				
Lane Grp Cap (vph)					325	276	2301	2372				
v/s Ratio Prot					c0.08		c0.33	0.19				
v/s Ratio Perm						0.01						
v/c Ratio					0.41	0.04	0.45	0.25				
Uniform Delay, d1					35.5	33.1	5.4	4.5				
Progression Factor					1.00	1.00	0.93	0.99				
Incremental Delay, d2					0.3	0.0	0.1	0.0				
Delay (s)					35.9	33.1	5.1	4.4				
Level of Service					D	C	A	A				
Approach Delay (s)		0.0			35.0			4.9			0.0	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM Average Control Delay	8.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	87.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	35	390	330	15	15	50
Peak Hour Factor	0.93	0.93	0.84	0.84	0.77	0.77
Hourly flow rate (vph)	38	419	393	18	19	65
Pedestrians		190	190		190	
Lane Width (ft)		14.0	12.0		10.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		18	16		13	
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)		592	1230			
pX, platoon unblocked						
vC, conflicting volume	601				1276	782
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	601				1276	782
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	96				85	77
cM capacity (veh/h)	848				128	279

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	457	411	84
Volume Left	38	0	19
Volume Right	0	18	65
cSH	848	1700	220
Volume to Capacity	0.04	0.24	0.38
Queue Length 95th (ft)	3	0	43
Control Delay (s)	1.3	0.0	31.3
Lane LOS	A		D
Approach Delay (s)	1.3	0.0	31.3
Approach LOS			D

Intersection Summary			
Average Delay	3.4		
Intersection Capacity Utilization	68.9%	ICU Level of Service	C
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis — 2013 Existing Conditions - Landmark
1: Beacon St & Mountfort St — Saturday Midday Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	5	480	5	5	520	10	5	5	5	5	0	5
Peak Hour Factor	0.81	0.81	0.81	0.95	0.95	0.95	0.79	0.79	0.79	0.45	0.45	0.45
Hourly flow rate (vph)	6	593	6	5	547	11	6	6	6	11	0	11
Pedestrians		165			165			105			165	
Lane Width (ft)		11.0			11.0			13.0			11.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		13			13			9			13	
Right turn flare (veh)												1
Median type								Raised			Raised	
Median storage veh)								0			0	
Upstream signal (ft)		959										
pX, platoon unblocked				0.92			0.92	0.92	0.92	0.92	0.92	
vC, conflicting volume	723			704			1162	1446	569	1211	1444	609
vC1, stage 1 conf vol							713	713		728	728	
vC2, stage 2 conf vol							449	733		483	716	
vCu, unblocked vol	723			588			1087	1397	441	1141	1395	609
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			96	96	98	93	100	97
cM capacity (veh/h)	777			823			176	166	413	164	166	338

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	302	302	279	284	19	22
Volume Left	6	0	5	0	6	11
Volume Right	0	6	0	11	6	11
cSH	777	1700	823	1700	212	328
Volume to Capacity	0.01	0.18	0.01	0.17	0.09	0.07
Queue Length 95th (ft)	1	0	0	0	6	5
Control Delay (s)	0.3	0.0	0.2	0.0	23.6	22.3
Lane LOS	A		A		C	C
Approach Delay (s)	0.1		0.1		23.6	22.3
Approach LOS					C	C

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	53.0%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis — 2013 Existing Conditions - Landmark
2: Beacon St & Arundel St — Saturday Midday Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	10	475	20	5	520	5	20	5	10	5	5	10
Peak Hour Factor	0.81	0.81	0.81	0.92	0.92	0.92	0.70	0.70	0.70	0.32	0.32	0.32
Hourly flow rate (vph)	12	586	25	5	565	5	29	7	14	16	16	31
Pedestrians		190			145			90			145	
Lane Width (ft)		12.0			12.0			10.0			10.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		16			12			6			10	
Right turn flare (veh)												
Median type								Raised			Raised	
Median storage veh)								0			0	
Upstream signal (ft)		504										
pX, platoon unblocked				0.88			0.88	0.88	0.88	0.88	0.88	
vC, conflicting volume	716			701			1236	1440	541	1205	1450	620
vC1, stage 1 conf vol							713	713		724	724	
vC2, stage 2 conf vol							523	727		481	726	
vCu, unblocked vol	716			532			1137	1367	351	1101	1378	620
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			99			82	96	97	91	91	91
cM capacity (veh/h)	798			856			157	172	475	171	172	330

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	306	318	288	288	50	62
Volume Left	12	0	5	0	29	16
Volume Right	0	25	0	5	14	31
cSH	798	1700	856	1700	197	226
Volume to Capacity	0.02	0.19	0.01	0.17	0.25	0.28
Queue Length 95th (ft)	1	0	0	0	21	24
Control Delay (s)	0.6	0.0	0.2	0.0	29.4	26.9
Lane LOS	A		A		D	D
Approach Delay (s)	0.3		0.1		29.4	26.9
Approach LOS					D	D

Intersection Summary			
Average Delay	2.6		
Intersection Capacity Utilization	43.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBT	WBR	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	571	136	623	33	355	54	522	16
v/c Ratio	0.77	0.50	0.78	0.07	0.40	0.13	0.60	0.04
Control Delay	40.7	36.9	30.2	6.2	26.6	14.2	32.5	12.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.7	36.9	30.2	6.2	26.6	14.2	32.5	12.9
Queue Length 50th (ft)	97	59	122	0	82	2	130	0
Queue Length 95th (ft)	130	107	163	15	112	21	#197	14
Internal Link Dist (ft)	679		424		640		497	
Turn Bay Length (ft)		100		100		100		100
Base Capacity (vph)	827	308	852	536	895	418	868	395
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.69	0.44	0.73	0.06	0.40	0.13	0.60	0.04

Intersection Summary

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	10	11	11	12	12	12	12	12	14	12	11
Total Lost time (s)			4.0	4.0			4.0	4.0		4.0	4.0	
Lane Util. Factor			0.91	1.00			0.95	1.00		0.95	1.00	
Frpb, ped/bikes			1.00	1.00			1.00	0.97		1.00	0.97	
Flpb, ped/bikes			1.00	1.00			1.00	1.00		1.00	1.00	
Frt			1.00	0.85			1.00	0.85		1.00	0.85	
Flt Protected			0.99	1.00			0.99	1.00		0.99	1.00	
Satd. Flow (prot)			4324	1258			3016	1255		3183	1237	
Flt Permitted			0.77	1.00			0.63	1.00		0.73	1.00	
Satd. Flow (perm)			3372	1258			1934	1255		2336	1237	
Volume (vph)	30	45	450	125	5	115	440	30	75	255	50	35
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.90	0.90	0.90	0.90	0.93	0.93	0.93	0.92
Adj. Flow (vph)	33	49	489	136	6	128	489	33	81	274	54	38
RTOR Reduction (vph)	0	0	0	0	0	0	0	20	0	0	38	0
Lane Group Flow (vph)	0	0	571	136	0	0	623	13	0	355	16	0
Confl. Bikes (#/hr)				20				24			25	
Heavy Vehicles (%)	0%	0%	0%	0%	0%	1%	1%	1%	2%	2%	2%	1%
Parking (#/hr)			1	1			1	1		1	1	
Turn Type		Perm		Prot		D.P+P		Perm	D.P+P		custom	Perm
Protected Phases			4	4		3	3 4		8	1 8		
Permitted Phases		4				4		3 4	1		1	1
Actuated Green, G (s)			19.6	19.6			31.6	34.6		34.6	27.1	
Effective Green, g (s)			19.6	19.6			30.6	34.6		33.6	27.1	
Actuated g/C Ratio			0.22	0.22			0.34	0.38		0.37	0.30	
Clearance Time (s)			4.0	4.0							4.0	
Vehicle Extension (s)			2.0	2.0							2.0	
Lane Grp Cap (vph)			734	274			790	482		933	372	
v/s Ratio Prot				0.11			c0.10			c0.03		
v/s Ratio Perm			0.17				c0.17	0.01		0.11	0.01	
v/c Ratio			0.78	0.50			0.79	0.03		0.38	0.04	
Uniform Delay, d1			33.2	30.9			26.8	17.2		20.6	22.3	
Progression Factor			1.00	1.00			1.00	1.00		1.23	1.61	
Incremental Delay, d2			4.8	0.5			4.9	0.0		0.3	0.2	
Delay (s)			37.9	31.4			31.6	17.2		25.5	36.2	
Level of Service			D	C			C	B		C	D	
Approach Delay (s)			36.7				30.9			26.9		
Approach LOS			D				C			C		

Intersection Summary

HCM Average Control Delay	31.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	25.8
Intersection Capacity Utilization	67.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBT	SBR
Lane Configurations		
Ideal Flow (vphpl)	1900	1900
Lane Width	11	12
Total Lost time (s)	4.0	4.0
Lane Util. Factor	0.95	1.00
Frpb, ped/bikes	1.00	0.97
Flpb, ped/bikes	1.00	1.00
Frt	1.00	0.85
Flt Protected	1.00	1.00
Satd. Flow (prot)	3098	1248
Flt Permitted	0.90	1.00
Satd. Flow (perm)	2808	1248
Volume (vph)	445	15
Peak-hour factor, PHF	0.92	0.92
Adj. Flow (vph)	484	16
RTOR Reduction (vph)	0	11
Lane Group Flow (vph)	522	5
Confl. Bikes (#/hr)		26
Heavy Vehicles (%)	1%	1%
Parking (#/hr)		1
Turn Type		Perm
Protected Phases	1	
Permitted Phases		1
Actuated Green, G (s)	27.1	27.1
Effective Green, g (s)	27.1	27.1
Actuated g/C Ratio	0.30	0.30
Clearance Time (s)	4.0	4.0
Vehicle Extension (s)	2.0	2.0
Lane Grp Cap (vph)	846	376
v/s Ratio Prot		
v/s Ratio Perm	c0.19	0.00
v/c Ratio	0.62	0.01
Uniform Delay, d1	27.0	22.1
Progression Factor	1.00	1.00
Incremental Delay, d2	3.4	0.1
Delay (s)	30.4	22.1
Level of Service	C	C
Approach Delay (s)	30.1	
Approach LOS	C	

Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	NBT	SBT	SBR
Lane Group Flow (vph)	83	300	39	315	113	37	75
v/c Ratio	0.17	0.28	0.50	0.33	0.71	0.21	0.29
Control Delay	3.0	5.1	38.9	8.0	46.8	35.5	9.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	3.0	5.1	38.9	8.0	46.8	35.5	9.2
Queue Length 50th (ft)	2	61	9	59	34	17	0
Queue Length 95th (ft)	m12	m76	#62	114	79	35	21
Internal Link Dist (ft)		594		467	104	352	
Turn Bay Length (ft)	200		50				100
Base Capacity (vph)	476	1053	78	962	212	252	260
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.28	0.50	0.33	0.53	0.15	0.29

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis
4: Brookline Ave & Fullerton St

2013 Existing Conditions - Landmark
Saturday Midday Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	11	11	10	10	10	12	12	12	11	11	11
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Frpb, ped/bikes	1.00	0.93		1.00	0.97			0.77			1.00	0.77
Flpb, ped/bikes	0.82	1.00		1.00	1.00			0.87			0.89	1.00
Frt	1.00	0.98		1.00	0.99			0.94			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98	1.00
Satd. Flow (prot)	1193	1297		1472	1393			1055			1440	1071
Flt Permitted	0.55	1.00		0.07	1.00			0.86			0.92	1.00
Satd. Flow (perm)	691	1297		101	1393			922			1342	1071
Volume (vph)	75	235	35	35	265	15	40	15	45	10	20	60
Peak-hour factor, PHF	0.90	0.90	0.90	0.89	0.89	0.89	0.88	0.88	0.88	0.80	0.80	0.80
Adj. Flow (vph)	83	261	39	39	298	17	45	17	51	12	25	75
RTOR Reduction (vph)	0	4	0	0	2	0	0	36	0	0	0	61
Lane Group Flow (vph)	83	296	0	39	313	0	0	77	0	0	37	14
Confl. Peds. (#/hr)	305		230	230		305	270		140	140		270
Confl. Bikes (#/hr)			13			12			5			4
Heavy Vehicles (%)	4%	4%	4%	3%	3%	3%	0%	0%	0%	1%	1%	1%
Bus Blockages (#/hr)	0	0	0	0	16	16	0	0	0	0	0	0
Parking (#/hr)		1	1									
Turn Type	D.P+P			Perm			Perm			Perm		pm+ov
Protected Phases	3	1 3			1			2			2	3
Permitted Phases	1			1			2			2		2
Actuated Green, G (s)	65.3	71.3		61.3	61.3			10.7			10.7	14.7
Effective Green, g (s)	67.3	71.3		61.3	61.3			10.7			10.7	16.7
Actuated g/C Ratio	0.75	0.79		0.68	0.68			0.12			0.12	0.19
Clearance Time (s)	6.0			4.0	4.0			4.0			4.0	6.0
Vehicle Extension (s)	3.0			3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	550	1028		69	949			110			160	246
v/s Ratio Prot	0.01	c0.23			0.22							0.00
v/s Ratio Perm	0.10			c0.39				c0.08			0.03	0.01
v/c Ratio	0.15	0.29		0.57	0.33			0.70			0.23	0.06
Uniform Delay, d1	3.1	2.5		7.4	5.9			38.1			35.9	30.2
Progression Factor	0.71	1.39		1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2	0.1	0.1		29.5	0.9			17.6			0.7	0.1
Delay (s)	2.3	3.6		36.9	6.8			55.7			36.7	30.3
Level of Service	A	A		D	A			E			D	C
Approach Delay (s)		3.3			10.1			55.7			32.4	
Approach LOS		A			B			E			C	

Intersection Summary			
HCM Average Control Delay	15.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	51.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
5: Kilmarnock St &

2013 Existing Conditions - Landmark
Saturday Midday Peak Hour

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	35	40	65	0	0	90
Peak Hour Factor	0.88	0.88	0.86	0.86	0.90	0.90
Hourly flow rate (vph)	40	45	76	0	0	100
Pedestrians			15			190
Lane Width (ft)			13.0			13.0
Walking Speed (ft/s)			4.0			4.0
Percent Blockage			1			17
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)			252			184
pX, platoon unblocked						
vC, conflicting volume	191	266			76	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	191	266			76	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	95	93			100	
cM capacity (veh/h)	790	642			1536	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	85	76	100
Volume Left	40	0	0
Volume Right	45	0	0
cSH	704	1700	1700
Volume to Capacity	0.12	0.04	0.06
Queue Length 95th (ft)	9	0	0
Control Delay (s)	10.8	0.0	0.0
Lane LOS	B		
Approach Delay (s)	10.8	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	3.5		
Intersection Capacity Utilization	25.3%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	1092	811	103	109	80
v/c Ratio	0.49	0.38	0.37	0.69	0.34
Control Delay	6.8	5.7	18.1	59.0	17.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	6.8	5.7	18.1	59.0	17.2
Queue Length 50th (ft)	102	66	19	59	11
Queue Length 95th (ft)	193	128	44	97	41
Internal Link Dist (ft)	625	553	480		172
Turn Bay Length (ft)				100	
Base Capacity (vph)	2220	2161	376	230	311
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.49	0.38	0.27	0.47	0.26

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	13	12	12	13	12	12	14	12	10	10	12
Total Lost time (s)		4.0			4.0			4.0		4.0	4.0	
Lane Util. Factor		0.95			0.95			1.00		1.00	1.00	
Frpb, ped/bikes		0.98			0.98			0.88		1.00	0.76	
Flpb, ped/bikes		1.00			1.00			0.95		0.88	1.00	
Frt		0.99			0.99			0.90		1.00	0.89	
Flt Protected		1.00			1.00			0.99		0.95	1.00	
Satd. Flow (prot)		3218			3222			1354		1320	1073	
Flt Permitted		0.92			0.89			0.95		0.62	1.00	
Satd. Flow (perm)		2965			2886			1298		862	1073	
Volume (vph)	25	940	40	25	715	30	15	10	60	95	20	50
Peak-hour factor, PHF	0.92	0.92	0.92	0.95	0.95	0.95	0.95	0.80	0.80	0.87	0.87	0.87
Adj. Flow (vph)	27	1022	43	26	753	32	16	12	75	109	23	57
RTOR Reduction (vph)	0	2	0	0	2	0	0	54	0	0	47	0
Lane Group Flow (vph)	0	1090	0	0	809	0	0	49	0	109	33	0
Confl. Peds. (#/hr)	175		195	195		175	330		115	115		330
Confl. Bikes (#/hr)			8			2			2			2
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Parking (#/hr)			1			1						
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		1			1			5			5	
Permitted Phases	1			1			5			5		
Actuated Green, G (s)		73.8			73.8			16.2		16.2	16.2	
Effective Green, g (s)		74.8			74.8			17.2		17.2	17.2	
Actuated g/C Ratio		0.75			0.75			0.17		0.17	0.17	
Clearance Time (s)		5.0			5.0			5.0		5.0	5.0	
Vehicle Extension (s)		4.0			4.0			2.0		2.0	2.0	
Lane Grp Cap (vph)		2218			2159			223		148	185	
v/s Ratio Prot											0.03	
v/s Ratio Perm		c0.37			0.28			0.04		c0.13		
v/c Ratio		0.49			0.37			0.22		0.74	0.18	
Uniform Delay, d1		5.0			4.4			35.6		39.3	35.4	
Progression Factor		1.00			1.00			1.00		1.00	1.00	
Incremental Delay, d2		0.8			0.5			0.2		15.1	0.2	
Delay (s)		5.8			4.9			35.8		54.3	35.5	
Level of Service		A			A			D		D	D	
Approach Delay (s)		5.8			4.9			35.8			46.4	
Approach LOS		A			A			D			D	

Intersection Summary

HCM Average Control Delay	10.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	75.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBT	NBT
Lane Group Flow (vph)	1129	973	108
v/c Ratio	0.51	0.84	0.47
Control Delay	6.0	22.3	22.2
Queue Delay	0.0	0.0	0.0
Total Delay	6.0	22.3	22.2
Queue Length 50th (ft)	66	68	21
Queue Length 95th (ft)	237	#394	37
Internal Link Dist (ft)	553	630	613
Turn Bay Length (ft)			
Base Capacity (vph)	2229	1164	418
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.51	0.84	0.26

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	12	12	12	12	16	12
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		0.95			0.95			1.00				
Frpb, ped/bikes		0.99			0.99			0.85				
Flpb, ped/bikes		1.00			1.00			0.97				
Frt		0.99			0.99			0.91				
Flt Protected		1.00			1.00			0.99				
Satd. Flow (prot)		3055			3035			1199				
Flt Permitted		0.91			0.58			0.99				
Satd. Flow (perm)		2772			1770			1199				
Volume (vph)	30	1025	40	50	780	45	15	10	55	0	0	0
Peak-hour factor, PHF	0.97	0.97	0.97	0.90	0.90	0.90	0.74	0.74	0.74	0.25	0.25	0.25
Adj. Flow (vph)	31	1057	41	56	867	50	20	14	74	0	0	0
RTOR Reduction (vph)	0	2	0	0	3	0	0	55	0	0	0	0
Lane Group Flow (vph)	0	1127	0	0	970	0	0	53	0	0	0	0
Confl. Peds. (#/hr)	115		110	110		115	145		190			
Confl. Bikes (#/hr)			5			2			7			2
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	3%	3%	3%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	8	8	8	0	0	0
Parking (#/hr)			1			1						
Turn Type	Perm			Perm			Perm					
Protected Phases		1 4			1			3				
Permitted Phases	1 4			1			3					
Actuated Green, G (s)		69.6			58.6			10.4				
Effective Green, g (s)		70.6			59.6			11.4				
Actuated g/C Ratio		0.78			0.66			0.13				
Clearance Time (s)					5.0			5.0				
Vehicle Extension (s)					3.0			2.0				
Lane Grp Cap (vph)		2174			1172			152				
v/s Ratio Prot												
v/s Ratio Perm		c0.41			c0.55			0.04				
v/c Ratio		0.52			0.83			0.35				
Uniform Delay, d1		3.5			11.4			35.9				
Progression Factor		1.00			1.05			1.00				
Incremental Delay, d2		0.9			6.1			0.5				
Delay (s)		4.4			17.9			36.4				
Level of Service		A			B			D				
Approach Delay (s)		4.4			17.9			36.4			0.0	
Approach LOS		A			B			D			A	

Intersection Summary			
HCM Average Control Delay	11.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	93.2%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	1192	924	112	112
v/c Ratio	0.73	0.52	0.31	0.29
Control Delay	14.1	13.2	28.6	9.7
Queue Delay	0.9	1.8	0.0	0.0
Total Delay	15.0	15.0	28.6	9.7
Queue Length 50th (ft)	222	133	44	6
Queue Length 95th (ft)	113	173	80	37
Internal Link Dist (ft)	630	157	243	
Turn Bay Length (ft)			50	
Base Capacity (vph)	1628	1791	361	383
Starvation Cap Reductn	0	665	0	0
Spillback Cap Reductn	194	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.83	0.82	0.31	0.29

Intersection Summary

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0
Lane Util. Factor		0.95	0.95		1.00	1.00
Frpb, ped/bikes		1.00	0.99		1.00	0.85
Flpb, ped/bikes		1.00	1.00		0.87	1.00
Frt		1.00	0.99		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		3205	3154		1300	1130
Flt Permitted		0.89	1.00		0.95	1.00
Satd. Flow (perm)		2873	3154		1300	1130
Volume (vph)	35	1050	815	35	95	95
Peak-hour factor, PHF	0.91	0.91	0.92	0.92	0.85	0.85
Adj. Flow (vph)	38	1154	886	38	112	112
RTOR Reduction (vph)	0	0	3	0	0	69
Lane Group Flow (vph)	0	1192	921	0	112	43
Confl. Peds. (#/hr)	125			125	85	95
Confl. Bikes (#/hr)				2		1
Heavy Vehicles (%)	1%	1%	1%	1%	9%	9%
Turn Type	Perm					custom
Protected Phases		1	1			
Permitted Phases	1				5	5
Actuated Green, G (s)		50.0	50.0		24.0	24.0
Effective Green, g (s)		51.0	51.0		25.0	25.0
Actuated g/C Ratio		0.57	0.57		0.28	0.28
Clearance Time (s)		5.0	5.0		5.0	5.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1628	1787		361	314
v/s Ratio Prot			0.29			
v/s Ratio Perm		c0.41			c0.09	0.04
v/c Ratio		0.73	0.52		0.31	0.14
Uniform Delay, d1		14.4	11.9		25.7	24.4
Progression Factor		0.77	1.04		1.00	1.00
Incremental Delay, d2		2.6	0.6		2.2	0.9
Delay (s)		13.7	13.1		27.9	25.3
Level of Service		B	B		C	C
Approach Delay (s)		13.7	13.1		26.6	
Approach LOS		B	B		C	

Intersection Summary			
HCM Average Control Delay	14.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	82.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	0	0	0	405	0	625
Peak Hour Factor	0.25	0.25	0.25	0.93	0.25	0.93
Hourly flow rate (vph)	0	0	0	435	0	672
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)				272	720	
pX, platoon unblocked	0.99					
vC, conflicting volume	218	0	672			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	200	0	672			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	768	1091	928			

Direction, Lane #	NB 1	NB 2	SB 1	SB 2
Volume Total	218	218	336	336
Volume Left	0	0	0	0
Volume Right	0	0	336	336
cSH	1700	1700	1700	1700
Volume to Capacity	0.13	0.13	0.20	0.20
Queue Length 95th (ft)	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0
Lane LOS				
Approach Delay (s)	0.0		0.0	
Approach LOS				

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	27.6%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	188	392	387	285
v/c Ratio	0.10	0.13	0.43	0.79
Control Delay	6.8	6.7	23.1	39.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	6.8	6.7	23.1	39.2
Queue Length 50th (ft)	17	25	74	156
Queue Length 95th (ft)	35	45	m102	m221
Internal Link Dist (ft)		149	220	
Turn Bay Length (ft)				100
Base Capacity (vph)	1964	2909	1966	788
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.10	0.13	0.20	0.36

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis — 2013 Existing Conditions - Landmark
10: Riverway & Park Drive — Saturday Midday Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	4.0
Lane Util. Factor				0.97	0.91						0.95	1.00
Frpb, ped/bikes				1.00	1.00						1.00	0.89
Flpb, ped/bikes				1.00	1.00						1.00	1.00
Frt				1.00	1.00						1.00	0.85
Flt Protected				0.95	1.00						1.00	1.00
Satd. Flow (prot)				3120	4622						3217	1282
Flt Permitted				0.95	1.00						1.00	1.00
Satd. Flow (perm)				3120	4622						3217	1282
Volume (vph)	0	0	0	175	365	0	0	0	0	0	360	265
Peak-hour factor, PHF	0.25	0.25	0.25	0.93	0.93	0.25	0.25	0.25	0.25	0.25	0.93	0.93
Adj. Flow (vph)	0	0	0	188	392	0	0	0	0	0	387	285
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	188	392	0	0	0	0	0	387	285
Confl. Peds. (#/hr)												60
Confl. Bikes (#/hr)						5						13
Heavy Vehicles (%)	0%	0%	0%	1%	1%	0%	0%	0%	0%	0%	1%	1%
Turn Type				Split								Perm
Protected Phases				1	1						4	
Permitted Phases												4
Actuated Green, G (s)				55.6	55.6						24.4	24.4
Effective Green, g (s)				56.6	56.6						25.4	25.4
Actuated g/C Ratio				0.63	0.63						0.28	0.28
Clearance Time (s)				5.0	5.0						5.0	5.0
Vehicle Extension (s)				2.0	2.0						2.0	2.0
Lane Grp Cap (vph)				1962	2907						908	362
v/s Ratio Prot				0.06	c0.08						0.12	
v/s Ratio Perm												c0.22
v/c Ratio				0.10	0.13						0.43	0.79
Uniform Delay, d1				6.6	6.8						26.4	29.8
Progression Factor				0.84	0.84						0.87	0.93
Incremental Delay, d2				0.1	0.1						0.1	8.1
Delay (s)				5.6	5.8						23.0	35.6
Level of Service				A	A						C	D
Approach Delay (s)		0.0			5.8			0.0			28.4	
Approach LOS		A			A			A			C	

Intersection Summary			
HCM Average Control Delay	17.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	65.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis — 2013 Existing Conditions - Landmark
11: Riverway & Park Dr — Saturday Midday Peak Hour

Movement	EBL	EBR	SET	SER	NWL	NWT
Lane Configurations						
Sign Control	Yield		Free			Stop
Grade	0%		0%			0%
Volume (veh/h)	0	650	530	0	0	0
Peak Hour Factor	0.84	0.84	0.93	0.93	0.25	0.25
Hourly flow rate (vph)	0	774	570	0	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					None
Median storage veh)						
Upstream signal (ft)			244			
pX, platoon unblocked						
vC, conflicting volume	1140	1140	0		1140	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1140	1140	0		1140	0
tC, single (s)	7.1	6.5	4.1		6.5	6.2
tC, 2 stage (s)						
tF (s)	3.5	4.0	2.2		4.0	3.3
p0 queue free %	100	0	65		100	100
cM capacity (veh/h)	130	131	1630		132	1091

Direction, Lane #	EB 1	EB 2	SE 1	SE 2	SE 3
Volume Total	387	387	190	190	190
Volume Left	0	0	190	190	190
Volume Right	0	0	0	0	0
cSH	131	131	1630	1630	1630
Volume to Capacity	2.95	2.95	0.35	0.35	0.35
Queue Length 95th (ft)	792	792	35	35	35
Control Delay (s)	948.7	948.7	8.4	8.4	8.4
Lane LOS	F	F	A	A	A
Approach Delay (s)	948.7		8.4		
Approach LOS	F				

Intersection Summary			
Average Delay	549.9		
Intersection Capacity Utilization	43.3%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	WBT	SBL	SBT	SBR
Lane Group Flow (vph)	695	702	551	505	143
v/c Ratio	0.30	0.41	1.26	0.55	0.33
Control Delay	21.3	6.0	164.8	32.8	30.4
Queue Delay	0.0	0.5	0.0	0.0	0.0
Total Delay	21.3	6.5	164.8	32.8	30.4
Queue Length 50th (ft)	50	23	~387	126	62
Queue Length 95th (ft)	153	58	#584	172	109
Internal Link Dist (ft)	1113	237		268	
Turn Bay Length (ft)					
Base Capacity (vph)	2297	1720	439	917	432
Starvation Cap Reductn	0	548	0	0	0
Spillback Cap Reductn	92	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.32	0.60	1.26	0.55	0.33

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBT	EBR	EBR2	WBT	SBL2	SBL	SBT	SBR
Lane Configurations								
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0		4.0	4.0	4.0
Lane Util. Factor	0.91			0.95		0.91	0.91	1.00
Frpb, ped/bikes	0.98			1.00		1.00	1.00	1.00
Flpb, ped/bikes	1.00			1.00		1.00	1.00	1.00
Frt	0.98			1.00		1.00	1.00	0.85
Flt Protected	1.00			1.00		0.95	0.99	1.00
Satd. Flow (prot)	4253			3185		1464	3057	1439
Flt Permitted	1.00			1.00		0.95	0.99	1.00
Satd. Flow (perm)	4253			3185		1464	3057	1439
Volume (vph)	570	35	55	625	540	80	415	140
Peak-hour factor, PHF	0.95	0.95	0.95	0.89	0.98	0.98	0.98	0.98
Adj. Flow (vph)	600	37	58	702	551	82	423	143
RTOR Reduction (vph)	10	0	0	0	0	0	0	0
Lane Group Flow (vph)	685	0	0	702	0	551	505	143
Confl. Peds. (#/hr)			210					150
Confl. Bikes (#/hr)		9	9					12
Heavy Vehicles (%)	2%	2%	2%	2%	1%	1%	1%	1%
Bus Blockages (#/hr)	25	25	25	0	0	0	0	0
Turn Type					Split	Split		Prot
Protected Phases	1			1	5	5	5	5
Permitted Phases								
Actuated Green, G (s)	46.4			46.4		26.0	26.0	26.0
Effective Green, g (s)	47.4			47.4		27.0	27.0	27.0
Actuated g/C Ratio	0.53			0.53		0.30	0.30	0.30
Clearance Time (s)	5.0			5.0		5.0	5.0	5.0
Vehicle Extension (s)	2.0			2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	2240			1677		439	917	432
v/s Ratio Prot	0.16			c0.22		c0.38	0.17	0.10
v/s Ratio Perm								
v/c Ratio	0.31			0.42		1.26	0.55	0.33
Uniform Delay, d1	12.0			12.9		31.5	26.4	24.5
Progression Factor	1.69			0.39		1.13	1.14	1.13
Incremental Delay, d2	0.3			0.7		132.3	2.4	2.0
Delay (s)	20.6			5.7		167.8	32.4	29.7
Level of Service	C			A		F	C	C
Approach Delay (s)	20.6			5.7			94.3	
Approach LOS	C			A			F	

Intersection Summary

HCM Average Control Delay	50.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	15.6
Intersection Capacity Utilization	52.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	EBR	WBT	WBR	NBT	NBR	NWL	NWR
Lane Group Flow (vph)	284	874	211	178	511	193	627	220
v/c Ratio	0.31	0.60	0.23	0.68	0.39	0.81	0.72	1.32
Control Delay	26.8	11.3	21.9	38.1	26.7	57.4	34.3	207.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.8	11.3	21.9	38.1	26.7	57.4	34.3	207.9
Queue Length 50th (ft)	76	204	32	54	74	89	144	~154
Queue Length 95th (ft)	m78	m77	m53	m#150	102	#195	198	#293
Internal Link Dist (ft)	237		594		604		625	
Turn Bay Length (ft)				150				300
Base Capacity (vph)	929	1447	900	261	1326	238	871	167
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.60	0.23	0.68	0.39	0.81	0.72	1.32

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBT	EBR	WBT	WBR	NBL	NBT	NBR	NBR2	NWL	NWR	NWR2
Lane Configurations											
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	0.95	0.88	0.95	1.00		0.91	1.00		0.97	0.91	
Frpb, ped/bikes	1.00	0.99	1.00	0.67		1.00	0.57		1.00	0.42	
Flpb, ped/bikes	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.85	1.00	0.85		1.00	0.85		0.95	0.85	
Flt Protected	1.00	1.00	1.00	1.00		0.99	1.00		0.97	1.00	
Satd. Flow (prot)	3217	2505	3114	903		4591	824		3014	555	
Flt Permitted	1.00	1.00	1.00	1.00		0.99	1.00		0.97	1.00	
Satd. Flow (perm)	3217	2505	3114	903		4591	824		3014	555	
Volume (vph)	270	830	190	160	65	410	45	135	370	370	30
Peak-hour factor, PHF	0.95	0.95	0.90	0.90	0.93	0.93	0.93	0.93	0.91	0.91	0.91
Adj. Flow (vph)	284	874	211	178	70	441	48	145	407	407	33
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	7	0
Lane Group Flow (vph)	284	874	211	178	0	511	193	0	627	213	0
Confl. Peds. (#/hr)				190	5		240	270			240
Confl. Bikes (#/hr)		3		15							2
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	0	0	16	16	0	0	0	0	0	0	0
Turn Type		pm+ov		Perm	Split		Perm			Perm	
Protected Phases	2	1	2		3	3			1		
Permitted Phases		2		2			3			1	
Actuated Green, G (s)	24.0	48.0	24.0	24.0		24.0	24.0		24.0	24.0	
Effective Green, g (s)	26.0	52.0	26.0	26.0		26.0	26.0		26.0	26.0	
Actuated g/C Ratio	0.29	0.58	0.29	0.29		0.29	0.29		0.29	0.29	
Clearance Time (s)	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	929	1559	900	261		1326	238		871	160	
v/s Ratio Prot	0.09	0.16	0.07			0.11			0.21		
v/s Ratio Perm		0.19		c0.20			c0.23			c0.38	
v/c Ratio	0.31	0.56	0.23	0.68		0.39	0.81		0.72	1.33	
Uniform Delay, d1	25.0	11.9	24.4	28.3		25.6	29.7		28.7	32.0	
Progression Factor	1.04	0.99	0.86	0.83		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	0.9	0.6	12.9		0.8	25.1		5.1	185.1	
Delay (s)	26.5	12.7	21.6	36.3		26.5	54.8		33.8	217.1	
Level of Service	C	B	C	D		C	D		C	F	
Approach Delay (s)	16.1		28.3			34.2			81.4		
Approach LOS	B		C			C			F		

Intersection Summary

HCM Average Control Delay	39.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	59.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	0	0	820	120	0	0
Peak Hour Factor	0.25	0.25	0.92	0.92	0.25	0.25
Hourly flow rate (vph)	0	0	891	130	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)			209			183
pX, platoon unblocked						
vC, conflicting volume	957	288			1022	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	957	288			1022	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	259	715			687	

Direction, Lane #	NB 1	NB 2	NB 3	NB 4
Volume Total	255	255	255	258
Volume Left	0	0	0	0
Volume Right	0	0	0	130
cSH	1700	1700	1700	1700
Volume to Capacity	0.15	0.15	0.15	0.15
Queue Length 95th (ft)	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0
Lane LOS				
Approach Delay (s)	0.0			
Approach LOS				

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	39.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBT	WBR	NBL	NBT
Lane Group Flow (vph)	76	70	511	371
v/c Ratio	0.21	0.26	0.22	0.15
Control Delay	30.4	31.8	2.8	2.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	30.4	31.8	2.8	2.7
Queue Length 50th (ft)	32	30	26	18
Queue Length 95th (ft)	59	56	m32	m24
Internal Link Dist (ft)	177			103
Turn Bay Length (ft)				
Base Capacity (vph)	589	446	2364	2438
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.13	0.16	0.22	0.15

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0	4.0	4.0	4.0				
Lane Util. Factor					1.00	1.00	0.97	0.95				
Frpb, ped/bikes					1.00	0.89	1.00	1.00				
Flpb, ped/bikes					1.00	1.00	1.00	1.00				
Frt					1.00	0.85	1.00	1.00				
Flt Protected					1.00	1.00	0.95	1.00				
Satd. Flow (prot)					1710	1295	3120	3217				
Flt Permitted					1.00	1.00	0.95	1.00				
Satd. Flow (perm)					1710	1295	3120	3217				
Volume (vph)	0	0	0	0	65	60	475	345	0	0	0	0
Peak-hour factor, PHF	0.25	0.25	0.25	0.25	0.86	0.86	0.93	0.93	0.25	0.25	0.25	0.25
Adj. Flow (vph)	0	0	0	0	76	70	511	371	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	76	70	511	371	0	0	0	0
Confl. Peds. (#/hr)			136			80			59			
Confl. Bikes (#/hr)						1			16			
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	1%	1%	0%	0%	0%	0%
Turn Type						Perm	Split					
Protected Phases					2		1	1				
Permitted Phases						2						
Actuated Green, G (s)					14.6	14.6	65.4	65.4				
Effective Green, g (s)					15.6	15.6	66.4	66.4				
Actuated g/C Ratio					0.17	0.17	0.74	0.74				
Clearance Time (s)					5.0	5.0	5.0	5.0				
Vehicle Extension (s)					2.0	2.0	2.0	2.0				
Lane Grp Cap (vph)					296	224	2302	2373				
v/s Ratio Prot					0.04		c0.16	0.12				
v/s Ratio Perm						c0.05						
v/c Ratio					0.26	0.31	0.22	0.16				
Uniform Delay, d1					32.2	32.5	3.7	3.5				
Progression Factor					1.00	1.00	0.58	0.60				
Incremental Delay, d2					0.2	0.3	0.2	0.1				
Delay (s)					32.4	32.8	2.3	2.2				
Level of Service					C	C	A	A				
Approach Delay (s)		0.0			32.6			2.3			0.0	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM Average Control Delay	6.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.24		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	57.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	10	275	290	10	5	10
Peak Hour Factor	0.82	0.82	0.89	0.89	0.53	0.53
Hourly flow rate (vph)	12	335	326	11	9	19
Pedestrians		175	175		175	
Lane Width (ft)		12.0	10.0		14.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		15	12		17	
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)		547				
pX, platoon unblocked						
vC, conflicting volume	512				1041	681
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	512				1041	681
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				95	94
cM capacity (veh/h)	866				185	322

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	348	337	28
Volume Left	12	0	9
Volume Right	0	11	19
cSH	866	1700	258
Volume to Capacity	0.01	0.20	0.11
Queue Length 95th (ft)	1	0	8
Control Delay (s)	0.5	0.0	20.7
Lane LOS	A		C
Approach Delay (s)	0.5	0.0	20.7
Approach LOS			C

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	45.0%	ICU Level of Service	A
Analysis Period (min)	15		

Queues
1: Beacon St & Mountfort St

2018 No-Build Conditions - Landmark
Weekday Morning Peak Hour

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	902	895	95	92
v/c Ratio	0.46	0.70	0.29	0.30
Control Delay	19.0	20.2	21.2	35.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	19.0	20.2	21.2	35.4
Queue Length 50th (ft)	207	259	25	48
Queue Length 95th (ft)	m192	m268	39	55
Internal Link Dist (ft)	361	1280	154	514
Turn Bay Length (ft)				
Base Capacity (vph)	1942	1278	328	303
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.46	0.70	0.29	0.30

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis
1: Beacon St & Mountfort St

2018 No-Build Conditions - Landmark
Weekday Morning Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	13	13	13	13	13	13
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Frpb, ped/bikes		0.98			0.99			0.97			1.00	
Flpb, ped/bikes		1.00			0.99			1.00			0.99	
Frt		0.99			0.99			0.93			0.99	
Flt Protected		1.00			0.99			0.99			0.98	
Satd. Flow (prot)		2827			2808			1577			1684	
Flt Permitted		0.95			0.63			0.91			0.87	
Satd. Flow (perm)		2690			1771			1448			1493	
Volume (vph)	5	761	64	151	654	28	17	12	31	21	25	5
Peak-hour factor, PHF	0.92	0.92	0.92	0.93	0.93	0.93	0.63	0.63	0.63	0.56	0.56	0.56
Adj. Flow (vph)	5	827	70	162	703	30	27	19	49	38	45	9
RTOR Reduction (vph)	0	6	0	0	3	0	0	38	0	0	4	0
Lane Group Flow (vph)	0	896	0	0	892	0	0	57	0	0	88	0
Confl. Peds. (#/hr)	55		60	60		55	5		20	20		5
Confl. Bikes (#/hr)			101			11						2
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	0%	0%	0%	0%	0%	0%
Parking (#/hr)		1	1		1	1						
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4	4		8	8		2	2		6	6	
Actuated Green, G (s)		71.0			71.0			19.0			19.0	
Effective Green, g (s)		72.0			72.0			20.0			20.0	
Actuated g/C Ratio		0.72			0.72			0.20			0.20	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Lane Grp Cap (vph)		1937			1275			290			299	
v/s Ratio Prot												
v/s Ratio Perm		0.33			c0.50			0.04			c0.06	
v/c Ratio		0.46			0.70			0.20			0.29	
Uniform Delay, d1		5.9			7.9			33.3			34.0	
Progression Factor		3.23			2.24			1.00			1.00	
Incremental Delay, d2		0.2			1.5			1.5			2.5	
Delay (s)		19.2			19.2			34.8			36.5	
Level of Service		B			B			C			D	
Approach Delay (s)		19.2			19.2			34.8			36.5	
Approach LOS		B			B			C			D	

Intersection Summary

HCM Average Control Delay	20.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	75.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	5	861	73	22	651	5	20	15	13	0	15	5
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.68	0.68	0.68	0.58	0.58	0.58
Hourly flow rate (vph)	5	926	78	24	700	5	29	22	19	0	26	9
Pedestrians		110			70			70			60	
Lane Width (ft)		12.0			12.0			10.0			10.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		9			6			5			4	
Right turn flare (veh)												
Median type								Raised			Raised	
Median storage veh)								0			0	
Upstream signal (ft)		488			441							
pX, platoon unblocked	0.96			0.76			0.77	0.77	0.76	0.77	0.77	0.96
vC, conflicting volume	765			1074			1575	1858	642	1384	1895	523
vC1, stage 1 conf vol							1046	1046		810	810	
vC2, stage 2 conf vol							529	813		574	1085	
vCu, unblocked vol	717			774			1304	1671	202	1058	1718	465
tC, single (s)	4.1			4.2			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			96			78	84	97	100	79	98
cM capacity (veh/h)	811			597			131	135	549	168	125	461

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	468	541	374	355	71	34
Volume Left	5	0	24	0	29	0
Volume Right	0	78	0	5	19	9
cSH	811	1700	597	1700	167	153
Volume to Capacity	0.01	0.32	0.04	0.21	0.42	0.23
Queue Length 95th (ft)	1	0	3	0	48	21
Control Delay (s)	0.2	0.0	1.2	0.0	41.6	35.3
Lane LOS	A		A		E	E
Approach Delay (s)	0.1		0.6		41.6	35.3
Approach LOS					E	E

Intersection Summary			
Average Delay	2.6		
Intersection Capacity Utilization	57.7%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	891	216	225	486	49	394	72	568
v/c Ratio	1.06	0.62	0.92	0.38	0.27	0.29	1.12	0.90
Control Delay	84.7	35.6	66.4	12.6	11.7	9.0	160.9	30.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	84.7	35.6	66.4	12.6	11.7	9.0	160.9	30.5
Queue Length 50th (ft)	~331	107	86	45	9	38	~52	274
Queue Length 95th (ft)	#446	180	m#219	95	18	46	m#97	#529
Internal Link Dist (ft)	968			408		639		270
Turn Bay Length (ft)		200	75		75			
Base Capacity (vph)	840	347	247	1272	183	1371	64	630
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.06	0.62	0.91	0.38	0.27	0.29	1.13	0.90

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	11	11	11	11	11	11
Total Lost time (s)		4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0
Lane Util. Factor		0.95	1.00		1.00	0.95		1.00	0.95		1.00	1.00
Frpb, ped/bikes		1.00	0.90		1.00	1.00		1.00	0.97		1.00	0.99
Flpb, ped/bikes		1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00
Frt		1.00	0.85		1.00	0.99		1.00	0.97		1.00	0.99
Flt Protected		1.00	1.00		0.95	1.00		0.95	1.00		0.95	1.00
Satd. Flow (prot)		3110	1120		1526	3014		1477	2790		1525	1529
Flt Permitted		1.00	1.00		0.15	1.00		0.20	1.00		0.10	1.00
Satd. Flow (perm)		3110	1120		238	3014		308	2790		156	1529
Volume (vph)	0	793	205	5	209	441	21	46	285	82	65	481
Peak-hour factor, PHF	0.89	0.89	0.95	0.95	0.95	0.95	0.95	0.93	0.93	0.93	0.90	0.90
Adj. Flow (vph)	0	891	216	5	220	464	22	49	306	88	72	534
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	891	216	0	225	486	0	49	394	0	72	568
Confl. Peds. (#/hr)			60		60		70	70		80	80	
Confl. Bikes (#/hr)							8			26		
Heavy Vehicles (%)	1%	1%	1%	0%	3%	3%	3%	6%	6%	6%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	8
Parking (#/hr)			1									
Turn Type			pm+ov	D.P+P	D.P+P			D.P+P			Perm	
Protected Phases		4	5	3	3	3 4		5	1 5			1
Permitted Phases			4	4	4			1			1	
Actuated Green, G (s)		25.0	30.0		37.8	40.8		45.2	48.2		40.2	40.2
Effective Green, g (s)		27.0	31.0		38.8	42.8		45.2	49.2		41.2	41.2
Actuated g/C Ratio		0.27	0.31		0.39	0.43		0.45	0.49		0.41	0.41
Clearance Time (s)		6.0	3.0		3.0			3.0			5.0	5.0
Vehicle Extension (s)		2.0	2.0		2.0			2.0			2.0	2.0
Lane Grp Cap (vph)		840	392		244	1290		186	1373		64	630
v/s Ratio Prot		c0.29	c0.02		c0.11	0.16		0.01	0.14			0.37
v/s Ratio Perm			0.17		0.25			0.11			c0.46	
v/c Ratio		1.06	0.55		0.92	0.38		0.26	0.29		1.12	0.90
Uniform Delay, d1		36.5	28.7		24.9	19.5		18.4	15.0		29.4	27.5
Progression Factor		1.00	1.00		1.36	0.61		0.59	0.55		0.47	0.47
Incremental Delay, d2		48.4	1.0		30.4	0.1		0.3	0.0		138.2	15.4
Delay (s)		84.9	29.7		64.2	12.0		11.1	8.4		152.0	28.2
Level of Service		F	C		E	B		B	A		F	C
Approach Delay (s)		74.2				28.5			8.7			42.2
Approach LOS		E				C			A			D

Intersection Summary			
HCM Average Control Delay	45.9	HCM Level of Service	D
HCM Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	84.7%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis — 2018 No-Build Conditions - Landmark
3: Beacon St & Park Dr — Weekday Morning Peak Hour

Movement	SBR
Lane Configurations	
Ideal Flow (vphpl)	1900
Lane Width	11
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Volume (vph)	31
Peak-hour factor, PHF	0.90
Adj. Flow (vph)	34
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	70
Confl. Bikes (#/hr)	35
Heavy Vehicles (%)	3%
Bus Blockages (#/hr)	8
Parking (#/hr)	
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	NBT	SBT	SBR
Lane Group Flow (vph)	168	633	22	494	180	76	75
v/c Ratio	0.38	0.63	0.37	0.65	0.82	0.32	0.21
Control Delay	4.9	6.8	23.8	11.0	65.7	38.3	7.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.9	6.8	23.8	11.0	65.7	38.3	7.6
Queue Length 50th (ft)	20	78	4	116	104	41	0
Queue Length 95th (ft)	m15	m56	m9	m142	#181	68	20
Internal Link Dist (ft)		648		198	37	352	
Turn Bay Length (ft)	200		50				100
Base Capacity (vph)	438	997	60	757	254	273	362
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.63	0.37	0.65	0.71	0.28	0.21

Intersection Summary

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	11	11	10	10	10	12	12	12	11	11	11
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Frpb, ped/bikes	1.00	0.98		1.00	0.91			0.95			1.00	0.86
Flpb, ped/bikes	0.95	1.00		1.00	1.00			0.92			0.93	1.00
Frt	1.00	0.99		1.00	0.97			0.98			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98	1.00
Satd. Flow (prot)	1360	1345		1391	1210			1401			1462	1169
Flt Permitted	0.40	1.00		0.06	1.00			0.82			0.85	1.00
Satd. Flow (perm)	574	1345		95	1210			1175			1268	1169
Volume (vph)	138	473	46	18	318	87	70	62	21	21	36	56
Peak-hour factor, PHF	0.82	0.82	0.82	0.82	0.82	0.82	0.85	0.85	0.85	0.75	0.75	0.75
Adj. Flow (vph)	168	577	56	22	388	106	82	73	25	28	48	75
RTOR Reduction (vph)	0	3	0	0	10	0	0	6	0	0	0	55
Lane Group Flow (vph)	168	630	0	22	484	0	0	174	0	0	76	20
Confl. Peds. (#/hr)	125		80	80		125	105		115	115		105
Confl. Bikes (#/hr)			7			15			3			4
Heavy Vehicles (%)	6%	6%	6%	9%	9%	9%	2%	2%	2%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	16	16	0	0	0	0	0	0
Parking (#/hr)		1	1									
Turn Type	D.P+P			Perm			Perm			Perm		pm+ov
Protected Phases	3	1 3			1			2			2	3
Permitted Phases	1			1			2			2		2
Actuated Green, G (s)	67.9	73.9		61.8	61.8			18.1			18.1	24.2
Effective Green, g (s)	69.9	73.9		61.8	61.8			18.1			18.1	26.2
Actuated g/C Ratio	0.70	0.74		0.62	0.62			0.18			0.18	0.26
Clearance Time (s)	6.0			4.0	4.0			4.0			4.0	6.0
Vehicle Extension (s)	3.0			3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	465	994		59	748			213			230	353
v/s Ratio Prot	0.03	c0.47			0.40							0.00
v/s Ratio Perm	0.22			0.23				c0.15			0.06	0.01
v/c Ratio	0.36	0.63		0.37	0.65			0.82			0.33	0.06
Uniform Delay, d1	5.9	6.4		9.5	12.2			39.4			35.7	27.6
Progression Factor	1.00	0.88		0.64	0.58			1.00			1.00	1.00
Incremental Delay, d2	0.0	0.1		14.9	3.7			21.0			0.8	0.1
Delay (s)	5.9	5.7		21.0	10.8			60.4			36.5	27.7
Level of Service	A	A		C	B			E			D	C
Approach Delay (s)		5.8			11.2			60.4			32.1	
Approach LOS		A			B			E			C	

Intersection Summary			
HCM Average Control Delay	15.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	64.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	26	66	87	13	91	14
Peak Hour Factor	0.81	0.81	0.93	0.93	0.88	0.88
Hourly flow rate (vph)	32	81	94	14	103	16
Pedestrians	115		120			135
Lane Width (ft)	15.0		13.0			13.0
Walking Speed (ft/s)	4.0		4.0			4.0
Percent Blockage	12		11			12
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)			297			117
pX, platoon unblocked						
vC, conflicting volume	558	351			223	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	558	351			223	
tC, single (s)	6.5	6.3			4.1	
tC, 2 stage (s)						
tF (s)	3.6	3.4			2.2	
p0 queue free %	91	85			91	
cM capacity (veh/h)	345	527			1185	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	114	108	119
Volume Left	32	0	103
Volume Right	81	14	0
cSH	459	1700	1185
Volume to Capacity	0.25	0.06	0.09
Queue Length 95th (ft)	24	0	7
Control Delay (s)	15.4	0.0	7.3
Lane LOS	C		A
Approach Delay (s)	15.4	0.0	7.3
Approach LOS	C		

Intersection Summary			
Average Delay	7.7		
Intersection Capacity Utilization	33.2%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	1443	1190	79	19	82
v/c Ratio	0.73	0.59	0.33	0.13	0.35
Control Delay	11.3	7.7	21.8	30.5	13.9
Queue Delay	0.1	2.3	0.0	0.0	0.0
Total Delay	11.4	10.0	21.8	30.5	13.9
Queue Length 50th (ft)	125	80	23	10	8
Queue Length 95th (ft)	425	282	55	21	27
Internal Link Dist (ft)	668	215	267		217
Turn Bay Length (ft)				100	
Base Capacity (vph)	1964	2006	448	296	399
Starvation Cap Reductn	0	648	0	0	0
Spillback Cap Reductn	50	0	4	2	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.75	0.88	0.18	0.06	0.21

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1600	1600	1600	1600	1600	1600	1900	1900	1900	1900	1900	1900
Lane Width	12	13	12	12	13	12	12	14	12	10	10	12
Total Lost time (s)		4.0			4.0			4.0		4.0	4.0	
Lane Util. Factor		0.95			0.95			1.00		1.00	1.00	
Frpb, ped/bikes		0.99			0.99			0.94		1.00	0.93	
Flpb, ped/bikes		1.00			1.00			0.99		0.94	1.00	
Frt		1.00			0.99			0.91		1.00	0.88	
Flt Protected		1.00			1.00			0.99		0.95	1.00	
Satd. Flow (prot)		2718			2734			1472		1282	1168	
Flt Permitted		0.91			0.92			0.93		0.70	1.00	
Satd. Flow (perm)		2477			2528			1377		947	1168	
Volume (vph)	25	1219	26	15	1020	48	15	10	46	14	10	50
Peak-hour factor, PHF	0.88	0.88	0.88	0.91	0.91	0.91	0.90	0.90	0.90	0.73	0.73	0.73
Adj. Flow (vph)	28	1385	30	16	1121	53	17	11	51	19	14	68
RTOR Reduction (vph)	0	1	0	0	2	0	0	31	0	0	59	0
Lane Group Flow (vph)	0	1442	0	0	1188	0	0	48	0	19	23	0
Confl. Peds. (#/hr)	40		80	80		40	60		60	60		60
Confl. Bikes (#/hr)			4			2			3			2
Heavy Vehicles (%)	3%	3%	3%	2%	2%	2%	4%	4%	4%	11%	11%	11%
Parking (#/hr)			1			1						
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		1			1			5			5	
Permitted Phases	1			1			5			5		
Actuated Green, G (s)		68.6			68.6			11.4		11.4	11.4	
Effective Green, g (s)		69.6			69.6			12.4		12.4	12.4	
Actuated g/C Ratio		0.77			0.77			0.14		0.14	0.14	
Clearance Time (s)		5.0			5.0			5.0		5.0	5.0	
Vehicle Extension (s)		4.0			4.0			2.0		2.0	2.0	
Lane Grp Cap (vph)		1916			1955			190		130	161	
v/s Ratio Prot											0.02	
v/s Ratio Perm		c0.58			0.47			c0.03		0.02		
v/c Ratio		0.75			0.61			0.25		0.15	0.15	
Uniform Delay, d1		5.5			4.4			34.7		34.1	34.1	
Progression Factor		1.00			1.00			1.00		1.00	1.00	
Incremental Delay, d2		2.8			1.4			0.3		0.2	0.2	
Delay (s)		8.3			5.8			34.9		34.3	34.3	
Level of Service		A			A			C		C	C	
Approach Delay (s)		8.3			5.8			34.9			34.3	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	8.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	93.7%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBT	NBT
Lane Group Flow (vph)	1345	1297	185
v/c Ratio	0.90	1.03	0.69
Control Delay	22.3	49.1	39.1
Queue Delay	9.4	72.3	0.6
Total Delay	31.8	121.4	39.8
Queue Length 50th (ft)	173	~190	79
Queue Length 95th (ft)	#569	#619	96
Internal Link Dist (ft)	258	630	256
Turn Bay Length (ft)			
Base Capacity (vph)	1498	1259	439
Starvation Cap Reductn	147	0	0
Spillback Cap Reductn	0	182	74
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	1.00	1.20	0.51

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1600	1600	1600	1600	1600	1600	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	12	12	12	12	16	12
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		0.95			0.95			1.00				
Frpb, ped/bikes		1.00			0.99			0.95				
Flpb, ped/bikes		1.00			1.00			0.98				
Frt		1.00			0.99			0.91				
Flt Protected		1.00			1.00			0.99				
Satd. Flow (prot)		2546			2523			1321				
Flt Permitted		0.89			0.88			0.99				
Satd. Flow (perm)		2278			2217			1321				
Volume (vph)	29	1124	31	31	1087	62	19	30	87	0	0	0
Peak-hour factor, PHF	0.88	0.88	0.88	0.91	0.91	0.91	0.74	0.74	0.74	0.25	0.25	0.25
Adj. Flow (vph)	33	1277	35	34	1195	68	26	41	118	0	0	0
RTOR Reduction (vph)	0	2	0	0	3	0	0	33	0	0	0	0
Lane Group Flow (vph)	0	1343	0	0	1294	0	0	152	0	0	0	0
Confl. Peds. (#/hr)	65		50	50		65	115		65			
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	8%	8%	8%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	4	4	4	0	0	0
Parking (#/hr)			1			1						
Turn Type	D.P+P			Perm			Perm					
Protected Phases	4	1 4			1			3				
Permitted Phases	1			1			3					
Actuated Green, G (s)		60.0			54.0			15.0				
Effective Green, g (s)		62.0			55.0			16.0				
Actuated g/C Ratio		0.69			0.61			0.18				
Clearance Time (s)					5.0			5.0				
Vehicle Extension (s)					3.0			2.0				
Lane Grp Cap (vph)		1590			1355			235				
v/s Ratio Prot		c0.07										
v/s Ratio Perm		0.52			c0.58			0.12				
v/c Ratio		0.84			0.95			0.65				
Uniform Delay, d1		10.4			16.3			34.4				
Progression Factor		1.00			0.99			1.00				
Incremental Delay, d2		5.7			11.6			4.5				
Delay (s)		16.1			27.8			38.9				
Level of Service		B			C			D				
Approach Delay (s)		16.1			27.8			38.9			0.0	
Approach LOS		B			C			D			A	

Intersection Summary			
HCM Average Control Delay	23.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	99.4%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	1342	1413	195	94
v/c Ratio	0.90	0.78	0.58	0.26
Control Delay	18.3	18.3	36.9	12.5
Queue Delay	146.9	114.5	1.2	0.0
Total Delay	165.2	132.8	38.1	12.5
Queue Length 50th (ft)	176	297	96	12
Queue Length 95th (ft)	m#275	391	138	38
Internal Link Dist (ft)	630	157	254	
Turn Bay Length (ft)			50	
Base Capacity (vph)	1485	1811	334	364
Starvation Cap Reductn	0	682	0	0
Spillback Cap Reductn	475	0	38	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.33	1.25	0.66	0.26

Intersection Summary

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis — 2018 No-Build Conditions - Landmark
8: Boylston St & Ipswich St — Weekday Morning Peak Hour

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0
Lane Util. Factor		0.95	0.95		1.00	1.00
Frpb, ped/bikes		1.00	0.99		1.00	0.94
Flpb, ped/bikes		1.00	1.00		0.90	1.00
Frt		1.00	0.99		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		3150	3124		1253	1183
Flt Permitted		0.82	1.00		0.95	1.00
Satd. Flow (perm)		2572	3124		1253	1183
Volume (vph)	36	1159	1225	103	150	72
Peak-hour factor, PHF	0.89	0.89	0.94	0.94	0.77	0.77
Adj. Flow (vph)	40	1302	1303	110	195	94
RTOR Reduction (vph)	0	0	7	0	0	48
Lane Group Flow (vph)	0	1342	1406	0	195	46
Confl. Peds. (#/hr)	30			30	70	30
Confl. Bikes (#/hr)				6		
Heavy Vehicles (%)	3%	3%	2%	2%	16%	16%
Turn Type	Perm					custom
Protected Phases		1	1			
Permitted Phases	1				5	5
Actuated Green, G (s)		51.0	51.0		23.0	23.0
Effective Green, g (s)		52.0	52.0		24.0	24.0
Actuated g/C Ratio		0.58	0.58		0.27	0.27
Clearance Time (s)		5.0	5.0		5.0	5.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1486	1805		334	315
v/s Ratio Prot			0.45			
v/s Ratio Perm		c0.52			c0.16	0.04
v/c Ratio		0.90	0.78		0.58	0.14
Uniform Delay, d1		16.8	14.6		28.7	25.2
Progression Factor		0.75	1.00		1.00	1.00
Incremental Delay, d2		4.6	3.4		7.3	1.0
Delay (s)		17.1	18.0		35.9	26.1
Level of Service		B	B		D	C
Approach Delay (s)		17.1	18.0		32.8	
Approach LOS		B	B		C	

Intersection Summary			
HCM Average Control Delay	19.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	86.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis — 2018 No-Build Conditions - Landmark
9: Park Dr SB & Park Dr — Weekday Morning Peak Hour

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	0	0	0	410	0	900
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	0	432	0	947
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)				149	719	
pX, platoon unblocked	0.98					
vC, conflicting volume	216	0	947			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	178	0	947			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	784	1091	733			

Direction, Lane #	NB 1	NB 2	SB 1	SB 2
Volume Total	216	216	474	474
Volume Left	0	0	0	0
Volume Right	0	0	474	474
cSH	1700	1700	1700	1700
Volume to Capacity	0.13	0.13	0.28	0.28
Queue Length 95th (ft)	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0
Lane LOS				
Approach Delay (s)	0.0		0.0	
Approach LOS				

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	38.3%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL2	WBL	SBT	SBR	NET
Lane Group Flow (vph)	269	540	573	375	92
v/c Ratio	0.50	0.50	0.51	0.74	0.31
Control Delay	24.9	23.4	26.3	35.3	43.8
Queue Delay	91.1	1.2	0.0	0.0	0.0
Total Delay	116.0	24.5	26.4	35.3	43.8
Queue Length 50th (ft)	168	169	155	214	30
Queue Length 95th (ft)	262	228	m221	m#351	50
Internal Link Dist (ft)		198	199		325
Turn Bay Length (ft)				100	
Base Capacity (vph)	536	1073	1133	507	733
Starvation Cap Reductn	132	275	0	0	0
Spillback Cap Reductn	307	307	30	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.17	0.70	0.52	0.74	0.13

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	WBL2	WBL	SBT	SBR	NET
Lane Configurations					
Ideal Flow (vphpl)	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.91	0.91	0.95	1.00	0.95
Frt	1.00	1.00	1.00	0.85	1.00
Flt Protected	0.95	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1449	2899	3154	1411	3185
Flt Permitted	0.95	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1449	2899	3154	1411	3185
Volume (vph)	291	437	544	356	85
Peak-hour factor, PHF	0.90	0.90	0.95	0.95	0.92
Adj. Flow (vph)	323	486	573	375	92
RTOR Reduction (vph)	0	0	0	0	0
Lane Group Flow (vph)	269	540	573	375	92
Heavy Vehicles (%)	2%	2%	3%	3%	2%
Turn Type	Split			Prot	
Protected Phases	1	1	4	4	2
Permitted Phases					
Actuated Green, G (s)	34.0	34.0	34.9	34.9	7.3
Effective Green, g (s)	35.0	35.0	35.9	35.9	8.3
Actuated g/C Ratio	0.35	0.35	0.36	0.36	0.08
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	0.2	0.2	2.0	2.0	2.0
Lane Grp Cap (vph)	507	1015	1132	507	264
v/s Ratio Prot	0.19	c0.19	0.18	c0.27	c0.03
v/s Ratio Perm					
v/c Ratio	0.53	0.53	0.51	0.74	0.35
Uniform Delay, d1	25.9	26.0	25.1	28.0	43.3
Progression Factor	0.87	0.88	0.92	0.92	1.00
Incremental Delay, d2	3.8	1.9	0.1	2.5	0.3
Delay (s)	26.3	24.8	23.1	28.2	43.6
Level of Service	C	C	C	C	D
Approach Delay (s)		25.3	25.1		43.6
Approach LOS		C	C		D

Intersection Summary			
HCM Average Control Delay	26.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	20.8
Intersection Capacity Utilization	45.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBR	SET
Lane Group Flow (vph)	894	889
v/c Ratio	0.58	0.63
Control Delay	13.8	35.3
Queue Delay	0.1	0.1
Total Delay	13.9	35.4
Queue Length 50th (ft)	201	217
Queue Length 95th (ft)	218	270
Internal Link Dist (ft)		158
Turn Bay Length (ft)		
Base Capacity (vph)	1545	2765
Starvation Cap Reductn	0	614
Spillback Cap Reductn	74	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.61	0.41

Intersection Summary

Movement	EBL	EBR	SET	SER	NWL	NWT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0			
Lane Util. Factor		0.88	0.91			
Frt		0.85	1.00			
Flt Protected		1.00	1.00			
Satd. Flow (prot)		2533	4532			
Flt Permitted		1.00	1.00			
Satd. Flow (perm)		2533	4532			
Volume (vph)	0	840	836	0	0	0
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.95	0.95
Adj. Flow (vph)	0	894	889	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	894	889	0	0	0
Heavy Vehicles (%)	1%	1%	3%	3%	0%	0%
Turn Type						
Protected Phases		2	1			
Permitted Phases						
Actuated Green, G (s)		60.0	30.0			
Effective Green, g (s)		61.0	31.0			
Actuated g/C Ratio		0.61	0.31			
Clearance Time (s)		5.0	5.0			
Vehicle Extension (s)		2.0	2.0			
Lane Grp Cap (vph)		1545	1405			
v/s Ratio Prot		c0.35	c0.20			
v/s Ratio Perm						
v/c Ratio		0.58	0.63			
Uniform Delay, d1		11.8	29.6			
Progression Factor		1.00	1.12			
Incremental Delay, d2		0.3	1.9			
Delay (s)		12.1	35.1			
Level of Service		B	D			
Approach Delay (s)	12.1		35.1			0.0
Approach LOS	B		D			A

Intersection Summary			
HCM Average Control Delay	23.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	57.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBT	SBL	SBT	SBR
Lane Group Flow (vph)	963	1169	490	1031	184
v/c Ratio	0.65	0.89	0.68	0.69	0.29
Control Delay	31.4	16.5	19.9	17.6	14.2
Queue Delay	1.8	80.6	0.9	0.5	0.0
Total Delay	33.2	97.0	20.7	18.1	14.2
Queue Length 50th (ft)	145	131	172	182	53
Queue Length 95th (ft)	195	m118	313	291	112
Internal Link Dist (ft)	23	182		265	
Turn Bay Length (ft)					
Base Capacity (vph)	1489	1312	725	1504	638
Starvation Cap Reductn	0	320	72	163	0
Spillback Cap Reductn	349	0	9	19	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.84	1.18	0.75	0.77	0.29

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1600	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0					4.0	4.0	4.0
Lane Util. Factor		0.91			0.95					0.91	0.91	1.00
Frpb, ped/bikes		0.99			1.00					1.00	1.00	0.90
Flpb, ped/bikes		1.00			1.00					1.00	1.00	1.00
Frt		0.99			1.00					1.00	1.00	0.85
Flt Protected		1.00			1.00					0.95	0.99	1.00
Satd. Flow (prot)		3527			3124					1449	3008	1276
Flt Permitted		1.00			1.00					0.95	0.99	1.00
Satd. Flow (perm)		3527			3124					1449	3008	1276
Volume (vph)	0	849	56	0	1017	0	0	0	0	767	723	180
Peak-hour factor, PHF	0.94	0.94	0.94	0.87	0.87	0.87	0.92	0.92	0.92	0.98	0.98	0.98
Adj. Flow (vph)	0	903	60	0	1169	0	0	0	0	783	738	184
RTOR Reduction (vph)	0	8	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	955	0	0	1169	0	0	0	0	490	1031	184
Confl. Peds. (#/hr)			135									85
Confl. Bikes (#/hr)			9									17
Heavy Vehicles (%)	6%	6%	6%	4%	4%	4%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	25	25	0	0	0	0	0	0	0	0	0
Turn Type										Split		Perm
Protected Phases		3			3					1	1	
Permitted Phases		3										1
Actuated Green, G (s)		41.0			41.0					49.0	49.0	49.0
Effective Green, g (s)		42.0			42.0					50.0	50.0	50.0
Actuated g/C Ratio		0.42			0.42					0.50	0.50	0.50
Clearance Time (s)		5.0			5.0					5.0	5.0	5.0
Vehicle Extension (s)		2.0			2.0					2.0	2.0	2.0
Lane Grp Cap (vph)		1481			1312					725	1504	638
v/s Ratio Prot		0.27			c0.37					0.34	c0.34	
v/s Ratio Perm												0.14
v/c Ratio		0.65			0.89					0.68	0.69	0.29
Uniform Delay, d1		23.1			26.9					18.9	19.0	14.6
Progression Factor		1.30			0.54					0.80	0.80	0.89
Incremental Delay, d2		1.5			1.0					4.0	2.1	0.9
Delay (s)		31.4			15.5					19.2	17.3	13.9
Level of Service		C			B					B	B	B
Approach Delay (s)		31.4			15.5			0.0			17.5	
Approach LOS		C			B			A			B	

Intersection Summary			
HCM Average Control Delay	20.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	72.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBT	WBR	NBT	NBR	NWL	NWR
Lane Group Flow (vph)	76	502	1122	337	239	583	349	946	239
v/c Ratio	0.43	1.48	0.83	0.58	0.95	0.46	1.30	1.52	1.74
Control Delay	45.5	258.8	16.9	41.2	82.8	31.1	190.9	274.2	391.0
Queue Delay	0.0	176.0	6.0	0.0	0.0	0.1	0.0	25.1	29.7
Total Delay	45.5	434.8	22.9	41.2	82.8	31.2	190.9	299.3	420.6
Queue Length 50th (ft)	44	~452	246	108	162	112	~286	~437	~251
Queue Length 95th (ft)	m70	#660	424	m142	m#272	147	#461	#542	#409
Internal Link Dist (ft)		182		648		176		668	
Turn Bay Length (ft)					150				300
Base Capacity (vph)	175	339	1352	583	252	1280	269	621	137
Starvation Cap Reductn	0	71	185	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	70	0	22	5
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.43	1.87	0.96	0.58	0.95	0.48	1.30	1.58	1.81

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBT	WBR	NBL	NBT	NBR	NBR2	NWL	NWR	NWR2
Lane Configurations												
Ideal Flow (vphpl)	1900	1600	1600	1600	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	0.88	0.95	1.00		0.91	1.00		0.97	0.91	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	0.84		1.00	0.67		1.00	0.51	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.85		1.00	0.85		0.96	0.85	
Flt Protected	0.95	1.00	1.00	1.00	1.00		0.99	1.00		0.96	1.00	
Satd. Flow (prot)	1593	1412	2112	2430	1051		4572	961		2958	645	
Flt Permitted	0.95	1.00	1.00	1.00	1.00		0.99	1.00		0.96	1.00	
Satd. Flow (perm)	1593	1412	2112	2430	1051		4572	961		2958	645	
Volume (vph)	72	477	1066	283	201	103	422	206	108	622	411	10
Peak-hour factor, PHF	0.95	0.95	0.95	0.84	0.84	0.90	0.90	0.90	0.90	0.88	0.88	0.88
Adj. Flow (vph)	76	502	1122	337	239	114	469	229	120	707	467	11
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	76	502	1122	337	239	0	583	349	0	946	237	0
Confl. Peds. (#/hr)					110	5		135	240			135
Confl. Bikes (#/hr)			6		8			3	6			
Heavy Vehicles (%)	2%	2%	2%	9%	9%	1%	1%	1%	1%	4%	4%	4%
Bus Blockages (#/hr)	0	0	0	16	16	0	0	0	0	0	0	0
Turn Type	Prot		custom		Perm	Perm		Perm			Perm	
Protected Phases	3	2	1 2 3	2			4			1		
Permitted Phases					2	4		4			1	
Actuated Green, G (s)	10.0	23.0	63.0	23.0	23.0		27.0	27.0		19.0	19.0	
Effective Green, g (s)	11.0	24.0	64.0	24.0	24.0		28.0	28.0		21.0	21.0	
Actuated g/C Ratio	0.11	0.24	0.64	0.24	0.24		0.28	0.28		0.21	0.21	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	175	339	1352	583	252		1280	269		621	135	
v/s Ratio Prot	0.05	c0.36	c0.53	0.14						0.32		
v/s Ratio Perm					0.23		0.13	c0.36			c0.37	
v/c Ratio	0.43	1.48	0.83	0.58	0.95		0.46	1.30		1.52	1.76	
Uniform Delay, d1	41.6	38.0	13.8	33.5	37.4		29.7	36.0		39.5	39.5	
Progression Factor	0.94	1.02	0.83	1.11	1.12		1.00	1.00		1.00	1.00	
Incremental Delay, d2	5.8	228.0	4.6	3.4	39.6		1.2	158.5		243.7	369.9	
Delay (s)	44.8	266.7	16.1	40.6	81.4		30.9	194.5		283.2	409.4	
Level of Service	D	F	B	D	F		C	F		F	F	
Approach Delay (s)		91.4		57.5			92.1			308.6		
Approach LOS		F		E			F			F		

Intersection Summary

HCM Average Control Delay	145.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.36		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	91.5%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	0	0	1046	60	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	1137	65	0	0
Pedestrians	10					
Lane Width (ft)	0.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	0					
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)			204			104
pX, platoon unblocked						
vC, conflicting volume	1180	327			1212	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1180	327			1212	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	183	669			571	

Direction, Lane #	NB 1	NB 2	NB 3	NB 4
Volume Total	325	325	325	228
Volume Left	0	0	0	0
Volume Right	0	0	0	65
cSH	1700	1700	1700	1700
Volume to Capacity	0.19	0.19	0.19	0.13
Queue Length 95th (ft)	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0
Lane LOS				
Approach Delay (s)	0.0			
Approach LOS				

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	28.0%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBT	NBL	NBT
Lane Group Flow (vph)	33	784	378
v/c Ratio	0.11	0.33	0.15
Control Delay	40.3	8.9	7.5
Queue Delay	0.0	1.0	0.0
Total Delay	40.3	9.9	7.5
Queue Length 50th (ft)	10	100	47
Queue Length 95th (ft)	23	m147	m55
Internal Link Dist (ft)	48		24
Turn Bay Length (ft)			
Base Capacity (vph)	710	2402	2475
Starvation Cap Reductn	0	1276	0
Spillback Cap Reductn	0	114	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.05	0.70	0.15

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0				
Lane Util. Factor					0.95		0.97	0.95				
Frt					0.95		1.00	1.00				
Flt Protected					1.00		0.95	1.00				
Satd. Flow (prot)					3087		3090	3185				
Flt Permitted					1.00		0.95	1.00				
Satd. Flow (perm)					3087		3090	3185				
Volume (vph)	0	0	0	0	21	10	706	340	0	0	0	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.90	0.90	0.90	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	0	22	11	784	378	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	33	0	784	378	0	0	0	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	2%	2%	2%	0%	0%	0%
Turn Type							Split					
Protected Phases					2		1 4	1 4				
Permitted Phases												
Actuated Green, G (s)					7.3		73.9	73.9				
Effective Green, g (s)					8.3		74.9	74.9				
Actuated g/C Ratio					0.08		0.75	0.75				
Clearance Time (s)					5.0							
Vehicle Extension (s)					2.0							
Lane Grp Cap (vph)					256		2314	2386				
v/s Ratio Prot					c0.01		c0.25	0.12				
v/s Ratio Perm												
v/c Ratio					0.13		0.34	0.16				
Uniform Delay, d1					42.5		4.2	3.6				
Progression Factor					1.00		1.80	1.76				
Incremental Delay, d2					0.1		0.0	0.0				
Delay (s)					42.6		7.6	6.3				
Level of Service					D		A	A				
Approach Delay (s)		0.0			42.6			7.2			0.0	
Approach LOS		A			D			A			A	

Intersection Summary			
HCM Average Control Delay	8.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.32		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.8
Intersection Capacity Utilization	53.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	118	332	432	30	25	41
Peak Hour Factor	0.88	0.88	0.94	0.94	0.83	0.83
Hourly flow rate (vph)	134	377	460	32	30	49
Pedestrians		115	115		115	
Lane Width (ft)		12.0	10.0		14.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		10	8		11	
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)		594	1176			
pX, platoon unblocked						
vC, conflicting volume	606				1351	706
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	606				1351	706
tC, single (s)	4.2				6.6	6.4
tC, 2 stage (s)						
tF (s)	2.3				3.7	3.5
p0 queue free %	84				71	85
cM capacity (veh/h)	833				103	326

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	511	491	80
Volume Left	134	0	30
Volume Right	0	32	49
cSH	833	1700	180
Volume to Capacity	0.16	0.29	0.44
Queue Length 95th (ft)	14	0	51
Control Delay (s)	4.2	0.0	40.1
Lane LOS	A		E
Approach Delay (s)	4.2	0.0	40.1
Approach LOS			E

Intersection Summary			
Average Delay	4.9		
Intersection Capacity Utilization	77.6%	ICU Level of Service	D
Analysis Period (min)	15		

Lane Group	NBT	NEL	NET
Lane Group Flow (vph)	380	45	47
v/c Ratio	0.15	0.17	0.18
Control Delay	0.9	1.7	1.7
Queue Delay	0.2	0.0	0.0
Total Delay	1.1	1.7	1.7
Queue Length 50th (ft)	6	0	0
Queue Length 95th (ft)	8	0	0
Internal Link Dist (ft)	148		107
Turn Bay Length (ft)			
Base Capacity (vph)	2475	360	371
Starvation Cap Reductn	1297	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.32	0.13	0.13

Intersection Summary

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0					4.0	4.0				
Lane Util. Factor		0.95					0.95	0.95				
Frt		1.00					1.00	1.00				
Flt Protected		1.00					0.95	0.98				
Satd. Flow (prot)		3185					1513	1559				
Flt Permitted		1.00					0.95	0.98				
Satd. Flow (perm)		3185					1513	1559				
Volume (vph)	0	350	0	0	0	0	60	25	0	0	0	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	380	0	0	0	0	65	27	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	380	0	0	0	0	45	47	0	0	0	0
Turn Type							Split					
Protected Phases		1 4					2 3	2 3				
Permitted Phases												
Actuated Green, G (s)		73.9					16.1	16.1				
Effective Green, g (s)		74.9					17.1	17.1				
Actuated g/C Ratio		0.75					0.17	0.17				
Clearance Time (s)												
Vehicle Extension (s)												
Lane Grp Cap (vph)		2386					259	267				
v/s Ratio Prot		c0.12					0.03	c0.03				
v/s Ratio Perm												
v/c Ratio		0.16					0.17	0.18				
Uniform Delay, d1		3.6					35.4	35.4				
Progression Factor		0.19					0.01	0.01				
Incremental Delay, d2		0.0					0.1	0.1				
Delay (s)		0.7					0.4	0.4				
Level of Service		A					A	A				
Approach Delay (s)		0.7			0.0			0.4			0.0	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM Average Control Delay	0.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.16		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	38.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	618	1067	383	43
v/c Ratio	0.42	0.78	0.67	0.10
Control Delay	20.1	39.7	31.0	19.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	20.1	39.7	31.0	19.7
Queue Length 50th (ft)	213	425	193	16
Queue Length 95th (ft)	m259	m437	196	37
Internal Link Dist (ft)	361	1340	154	472
Turn Bay Length (ft)				
Base Capacity (vph)	1462	1362	568	445
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.42	0.78	0.67	0.10

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	13	13	13	13	13	13
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Frpb, ped/bikes		0.98			0.99			0.96			1.00	
Flpb, ped/bikes		1.00			0.99			1.00			0.99	
Frt		0.99			1.00			0.94			0.98	
Flt Protected		1.00			1.00			0.98			0.97	
Satd. Flow (prot)		2872			2870			1561			1479	
Flt Permitted		0.95			0.88			0.87			0.74	
Satd. Flow (perm)		2722			2535			1378			1128	
Volume (vph)	5	559	30	50	916	26	93	43	150	23	7	5
Peak-hour factor, PHF	0.96	0.96	0.96	0.93	0.93	0.93	0.68	0.68	0.82	0.82	0.82	0.82
Adj. Flow (vph)	5	582	31	54	985	28	137	63	183	28	9	6
RTOR Reduction (vph)	0	3	0	0	2	0	0	30	0	0	4	0
Lane Group Flow (vph)	0	615	0	0	1065	0	0	353	0	0	39	0
Confl. Peds. (#/hr)	155		95	95		155	5		30	30		5
Confl. Bikes (#/hr)			24			71			4			1
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	0%	0%	0%	0%	0%	0%
Parking (#/hr)		1	1		1	1					1	1
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		58.0			58.0			42.0			42.0	
Effective Green, g (s)		59.0			59.0			43.0			43.0	
Actuated g/C Ratio		0.54			0.54			0.39			0.39	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Lane Grp Cap (vph)		1460			1360			539			441	
v/s Ratio Prot												
v/s Ratio Perm		0.23			c0.42			c0.26			0.03	
v/c Ratio		0.42			0.78			0.66			0.09	
Uniform Delay, d1		15.3			20.4			27.4			21.1	
Progression Factor		1.26			1.83			1.00			1.00	
Incremental Delay, d2		0.7			1.5			6.1			0.4	
Delay (s)		20.0			38.7			33.5			21.5	
Level of Service		C			D			C			C	
Approach Delay (s)		20.0			38.7			33.5			21.5	
Approach LOS		C			D			C			C	

Intersection Summary

HCM Average Control Delay	32.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	79.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	5	546	26	10	1018	5	43	15	38	5	5	5
Peak Hour Factor	0.92	0.92	0.92	0.88	0.88	0.88	0.84	0.84	0.84	0.69	0.69	0.69
Hourly flow rate (vph)	5	593	28	11	1157	6	51	18	45	7	7	7
Pedestrians		235			145			120			145	
Lane Width (ft)		12.0			12.0			10.0			10.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		20			12			8			10	
Right turn flare (veh)												
Median type								Raised			Raised	
Median storage veh)								0			0	
Upstream signal (ft)		488			441							
pX, platoon unblocked	0.76			0.87			0.83	0.83	0.87	0.83	0.83	0.76
vC, conflicting volume	1308			742			1585	2069	576	1834	2080	961
vC1, stage 1 conf vol							738	738		1327	1327	
vC2, stage 2 conf vol							847	1330		507	753	
vCu, unblocked vol	1088			551			1019	1604	360	1320	1618	632
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			65	83	90	92	93	97
cM capacity (veh/h)	439			814			144	106	448	89	108	235

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	302	325	590	584	114	22
Volume Left	5	0	11	0	51	7
Volume Right	0	28	0	6	45	7
cSH	439	1700	814	1700	183	121
Volume to Capacity	0.01	0.19	0.01	0.34	0.62	0.18
Queue Length 95th (ft)	1	0	1	0	88	16
Control Delay (s)	0.4	0.0	0.4	0.0	52.7	41.1
Lane LOS	A		A		F	E
Approach Delay (s)	0.2		0.2		52.7	41.1
Approach LOS					F	E

Intersection Summary			
Average Delay	3.8		
Intersection Capacity Utilization	59.3%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	512	147	332	743	156	644	678
v/c Ratio	0.73	0.65	1.46	0.73	0.56	0.36	0.69
Control Delay	45.9	47.4	245.2	26.3	23.4	12.9	12.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.9	47.4	245.2	26.3	23.4	12.9	12.0
Queue Length 50th (ft)	178	85	~232	293	46	113	64
Queue Length 95th (ft)	216	130	m#445	299	88	169	85
Internal Link Dist (ft)	968			408		638	275
Turn Bay Length (ft)		200	75		75		
Base Capacity (vph)	1085	225	228	1393	280	1776	988
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.47	0.65	1.46	0.53	0.56	0.36	0.69

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	11	11	11	11	11	11
Total Lost time (s)		4.0	4.0		4.0	4.0		4.0	4.0			4.0
Lane Util. Factor		0.95	1.00		1.00	0.95		1.00	0.95			0.95
Frpb, ped/bikes		1.00	0.72		1.00	0.99		1.00	0.98			1.00
Flpb, ped/bikes		1.00	1.00		0.98	1.00		0.98	1.00			1.00
Frt		1.00	0.85		1.00	0.99		1.00	0.98			1.00
Flt Protected		1.00	1.00		0.95	1.00		0.95	1.00			1.00
Satd. Flow (prot)		3141	902		1520	3058		1527	2982			3027
Flt Permitted		1.00	1.00		0.25	1.00		0.34	1.00			0.62
Satd. Flow (perm)		3141	902		405	3058		539	2982			1891
Volume (vph)	0	466	134	5	320	695	33	133	476	71	31	598
Peak-hour factor, PHF	0.91	0.91	0.91	0.98	0.98	0.98	0.98	0.85	0.85	0.85	0.95	0.95
Adj. Flow (vph)	0	512	147	5	327	709	34	156	560	84	33	629
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	512	147	0	332	743	0	156	644	0	0	678
Confl. Peds. (#/hr)			185		185		75	140		110	110	
Confl. Bikes (#/hr)							82			48		
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	8
Parking (#/hr)			1									
Turn Type			pm+ov	D.P+P	D.P+P			D.P+P			Perm	
Protected Phases		4	5	3	3	3 4		5	1 5			1
Permitted Phases			4	4	4			1			1	
Actuated Green, G (s)		22.4	26.4		31.4	34.4		61.6	64.6			57.6
Effective Green, g (s)		24.4	27.4		32.4	36.4		61.6	65.6			58.6
Actuated g/C Ratio		0.22	0.25		0.29	0.33		0.56	0.60			0.53
Clearance Time (s)		6.0	3.0		3.0			3.0				5.0
Vehicle Extension (s)		2.0	2.0		2.0			2.0				2.0
Lane Grp Cap (vph)		697	257		200	1012		329	1778			1007
v/s Ratio Prot		0.16	c0.02		c0.12	0.24		0.01	0.22			
v/s Ratio Perm			0.15		c0.37			0.25				c0.36
v/c Ratio		0.73	0.57		1.66	0.73		0.47	0.36			0.67
Uniform Delay, d1		39.8	36.2		36.3	32.5		15.1	11.4			18.7
Progression Factor		1.00	1.00		0.73	0.72		1.00	1.00			0.45
Incremental Delay, d2		3.5	1.9		312.1	1.7		0.4	0.0			2.3
Delay (s)		43.3	38.1		338.7	25.0		15.5	11.5			10.8
Level of Service		D	D		F	C		B	B			B
Approach Delay (s)		42.1				121.9			12.3			10.8
Approach LOS		D				F			B			B

Intersection Summary			
HCM Average Control Delay	54.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	89.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
3: Beacon St & Park Dr
2018 No-Build Conditions - Landmark
Weekday Evening Peak Hour

Movement	SBR
Lane Configurations	
Ideal Flow (vphpl)	1900
Lane Width	11
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Volume (vph)	15
Peak-hour factor, PHF	0.95
Adj. Flow (vph)	16
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	140
Confl. Bikes (#/hr)	33
Heavy Vehicles (%)	1%
Bus Blockages (#/hr)	8
Parking (#/hr)	
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	NBT	SBT	SBR
Lane Group Flow (vph)	102	488	59	595	194	150	159
v/c Ratio	0.28	0.54	0.92	0.79	0.88	0.55	0.41
Control Delay	5.6	7.1	122.3	27.7	69.8	40.6	20.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.6	7.1	122.3	27.7	69.8	40.6	20.9
Queue Length 50th (ft)	13	64	35	304	112	83	51
Queue Length 95th (ft)	m12	m55	#103	371	m#180	131	95
Internal Link Dist (ft)		648		198	46	352	
Turn Bay Length (ft)	200		50				100
Base Capacity (vph)	360	896	64	755	276	341	386
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.54	0.92	0.79	0.70	0.44	0.41

Intersection Summary

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	11	11	10	10	10	12	12	12	11	11	11
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Frpb, ped/bikes	1.00	0.94		1.00	0.95			0.94			1.00	0.82
Flpb, ped/bikes	0.96	1.00		1.00	1.00			0.89			0.90	1.00
Frt	1.00	0.98		1.00	0.99			0.98			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.97			0.98	1.00
Satd. Flow (prot)	1390	1293		1430	1325			1341			1451	1154
Flt Permitted	0.31	1.00		0.07	1.00			0.62			0.79	1.00
Satd. Flow (perm)	447	1293		106	1325			865			1172	1154
Volume (vph)	92	384	55	47	434	36	110	36	26	62	67	138
Peak-hour factor, PHF	0.90	0.90	0.90	0.79	0.79	0.79	0.89	0.89	0.86	0.86	0.86	0.87
Adj. Flow (vph)	102	427	61	59	549	46	124	40	30	72	78	159
RTOR Reduction (vph)	0	4	0	0	3	0	0	7	0	0	0	25
Lane Group Flow (vph)	102	484	0	59	592	0	0	187	0	0	150	134
Confl. Peds. (#/hr)	390		190	190		390	140		135	135		140
Confl. Bikes (#/hr)			6			9			5			3
Heavy Vehicles (%)	5%	5%	5%	6%	6%	6%	1%	1%	1%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	16	16	0	0	0	0	0	0
Parking (#/hr)		1	1									
Turn Type	D.P+P			Perm			Perm			Perm		pm+ov
Protected Phases	3	1 3			1			2			2	3
Permitted Phases	1			1			2			2		2
Actuated Green, G (s)	66.0	69.0		56.8	56.8			23.0			23.0	32.2
Effective Green, g (s)	65.0	69.0		56.8	56.8			23.0			23.0	31.2
Actuated g/C Ratio	0.65	0.69		0.57	0.57			0.23			0.23	0.31
Clearance Time (s)	3.0			4.0	4.0			4.0			4.0	3.0
Vehicle Extension (s)	3.0			3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	368	892		60	753			199			270	406
v/s Ratio Prot	0.02	c0.37			0.45							0.03
v/s Ratio Perm	0.16			c0.56				c0.22			0.13	0.09
v/c Ratio	0.28	0.54		0.98	0.79			0.94			0.56	0.33
Uniform Delay, d1	8.4	7.7		21.1	16.9			37.8			34.0	26.4
Progression Factor	0.81	0.75		1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2	0.0	0.1		111.5	8.1			46.4			2.5	0.5
Delay (s)	6.9	5.8		132.7	25.0			84.1			36.5	26.9
Level of Service	A	A		F	C			F			D	C
Approach Delay (s)		6.0			34.7			84.1			31.5	
Approach LOS		A			C			F			C	

Intersection Summary

HCM Average Control Delay	29.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	69.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	70	64	119	11	137	31
Peak Hour Factor	0.82	0.82	0.87	0.87	0.90	0.90
Hourly flow rate (vph)	85	78	137	13	152	34
Pedestrians	105		110			125
Lane Width (ft)	15.0		13.0			13.0
Walking Speed (ft/s)	4.0		4.0			4.0
Percent Blockage	11		10			11
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)			292			126
pX, platoon unblocked						
vC, conflicting volume	697	373			254	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	697	373			254	
tC, single (s)	6.5	6.3			4.1	
tC, 2 stage (s)						
tF (s)	3.6	3.4			2.2	
p0 queue free %	69	85			87	
cM capacity (veh/h)	278	521			1167	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	163	149	187
Volume Left	85	0	152
Volume Right	78	13	0
cSH	358	1700	1167
Volume to Capacity	0.46	0.09	0.13
Queue Length 95th (ft)	58	0	11
Control Delay (s)	23.3	0.0	7.2
Lane LOS	C		A
Approach Delay (s)	23.3	0.0	7.2
Approach LOS	C		

Intersection Summary			
Average Delay	10.3		
Intersection Capacity Utilization	46.7%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	1314	1165	90	91	190
v/c Ratio	0.71	0.82	0.38	0.63	0.77
Control Delay	10.0	31.9	25.0	56.5	41.9
Queue Delay	0.3	118.4	0.0	0.0	0.0
Total Delay	10.3	150.3	25.0	56.5	41.9
Queue Length 50th (ft)	144	333	29	55	68
Queue Length 95th (ft)	m247	#490	68	m93	m125
Internal Link Dist (ft)	668	184	267		212
Turn Bay Length (ft)				150	
Base Capacity (vph)	1841	1416	346	222	338
Starvation Cap Reductn	0	492	0	0	0
Spillback Cap Reductn	112	0	1	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.76	1.26	0.26	0.41	0.56

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1600	1600	1600	1600	1600	1600	1900	1900	1900	1600	1600	1900
Lane Width	12	13	12	12	13	12	12	14	12	12	16	12
Total Lost time (s)		4.0			4.0			4.0		4.0	4.0	
Lane Util. Factor		0.95			0.95			1.00		1.00	1.00	
Frpb, ped/bikes		0.97			0.98			0.94		1.00	0.81	
Flpb, ped/bikes		1.00			1.00			0.95		0.91	1.00	
Frt		0.99			1.00			0.93		1.00	0.87	
Flt Protected		1.00			1.00			0.98		0.95	1.00	
Satd. Flow (prot)		2671			2696			1428		1213	1110	
Flt Permitted		0.91			0.72			0.72		0.67	1.00	
Satd. Flow (perm)		2428			1942			1042		850	1110	
Volume (vph)	26	1186	62	77	948	35	26	15	41	79	21	144
Peak-hour factor, PHF	0.97	0.97	0.97	0.91	0.91	0.91	0.91	0.91	0.91	0.87	0.87	0.87
Adj. Flow (vph)	27	1223	64	85	1042	38	29	16	45	91	24	166
RTOR Reduction (vph)	0	3	0	0	2	0	0	33	0	0	67	0
Lane Group Flow (vph)	0	1311	0	0	1163	0	0	57	0	91	123	0
Confl. Peds. (#/hr)	135		215	215		135	155		80	80		155
Confl. Bikes (#/hr)			8			4			4			3
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	5%	5%	5%	3%	3%	3%
Parking (#/hr)			1			1						
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		1			1			5			5	
Permitted Phases	1			1			5			5		
Actuated Green, G (s)		74.8			74.8			15.2		15.2	15.2	
Effective Green, g (s)		75.8			75.8			16.2		16.2	16.2	
Actuated g/C Ratio		0.76			0.76			0.16		0.16	0.16	
Clearance Time (s)		5.0			5.0			5.0		5.0	5.0	
Vehicle Extension (s)		4.0			4.0			2.0		2.0	2.0	
Lane Grp Cap (vph)		1840			1472			169		138	180	
v/s Ratio Prot											c0.11	
v/s Ratio Perm		0.54			c0.60			0.06		0.11		
v/c Ratio		0.71			0.79			0.34		0.66	0.68	
Uniform Delay, d1		6.4			7.3			37.2		39.3	39.5	
Progression Factor		1.02			2.73			1.00		1.00	1.00	
Incremental Delay, d2		1.5			3.8			0.4		8.4	8.2	
Delay (s)		8.0			23.8			37.6		47.7	47.8	
Level of Service		A			C			D		D	D	
Approach Delay (s)		8.0			23.8			37.6			47.8	
Approach LOS		A			C			D			D	

Intersection Summary			
HCM Average Control Delay	19.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	130.2%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBT	NBT
Lane Group Flow (vph)	1292	1173	196
v/c Ratio	0.80	0.93	0.75
Control Delay	22.7	25.2	46.7
Queue Delay	1.8	66.2	0.4
Total Delay	24.5	91.3	47.1
Queue Length 50th (ft)	200	109	97
Queue Length 95th (ft)	#429	#576	136
Internal Link Dist (ft)	289	630	256
Turn Bay Length (ft)			
Base Capacity (vph)	1618	1267	360
Starvation Cap Reductn	178	0	0
Spillback Cap Reductn	0	246	22
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.90	1.15	0.58

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1600	1600	1600	1600	1600	1600	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	12	12	12	12	16	12
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		0.95			0.95			1.00				
Frpb, ped/bikes		0.99			0.99			0.84				
Flpb, ped/bikes		1.00			1.00			0.97				
Frt		1.00			1.00			0.91				
Flt Protected		1.00			1.00			0.99				
Satd. Flow (prot)		2552			2545			1187				
Flt Permitted		0.91			0.84			0.99				
Satd. Flow (perm)		2333			2149			1187				
Volume (vph)	25	1192	36	39	994	35	30	26	103	0	0	0
Peak-hour factor, PHF	0.97	0.97	0.97	0.91	0.91	0.91	0.81	0.81	0.81	0.25	0.25	0.25
Adj. Flow (vph)	26	1229	37	43	1092	38	37	32	127	0	0	0
RTOR Reduction (vph)	0	2	0	0	2	0	0	31	0	0	0	0
Lane Group Flow (vph)	0	1290	0	0	1171	0	0	165	0	0	0	0
Confl. Peds. (#/hr)	130		140	140		130	150		200			
Confl. Bikes (#/hr)			9			8			5			5
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	5%	5%	5%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	3	3	3	0	0	0
Parking (#/hr)			1			1						
Turn Type	D.P+P			Perm			Perm					
Protected Phases	4	1 4			1			3				
Permitted Phases	1			1			3					
Actuated Green, G (s)		66.6			60.6			18.4				
Effective Green, g (s)		68.6			61.6			19.4				
Actuated g/C Ratio		0.69			0.62			0.19				
Clearance Time (s)					5.0			5.0				
Vehicle Extension (s)					3.0			2.0				
Lane Grp Cap (vph)		1616			1324			230				
v/s Ratio Prot		c0.06										
v/s Ratio Perm		0.49			c0.54			0.14				
v/c Ratio		0.80			0.88			0.72				
Uniform Delay, d1		10.9			16.2			37.7				
Progression Factor		1.54			0.61			1.00				
Incremental Delay, d2		2.3			7.3			8.6				
Delay (s)		19.0			17.2			46.4				
Level of Service		B			B			D				
Approach Delay (s)		19.0			17.2			46.4			0.0	
Approach LOS		B			B			D			A	

Intersection Summary			
HCM Average Control Delay	20.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	104.0%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	1528	1066	367	99
v/c Ratio	1.00	0.65	0.98	0.24
Control Delay	37.7	14.8	79.6	7.8
Queue Delay	377.1	58.7	574.3	0.0
Total Delay	414.8	73.5	653.9	7.8
Queue Length 50th (ft)	553	212	233	0
Queue Length 95th (ft)	#663	279	#416	40
Internal Link Dist (ft)	630	157	254	
Turn Bay Length (ft)			50	
Base Capacity (vph)	1533	1649	376	411
Starvation Cap Reductn	0	698	0	0
Spillback Cap Reductn	712	0	217	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.86	1.12	2.31	0.24

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1600	1600	1600	1600	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0
Lane Util. Factor		0.95	0.95		1.00	1.00
Frpb, ped/bikes		1.00	1.00		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		2681	2700		1504	1346
Flt Permitted		0.94	1.00		0.95	1.00
Satd. Flow (perm)		2514	2700		1504	1346
Volume (vph)	15	1391	1045	21	341	92
Peak-hour factor, PHF	0.92	0.92	1.00	1.00	0.93	0.93
Adj. Flow (vph)	16	1512	1045	21	367	99
RTOR Reduction (vph)	0	0	2	0	0	74
Lane Group Flow (vph)	0	1528	1064	0	367	25
Confl. Bikes (#/hr)				3		
Heavy Vehicles (%)	2%	2%	1%	1%	8%	8%
Turn Type	Perm					custom
Protected Phases		1	1			
Permitted Phases	1				5	5
Actuated Green, G (s)		59.0	59.0		24.0	24.0
Effective Green, g (s)		61.0	61.0		25.0	25.0
Actuated g/C Ratio		0.61	0.61		0.25	0.25
Clearance Time (s)		6.0	6.0		5.0	5.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1534	1647		376	337
v/s Ratio Prot			0.39			
v/s Ratio Perm		c0.61			c0.24	0.02
v/c Ratio		1.00	0.65		0.98	0.07
Uniform Delay, d1		19.4	12.6		37.2	28.7
Progression Factor		0.93	1.00		1.00	1.00
Incremental Delay, d2		18.3	2.0		40.8	0.4
Delay (s)		36.3	14.5		78.0	29.1
Level of Service		D	B		E	C
Approach Delay (s)		36.3	14.5		67.6	
Approach LOS		D	B		E	

Intersection Summary			
HCM Average Control Delay	33.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	92.3%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	0	0	0	689	0	1021
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	0	725	0	1075
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)				157	718	
pX, platoon unblocked	0.93					
vC, conflicting volume	363	0	1075			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	231	0	1075			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	687	1091	656			

Direction, Lane #	NB 1	NB 2	SB 1	SB 2
Volume Total	363	363	537	537
Volume Left	0	0	0	0
Volume Right	0	0	537	537
cSH	1700	1700	1700	1700
Volume to Capacity	0.21	0.21	0.32	0.32
Queue Length 95th (ft)	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0
Lane LOS				
Approach Delay (s)	0.0		0.0	
Approach LOS				

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	43.0%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL2	WBL	SBT	SBR	NET
Lane Group Flow (vph)	441	899	531	616	88
v/c Ratio	0.81	0.83	0.56	1.46	0.20
Control Delay	39.8	34.9	34.1	248.3	38.0
Queue Delay	9.4	8.5	0.1	0.0	0.0
Total Delay	49.1	43.4	34.2	248.3	38.0
Queue Length 50th (ft)	284	292	157	~570	26
Queue Length 95th (ft)	#451	365	219	#794	47
Internal Link Dist (ft)		195	209		325
Turn Bay Length (ft)				100	
Base Capacity (vph)	542	1083	944	423	733
Starvation Cap Reductn	77	158	0	0	0
Spillback Cap Reductn	45	0	49	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.95	0.97	0.59	1.46	0.12

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	WBL2	WBL	SBT	SBR	NET
Lane Configurations					
Ideal Flow (vphpl)	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.91	0.91	0.95	1.00	0.95
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00
Flt Protected	0.95	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1464	2927	3185	1425	3185
Flt Permitted	0.95	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1464	2927	3185	1425	3185
Volume (vph)	428	872	473	548	84
Peak-hour factor, PHF	0.97	0.97	0.89	0.89	0.95
Adj. Flow (vph)	441	899	531	616	88
RTOR Reduction (vph)	0	0	0	0	0
Lane Group Flow (vph)	441	899	531	616	88
Confl. Bikes (#/hr)				11	
Heavy Vehicles (%)	1%	1%	2%	2%	2%
Turn Type	Split			Prot	
Protected Phases	1	1	4	4	2
Permitted Phases					
Actuated Green, G (s)	35.0	35.0	28.7	28.7	12.7
Effective Green, g (s)	36.0	36.0	29.7	29.7	13.7
Actuated g/C Ratio	0.36	0.36	0.30	0.30	0.14
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	0.2	0.2	2.0	2.0	2.0
Lane Grp Cap (vph)	527	1054	946	423	436
v/s Ratio Prot	0.30	c0.31	0.17	c0.43	c0.03
v/s Ratio Perm					
v/c Ratio	0.84	0.85	0.56	1.46	0.20
Uniform Delay, d1	29.3	29.6	29.7	35.2	38.3
Progression Factor	0.97	0.97	1.00	1.00	1.00
Incremental Delay, d2	12.8	7.6	0.5	218.1	0.1
Delay (s)	41.1	36.3	30.1	253.3	38.4
Level of Service	D	D	C	F	D
Approach Delay (s)		37.9	150.0		38.4
Approach LOS		D	F		D

Intersection Summary

HCM Average Control Delay	87.8	HCM Level of Service	F
HCM Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	20.6
Intersection Capacity Utilization	55.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBR	SET
Lane Group Flow (vph)	757	969
v/c Ratio	0.68	0.43
Control Delay	25.1	10.1
Queue Delay	0.7	0.2
Total Delay	25.7	10.3
Queue Length 50th (ft)	215	114
Queue Length 95th (ft)	225	197
Internal Link Dist (ft)		173
Turn Bay Length (ft)		
Base Capacity (vph)	1106	2847
Starvation Cap Reductn	0	985
Spillback Cap Reductn	112	221
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.76	0.52

Intersection Summary

Movement	EBL	EBR	SET	SER	NWL	NWT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0			
Lane Util. Factor		0.88	0.91			
Frt		0.85	1.00			
Flt Protected		1.00	1.00			
Satd. Flow (prot)		2508	4668			
Flt Permitted		1.00	1.00			
Satd. Flow (perm)		2508	4668			
Volume (vph)	0	727	901	0	0	0
Peak-hour factor, PHF	0.96	0.96	0.93	0.93	0.95	0.95
Adj. Flow (vph)	0	757	969	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	757	969	0	0	0
Heavy Vehicles (%)	2%	2%	0%	0%	0%	0%
Turn Type						
Protected Phases		2	1			
Permitted Phases						
Actuated Green, G (s)		43.1	46.9			
Effective Green, g (s)		44.1	47.9			
Actuated g/C Ratio		0.44	0.48			
Clearance Time (s)		5.0	5.0			
Vehicle Extension (s)		3.0	2.0			
Lane Grp Cap (vph)		1106	2236			
v/s Ratio Prot		c0.30	c0.21			
v/s Ratio Perm						
v/c Ratio		0.68	0.43			
Uniform Delay, d1		22.4	17.1			
Progression Factor		1.00	0.52			
Incremental Delay, d2		1.8	0.4			
Delay (s)		24.2	9.3			
Level of Service		C	A			
Approach Delay (s)	24.2		9.3			0.0
Approach LOS	C		A			A

Intersection Summary			
HCM Average Control Delay	15.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	54.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBT	SBL	SBT	SBR
Lane Group Flow (vph)	1184	926	515	1083	134
v/c Ratio	0.78	0.83	0.70	0.71	0.21
Control Delay	29.3	52.1	26.4	23.2	16.3
Queue Delay	23.1	219.2	6.1	4.6	0.0
Total Delay	52.4	271.3	32.5	27.8	16.3
Queue Length 50th (ft)	231	334	237	249	32
Queue Length 95th (ft)	241	m287	478	445	m98
Internal Link Dist (ft)	23	183		268	
Turn Bay Length (ft)					
Base Capacity (vph)	1510	1116	732	1529	630
Starvation Cap Reductn	0	493	164	367	0
Spillback Cap Reductn	365	0	80	167	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.03	1.49	0.91	0.93	0.21

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1600	1900	1900	1600	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0					4.0	4.0	4.0
Lane Util. Factor		0.91			0.95					0.91	0.91	1.00
Frpb, ped/bikes		0.99			1.00					1.00	1.00	0.88
Flpb, ped/bikes		1.00			1.00					1.00	1.00	1.00
Frt		0.99			1.00					1.00	1.00	0.85
Flt Protected		1.00			1.00					0.95	0.99	1.00
Satd. Flow (prot)		3578			2656					1464	3057	1260
Flt Permitted		1.00			1.00					0.95	0.99	1.00
Satd. Flow (perm)		3578			2656					1464	3057	1260
Volume (vph)	0	885	62	0	870	0	0	0	0	648	854	126
Peak-hour factor, PHF	0.80	0.80	0.80	0.94	0.94	0.94	0.92	0.92	0.92	0.94	0.94	0.94
Adj. Flow (vph)	0	1106	78	0	926	0	0	0	0	689	909	134
RTOR Reduction (vph)	0	8	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1176	0	0	926	0	0	0	0	515	1083	134
Confl. Peds. (#/hr)			215									110
Confl. Bikes (#/hr)			7			6						2
Heavy Vehicles (%)	4%	4%	4%	3%	3%	3%	2%	2%	2%	1%	1%	1%
Bus Blockages (#/hr)	0	25	25	0	0	0	0	0	0	0	0	0
Turn Type										Split		Perm
Protected Phases		3			3					1	1	
Permitted Phases												1
Actuated Green, G (s)		41.0			41.0					49.0	49.0	49.0
Effective Green, g (s)		42.0			42.0					50.0	50.0	50.0
Actuated g/C Ratio		0.42			0.42					0.50	0.50	0.50
Clearance Time (s)		5.0			5.0					5.0	5.0	5.0
Vehicle Extension (s)		2.0			2.0					2.0	2.0	2.0
Lane Grp Cap (vph)		1503			1116					732	1529	630
v/s Ratio Prot		0.33			c0.35					0.35	c0.35	
v/s Ratio Perm												0.11
v/c Ratio		0.78			0.83					0.70	0.71	0.21
Uniform Delay, d1		25.1			25.8					19.3	19.4	14.0
Progression Factor		1.00			1.96					1.07	1.05	1.09
Incremental Delay, d2		4.1			0.7					4.8	2.4	0.7
Delay (s)		29.2			51.2					25.5	22.8	15.9
Level of Service		C			D					C	C	B
Approach Delay (s)		29.2			51.2			0.0			23.0	
Approach LOS		C			D			A			C	

Intersection Summary			
HCM Average Control Delay	31.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	72.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBT	WBR	NBT	NBR	NWL	NWR
Lane Group Flow (vph)	110	467	1156	277	441	800	288	930	377
v/c Ratio	0.63	1.16	0.72	0.40	2.23	0.63	1.18	1.46	2.92
Control Delay	60.9	125.7	19.9	36.0	586.4	34.1	149.6	245.4	896.1
Queue Delay	0.0	178.7	50.5	105.9	106.5	0.2	0.0	104.4	0.0
Total Delay	60.9	304.4	70.4	141.9	692.9	34.3	149.6	349.7	896.1
Queue Length 50th (ft)	71	~367	360	90	~471	163	~221	~420	~458
Queue Length 95th (ft)	m95	m#541	396	m112	m#631	201	#371	#544	m#590
Internal Link Dist (ft)		183		648		176		668	
Turn Bay Length (ft)					150				300
Base Capacity (vph)	175	402	1605	686	198	1271	244	635	129
Starvation Cap Reductn	0	104	557	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	457	19	88	0	87	2
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.63	1.57	1.10	1.21	2.46	0.68	1.18	1.70	2.97

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBT	WBR	NBL	NBT	NBR	NBR2	NWL	NWR	NWR2
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	0.88	0.95	1.00		0.91	1.00		0.97	0.91	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	0.71		1.00	0.61		1.00	0.46	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.85		1.00	0.85		0.94	0.85	
Flt Protected	0.95	1.00	1.00	1.00	1.00		0.99	1.00		0.97	1.00	
Satd. Flow (prot)	1593	1676	2508	2858	823		4542	873		3026	604	
Flt Permitted	0.95	1.00	1.00	1.00	1.00		0.99	1.00		0.97	1.00	
Satd. Flow (perm)	1593	1676	2508	2858	823		4542	873		3026	604	
Volume (vph)	98	416	1029	263	419	97	607	128	126	510	670	23
Peak-hour factor, PHF	0.89	0.89	0.89	0.95	0.95	0.88	0.88	0.88	0.88	0.92	0.92	0.92
Adj. Flow (vph)	110	467	1156	277	441	110	690	145	143	554	728	25
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	110	467	1156	277	441	0	800	288	0	930	375	0
Confl. Peds. (#/hr)					215	5		185	375			185
Confl. Bikes (#/hr)			8		12			25	34			2
Heavy Vehicles (%)	2%	2%	2%	4%	4%	2%	2%	2%	2%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	16	16	0	0	0	0	0	0	0
Parking (#/hr)				2	2							
Turn Type	Prot		custom		Perm	Perm		Perm			Perm	
Protected Phases	3	2	1 2 3	2			4			1		
Permitted Phases					2	4		4			1	
Actuated Green, G (s)	10.0	23.0	63.0	23.0	23.0		27.0	27.0		19.0	19.0	
Effective Green, g (s)	11.0	24.0	64.0	24.0	24.0		28.0	28.0		21.0	21.0	
Actuated g/C Ratio	0.11	0.24	0.64	0.24	0.24		0.28	0.28		0.21	0.21	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	175	402	1605	686	198		1272	244		635	127	
v/s Ratio Prot	0.07	0.28	c0.46	0.10						0.31		
v/s Ratio Perm					c0.54		0.18	c0.33			c0.62	
v/c Ratio	0.63	1.16	0.72	0.40	2.23		0.63	1.18		1.46	2.95	
Uniform Delay, d1	42.5	38.0	12.0	32.0	38.0		31.5	36.0		39.5	39.5	
Progression Factor	1.16	1.02	1.45	1.08	1.11		1.00	1.00		0.97	0.97	
Incremental Delay, d2	10.4	89.4	1.8	1.2	563.1		2.4	115.2		214.5	890.6	
Delay (s)	59.9	128.0	19.2	35.7	605.1		33.8	151.2		252.9	928.9	
Level of Service	E	F	B	D	F		C	F		F	F	
Approach Delay (s)		51.1		385.4			64.9			447.9		
Approach LOS		D		F			E			F		

Intersection Summary

HCM Average Control Delay	210.8	HCM Level of Service	F
HCM Volume to Capacity ratio	1.80		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	110.4%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
14: Park Dr &

2018 No-Build Conditions - Landmark
Weekday Evening Peak Hour

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	0	0	1751	44	0	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	1843	46	0	0
Pedestrians	10					
Lane Width (ft)	0.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	0					
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)			204			112
pX, platoon unblocked						
vC, conflicting volume	1876	494			1899	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1876	494			1899	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	65	526			318	

Direction, Lane #	NB 1	NB 2	NB 3	NB 4
Volume Total	527	527	527	310
Volume Left	0	0	0	0
Volume Right	0	0	0	46
cSH	1700	1700	1700	1700
Volume to Capacity	0.31	0.31	0.31	0.18
Queue Length 95th (ft)	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0
Lane LOS				
Approach Delay (s)	0.0			
Approach LOS				

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	41.8%	ICU Level of Service	A
Analysis Period (min)	15		

Queues
15: Park Dr & Landmark Center Driveway

2018 No-Build Conditions - Landmark
Weekday Evening Peak Hour

Lane Group	WBT	NBL	NBT
Lane Group Flow (vph)	200	1208	597
v/c Ratio	0.47	0.54	0.26
Control Delay	42.7	7.8	5.5
Queue Delay	0.0	4.7	0.6
Total Delay	42.7	12.6	6.1
Queue Length 50th (ft)	61	181	69
Queue Length 95th (ft)	95	m162	m77
Internal Link Dist (ft)	48		32
Turn Bay Length (ft)			
Base Capacity (vph)	711	2227	2296
Starvation Cap Reductn	0	933	1256
Spillback Cap Reductn	0	472	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.28	0.93	0.57

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis
15: Park Dr & Landmark Center Driveway

2018 No-Build Conditions - Landmark
Weekday Evening Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0				
Lane Util. Factor					0.95		0.97	0.95				
Frt					0.95		1.00	1.00				
Flt Protected					1.00		0.95	1.00				
Satd. Flow (prot)					3091		3152	3249				
Flt Permitted					1.00		0.95	1.00				
Satd. Flow (perm)					3091		3152	3249				
Volume (vph)	0	0	0	0	128	62	1172	579	0	0	0	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.97	0.97	0.97	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	0	135	65	1208	597	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	200	0	1208	597	0	0	0	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type							Split					
Protected Phases					2		1 4	1 4				
Permitted Phases												
Actuated Green, G (s)					12.7		68.7	68.7				
Effective Green, g (s)					13.7		69.7	69.7				
Actuated g/C Ratio					0.14		0.70	0.70				
Clearance Time (s)					5.0							
Vehicle Extension (s)					2.0							
Lane Grp Cap (vph)					423		2197	2265				
v/s Ratio Prot					c0.06		c0.38	0.18				
v/s Ratio Perm												
v/c Ratio					0.47		0.55	0.26				
Uniform Delay, d1					39.8		7.4	5.6				
Progression Factor					1.00		0.95	0.90				
Incremental Delay, d2					0.3		0.0	0.0				
Delay (s)					40.1		7.1	5.1				
Level of Service					D		A	A				
Approach Delay (s)		0.0			40.1			6.4			0.0	
Approach LOS		A			D			A			A	

Intersection Summary			
HCM Average Control Delay	9.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.6
Intersection Capacity Utilization	82.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
16: Brookline Ave & Overland St

2018 No-Build Conditions - Landmark
Weekday Evening Peak Hour

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	65	403	382	18	75	118
Peak Hour Factor	0.93	0.93	0.84	0.84	0.77	0.77
Hourly flow rate (vph)	70	433	455	21	97	153
Pedestrians		190	190		190	
Lane Width (ft)		14.0	12.0		10.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		18	16		13	
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)		592	1230			
pX, platoon unblocked					0.99	
vC, conflicting volume	666				1419	845
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	666				1422	845
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	91				2	40
cM capacity (veh/h)	801				99	257

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	503	476	251
Volume Left	70	0	97
Volume Right	0	21	153
cSH	801	1700	159
Volume to Capacity	0.09	0.28	1.58
Queue Length 95th (ft)	7	0	425
Control Delay (s)	2.4	0.0	340.0
Lane LOS	A		F
Approach Delay (s)	2.4	0.0	340.0
Approach LOS			F

Intersection Summary			
Average Delay	70.2		
Intersection Capacity Utilization	78.8%	ICU Level of Service	D
Analysis Period (min)	15		

Lane Group	NBT	NEL	NET
Lane Group Flow (vph)	675	43	46
v/c Ratio	0.30	0.12	0.13
Control Delay	4.8	1.2	1.3
Queue Delay	0.2	0.0	0.0
Total Delay	5.0	1.2	1.3
Queue Length 50th (ft)	50	0	1
Queue Length 95th (ft)	55	1	1
Internal Link Dist (ft)	128		116
Turn Bay Length (ft)			
Base Capacity (vph)	2250	378	394
Starvation Cap Reductn	768	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.46	0.11	0.12

Intersection Summary

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0					4.0	4.0				
Lane Util. Factor		0.95					0.95	0.95				
Frt		1.00					1.00	1.00				
Flt Protected		1.00					0.95	0.99				
Satd. Flow (prot)		3185					1513	1579				
Flt Permitted		1.00					0.95	0.99				
Satd. Flow (perm)		3185					1513	1579				
Volume (vph)	0	641	0	0	0	0	48	36	0	0	0	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	675	0	0	0	0	51	38	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	675	0	0	0	0	43	46	0	0	0	0
Turn Type							Split					
Protected Phases		1 4					2 3	2 3				
Permitted Phases												
Actuated Green, G (s)		68.7					21.3	21.3				
Effective Green, g (s)		69.7					22.3	22.3				
Actuated g/C Ratio		0.70					0.22	0.22				
Clearance Time (s)												
Vehicle Extension (s)												
Lane Grp Cap (vph)		2220					337	352				
v/s Ratio Prot		c0.21					0.03	c0.03				
v/s Ratio Perm												
v/c Ratio		0.30					0.13	0.13				
Uniform Delay, d1		5.8					31.1	31.1				
Progression Factor		0.71					0.02	0.02				
Incremental Delay, d2		0.0					0.1	0.1				
Delay (s)		4.2					0.6	0.7				
Level of Service		A					A	A				
Approach Delay (s)		4.2			0.0			0.6			0.0	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM Average Control Delay	3.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.26		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	43.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	621	593	39	69
v/c Ratio	0.41	0.40	0.07	0.14
Control Delay	14.1	14.4	15.1	18.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	14.1	14.4	15.1	18.3
Queue Length 50th (ft)	61	96	9	21
Queue Length 95th (ft)	112	132	24	20
Internal Link Dist (ft)	375	370	143	783
Turn Bay Length (ft)				
Base Capacity (vph)	1518	1493	593	507
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.41	0.40	0.07	0.14

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	13	13	13	13	13	13
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Frpb, ped/bikes		1.00			0.99			0.98			1.00	
Flpb, ped/bikes		1.00			1.00			0.99			0.98	
Frt		1.00			1.00			0.96			0.98	
Flt Protected		1.00			1.00			0.98			0.97	
Satd. Flow (prot)		2955			2903			1623			1473	
Flt Permitted		0.95			0.95			0.93			0.87	
Satd. Flow (perm)		2809			2761			1539			1318	
Volume (vph)	5	493	5	5	547	11	10	10	10	16	10	5
Peak-hour factor, PHF	0.81	0.81	0.81	0.95	0.95	0.95	0.79	0.79	0.79	0.45	0.45	0.45
Adj. Flow (vph)	6	609	6	5	576	12	13	13	13	36	22	11
RTOR Reduction (vph)	0	0	0	0	1	0	0	8	0	0	7	0
Lane Group Flow (vph)	0	621	0	0	592	0	0	31	0	0	62	0
Confl. Peds. (#/hr)	165		105	105		165	10		20	20		10
Confl. Bikes (#/hr)			19			20			2			
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	0%	0%	0%	0%	0%	0%
Parking (#/hr)		1	1		1	1					1	1
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		53.0			53.0			37.0			37.0	
Effective Green, g (s)		54.0			54.0			38.0			38.0	
Actuated g/C Ratio		0.54			0.54			0.38			0.38	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Lane Grp Cap (vph)		1517			1491			585			501	
v/s Ratio Prot												
v/s Ratio Perm		c0.22			0.21			0.02			c0.05	
v/c Ratio		0.41			0.40			0.05			0.12	
Uniform Delay, d1		13.6			13.5			19.6			20.2	
Progression Factor		0.97			1.00			1.00			1.00	
Incremental Delay, d2		0.7			0.8			0.2			0.5	
Delay (s)		13.9			14.3			19.8			20.7	
Level of Service		B			B			B			C	
Approach Delay (s)		13.9			14.3			19.8			20.7	
Approach LOS		B			B			B			C	

Intersection Summary			
HCM Average Control Delay	14.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.29		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	41.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	11	488	21	5	547	5	21	5	11	5	5	11
Peak Hour Factor	0.81	0.81	0.81	0.92	0.92	0.92	0.70	0.70	0.70	0.32	0.32	0.32
Hourly flow rate (vph)	14	602	26	5	595	5	30	7	16	16	16	34
Pedestrians		190			145			90			145	
Lane Width (ft)		12.0			12.0			10.0			10.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		16			12			6			10	
Right turn flare (veh)												
Median type								Raised			Raised	
Median storage veh)								0			0	
Upstream signal (ft)		504			455							
pX, platoon unblocked	0.91			0.87			0.91	0.91	0.87	0.91	0.91	0.91
vC, conflicting volume	745			718			1273	1488	549	1246	1499	635
vC1, stage 1 conf vol							733	733		753	753	
vC2, stage 2 conf vol							540	756		493	746	
vCu, unblocked vol	621			522			907	1143	327	877	1154	500
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			99			83	96	97	92	92	90
cM capacity (veh/h)	788			846			176	186	482	190	186	359

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	315	327	303	303	53	66
Volume Left	14	0	5	0	30	16
Volume Right	0	26	0	5	16	34
cSH	788	1700	846	1700	218	251
Volume to Capacity	0.02	0.19	0.01	0.18	0.24	0.26
Queue Length 95th (ft)	1	0	0	0	20	22
Control Delay (s)	0.6	0.0	0.2	0.0	26.7	24.4
Lane LOS	A		A		D	C
Approach Delay (s)	0.3		0.1		26.7	24.4
Approach LOS					D	C

Intersection Summary			
Average Delay	2.4		
Intersection Capacity Utilization	44.7%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	524	142	140	549	85	345	554
v/c Ratio	0.67	0.47	0.51	0.46	0.26	0.23	0.66
Control Delay	38.3	30.8	25.8	17.3	15.5	13.8	28.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.3	30.8	25.8	17.3	15.5	13.8	28.2
Queue Length 50th (ft)	137	56	31	65	23	53	131
Queue Length 95th (ft)	185	104	68	79	48	82	188
Internal Link Dist (ft)	679			424		602	497
Turn Bay Length (ft)		200	75		75		
Base Capacity (vph)	848	305	298	1215	331	1527	839
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.62	0.47	0.47	0.45	0.26	0.23	0.66

Intersection Summary

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	11	11	11	11	11	11	11
Total Lost time (s)		4.0	4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor		0.95	1.00		1.00	0.95		1.00	0.95			0.95	
Frpb, ped/bikes		1.00	0.78		1.00	0.99		1.00	0.97			0.99	
Flpb, ped/bikes		1.00	1.00		0.98	1.00		0.98	1.00			1.00	
Frt		1.00	0.85		1.00	0.99		1.00	0.98			1.00	
Flt Protected		1.00	1.00		0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)		3141	983		1521	3051		1510	2900			3072	
Flt Permitted		1.00	1.00		0.28	1.00		0.37	1.00			0.64	
Satd. Flow (perm)		3141	983		451	3051		589	2900			1977	
Volume (vph)	0	482	131	5	121	462	32	79	268	53	26	468	16
Peak-hour factor, PHF	0.92	0.92	0.92	0.90	0.90	0.90	0.90	0.93	0.93	0.93	0.92	0.92	0.92
Adj. Flow (vph)	0	524	142	6	134	513	36	85	288	57	28	509	17
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	524	142	0	140	549	0	85	345	0	0	554	0
Confl. Peds. (#/hr)			150		150		155	120		160	160		120
Confl. Bikes (#/hr)							24			25			26
Heavy Vehicles (%)	0%	0%	0%	0%	1%	1%	1%	2%	2%	2%	1%	1%	1%
Parking (#/hr)			1										
Turn Type			pm+ov	D.P+P	D.P+P			D.P+P			Perm		
Protected Phases		4	5	3	3	3 4		5	1 5			1	
Permitted Phases			4	4	4			1			1		
Actuated Green, G (s)		22.9	30.0		34.3	37.3		48.7	51.7			41.6	
Effective Green, g (s)		24.9	31.0		35.3	39.3		48.7	52.7			42.6	
Actuated g/C Ratio		0.25	0.31		0.35	0.39		0.49	0.53			0.43	
Clearance Time (s)		6.0	3.0		3.0			3.0				5.0	
Vehicle Extension (s)		2.0	2.0		2.0			2.0				2.0	
Lane Grp Cap (vph)		782	344		270	1199		343	1528			842	
v/s Ratio Prot		c0.17	c0.03		0.05	c0.18		0.02	0.12				
v/s Ratio Perm			0.12		0.13			0.11				c0.28	
v/c Ratio		0.67	0.41		0.52	0.46		0.25	0.23			0.66	
Uniform Delay, d1		33.8	27.3		23.6	22.5		14.2	12.7			22.9	
Progression Factor		1.00	1.00		0.98	0.73		1.00	1.00			1.00	
Incremental Delay, d2		1.8	0.3		0.7	0.1		0.1	0.0			4.0	
Delay (s)		35.6	27.6		23.9	16.4		14.4	12.7			26.9	
Level of Service		D	C		C	B		B	B			C	
Approach Delay (s)		33.9				17.9			13.0			26.9	
Approach LOS		C				B			B			C	

Intersection Summary

HCM Average Control Delay	23.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	77.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBT	SBT	SBR
Lane Group Flow (vph)	88	315	42	331	119	40	79
v/c Ratio	0.19	0.30	0.55	0.35	0.73	0.22	0.30
Control Delay	6.6	6.9	43.6	8.4	49.2	35.4	9.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.6	6.9	43.6	8.4	49.2	35.4	9.0
Queue Length 50th (ft)	13	47	10	65	38	18	0
Queue Length 95th (ft)	m29	m96	#66	121	84	37	21
Internal Link Dist (ft)		594		467	104	352	
Turn Bay Length (ft)	200		50				100
Base Capacity (vph)	471	1047	77	956	211	247	267
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.30	0.55	0.35	0.56	0.16	0.30

Intersection Summary

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	11	11	10	10	10	12	12	12	11	11	11
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Frpb, ped/bikes	1.00	0.93		1.00	0.97			0.78			1.00	0.77
Flpb, ped/bikes	0.83	1.00		1.00	1.00			0.87			0.89	1.00
Frt	1.00	0.98		1.00	0.99			0.94			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98	1.00
Satd. Flow (prot)	1210	1296		1472	1393			1058			1429	1066
Flt Permitted	0.54	1.00		0.07	1.00			0.85			0.90	1.00
Satd. Flow (perm)	684	1296		102	1393			922			1314	1066
Volume (vph)	79	247	37	37	279	16	42	16	47	11	21	63
Peak-hour factor, PHF	0.90	0.90	0.90	0.89	0.89	0.89	0.88	0.88	0.88	0.80	0.80	0.80
Adj. Flow (vph)	88	274	41	42	313	18	48	18	53	14	26	79
RTOR Reduction (vph)	0	4	0	0	2	0	0	35	0	0	0	64
Lane Group Flow (vph)	88	311	0	42	329	0	0	84	0	0	40	15
Confl. Peds. (#/hr)	305		230	230		305	270		140	140		270
Confl. Bikes (#/hr)			13			12			5			4
Heavy Vehicles (%)	4%	4%	4%	3%	3%	3%	0%	0%	0%	1%	1%	1%
Bus Blockages (#/hr)	0	0	0	0	16	16	0	0	0	0	0	0
Parking (#/hr)		1	1									
Turn Type	D.P+P			Perm			Perm			Perm		pm+ov
Protected Phases	3	1 3			1			2			2	3
Permitted Phases	1			1			2			2		2
Actuated Green, G (s)	64.8	70.8		60.8	60.8			11.2			11.2	15.2
Effective Green, g (s)	66.8	70.8		60.8	60.8			11.2			11.2	17.2
Actuated g/C Ratio	0.74	0.79		0.68	0.68			0.12			0.12	0.19
Clearance Time (s)	6.0			4.0	4.0			4.0			4.0	6.0
Vehicle Extension (s)	3.0			3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	543	1020		69	941			115			164	251
v/s Ratio Prot	0.01	c0.24			0.24							0.00
v/s Ratio Perm	0.11			c0.41				c0.09			0.03	0.01
v/c Ratio	0.16	0.31		0.61	0.35			0.73			0.24	0.06
Uniform Delay, d1	3.3	2.7		8.0	6.2			37.9			35.6	29.8
Progression Factor	1.89	1.91		1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2	0.1	0.1		34.0	1.0			21.0			0.8	0.1
Delay (s)	6.2	5.2		42.1	7.2			59.0			36.4	29.9
Level of Service	A	A		D	A			E			D	C
Approach Delay (s)		5.4			11.1			59.0			32.1	
Approach LOS		A			B			E			C	

Intersection Summary

HCM Average Control Delay	16.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	52.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	37	42	68	6	28	66
Peak Hour Factor	0.88	0.88	0.86	0.86	0.90	0.90
Hourly flow rate (vph)	42	48	79	7	31	73
Pedestrians			15			190
Lane Width (ft)			13.0			13.0
Walking Speed (ft/s)			4.0			4.0
Percent Blockage			1			17
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)			252			184
pX, platoon unblocked						
vC, conflicting volume	233	273			86	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	233	273			86	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	94	93			98	
cM capacity (veh/h)	732	637			1523	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	90	86	104
Volume Left	42	0	31
Volume Right	48	7	0
cSH	678	1700	1523
Volume to Capacity	0.13	0.05	0.02
Queue Length 95th (ft)	10	0	1
Control Delay (s)	11.1	0.0	2.3
Lane LOS	B		A
Approach Delay (s)	11.1	0.0	2.3
Approach LOS	B		

Intersection Summary			
Average Delay	4.4		
Intersection Capacity Utilization	32.2%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	1149	852	110	82	85
v/c Ratio	0.52	0.39	0.43	0.58	0.39
Control Delay	6.5	4.6	23.0	53.7	18.6
Queue Delay	0.0	0.1	0.0	0.0	0.0
Total Delay	6.5	4.7	23.0	53.7	18.6
Queue Length 50th (ft)	96	60	26	44	12
Queue Length 95th (ft)	197	91	53	77	44
Internal Link Dist (ft)	625	229	480		172
Turn Bay Length (ft)				100	
Base Capacity (vph)	2220	2196	372	226	313
Starvation Cap Reductn	0	469	0	0	0
Spillback Cap Reductn	5	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.52	0.49	0.30	0.36	0.27

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	13	12	12	13	12	12	14	12	10	10	12
Total Lost time (s)		4.0			4.0			4.0		4.0	4.0	
Lane Util. Factor		0.95			0.95			1.00		1.00	1.00	
Frpb, ped/bikes		0.98			0.98			0.88		1.00	0.76	
Flpb, ped/bikes		1.00			1.00			0.95		0.88	1.00	
Frt		0.99			0.99			0.90		1.00	0.89	
Flt Protected		1.00			1.00			0.99		0.95	1.00	
Satd. Flow (prot)		3213			3221			1359		1325	1069	
Flt Permitted		0.90			0.89			0.95		0.58	1.00	
Satd. Flow (perm)		2902			2870			1299		814	1069	
Volume (vph)	33	982	42	26	751	32	16	11	63	71	21	53
Peak-hour factor, PHF	0.92	0.92	0.92	0.95	0.95	0.95	0.95	0.80	0.80	0.87	0.87	0.87
Adj. Flow (vph)	36	1067	46	27	791	34	17	14	79	82	24	61
RTOR Reduction (vph)	0	2	0	0	2	0	0	50	0	0	52	0
Lane Group Flow (vph)	0	1147	0	0	850	0	0	60	0	82	33	0
Confl. Peds. (#/hr)	175		195	195		175	330		115	115		330
Confl. Bikes (#/hr)			8			2			2			2
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Parking (#/hr)			1			1						
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		1			1			5			5	
Permitted Phases	1			1			5			5		
Actuated Green, G (s)		75.5			75.5			14.5		14.5	14.5	
Effective Green, g (s)		76.5			76.5			15.5		15.5	15.5	
Actuated g/C Ratio		0.76			0.76			0.16		0.16	0.16	
Clearance Time (s)		5.0			5.0			5.0		5.0	5.0	
Vehicle Extension (s)		4.0			4.0			2.0		2.0	2.0	
Lane Grp Cap (vph)		2220			2196			201		126	166	
v/s Ratio Prot											0.03	
v/s Ratio Perm		c0.40			0.30			0.05		c0.10		
v/c Ratio		0.52			0.39			0.30		0.65	0.20	
Uniform Delay, d1		4.6			3.9			37.4		39.7	36.9	
Progression Factor		1.00			0.86			1.00		1.00	1.00	
Incremental Delay, d2		0.9			0.5			0.3		8.8	0.2	
Delay (s)		5.4			3.8			37.7		48.5	37.1	
Level of Service		A			A			D		D	D	
Approach Delay (s)		5.4			3.8			37.7			42.7	
Approach LOS		A			A			D			D	

Intersection Summary			
HCM Average Control Delay	9.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	83.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBT	NBT
Lane Group Flow (vph)	1150	1022	115
v/c Ratio	0.54	0.67	0.52
Control Delay	7.3	14.0	27.8
Queue Delay	0.5	0.0	0.0
Total Delay	7.8	14.1	27.8
Queue Length 50th (ft)	71	63	32
Queue Length 95th (ft)	225	#346	46
Internal Link Dist (ft)	244	630	613
Turn Bay Length (ft)			
Base Capacity (vph)	2116	1518	409
Starvation Cap Reductn	484	0	0
Spillback Cap Reductn	0	21	13
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.70	0.68	0.29

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	12	12	12	12	16	12
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		0.95			0.95			1.00				
Frpb, ped/bikes		0.99			0.99			0.86				
Flpb, ped/bikes		1.00			1.00			0.97				
Frt		0.99			0.99			0.91				
Flt Protected		1.00			1.00			0.99				
Satd. Flow (prot)		3057			3029			1201				
Flt Permitted		0.92			0.81			0.99				
Satd. Flow (perm)		2813			2452			1201				
Volume (vph)	25	1049	42	53	820	47	16	11	58	0	0	0
Peak-hour factor, PHF	0.97	0.97	0.97	0.90	0.90	0.90	0.74	0.74	0.74	0.25	0.25	0.25
Adj. Flow (vph)	26	1081	43	59	911	52	22	15	78	0	0	0
RTOR Reduction (vph)	0	2	0	0	3	0	0	43	0	0	0	0
Lane Group Flow (vph)	0	1148	0	0	1019	0	0	72	0	0	0	0
Confl. Peds. (#/hr)	115		110	110		115	145		190			
Confl. Bikes (#/hr)			5			2			7			2
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	3%	3%	3%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	8	8	8	0	0	0
Parking (#/hr)			1			1						
Turn Type	D.P+P			Perm			Perm					
Protected Phases	4	1 4			1			3				
Permitted Phases	1			1			3					
Actuated Green, G (s)		64.1			58.1			10.9				
Effective Green, g (s)		66.1			59.1			11.9				
Actuated g/C Ratio		0.73			0.66			0.13				
Clearance Time (s)					5.0			5.0				
Vehicle Extension (s)					3.0			2.0				
Lane Grp Cap (vph)		2085			1610			159				
v/s Ratio Prot		c0.04										
v/s Ratio Perm		0.36			c0.42			0.06				
v/c Ratio		0.55			0.63			0.46				
Uniform Delay, d1		5.3			9.1			36.1				
Progression Factor		1.00			0.94			1.00				
Incremental Delay, d2		1.1			1.7			0.8				
Delay (s)		6.4			10.2			36.8				
Level of Service		A			B			D				
Approach Delay (s)		6.4			10.2			36.8			0.0	
Approach LOS		A			B			D			A	

Intersection Summary			
HCM Average Control Delay	9.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	95.3%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	1222	972	151	118
v/c Ratio	0.76	0.54	0.42	0.31
Control Delay	15.2	13.4	30.9	11.6
Queue Delay	1.4	2.1	0.0	0.0
Total Delay	16.6	15.5	30.9	11.6
Queue Length 50th (ft)	235	140	62	12
Queue Length 95th (ft)	147	181	105	44
Internal Link Dist (ft)	630	157	243	
Turn Bay Length (ft)			50	
Base Capacity (vph)	1612	1791	361	377
Starvation Cap Reductn	0	637	0	0
Spillback Cap Reductn	206	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.87	0.84	0.42	0.31

Intersection Summary

HCM Signalized Intersection Capacity Analysis
8: Boylston St & Ipswich St

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0
Lane Util. Factor		0.95	0.95		1.00	1.00
Frpb, ped/bikes		1.00	0.99		1.00	0.85
Flpb, ped/bikes		1.00	1.00		0.87	1.00
Frt		1.00	0.99		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		3206	3154		1300	1130
Flt Permitted		0.89	1.00		0.95	1.00
Satd. Flow (perm)		2844	3154		1300	1130
Volume (vph)	37	1075	857	37	128	100
Peak-hour factor, PHF	0.91	0.91	0.92	0.92	0.85	0.85
Adj. Flow (vph)	41	1181	932	40	151	118
RTOR Reduction (vph)	0	0	3	0	0	63
Lane Group Flow (vph)	0	1222	969	0	151	55
Confl. Peds. (#/hr)	125			125	85	95
Confl. Bikes (#/hr)				2		1
Heavy Vehicles (%)	1%	1%	1%	1%	9%	9%
Turn Type	Perm					custom
Protected Phases		1	1			
Permitted Phases	1				5	5
Actuated Green, G (s)		50.0	50.0		24.0	24.0
Effective Green, g (s)		51.0	51.0		25.0	25.0
Actuated g/C Ratio		0.57	0.57		0.28	0.28
Clearance Time (s)		5.0	5.0		5.0	5.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1612	1787		361	314
v/s Ratio Prot			0.31			
v/s Ratio Perm		c0.43			c0.12	0.05
v/c Ratio		0.76	0.54		0.42	0.18
Uniform Delay, d1		14.8	12.2		26.6	24.7
Progression Factor		0.80	1.03		1.00	1.00
Incremental Delay, d2		3.0	0.7		3.5	1.2
Delay (s)		14.8	13.3		30.1	25.9
Level of Service		B	B		C	C
Approach Delay (s)		14.8	13.3		28.3	
Approach LOS		B	B		C	

Intersection Summary			
HCM Average Control Delay	15.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	84.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
9: Park Drive & Park Dr

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	0	0	0	428	0	657
Peak Hour Factor	0.25	0.25	0.25	0.93	0.25	0.93
Hourly flow rate (vph)	0	0	0	460	0	706
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)				167	682	
pX, platoon unblocked	0.97					
vC, conflicting volume	230	0	706			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	167	0	706			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	785	1091	901			

Direction, Lane #	NB 1	NB 2	SB 1	SB 2
Volume Total	230	230	353	353
Volume Left	0	0	0	0
Volume Right	0	0	353	353
cSH	1700	1700	1700	1700
Volume to Capacity	0.14	0.14	0.21	0.21
Queue Length 95th (ft)	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0
Lane LOS				
Approach Delay (s)	0.0		0.0	
Approach LOS				

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	28.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL2	WBL	SBT	SBR	NET
Lane Group Flow (vph)	192	418	406	300	61
v/c Ratio	0.36	0.39	0.40	0.66	0.16
Control Delay	23.4	22.6	25.9	35.9	35.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	23.4	22.6	25.9	35.9	35.1
Queue Length 50th (ft)	85	93	78	122	14
Queue Length 95th (ft)	136	128	130	#256	28
Internal Link Dist (ft)		208	251		316
Turn Bay Length (ft)				100	
Base Capacity (vph)	531	1063	1019	456	814
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.36	0.39	0.40	0.66	0.07

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	WBL2	WBL	SBT	SBR	NET
Lane Configurations					
Ideal Flow (vphpl)	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.91	0.91	0.95	1.00	0.95
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00
Flt Protected	0.95	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1464	2927	3217	1439	3185
Flt Permitted	0.95	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1464	2927	3217	1439	3185
Volume (vph)	179	389	378	279	58
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.95
Adj. Flow (vph)	192	418	406	300	61
RTOR Reduction (vph)	0	0	0	0	0
Lane Group Flow (vph)	192	418	406	300	61
Confl. Peds. (#/hr)				60	
Confl. Bikes (#/hr)				13	
Heavy Vehicles (%)	1%	1%	1%	1%	2%
Turn Type	Split			Prot	
Protected Phases	1	1	4	4	2
Permitted Phases					
Actuated Green, G (s)	29.7	29.7	27.5	27.5	9.5
Effective Green, g (s)	30.7	30.7	28.5	28.5	10.5
Actuated g/C Ratio	0.34	0.34	0.32	0.32	0.12
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	0.2	0.2	2.0	2.0	2.0
Lane Grp Cap (vph)	499	998	1019	456	372
v/s Ratio Prot	0.13	c0.14	0.13	c0.21	c0.02
v/s Ratio Perm					
v/c Ratio	0.38	0.42	0.40	0.66	0.16
Uniform Delay, d1	22.5	22.8	24.0	26.5	35.8
Progression Factor	0.90	0.92	1.00	1.00	1.00
Incremental Delay, d2	2.2	1.3	0.1	2.6	0.1
Delay (s)	22.4	22.3	24.1	29.2	35.9
Level of Service	C	C	C	C	D
Approach Delay (s)		22.3	26.3		35.9
Approach LOS		C	C		D

Intersection Summary

HCM Average Control Delay	25.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	20.3
Intersection Capacity Utilization	38.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBR	SET
Lane Group Flow (vph)	758	599
v/c Ratio	0.74	0.26
Control Delay	26.8	16.0
Queue Delay	0.0	0.1
Total Delay	26.8	16.2
Queue Length 50th (ft)	181	56
Queue Length 95th (ft)	167	108
Internal Link Dist (ft)		164
Turn Bay Length (ft)		
Base Capacity (vph)	1054	2677
Starvation Cap Reductn	0	1072
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.72	0.37

Intersection Summary

Movement	EBL	EBR	SET	SER	NWL	NWT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0			
Lane Util. Factor		0.88	0.91			
Frt		0.85	1.00			
Flt Protected		1.00	1.00			
Satd. Flow (prot)		2533	4622			
Flt Permitted		1.00	1.00			
Satd. Flow (perm)		2533	4622			
Volume (vph)	0	637	557	0	0	0
Peak-hour factor, PHF	0.84	0.84	0.93	0.93	0.25	0.25
Adj. Flow (vph)	0	758	599	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	758	599	0	0	0
Heavy Vehicles (%)	1%	1%	1%	1%	0%	0%
Turn Type						
Protected Phases		2	1			
Permitted Phases						
Actuated Green, G (s)		35.3	44.7			
Effective Green, g (s)		36.3	45.7			
Actuated g/C Ratio		0.40	0.51			
Clearance Time (s)		5.0	5.0			
Vehicle Extension (s)		3.0	3.0			
Lane Grp Cap (vph)		1022	2347			
v/s Ratio Prot		c0.30	c0.13			
v/s Ratio Perm						
v/c Ratio		0.74	0.26			
Uniform Delay, d1		22.9	12.5			
Progression Factor		1.00	1.11			
Incremental Delay, d2		2.9	0.2			
Delay (s)		25.8	14.2			
Level of Service		C	B			
Approach Delay (s)	25.8		14.2			0.0
Approach LOS	C		B			A

Intersection Summary			
HCM Average Control Delay	20.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	43.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBT	SBL	SBT	SBR
Lane Group Flow (vph)	718	738	342	720	150
v/c Ratio	0.35	0.50	0.53	0.54	0.28
Control Delay	7.8	32.1	27.9	26.4	23.3
Queue Delay	0.0	1.5	0.8	0.5	0.0
Total Delay	7.8	33.6	28.7	26.9	23.3
Queue Length 50th (ft)	45	151	148	156	59
Queue Length 95th (ft)	16	m114	m246	235	m69
Internal Link Dist (ft)	1113	237		268	
Turn Bay Length (ft)					
Base Capacity (vph)	2024	1486	651	1344	541
Starvation Cap Reductn	0	525	115	257	0
Spillback Cap Reductn	0	0	3	7	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.35	0.77	0.64	0.66	0.28

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↱			↑↑					↰	↰↑	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0					4.0	4.0	4.0
Lane Util. Factor		0.91			0.95					0.91	0.91	1.00
Frpb, ped/bikes		0.99			1.00					1.00	1.00	0.85
Flpb, ped/bikes		1.00			1.00					1.00	1.00	1.00
Frt		0.99			1.00					1.00	1.00	0.85
Flt Protected		1.00			1.00					0.95	0.98	1.00
Satd. Flow (prot)		4312			3185					1464	3024	1218
Flt Permitted		1.00			1.00					0.95	0.98	1.00
Satd. Flow (perm)		4312			3185					1464	3024	1218
Volume (vph)	0	624	58	0	657	0	0	0	0	605	436	147
Peak-hour factor, PHF	0.95	0.95	0.95	0.89	0.89	0.89	0.25	0.25	0.25	0.98	0.98	0.98
Adj. Flow (vph)	0	657	61	0	738	0	0	0	0	617	445	150
RTOR Reduction (vph)	0	12	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	706	0	0	738	0	0	0	0	342	720	150
Confl. Peds. (#/hr)			210									150
Confl. Bikes (#/hr)			9									12
Heavy Vehicles (%)	0%	2%	2%	2%	2%	0%	0%	0%	0%	1%	1%	1%
Bus Blockages (#/hr)	0	25	25	0	0	0	0	0	0	0	0	0
Turn Type										Split		Perm
Protected Phases		3			3					1	1	
Permitted Phases		3										1
Actuated Green, G (s)		41.0			41.0					39.0	39.0	39.0
Effective Green, g (s)		42.0			42.0					40.0	40.0	40.0
Actuated g/C Ratio		0.47			0.47					0.44	0.44	0.44
Clearance Time (s)		5.0			5.0					5.0	5.0	5.0
Vehicle Extension (s)		2.0			2.0					2.0	2.0	2.0
Lane Grp Cap (vph)		2012			1486					651	1344	541
v/s Ratio Prot		0.16			c0.23					0.23	c0.24	
v/s Ratio Perm												0.12
v/c Ratio		0.35			0.50					0.53	0.54	0.28
Uniform Delay, d1		15.3			16.7					18.1	18.2	15.8
Progression Factor		0.50			1.89					1.35	1.35	1.36
Incremental Delay, d2		0.4			0.1					2.6	1.3	1.1
Delay (s)		8.0			31.6					27.0	26.0	22.7
Level of Service		A			C					C	C	C
Approach Delay (s)		8.0			31.6			0.0			25.8	
Approach LOS		A			C			A			C	

Intersection Summary

HCM Average Control Delay	22.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	65.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBT	WBR	NBT	NBR	NWL	NWR
Lane Group Flow (vph)	65	299	918	222	187	406	204	658	231
v/c Ratio	0.33	0.66	0.60	0.27	0.68	0.29	0.70	1.79	3.67
Control Delay	40.2	39.4	13.7	22.3	38.5	24.1	42.1	392.5	1252.5
Queue Delay	0.0	0.8	0.5	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.2	40.2	14.2	22.3	38.5	24.1	42.1	392.5	1252.5
Queue Length 50th (ft)	31	132	184	31	86	56	89	~256	~230
Queue Length 95th (ft)	m59	203	214	m50	m#166	79	#181	#351	#371
Internal Link Dist (ft)		237		594		604		625	
Turn Bay Length (ft)					150				300
Base Capacity (vph)	198	451	1520	830	274	1424	292	368	63
Starvation Cap Reductn	0	32	236	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.71	0.71	0.27	0.68	0.29	0.70	1.79	3.67

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBT	WBR	NBL	NBT	NBR	NBR2	NWL	NWR	NWR2
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	0.88	0.95	1.00		0.91	1.00		0.97	0.91	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	0.76		1.00	0.65		1.00	0.35	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.85		1.00	0.85		0.95	0.85	
Flt Protected	0.95	1.00	1.00	1.00	1.00		0.99	1.00		0.97	1.00	
Satd. Flow (prot)	1624	1693	2533	3114	1026		4577	940		3014	459	
Flt Permitted	0.95	1.00	1.00	1.00	1.00		0.99	1.00		0.97	1.00	
Satd. Flow (perm)	1624	1693	2533	3114	1026		4577	940		3014	459	
Volume (vph)	62	284	872	200	168	68	310	47	142	389	389	32
Peak-hour factor, PHF	0.95	0.95	0.95	0.90	0.90	0.93	0.93	0.93	0.93	0.91	0.91	0.91
Adj. Flow (vph)	65	299	918	222	187	73	333	51	153	427	427	35
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	7	0
Lane Group Flow (vph)	65	299	918	222	187	0	406	204	0	658	224	0
Confl. Peds. (#/hr)					190	5		240	270			240
Confl. Bikes (#/hr)			3		15							2
Heavy Vehicles (%)	0%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	0	0	0	16	16	0	0	0	0	0	0	0
Turn Type	Prot		custom		Perm	Perm		Perm			Perm	
Protected Phases	3	2	1 2 3	2			4			1		
Permitted Phases					2	4		4			1	
Actuated Green, G (s)	10.0	23.0	53.0	23.0	23.0		27.0	27.0		9.0	9.0	
Effective Green, g (s)	11.0	24.0	54.0	24.0	24.0		28.0	28.0		11.0	11.0	
Actuated g/C Ratio	0.12	0.27	0.60	0.27	0.27		0.31	0.31		0.12	0.12	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	198	451	1520	830	274		1424	292		368	56	
v/s Ratio Prot	0.04	0.18	c0.36	0.07						0.22		
v/s Ratio Perm					0.18		0.09	c0.22			c0.49	
v/c Ratio	0.33	0.66	0.60	0.27	0.68		0.29	0.70		1.79	4.00	
Uniform Delay, d1	36.1	29.4	11.3	26.1	29.6		23.4	27.3		39.5	39.5	
Progression Factor	0.98	1.08	1.04	0.82	0.83		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.0	6.9	1.6	0.7	12.3		0.5	13.0		365.4	1391.4	
Delay (s)	39.5	38.6	13.4	22.1	36.9		23.9	40.3		404.9	1430.9	
Level of Service	D	D	B	C	D		C	D		F	F	
Approach Delay (s)		20.6		28.8			29.4			671.5		
Approach LOS		C		C			C			F		

Intersection Summary

HCM Average Control Delay	204.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.08		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	78.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	0	0	833	97	0	0
Peak Hour Factor	0.25	0.25	0.92	0.92	0.25	0.25
Hourly flow rate (vph)	0	0	905	105	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)			209			111
pX, platoon unblocked						
vC, conflicting volume	958	279			1011	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	958	279			1011	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	259	724			694	

Direction, Lane #	NB 1	NB 2	NB 3	NB 4
Volume Total	259	259	259	235
Volume Left	0	0	0	0
Volume Right	0	0	0	105
cSH	1700	1700	1700	1700
Volume to Capacity	0.15	0.15	0.15	0.14
Queue Length 95th (ft)	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0
Lane LOS				
Approach Delay (s)	0.0			
Approach LOS				

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	26.2%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBT	NBL	NBT
Lane Group Flow (vph)	152	537	358
v/c Ratio	0.44	0.24	0.15
Control Delay	40.0	7.7	7.1
Queue Delay	0.0	0.2	0.0
Total Delay	40.0	7.9	7.1
Queue Length 50th (ft)	38	72	45
Queue Length 95th (ft)	56	m74	m51
Internal Link Dist (ft)	177		31
Turn Bay Length (ft)			
Base Capacity (vph)	766	2260	2331
Starvation Cap Reductn	0	933	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.20	0.40	0.15

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0				
Lane Util. Factor					0.95		0.97	0.95				
Frpb, ped/bikes					0.99		1.00	1.00				
Flpb, ped/bikes					1.00		1.00	1.00				
Frt					0.93		1.00	1.00				
Flt Protected					1.00		0.95	1.00				
Satd. Flow (prot)					2995		3120	3217				
Flt Permitted					1.00		0.95	1.00				
Satd. Flow (perm)					2995		3120	3217				
Volume (vph)	0	0	0	0	68	63	499	333	0	0	0	0
Peak-hour factor, PHF	0.25	0.25	0.25	0.25	0.86	0.86	0.93	0.93	0.25	0.25	0.25	0.25
Adj. Flow (vph)	0	0	0	0	79	73	537	358	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	152	0	537	358	0	0	0	0
Confl. Bikes (#/hr)						1			16			
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	1%	1%	0%	0%	0%	0%
Turn Type							Split					
Protected Phases					2		1 4	1 4				
Permitted Phases												
Actuated Green, G (s)					9.5		62.2	62.2				
Effective Green, g (s)					10.5		63.2	63.2				
Actuated g/C Ratio					0.12		0.70	0.70				
Clearance Time (s)					5.0							
Vehicle Extension (s)					2.0							
Lane Grp Cap (vph)					349		2191	2259				
v/s Ratio Prot					c0.05		c0.17	0.11				
v/s Ratio Perm												
v/c Ratio					0.44		0.25	0.16				
Uniform Delay, d1					37.0		4.8	4.5				
Progression Factor					1.00		1.42	1.39				
Incremental Delay, d2					0.3		0.0	0.0				
Delay (s)					37.3		6.9	6.2				
Level of Service					D		A	A				
Approach Delay (s)		0.0			37.3			6.6			0.0	
Approach LOS		A			D			A			A	

Intersection Summary			
HCM Average Control Delay	11.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.27		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	16.3
Intersection Capacity Utilization	45.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	11	289	305	11	5	11
Peak Hour Factor	0.82	0.82	0.89	0.89	0.53	0.53
Hourly flow rate (vph)	13	352	343	12	9	21
Pedestrians		175	175		175	
Lane Width (ft)		12.0	10.0		14.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		15	12		17	
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)		547				
pX, platoon unblocked						
vC, conflicting volume	530				1078	699
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	530				1078	699
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				95	93
cM capacity (veh/h)	852				175	314

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	366	355	30
Volume Left	13	0	9
Volume Right	0	12	21
cSH	852	1700	252
Volume to Capacity	0.02	0.21	0.12
Queue Length 95th (ft)	1	0	9
Control Delay (s)	0.5	0.0	21.2
Lane LOS	A		C
Approach Delay (s)	0.5	0.0	21.2
Approach LOS			C

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	46.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	NBT	NEL	NET
Lane Group Flow (vph)	417	34	27
v/c Ratio	0.18	0.10	0.07
Control Delay	3.4	0.9	0.5
Queue Delay	0.2	0.0	0.0
Total Delay	3.5	0.9	0.5
Queue Length 50th (ft)	22	0	0
Queue Length 95th (ft)	30	0	0
Internal Link Dist (ft)	132		156
Turn Bay Length (ft)			
Base Capacity (vph)	2307	402	423
Starvation Cap Reductn	1102	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.35	0.08	0.06

Intersection Summary

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0					4.0	4.0				
Lane Util. Factor		0.95					0.95	0.95				
Frt		1.00					1.00	1.00				
Flt Protected		1.00					0.95	1.00				
Satd. Flow (prot)		3185					1513	1593				
Flt Permitted		1.00					0.95	1.00				
Satd. Flow (perm)		3185					1513	1593				
Volume (vph)	0	396	0	0	0	0	32	26	0	0	0	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	417	0	0	0	0	34	27	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	417	0	0	0	0	34	27	0	0	0	0
Turn Type							Split					
Protected Phases		1 4					2 3	2 3				
Permitted Phases												
Actuated Green, G (s)		62.2					17.8	17.8				
Effective Green, g (s)		63.2					18.8	18.8				
Actuated g/C Ratio		0.70					0.21	0.21				
Clearance Time (s)												
Vehicle Extension (s)												
Lane Grp Cap (vph)		2237					316	333				
v/s Ratio Prot		c0.13					c0.02	0.02				
v/s Ratio Perm												
v/c Ratio		0.19					0.11	0.08				
Uniform Delay, d1		4.6					28.8	28.6				
Progression Factor		0.62					0.01	0.00				
Incremental Delay, d2		0.0					0.1	0.0				
Delay (s)		2.9					0.4	0.1				
Level of Service		A					A	A				
Approach Delay (s)		2.9			0.0			0.3			0.0	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM Average Control Delay	2.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.17		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	28.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	908	891	95	92
v/c Ratio	0.47	0.70	0.29	0.30
Control Delay	19.0	20.2	21.2	35.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	19.0	20.2	21.2	35.4
Queue Length 50th (ft)	218	258	25	48
Queue Length 95th (ft)	m214	m266	39	55
Internal Link Dist (ft)	361	1280	154	514
Turn Bay Length (ft)				
Base Capacity (vph)	1942	1273	328	303
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.47	0.70	0.29	0.30

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	13	13	13	13	13	13
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Frpb, ped/bikes		0.98			0.99			0.97			1.00	
Flpb, ped/bikes		1.00			0.99			1.00			0.99	
Frt		0.99			0.99			0.93			0.99	
Flt Protected		1.00			0.99			0.99			0.98	
Satd. Flow (prot)		2828			2808			1577			1684	
Flt Permitted		0.95			0.62			0.91			0.87	
Satd. Flow (perm)		2691			1766			1448			1493	
Volume (vph)	5	766	64	151	650	28	17	12	31	21	25	5
Peak-hour factor, PHF	0.92	0.92	0.92	0.93	0.93	0.93	0.63	0.63	0.63	0.56	0.56	0.56
Adj. Flow (vph)	5	833	70	162	699	30	27	19	49	38	45	9
RTOR Reduction (vph)	0	6	0	0	3	0	0	38	0	0	4	0
Lane Group Flow (vph)	0	902	0	0	888	0	0	57	0	0	88	0
Confl. Peds. (#/hr)	55		60	60		55	5		20	20		5
Confl. Bikes (#/hr)			101			11						2
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	0%	0%	0%	0%	0%	0%
Parking (#/hr)		1	1		1	1						
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4	4		8	8		2	2		6	6	
Actuated Green, G (s)		71.0			71.0			19.0			19.0	
Effective Green, g (s)		72.0			72.0			20.0			20.0	
Actuated g/C Ratio		0.72			0.72			0.20			0.20	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Lane Grp Cap (vph)		1938			1272			290			299	
v/s Ratio Prot												
v/s Ratio Perm		0.34			c0.50			0.04			c0.06	
v/c Ratio		0.47			0.70			0.20			0.29	
Uniform Delay, d1		5.9			7.9			33.3			34.0	
Progression Factor		3.19			2.25			1.00			1.00	
Incremental Delay, d2		0.3			1.5			1.5			2.5	
Delay (s)		19.1			19.2			34.8			36.5	
Level of Service		B			B			C			D	
Approach Delay (s)		19.1			19.2			34.8			36.5	
Approach LOS		B			B			C			D	

Intersection Summary			
HCM Average Control Delay	20.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	75.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	5	861	54	18	651	5	22	15	18	0	9	5
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.68	0.68	0.68	0.58	0.58	0.58
Hourly flow rate (vph)	5	926	58	19	700	5	32	22	26	0	16	9
Pedestrians		110			70			70			60	
Lane Width (ft)		12.0			12.0			10.0			10.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		9			6			5			4	
Right turn flare (veh)												
Median type								Raised			Raised	
Median storage veh)								0			0	
Upstream signal (ft)		488			441							
pX, platoon unblocked	0.96			0.76			0.77	0.77	0.76	0.77	0.77	0.96
vC, conflicting volume	765			1054			1551	1840	632	1383	1866	523
vC1, stage 1 conf vol							1036	1036		801	801	
vC2, stage 2 conf vol							515	804		581	1065	
vCu, unblocked vol	720			749			1282	1655	191	1065	1689	468
tC, single (s)	4.1			4.2			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			97			76	84	95	100	88	98
cM capacity (veh/h)	811			611			137	137	559	169	130	459

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	468	521	369	355	81	24
Volume Left	5	0	19	0	32	0
Volume Right	0	58	0	5	26	9
cSH	811	1700	611	1700	182	174
Volume to Capacity	0.01	0.31	0.03	0.21	0.44	0.14
Queue Length 95th (ft)	1	0	2	0	52	12
Control Delay (s)	0.2	0.0	1.0	0.0	39.8	28.9
Lane LOS	A		A		E	D
Approach Delay (s)	0.1		0.5		39.8	28.9
Approach LOS					E	D

Intersection Summary			
Average Delay	2.4		
Intersection Capacity Utilization	54.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	871	216	225	488	49	393	71	568
v/c Ratio	1.04	0.62	0.92	0.38	0.27	0.29	1.11	0.90
Control Delay	77.8	35.6	66.4	12.7	11.7	8.8	156.1	30.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	77.8	35.6	66.4	12.7	11.7	8.8	156.1	30.5
Queue Length 50th (ft)	~316	107	86	46	9	39	~51	274
Queue Length 95th (ft)	#431	180	m#220	95	18	46	m#96	#529
Internal Link Dist (ft)	968			408		639		270
Turn Bay Length (ft)		200	75		75			
Base Capacity (vph)	840	347	247	1272	183	1371	64	630
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.04	0.62	0.91	0.38	0.27	0.29	1.11	0.90

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	11	11	11	11	11	11
Total Lost time (s)		4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0
Lane Util. Factor		0.95	1.00		1.00	0.95		1.00	0.95		1.00	1.00
Frpb, ped/bikes		1.00	0.90		1.00	0.99		1.00	0.97		1.00	0.99
Flpb, ped/bikes		1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00
Frt		1.00	0.85		1.00	0.99		1.00	0.97		1.00	0.99
Flt Protected		1.00	1.00		0.95	1.00		0.95	1.00		0.95	1.00
Satd. Flow (prot)		3110	1120		1526	3012		1477	2789		1525	1529
Flt Permitted		1.00	1.00		0.15	1.00		0.20	1.00		0.10	1.00
Satd. Flow (perm)		3110	1120		238	3012		308	2789		156	1529
Volume (vph)	0	775	205	5	209	442	22	46	284	82	64	481
Peak-hour factor, PHF	0.89	0.89	0.95	0.95	0.95	0.95	0.95	0.93	0.93	0.93	0.90	0.90
Adj. Flow (vph)	0	871	216	5	220	465	23	49	305	88	71	534
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	871	216	0	225	488	0	49	393	0	71	568
Confl. Peds. (#/hr)			60		60		70	70		80	80	
Confl. Bikes (#/hr)							8			26		
Heavy Vehicles (%)	1%	1%	1%	0%	3%	3%	3%	6%	6%	6%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	8
Parking (#/hr)			1									
Turn Type			pm+ov	D.P+P	D.P+P			D.P+P			Perm	
Protected Phases		4	5	3	3	3 4		5	1 5			1
Permitted Phases			4	4	4			1			1	
Actuated Green, G (s)		25.0	30.0		37.8	40.8		45.2	48.2		40.2	40.2
Effective Green, g (s)		27.0	31.0		38.8	42.8		45.2	49.2		41.2	41.2
Actuated g/C Ratio		0.27	0.31		0.39	0.43		0.45	0.49		0.41	0.41
Clearance Time (s)		6.0	3.0		3.0			3.0			5.0	5.0
Vehicle Extension (s)		2.0	2.0		2.0			2.0			2.0	2.0
Lane Grp Cap (vph)		840	392		244	1289		186	1372		64	630
v/s Ratio Prot		c0.28	c0.02		c0.11	0.16		0.01	0.14			0.37
v/s Ratio Perm			0.17		0.25			0.11			c0.46	
v/c Ratio		1.04	0.55		0.92	0.38		0.26	0.29		1.11	0.90
Uniform Delay, d1		36.5	28.7		24.8	19.5		18.4	15.0		29.4	27.5
Progression Factor		1.00	1.00		1.35	0.61		0.59	0.54		0.47	0.47
Incremental Delay, d2		41.0	1.0		30.5	0.1		0.3	0.0		133.1	15.4
Delay (s)		77.5	29.7		64.0	12.0		11.1	8.2		146.9	28.2
Level of Service		E	C		E	B		B	A		F	C
Approach Delay (s)		68.0				28.4			8.5			41.4
Approach LOS		E				C			A			D

Intersection Summary			
HCM Average Control Delay	43.2	HCM Level of Service	D
HCM Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	84.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBR
Lane Configurations	
Ideal Flow (vphpl)	1900
Lane Width	11
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Volume (vph)	31
Peak-hour factor, PHF	0.90
Adj. Flow (vph)	34
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	70
Confl. Bikes (#/hr)	35
Heavy Vehicles (%)	3%
Bus Blockages (#/hr)	8
Parking (#/hr)	
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	124	633	22	467	169	25	133	87
v/c Ratio	0.28	0.64	0.37	0.60	0.83	0.14	0.55	0.23
Control Delay	3.9	6.8	24.6	10.2	70.0	14.3	45.3	7.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	3.9	6.8	24.6	10.2	70.0	14.3	45.3	7.4
Queue Length 50th (ft)	15	80	4	106	101	0	75	0
Queue Length 95th (ft)	m12	m60	m11	m130	#181	20	109	21
Internal Link Dist (ft)		648		198	37		352	
Turn Bay Length (ft)	200		50			90		100
Base Capacity (vph)	445	993	60	775	233	200	277	371
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.64	0.37	0.60	0.73	0.13	0.48	0.23

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	11	11	10	10	10	12	11	11	11	11	11
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	1.00
Frpb, ped/bikes	1.00	0.98		1.00	0.93			1.00	0.62		1.00	0.86
Flpb, ped/bikes	0.94	1.00		1.00	1.00			0.93	1.00		0.93	1.00
Frt	1.00	0.99		1.00	0.97			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.98	1.00		0.99	1.00
Satd. Flow (prot)	1350	1345		1391	1243			1466	859		1475	1166
Flt Permitted	0.42	1.00		0.06	1.00			0.69	1.00		0.84	1.00
Satd. Flow (perm)	596	1345		95	1243			1039	859		1260	1166
Volume (vph)	102	473	46	18	318	65	70	74	21	28	72	65
Peak-hour factor, PHF	0.82	0.82	0.82	0.82	0.82	0.82	0.85	0.85	0.85	0.75	0.75	0.75
Adj. Flow (vph)	124	577	56	22	388	79	82	87	25	37	96	87
RTOR Reduction (vph)	0	3	0	0	7	0	0	0	20	0	0	64
Lane Group Flow (vph)	124	630	0	22	460	0	0	169	5	0	133	23
Confl. Peds. (#/hr)	125		80	80		125	105		115	115		105
Confl. Bikes (#/hr)			7			15			3			4
Heavy Vehicles (%)	6%	6%	6%	9%	9%	9%	2%	2%	2%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	16	16	0	0	0	0	0	0
Parking (#/hr)		1	1									
Turn Type	D.P+P			Perm			Perm		Perm	Perm		pm+ov
Protected Phases	3	1 3			1			2			2	3
Permitted Phases	1			1			2		2	2		2
Actuated Green, G (s)	67.6	73.6		61.7	61.7			18.4	18.4		18.4	24.3
Effective Green, g (s)	69.6	73.6		61.7	61.7			18.4	18.4		18.4	26.3
Actuated g/C Ratio	0.70	0.74		0.62	0.62			0.18	0.18		0.18	0.26
Clearance Time (s)	6.0			4.0	4.0			4.0	4.0		4.0	6.0
Vehicle Extension (s)	3.0			3.0	3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	474	990		59	767			191	158		232	353
v/s Ratio Prot	0.02	c0.47			0.37							0.01
v/s Ratio Perm	0.16			0.23				c0.16	0.01		0.11	0.01
v/c Ratio	0.26	0.64		0.37	0.60			0.88	0.03		0.57	0.06
Uniform Delay, d1	5.6	6.6		9.5	11.6			39.8	33.5		37.2	27.6
Progression Factor	0.84	0.86		0.67	0.59			1.00	1.00		1.00	1.00
Incremental Delay, d2	0.0	0.1		15.2	3.1			34.9	0.1		3.4	0.1
Delay (s)	4.7	5.8		21.6	9.9			74.7	33.5		40.6	27.7
Level of Service	A	A		C	A			E	C		D	C
Approach Delay (s)		5.6			10.5			69.4			35.5	
Approach LOS		A			B			E			D	

Intersection Summary			
HCM Average Control Delay	18.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	67.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	26	71	94	13	109	32
Peak Hour Factor	0.81	0.81	0.93	0.93	0.88	0.88
Hourly flow rate (vph)	32	88	101	14	124	36
Pedestrians	115		120			135
Lane Width (ft)	15.0		13.0			13.0
Walking Speed (ft/s)	4.0		4.0			4.0
Percent Blockage	12		11			12
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)			297			117
pX, platoon unblocked	0.97					
vC, conflicting volume	627	358			230	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	617	358			230	
tC, single (s)	6.5	6.3			4.1	
tC, 2 stage (s)						
tF (s)	3.6	3.4			2.2	
p0 queue free %	89	83			89	
cM capacity (veh/h)	304	522			1178	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	120	115	160
Volume Left	32	0	124
Volume Right	88	14	0
cSH	438	1700	1178
Volume to Capacity	0.27	0.07	0.11
Queue Length 95th (ft)	27	0	9
Control Delay (s)	16.3	0.0	6.7
Lane LOS	C		A
Approach Delay (s)	16.3	0.0	6.7
Approach LOS	C		

Intersection Summary			
Average Delay	7.7		
Intersection Capacity Utilization	35.2%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	1443	1199	78	44	82
v/c Ratio	0.74	0.60	0.32	0.29	0.34
Control Delay	11.5	7.9	21.4	35.2	13.7
Queue Delay	0.1	2.3	0.0	0.0	0.0
Total Delay	11.6	10.2	21.4	35.2	13.7
Queue Length 50th (ft)	139	90	23	24	7
Queue Length 95th (ft)	425	286	54	38	27
Internal Link Dist (ft)	668	215	267		217
Turn Bay Length (ft)				100	
Base Capacity (vph)	1957	1995	447	297	399
Starvation Cap Reductn	0	629	0	0	0
Spillback Cap Reductn	49	0	4	2	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.76	0.88	0.18	0.15	0.21

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1600	1600	1600	1600	1600	1600	1900	1900	1900	1900	1900	1900
Lane Width	12	13	12	12	13	12	12	14	12	10	10	12
Total Lost time (s)		4.0			4.0			4.0		4.0	4.0	
Lane Util. Factor		0.95			0.95			1.00		1.00	1.00	
Frpb, ped/bikes		0.99			0.99			0.94		1.00	0.93	
Flpb, ped/bikes		1.00			1.00			0.99		0.94	1.00	
Frt		1.00			0.99			0.91		1.00	0.88	
Flt Protected		1.00			1.00			0.99		0.95	1.00	
Satd. Flow (prot)		2718			2728			1469		1282	1168	
Flt Permitted		0.91			0.92			0.93		0.71	1.00	
Satd. Flow (perm)		2476			2523			1374		953	1168	
Volume (vph)	25	1219	26	15	1020	56	15	9	46	32	10	50
Peak-hour factor, PHF	0.88	0.88	0.88	0.91	0.91	0.91	0.90	0.90	0.90	0.73	0.73	0.73
Adj. Flow (vph)	28	1385	30	16	1121	62	17	10	51	44	14	68
RTOR Reduction (vph)	0	1	0	0	3	0	0	31	0	0	58	0
Lane Group Flow (vph)	0	1442	0	0	1196	0	0	47	0	44	24	0
Confl. Peds. (#/hr)	40		80	80		40	60		60	60		60
Confl. Bikes (#/hr)			4			2			3			2
Heavy Vehicles (%)	3%	3%	3%	2%	2%	2%	4%	4%	4%	11%	11%	11%
Parking (#/hr)			1			1						
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		1			1			5			5	
Permitted Phases	1			1			5			5		
Actuated Green, G (s)		68.4			68.4			11.6		11.6	11.6	
Effective Green, g (s)		69.4			69.4			12.6		12.6	12.6	
Actuated g/C Ratio		0.77			0.77			0.14		0.14	0.14	
Clearance Time (s)		5.0			5.0			5.0		5.0	5.0	
Vehicle Extension (s)		4.0			4.0			2.0		2.0	2.0	
Lane Grp Cap (vph)		1909			1946			192		133	164	
v/s Ratio Prot											0.02	
v/s Ratio Perm		c0.58			0.47			0.03		c0.05		
v/c Ratio		0.76			0.61			0.24		0.33	0.14	
Uniform Delay, d1		5.6			4.5			34.5		34.9	34.0	
Progression Factor		1.00			1.00			1.00		1.00	1.00	
Incremental Delay, d2		2.8			1.5			0.2		0.5	0.1	
Delay (s)		8.5			5.9			34.7		35.4	34.1	
Level of Service		A			A			C		D	C	
Approach Delay (s)		8.5			5.9			34.7			34.6	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	9.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	93.7%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBT	NBT
Lane Group Flow (vph)	1366	1305	185
v/c Ratio	0.92	1.05	0.69
Control Delay	24.2	54.4	39.6
Queue Delay	12.4	74.9	0.6
Total Delay	36.7	129.3	40.3
Queue Length 50th (ft)	180	~201	80
Queue Length 95th (ft)	#584	#627	97
Internal Link Dist (ft)	258	630	256
Turn Bay Length (ft)			
Base Capacity (vph)	1492	1247	437
Starvation Cap Reductn	140	0	0
Spillback Cap Reductn	0	180	74
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	1.01	1.22	0.51

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1600	1600	1600	1600	1600	1600	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	12	12	12	12	16	12
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		0.95			0.95			1.00				
Frpb, ped/bikes		1.00			0.99			0.95				
Flpb, ped/bikes		1.00			1.00			0.98				
Frt		1.00			0.99			0.91				
Flt Protected		1.00			1.00			0.99				
Satd. Flow (prot)		2546			2523			1321				
Flt Permitted		0.89			0.88			0.99				
Satd. Flow (perm)		2279			2214			1321				
Volume (vph)	29	1142	31	31	1095	62	19	30	87	0	0	0
Peak-hour factor, PHF	0.88	0.88	0.88	0.91	0.91	0.91	0.74	0.74	0.74	0.25	0.25	0.25
Adj. Flow (vph)	33	1298	35	34	1203	68	26	41	118	0	0	0
RTOR Reduction (vph)	0	2	0	0	3	0	0	31	0	0	0	0
Lane Group Flow (vph)	0	1364	0	0	1302	0	0	154	0	0	0	0
Confl. Peds. (#/hr)	65		50	50		65	115		65			
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	8%	8%	8%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	4	4	4	0	0	0
Parking (#/hr)			1			1						
Turn Type	D.P+P			Perm			Perm					
Protected Phases	4	1 4			1			3				
Permitted Phases	1			1			3					
Actuated Green, G (s)		59.9			53.9			15.1				
Effective Green, g (s)		61.9			54.9			16.1				
Actuated g/C Ratio		0.69			0.61			0.18				
Clearance Time (s)					5.0			5.0				
Vehicle Extension (s)					3.0			2.0				
Lane Grp Cap (vph)		1588			1351			236				
v/s Ratio Prot		c0.07										
v/s Ratio Perm		0.52			c0.59			0.12				
v/c Ratio		0.86			0.96			0.65				
Uniform Delay, d1		10.7			16.6			34.3				
Progression Factor		1.00			1.00			1.00				
Incremental Delay, d2		6.3			12.7			4.8				
Delay (s)		17.0			29.3			39.2				
Level of Service		B			C			D				
Approach Delay (s)		17.0			29.3			39.2			0.0	
Approach LOS		B			C			D			A	

Intersection Summary			
HCM Average Control Delay	24.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	99.6%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	1362	1427	218	94
v/c Ratio	0.92	0.79	0.65	0.26
Control Delay	19.1	18.6	39.9	12.7
Queue Delay	157.5	116.5	2.0	0.0
Total Delay	176.6	135.0	41.9	12.7
Queue Length 50th (ft)	177	303	110	12
Queue Length 95th (ft)	m#273	398	154	38
Internal Link Dist (ft)	630	157	254	
Turn Bay Length (ft)			50	
Base Capacity (vph)	1480	1811	334	363
Starvation Cap Reductn	0	675	0	0
Spillback Cap Reductn	474	0	39	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.35	1.26	0.74	0.26

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis
8: Boylston St & Ipswich St

2018 Build Conditions - Landmark
Weekday Morning Peak Hour

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0
Lane Util. Factor		0.95	0.95		1.00	1.00
Frpb, ped/bikes		1.00	0.99		1.00	0.94
Flpb, ped/bikes		1.00	1.00		0.90	1.00
Frt		1.00	0.99		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		3150	3122		1253	1183
Flt Permitted		0.81	1.00		0.95	1.00
Satd. Flow (perm)		2561	3122		1253	1183
Volume (vph)	36	1177	1233	108	168	72
Peak-hour factor, PHF	0.89	0.89	0.94	0.94	0.77	0.77
Adj. Flow (vph)	40	1322	1312	115	218	94
RTOR Reduction (vph)	0	0	7	0	0	48
Lane Group Flow (vph)	0	1362	1420	0	218	46
Confl. Peds. (#/hr)	30			30	70	30
Confl. Bikes (#/hr)				6		
Heavy Vehicles (%)	3%	3%	2%	2%	16%	16%
Turn Type	Perm					custom
Protected Phases		1	1			
Permitted Phases	1				5	5
Actuated Green, G (s)		51.0	51.0		23.0	23.0
Effective Green, g (s)		52.0	52.0		24.0	24.0
Actuated g/C Ratio		0.58	0.58		0.27	0.27
Clearance Time (s)		5.0	5.0		5.0	5.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1480	1804		334	315
v/s Ratio Prot			0.45			
v/s Ratio Perm		c0.53			c0.17	0.04
v/c Ratio		0.92	0.79		0.65	0.15
Uniform Delay, d1		17.1	14.7		29.3	25.2
Progression Factor		0.74	1.00		1.00	1.00
Incremental Delay, d2		5.2	3.6		9.5	1.0
Delay (s)		17.9	18.3		38.8	26.2
Level of Service		B	B		D	C
Approach Delay (s)		17.9	18.3		35.0	
Approach LOS		B	B		D	

Intersection Summary			
HCM Average Control Delay	19.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	86.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
9: Park Dr SB & Park Dr

2018 Build Conditions - Landmark
Weekday Morning Peak Hour

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	0	0	0	409	0	900
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	0	431	0	947
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)				149	719	
pX, platoon unblocked	0.98					
vC, conflicting volume	215	0	947			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	176	0	947			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	786	1091	733			

Direction, Lane #	NB 1	NB 2	SB 1	SB 2
Volume Total	215	215	474	474
Volume Left	0	0	0	0
Volume Right	0	0	474	474
cSH	1700	1700	1700	1700
Volume to Capacity	0.13	0.13	0.28	0.28
Queue Length 95th (ft)	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0
Lane LOS				
Approach Delay (s)	0.0		0.0	
Approach LOS				

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	38.3%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL2	WBL	SBT	SBR	NET
Lane Group Flow (vph)	282	564	573	375	107
v/c Ratio	0.53	0.53	0.51	0.75	0.34
Control Delay	26.2	24.4	27.1	36.3	43.5
Queue Delay	84.6	1.2	0.0	0.0	0.0
Total Delay	110.8	25.6	27.1	36.3	43.5
Queue Length 50th (ft)	178	178	155	217	34
Queue Length 95th (ft)	278	239	m223	m#366	55
Internal Link Dist (ft)		198	199		325
Turn Bay Length (ft)				100	
Base Capacity (vph)	536	1073	1115	499	733
Starvation Cap Reductn	129	269	0	0	0
Spillback Cap Reductn	293	294	22	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.16	0.72	0.52	0.75	0.15

Intersection Summary

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Movement	WBL2	WBL	SBT	SBR	NET
Lane Configurations					
Ideal Flow (vphpl)	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.91	0.91	0.95	1.00	0.95
Frt	1.00	1.00	1.00	0.85	1.00
Flt Protected	0.95	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1449	2899	3154	1411	3185
Flt Permitted	0.95	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1449	2899	3154	1411	3185
Volume (vph)	311	450	544	356	98
Peak-hour factor, PHF	0.90	0.90	0.95	0.95	0.92
Adj. Flow (vph)	346	500	573	375	107
RTOR Reduction (vph)	0	0	0	0	0
Lane Group Flow (vph)	282	564	573	375	107
Heavy Vehicles (%)	2%	2%	3%	3%	2%
Turn Type	Split			Prot	
Protected Phases	1	1	4	4	2
Permitted Phases					
Actuated Green, G (s)	34.0	34.0	34.3	34.3	7.9
Effective Green, g (s)	35.0	35.0	35.3	35.3	8.9
Actuated g/C Ratio	0.35	0.35	0.35	0.35	0.09
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	0.2	0.2	2.0	2.0	2.0
Lane Grp Cap (vph)	507	1015	1113	498	283
v/s Ratio Prot	c0.19	0.19	0.18	c0.27	c0.03
v/s Ratio Perm					
v/c Ratio	0.56	0.56	0.51	0.75	0.38
Uniform Delay, d1	26.2	26.2	25.6	28.5	42.9
Progression Factor	0.89	0.91	0.92	0.92	1.00
Incremental Delay, d2	4.2	2.1	0.1	2.9	0.3
Delay (s)	27.6	25.9	23.5	29.2	43.3
Level of Service	C	C	C	C	D
Approach Delay (s)		26.4	25.8		43.3
Approach LOS		C	C		D

Intersection Summary			
HCM Average Control Delay	27.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	20.8
Intersection Capacity Utilization	46.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBR	SET
Lane Group Flow (vph)	877	911
v/c Ratio	0.59	0.60
Control Delay	15.1	32.6
Queue Delay	0.1	0.1
Total Delay	15.2	32.7
Queue Length 50th (ft)	206	221
Queue Length 95th (ft)	215	276
Internal Link Dist (ft)		158
Turn Bay Length (ft)		
Base Capacity (vph)	1486	2765
Starvation Cap Reductn	0	660
Spillback Cap Reductn	77	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.62	0.43

Intersection Summary

Movement	EBL	EBR	SET	SER	NWL	NWT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0			
Lane Util. Factor		0.88	0.91			
Frt		0.85	1.00			
Flt Protected		1.00	1.00			
Satd. Flow (prot)		2533	4532			
Flt Permitted		1.00	1.00			
Satd. Flow (perm)		2533	4532			
Volume (vph)	0	824	856	0	0	0
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.95	0.95
Adj. Flow (vph)	0	877	911	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	877	911	0	0	0
Heavy Vehicles (%)	1%	1%	3%	3%	0%	0%
Turn Type						
Protected Phases		2	1			
Permitted Phases						
Actuated Green, G (s)		57.7	32.3			
Effective Green, g (s)		58.7	33.3			
Actuated g/C Ratio		0.59	0.33			
Clearance Time (s)		5.0	5.0			
Vehicle Extension (s)		2.0	2.0			
Lane Grp Cap (vph)		1487	1509			
v/s Ratio Prot		c0.35	c0.20			
v/s Ratio Perm						
v/c Ratio		0.59	0.60			
Uniform Delay, d1		13.0	27.8			
Progression Factor		1.00	1.10			
Incremental Delay, d2		0.4	1.6			
Delay (s)		13.4	32.1			
Level of Service		B	C			
Approach Delay (s)	13.4		32.1			0.0
Approach LOS	B		C			A

Intersection Summary			
HCM Average Control Delay	23.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	57.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBT	SBL	SBT	SBR
Lane Group Flow (vph)	951	1174	490	1032	186
v/c Ratio	0.64	0.89	0.68	0.69	0.29
Control Delay	31.3	16.8	19.9	17.7	14.3
Queue Delay	1.5	82.7	0.9	0.6	0.0
Total Delay	32.9	99.4	20.8	18.2	14.3
Queue Length 50th (ft)	143	133	171	181	53
Queue Length 95th (ft)	193	m120	314	292	114
Internal Link Dist (ft)	23	182		265	
Turn Bay Length (ft)					
Base Capacity (vph)	1489	1312	725	1506	638
Starvation Cap Reductn	0	320	73	165	0
Spillback Cap Reductn	339	0	6	13	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.83	1.18	0.75	0.77	0.29

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1600	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0					4.0	4.0	4.0
Lane Util. Factor		0.91			0.95					0.91	0.91	1.00
Frpb, ped/bikes		0.99			1.00					1.00	1.00	0.90
Flpb, ped/bikes		1.00			1.00					1.00	1.00	1.00
Frt		0.99			1.00					1.00	1.00	0.85
Flt Protected		1.00			1.00					0.95	0.99	1.00
Satd. Flow (prot)		3526			3124					1449	3011	1276
Flt Permitted		1.00			1.00					0.95	0.99	1.00
Satd. Flow (perm)		3526			3124					1449	3011	1276
Volume (vph)	0	838	56	0	1021	0	0	0	0	751	741	182
Peak-hour factor, PHF	0.94	0.94	0.94	0.87	0.87	0.87	0.92	0.92	0.92	0.98	0.98	0.98
Adj. Flow (vph)	0	891	60	0	1174	0	0	0	0	766	756	186
RTOR Reduction (vph)	0	8	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	943	0	0	1174	0	0	0	0	490	1032	186
Confl. Peds. (#/hr)			135									85
Confl. Bikes (#/hr)			9									17
Heavy Vehicles (%)	6%	6%	6%	4%	4%	4%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	25	25	0	0	0	0	0	0	0	0	0
Turn Type										Split		Perm
Protected Phases		3			3					1	1	
Permitted Phases		3										1
Actuated Green, G (s)		41.0			41.0					49.0	49.0	49.0
Effective Green, g (s)		42.0			42.0					50.0	50.0	50.0
Actuated g/C Ratio		0.42			0.42					0.50	0.50	0.50
Clearance Time (s)		5.0			5.0					5.0	5.0	5.0
Vehicle Extension (s)		2.0			2.0					2.0	2.0	2.0
Lane Grp Cap (vph)		1481			1312					725	1506	638
v/s Ratio Prot		0.27			c0.38					0.34	c0.34	
v/s Ratio Perm												0.15
v/c Ratio		0.64			0.89					0.68	0.69	0.29
Uniform Delay, d1		23.0			26.9					18.9	19.0	14.6
Progression Factor		1.30			0.55					0.81	0.80	0.89
Incremental Delay, d2		1.5			1.0					4.1	2.1	0.9
Delay (s)		31.3			15.8					19.3	17.3	13.9
Level of Service		C			B					B	B	B
Approach Delay (s)		31.3			15.8			0.0			17.5	
Approach LOS		C			B			A			B	

Intersection Summary			
HCM Average Control Delay	20.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	72.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBT	WBR	NBT	NBR	NWL	NWR
Lane Group Flow (vph)	80	469	1122	342	246	575	343	946	239
v/c Ratio	0.46	1.38	0.83	0.59	0.98	0.45	1.28	1.52	1.74
Control Delay	46.5	218.5	17.3	41.7	90.1	31.0	182.2	274.2	391.0
Queue Delay	0.0	166.9	6.1	0.0	0.9	0.1	0.0	26.3	29.7
Total Delay	46.5	385.4	23.4	41.7	91.0	31.1	182.2	300.5	420.6
Queue Length 50th (ft)	46	~407	247	110	167	110	~278	~437	~251
Queue Length 95th (ft)	m76	#610	424	m143	m#281	146	#452	#542	#409
Internal Link Dist (ft)		182		648		176		668	
Turn Bay Length (ft)					150				300
Base Capacity (vph)	175	339	1352	583	252	1280	269	621	137
Starvation Cap Reductn	0	72	186	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	1	75	0	23	5
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.46	1.76	0.96	0.59	0.98	0.48	1.28	1.58	1.81

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBT	WBR	NBL	NBT	NBR	NBR2	NWL	NWR	NWR2
Lane Configurations												
Ideal Flow (vphpl)	1900	1600	1600	1600	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	0.88	0.95	1.00		0.91	1.00		0.97	0.91	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	0.84		1.00	0.67		1.00	0.51	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.85		1.00	0.85		0.96	0.85	
Flt Protected	0.95	1.00	1.00	1.00	1.00		0.99	1.00		0.96	1.00	
Satd. Flow (prot)	1593	1412	2112	2430	1051		4572	961		2958	645	
Flt Permitted	0.95	1.00	1.00	1.00	1.00		0.99	1.00		0.96	1.00	
Satd. Flow (perm)	1593	1412	2112	2430	1051		4572	961		2958	645	
Volume (vph)	76	446	1066	287	207	103	415	201	108	622	411	10
Peak-hour factor, PHF	0.95	0.95	0.95	0.84	0.84	0.90	0.90	0.90	0.90	0.88	0.88	0.88
Adj. Flow (vph)	80	469	1122	342	246	114	461	223	120	707	467	11
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	80	469	1122	342	246	0	575	343	0	946	237	0
Confl. Peds. (#/hr)					110	5		135	240			135
Confl. Bikes (#/hr)			6		8			3	6			
Heavy Vehicles (%)	2%	2%	2%	9%	9%	1%	1%	1%	1%	4%	4%	4%
Bus Blockages (#/hr)	0	0	0	16	16	0	0	0	0	0	0	0
Turn Type	Prot		custom		Perm	Perm		Perm			Perm	
Protected Phases	3	2	1 2 3	2			4			1		
Permitted Phases					2	4		4			1	
Actuated Green, G (s)	10.0	23.0	63.0	23.0	23.0		27.0	27.0		19.0	19.0	
Effective Green, g (s)	11.0	24.0	64.0	24.0	24.0		28.0	28.0		21.0	21.0	
Actuated g/C Ratio	0.11	0.24	0.64	0.24	0.24		0.28	0.28		0.21	0.21	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	175	339	1352	583	252		1280	269		621	135	
v/s Ratio Prot	0.05	c0.33	c0.53	0.14						0.32		
v/s Ratio Perm					0.23		0.13	c0.36			c0.37	
v/c Ratio	0.46	1.38	0.83	0.59	0.98		0.45	1.28		1.52	1.76	
Uniform Delay, d1	41.7	38.0	13.8	33.6	37.7		29.6	36.0		39.5	39.5	
Progression Factor	0.94	1.03	0.86	1.11	1.12		1.00	1.00		1.00	1.00	
Incremental Delay, d2	6.4	186.0	4.6	3.6	46.4		1.1	149.5		243.7	369.9	
Delay (s)	45.8	224.9	16.4	41.1	88.7		30.8	185.5		283.2	409.4	
Level of Service	D	F	B	D	F		C	F		F	F	
Approach Delay (s)		76.4		61.0			88.6			308.6		
Approach LOS		E		E			F			F		

Intersection Summary			
HCM Average Control Delay	140.0	HCM Level of Service	F
HCM Volume to Capacity ratio	1.33		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	89.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBT	NBL	NBT
Lane Group Flow (vph)	60	791	441
v/c Ratio	0.19	0.33	0.18
Control Delay	40.8	9.3	8.0
Queue Delay	0.0	1.0	0.4
Total Delay	40.8	10.3	8.3
Queue Length 50th (ft)	18	99	54
Queue Length 95th (ft)	35	m157	m71
Internal Link Dist (ft)	48		227
Turn Bay Length (ft)			
Base Capacity (vph)	731	2384	2405
Starvation Cap Reductn	0	1252	1394
Spillback Cap Reductn	0	111	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.08	0.70	0.44

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0				
Lane Util. Factor					0.95		0.97	0.95				
Frt					0.98		1.00	0.98				
Flt Protected					1.00		0.95	1.00				
Satd. Flow (prot)					3176		3090	3117				
Flt Permitted					1.00		0.95	1.00				
Satd. Flow (perm)					3176		3090	3117				
Volume (vph)	0	0	0	0	48	9	712	340	57	0	0	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.90	0.90	0.90	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	0	51	9	791	378	63	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	60	0	791	441	0	0	0	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	2%	2%	2%	0%	0%	0%
Turn Type							Split					
Protected Phases					2		1 4	1 4				
Permitted Phases												
Actuated Green, G (s)					7.9		73.3	73.3				
Effective Green, g (s)					8.9		74.3	74.3				
Actuated g/C Ratio					0.09		0.74	0.74				
Clearance Time (s)					5.0							
Vehicle Extension (s)					2.0							
Lane Grp Cap (vph)					283		2296	2316				
v/s Ratio Prot					c0.02		c0.26	0.14				
v/s Ratio Perm												
v/c Ratio					0.21		0.34	0.19				
Uniform Delay, d1					42.3		4.4	3.8				
Progression Factor					1.00		1.75	1.72				
Incremental Delay, d2					0.1		0.0	0.0				
Delay (s)					42.4		7.8	6.6				
Level of Service					D		A	A				
Approach Delay (s)		0.0			42.4			7.4			0.0	
Approach LOS		A			D			A			A	

Intersection Summary

HCM Average Control Delay	9.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.8
Intersection Capacity Utilization	32.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
16: Brookline Ave & Overland Street

2018 Build Conditions - Landmark
Weekday Morning Peak Hour

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	118	339	410	30	25	41
Peak Hour Factor	0.88	0.88	0.94	0.94	0.83	0.83
Hourly flow rate (vph)	134	385	436	32	30	49
Pedestrians		115	115		115	
Lane Width (ft)		12.0	10.0		14.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		10	8		11	
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)		594	1176			
pX, platoon unblocked						
vC, conflicting volume	583				1336	682
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	583				1336	682
tC, single (s)	4.2				6.6	6.4
tC, 2 stage (s)						
tF (s)	2.3				3.7	3.5
p0 queue free %	84				72	85
cM capacity (veh/h)	851				106	336

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	519	468	80
Volume Left	134	0	30
Volume Right	0	32	49
cSH	851	1700	185
Volume to Capacity	0.16	0.28	0.43
Queue Length 95th (ft)	14	0	49
Control Delay (s)	4.1	0.0	38.5
Lane LOS	A		E
Approach Delay (s)	4.1	0.0	38.5
Approach LOS			E

Intersection Summary			
Average Delay	4.9		
Intersection Capacity Utilization	76.7%	ICU Level of Service	D
Analysis Period (min)	15		

Queues
17: Park Dr & Riverway

2018 Build Conditions - Landmark
Weekday Morning Peak Hour

Lane Group	NBT	NEL	NET
Lane Group Flow (vph)	379	52	54
v/c Ratio	0.15	0.19	0.19
Control Delay	0.9	1.8	1.8
Queue Delay	0.2	0.0	0.3
Total Delay	1.0	1.8	2.1
Queue Length 50th (ft)	5	0	0
Queue Length 95th (ft)	6	0	0
Internal Link Dist (ft)	148		107
Turn Bay Length (ft)			
Base Capacity (vph)	2457	365	379
Starvation Cap Reductn	1266	0	121
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.32	0.14	0.21

Intersection Summary

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0					4.0	4.0				
Lane Util. Factor		0.95					0.95	0.95				
Frt		1.00					1.00	1.00				
Flt Protected		1.00					0.95	0.99				
Satd. Flow (prot)		3185					1513	1574				
Flt Permitted		1.00					0.95	0.99				
Satd. Flow (perm)		3185					1513	1574				
Volume (vph)	0	349	0	0	0	0	60	38	0	0	0	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	379	0	0	0	0	65	41	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	379	0	0	0	0	52	54	0	0	0	0
Turn Type							Split					
Protected Phases		1 4					2 3	2 3				
Permitted Phases												
Actuated Green, G (s)		73.3					16.7	16.7				
Effective Green, g (s)		74.3					17.7	17.7				
Actuated g/C Ratio		0.74					0.18	0.18				
Clearance Time (s)												
Vehicle Extension (s)												
Lane Grp Cap (vph)		2366					268	279				
v/s Ratio Prot		c0.12					c0.03	0.03				
v/s Ratio Perm												
v/c Ratio		0.16					0.19	0.19				
Uniform Delay, d1		3.7					35.1	35.1				
Progression Factor		0.16					0.01	0.01				
Incremental Delay, d2		0.0					0.1	0.1				
Delay (s)		0.6					0.5	0.4				
Level of Service		A					A	A				
Approach Delay (s)		0.6			0.0			0.4			0.0	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM Average Control Delay	0.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.17		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	38.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	616	1074	383	43
v/c Ratio	0.42	0.79	0.67	0.10
Control Delay	20.0	39.9	31.0	19.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	20.0	39.9	31.0	19.7
Queue Length 50th (ft)	212	428	193	16
Queue Length 95th (ft)	m259	m440	196	37
Internal Link Dist (ft)	361	1340	154	472
Turn Bay Length (ft)				
Base Capacity (vph)	1462	1363	568	445
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.42	0.79	0.67	0.10

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	13	13	13	13	13	13
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Frpb, ped/bikes		0.98			0.99			0.96			1.00	
Flpb, ped/bikes		1.00			0.99			1.00			0.99	
Frt		0.99			1.00			0.94			0.98	
Flt Protected		1.00			1.00			0.98			0.97	
Satd. Flow (prot)		2871			2871			1561			1479	
Flt Permitted		0.95			0.88			0.87			0.74	
Satd. Flow (perm)		2721			2538			1378			1128	
Volume (vph)	5	557	30	50	923	26	93	43	150	23	7	5
Peak-hour factor, PHF	0.96	0.96	0.96	0.93	0.93	0.93	0.68	0.68	0.82	0.82	0.82	0.82
Adj. Flow (vph)	5	580	31	54	992	28	137	63	183	28	9	6
RTOR Reduction (vph)	0	3	0	0	2	0	0	30	0	0	4	0
Lane Group Flow (vph)	0	613	0	0	1072	0	0	353	0	0	39	0
Confl. Peds. (#/hr)	155		95	95		155	5		30	30		5
Confl. Bikes (#/hr)			24			71			4			1
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	0%	0%	0%	0%	0%	0%
Parking (#/hr)		1	1		1	1					1	1
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		58.0			58.0			42.0			42.0	
Effective Green, g (s)		59.0			59.0			43.0			43.0	
Actuated g/C Ratio		0.54			0.54			0.39			0.39	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Lane Grp Cap (vph)		1459			1361			539			441	
v/s Ratio Prot												
v/s Ratio Perm		0.23			c0.42			c0.26			0.03	
v/c Ratio		0.42			0.79			0.66			0.09	
Uniform Delay, d1		15.3			20.5			27.4			21.1	
Progression Factor		1.26			1.82			1.00			1.00	
Incremental Delay, d2		0.7			1.6			6.1			0.4	
Delay (s)		19.9			38.9			33.5			21.5	
Level of Service		B			D			C			C	
Approach Delay (s)		19.9			38.9			33.5			21.5	
Approach LOS		B			D			C			C	

Intersection Summary

HCM Average Control Delay	32.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	79.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	5	546	32	17	1018	5	38	13	36	5	5	5
Peak Hour Factor	0.92	0.92	0.92	0.88	0.88	0.88	0.84	0.84	0.84	0.69	0.69	0.69
Hourly flow rate (vph)	5	593	35	19	1157	6	45	15	43	7	7	7
Pedestrians		235			145			120			145	
Lane Width (ft)		12.0			12.0			10.0			10.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		20			12			8			10	
Right turn flare (veh)												
Median type								Raised			Raised	
Median storage veh)								0			0	
Upstream signal (ft)		488			441							
pX, platoon unblocked	0.76			0.87			0.82	0.82	0.87	0.82	0.82	0.76
vC, conflicting volume	1308			748			1605	2088	579	1846	2102	961
vC1, stage 1 conf vol							742	742		1343	1343	
vC2, stage 2 conf vol							863	1346		503	759	
vCu, unblocked vol	1084			556			1034	1621	361	1328	1639	627
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			98			68	85	90	92	93	97
cM capacity (veh/h)	439			809			141	103	446	87	104	236

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	302	332	598	584	104	22
Volume Left	5	0	19	0	45	7
Volume Right	0	35	0	6	43	7
cSH	439	1700	809	1700	182	118
Volume to Capacity	0.01	0.20	0.02	0.34	0.57	0.18
Queue Length 95th (ft)	1	0	2	0	76	16
Control Delay (s)	0.4	0.0	0.6	0.0	48.0	42.2
Lane LOS	A		A		E	E
Approach Delay (s)	0.2		0.3		48.0	42.2
Approach LOS					E	E

Intersection Summary			
Average Delay	3.3		
Intersection Capacity Utilization	64.9%	ICU Level of Service	C
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	515	147	332	738	154	625	681
v/c Ratio	0.74	0.66	1.46	0.73	0.55	0.35	0.70
Control Delay	46.3	47.6	247.8	26.1	23.0	12.7	12.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.3	47.6	247.8	26.1	23.0	12.7	12.5
Queue Length 50th (ft)	181	85	~233	291	45	108	65
Queue Length 95th (ft)	217	131	m#442	294	86	163	86
Internal Link Dist (ft)	968			408		638	275
Turn Bay Length (ft)		200	75		75		
Base Capacity (vph)	1085	224	227	1391	279	1777	972
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.47	0.66	1.46	0.53	0.55	0.35	0.70

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	11	11	11	11	11	11
Total Lost time (s)		4.0	4.0		4.0	4.0		4.0	4.0			4.0
Lane Util. Factor		0.95	1.00		1.00	0.95		1.00	0.95			0.95
Frpb, ped/bikes		1.00	0.72		1.00	0.99		1.00	0.98			1.00
Flpb, ped/bikes		1.00	1.00		0.98	1.00		0.98	1.00			1.00
Frt		1.00	0.85		1.00	0.99		1.00	0.98			1.00
Flt Protected		1.00	1.00		0.95	1.00		0.95	1.00			1.00
Satd. Flow (prot)		3141	902		1521	3053		1527	2978			3027
Flt Permitted		1.00	1.00		0.25	1.00		0.33	1.00			0.61
Satd. Flow (perm)		3141	902		399	3053		537	2978			1857
Volume (vph)	0	469	134	5	320	687	36	131	460	71	34	598
Peak-hour factor, PHF	0.91	0.91	0.91	0.98	0.98	0.98	0.98	0.85	0.85	0.85	0.95	0.95
Adj. Flow (vph)	0	515	147	5	327	701	37	154	541	84	36	629
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	515	147	0	332	738	0	154	625	0	0	681
Confl. Peds. (#/hr)			185		185		75	140		110	110	
Confl. Bikes (#/hr)							82			48		
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	8
Parking (#/hr)			1									
Turn Type			pm+ov	D.P+P	D.P+P			D.P+P			Perm	
Protected Phases		4	5	3	3	3 4		5	1 5			1
Permitted Phases			4	4	4			1			1	
Actuated Green, G (s)		22.3	26.3		31.3	34.3		61.7	64.7			57.7
Effective Green, g (s)		24.3	27.3		32.3	36.3		61.7	65.7			58.7
Actuated g/C Ratio		0.22	0.25		0.29	0.33		0.56	0.60			0.53
Clearance Time (s)		6.0	3.0		3.0			3.0				5.0
Vehicle Extension (s)		2.0	2.0		2.0			2.0				2.0
Lane Grp Cap (vph)		694	257		199	1007		328	1779			991
v/s Ratio Prot		0.16	c0.02		c0.12	0.24		0.01	0.21			
v/s Ratio Perm			0.15		c0.37			0.25				c0.37
v/c Ratio		0.74	0.57		1.67	0.73		0.47	0.35			0.69
Uniform Delay, d1		39.9	36.2		36.4	32.6		15.0	11.3			18.9
Progression Factor		1.00	1.00		0.73	0.71		1.00	1.00			0.45
Incremental Delay, d2		3.8	1.9		315.6	1.7		0.4	0.0			2.5
Delay (s)		43.7	38.1		342.1	24.8		15.4	11.3			11.1
Level of Service		D	D		F	C		B	B			B
Approach Delay (s)		42.5				123.3			12.1			11.1
Approach LOS		D				F			B			B

Intersection Summary			
HCM Average Control Delay	55.4	HCM Level of Service	E
HCM Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	89.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBR
Lane Configurations	
Ideal Flow (vphpl)	1900
Lane Width	11
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Volume (vph)	15
Peak-hour factor, PHF	0.95
Adj. Flow (vph)	16
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	140
Confl. Bikes (#/hr)	33
Heavy Vehicles (%)	1%
Bus Blockages (#/hr)	8
Parking (#/hr)	
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	117	488	59	608	241	30	202	144
v/c Ratio	0.37	0.58	0.97	0.86	0.94	0.12	0.66	0.35
Control Delay	7.2	8.0	137.7	34.0	77.7	11.8	42.9	18.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.2	8.0	137.7	34.0	77.7	11.8	42.9	18.7
Queue Length 50th (ft)	17	70	35	320	145	1	111	44
Queue Length 95th (ft)	m14	m57	#103	390	m#259	m13	180	85
Internal Link Dist (ft)		648		198	46		352	
Turn Bay Length (ft)	200		50			90		100
Base Capacity (vph)	318	842	61	710	273	266	327	407
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.37	0.58	0.97	0.86	0.88	0.11	0.62	0.35

Intersection Summary

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	11	11	10	10	10	12	11	11	11	11	11
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	1.00
Frpb, ped/bikes	1.00	0.94		1.00	0.94			1.00	0.61		1.00	0.81
Flpb, ped/bikes	1.00	1.00		1.00	1.00			0.92	1.00		0.93	1.00
Frt	1.00	0.98		1.00	0.99			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.97	1.00		0.98	1.00
Satd. Flow (prot)	1444	1293		1430	1304			1472	846		1506	1131
Flt Permitted	0.28	1.00		0.07	1.00			0.60	1.00		0.71	1.00
Satd. Flow (perm)	423	1293		111	1304			909	846		1086	1131
Volume (vph)	105	384	55	47	434	47	110	104	26	59	114	125
Peak-hour factor, PHF	0.90	0.90	0.90	0.79	0.79	0.79	0.89	0.89	0.86	0.86	0.86	0.87
Adj. Flow (vph)	117	427	61	59	549	59	124	117	30	69	133	144
RTOR Reduction (vph)	0	5	0	0	4	0	0	0	21	0	0	24
Lane Group Flow (vph)	117	483	0	59	604	0	0	241	9	0	202	120
Confl. Peds. (#/hr)	390		190	190		390	140		135	135		140
Confl. Bikes (#/hr)			6			9			5			3
Heavy Vehicles (%)	5%	5%	5%	6%	6%	6%	1%	1%	1%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	16	16	0	0	0	0	0	0
Parking (#/hr)		1	1									
Turn Type	D.P+P			Perm			Perm		Perm	Perm		pm+ov
Protected Phases	3	1 3			1			2			2	3
Permitted Phases	1			1			2		2	2		2
Actuated Green, G (s)	61.7	64.7		54.1	54.1			27.3	27.3		27.3	34.9
Effective Green, g (s)	60.7	64.7		54.1	54.1			27.3	27.3		27.3	33.9
Actuated g/C Ratio	0.61	0.65		0.54	0.54			0.27	0.27		0.27	0.34
Clearance Time (s)	3.0			4.0	4.0			4.0	4.0		4.0	3.0
Vehicle Extension (s)	3.0			3.0	3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	324	837		60	705			248	231		296	429
v/s Ratio Prot	0.02	c0.37			0.46							0.02
v/s Ratio Perm	0.20			c0.53				c0.27	0.01		0.19	0.09
v/c Ratio	0.36	0.58		0.98	0.86			0.97	0.04		0.68	0.28
Uniform Delay, d1	10.7	9.9		22.5	19.6			36.0	26.7		32.5	24.1
Progression Factor	0.91	0.72		1.00	1.00			0.99	1.08		1.00	1.00
Incremental Delay, d2	0.1	0.1		111.5	12.8			48.2	0.1		6.4	0.4
Delay (s)	9.8	7.2		134.0	32.4			83.7	28.9		38.8	24.5
Level of Service	A	A		F	C			F	C		D	C
Approach Delay (s)		7.7			41.4			77.6			32.9	
Approach LOS		A			D			E			C	

Intersection Summary

HCM Average Control Delay	34.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	69.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	70	96	155	11	161	54
Peak Hour Factor	0.82	0.82	0.87	0.87	0.90	0.90
Hourly flow rate (vph)	85	117	178	13	179	60
Pedestrians	105		110			125
Lane Width (ft)	15.0		13.0			13.0
Walking Speed (ft/s)	4.0		4.0			4.0
Percent Blockage	11		10			11
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)			292			126
pX, platoon unblocked	0.97					
vC, conflicting volume	817	414			296	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	812	414			296	
tC, single (s)	6.5	6.3			4.1	
tC, 2 stage (s)						
tF (s)	3.6	3.4			2.2	
p0 queue free %	62	76			84	
cM capacity (veh/h)	223	494			1127	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	202	191	239
Volume Left	85	0	179
Volume Right	117	13	0
cSH	327	1700	1127
Volume to Capacity	0.62	0.11	0.16
Queue Length 95th (ft)	98	0	14
Control Delay (s)	32.4	0.0	6.9
Lane LOS	D		A
Approach Delay (s)	32.4	0.0	6.9
Approach LOS	D		

Intersection Summary			
Average Delay	13.0		
Intersection Capacity Utilization	51.0%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	1314	1205	90	118	189
v/c Ratio	0.73	0.88	0.35	0.76	0.72
Control Delay	10.5	35.8	23.9	66.7	37.3
Queue Delay	0.3	147.5	0.0	0.0	0.0
Total Delay	10.8	183.3	23.9	66.7	37.3
Queue Length 50th (ft)	145	346	28	72	66
Queue Length 95th (ft)	m246	#525	68	m117	m123
Internal Link Dist (ft)	668	184	267		212
Turn Bay Length (ft)				150	
Base Capacity (vph)	1805	1373	346	222	337
Starvation Cap Reductn	0	466	0	0	0
Spillback Cap Reductn	110	0	1	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.78	1.33	0.26	0.53	0.56

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1600	1600	1600	1600	1600	1600	1900	1900	1900	1600	1600	1900
Lane Width	12	13	12	12	13	12	12	14	12	12	16	12
Total Lost time (s)		4.0			4.0			4.0		4.0	4.0	
Lane Util. Factor		0.95			0.95			1.00		1.00	1.00	
Frpb, ped/bikes		0.97			0.97			0.94		1.00	0.81	
Flpb, ped/bikes		1.00			1.00			0.95		0.91	1.00	
Frt		0.99			0.99			0.93		1.00	0.87	
Flt Protected		1.00			1.00			0.98		0.95	1.00	
Satd. Flow (prot)		2671			2644			1428		1212	1108	
Flt Permitted		0.91			0.72			0.77		0.67	1.00	
Satd. Flow (perm)		2422			1901			1123		858	1108	
Volume (vph)	26	1186	62	77	948	71	26	15	41	103	20	144
Peak-hour factor, PHF	0.97	0.97	0.97	0.91	0.91	0.91	0.91	0.91	0.91	0.87	0.87	0.87
Adj. Flow (vph)	27	1223	64	85	1042	78	29	16	45	118	23	166
RTOR Reduction (vph)	0	3	0	0	4	0	0	32	0	0	66	0
Lane Group Flow (vph)	0	1311	0	0	1201	0	0	58	0	118	123	0
Confl. Peds. (#/hr)	135		215	215		135	155		80	80		155
Confl. Bikes (#/hr)			8			4			4			3
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	5%	5%	5%	3%	3%	3%
Parking (#/hr)			1			1						
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		1			1			5			5	
Permitted Phases	1			1			5			5		
Actuated Green, G (s)		73.4			73.4			16.6		16.6	16.6	
Effective Green, g (s)		74.4			74.4			17.6		17.6	17.6	
Actuated g/C Ratio		0.74			0.74			0.18		0.18	0.18	
Clearance Time (s)		5.0			5.0			5.0		5.0	5.0	
Vehicle Extension (s)		4.0			4.0			2.0		2.0	2.0	
Lane Grp Cap (vph)		1802			1414			198		151	195	
v/s Ratio Prot											0.11	
v/s Ratio Perm		0.54			c0.63			0.05		c0.14		
v/c Ratio		0.73			0.85			0.29		0.78	0.63	
Uniform Delay, d1		7.1			8.9			35.8		39.4	38.2	
Progression Factor		1.00			2.60			1.00		1.00	1.01	
Incremental Delay, d2		1.6			5.8			0.3		21.0	4.8	
Delay (s)		8.7			29.0			36.1		60.5	43.5	
Level of Service		A			C			D		E	D	
Approach Delay (s)		8.7			29.0			36.1			50.1	
Approach LOS		A			C			D			D	

Intersection Summary			
HCM Average Control Delay	22.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	132.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBT	NBT
Lane Group Flow (vph)	1317	1213	196
v/c Ratio	0.82	0.96	0.75
Control Delay	23.4	30.3	47.2
Queue Delay	2.2	89.5	0.4
Total Delay	25.5	119.8	47.6
Queue Length 50th (ft)	210	126	99
Queue Length 95th (ft)	#446	#589	138
Internal Link Dist (ft)	289	630	256
Turn Bay Length (ft)			
Base Capacity (vph)	1614	1259	359
Starvation Cap Reductn	173	0	0
Spillback Cap Reductn	0	256	22
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.91	1.21	0.58

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1600	1600	1600	1600	1600	1600	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	12	12	12	12	16	12
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		0.95			0.95			1.00				
Frpb, ped/bikes		0.99			0.99			0.84				
Flpb, ped/bikes		1.00			1.00			0.97				
Frt		1.00			1.00			0.91				
Flt Protected		1.00			1.00			0.99				
Satd. Flow (prot)		2553			2547			1187				
Flt Permitted		0.91			0.84			0.99				
Satd. Flow (perm)		2331			2150			1187				
Volume (vph)	25	1216	36	39	1030	35	30	26	103	0	0	0
Peak-hour factor, PHF	0.97	0.97	0.97	0.91	0.91	0.91	0.81	0.81	0.81	0.25	0.25	0.25
Adj. Flow (vph)	26	1254	37	43	1132	38	37	32	127	0	0	0
RTOR Reduction (vph)	0	2	0	0	2	0	0	29	0	0	0	0
Lane Group Flow (vph)	0	1315	0	0	1211	0	0	167	0	0	0	0
Confl. Peds. (#/hr)	130		140	140		130	150		200			
Confl. Bikes (#/hr)			9			8			5			5
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	5%	5%	5%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	3	3	3	0	0	0
Parking (#/hr)			1			1						
Turn Type	D.P+P			Perm			Perm					
Protected Phases	4	1 4			1			3				
Permitted Phases	1			1			3					
Actuated Green, G (s)		66.5			60.5			18.5				
Effective Green, g (s)		68.5			61.5			19.5				
Actuated g/C Ratio		0.68			0.62			0.20				
Clearance Time (s)					5.0			5.0				
Vehicle Extension (s)					3.0			2.0				
Lane Grp Cap (vph)		1612			1322			231				
v/s Ratio Prot		c0.06										
v/s Ratio Perm		0.50			c0.56			0.14				
v/c Ratio		0.82			0.92			0.72				
Uniform Delay, d1		11.2			17.0			37.7				
Progression Factor		1.51			0.60			1.00				
Incremental Delay, d2		2.7			9.2			9.1				
Delay (s)		19.7			19.4			46.8				
Level of Service		B			B			D				
Approach Delay (s)		19.7			19.4			46.8			0.0	
Approach LOS		B			B			D			A	

Intersection Summary			
HCM Average Control Delay	21.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	105.2%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	1554	1134	392	99
v/c Ratio	1.01	0.69	1.04	0.24
Control Delay	42.0	15.8	96.1	7.8
Queue Delay	378.6	71.3	620.9	0.0
Total Delay	420.7	87.1	717.0	7.8
Queue Length 50th (ft)	~572	234	~272	0
Queue Length 95th (ft)	#682	310	#454	40
Internal Link Dist (ft)	630	157	254	
Turn Bay Length (ft)			50	
Base Capacity (vph)	1532	1643	376	411
Starvation Cap Reductn	0	658	0	0
Spillback Cap Reductn	703	0	216	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.87	1.15	2.45	0.24

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis | 2018 Build Conditions - Landmark
8: Boylston St & Ipswich St | Weekday Evening Peak Hour

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1600	1600	1600	1600	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0
Lane Util. Factor		0.95	0.95		1.00	1.00
Frpb, ped/bikes		1.00	1.00		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	0.99		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		2681	2687		1504	1346
Flt Permitted		0.94	1.00		0.95	1.00
Satd. Flow (perm)		2511	2687		1504	1346
Volume (vph)	15	1415	1081	53	365	92
Peak-hour factor, PHF	0.92	0.92	1.00	1.00	0.93	0.93
Adj. Flow (vph)	16	1538	1081	53	392	99
RTOR Reduction (vph)	0	0	4	0	0	74
Lane Group Flow (vph)	0	1554	1130	0	392	25
Confl. Bikes (#/hr)				3		
Heavy Vehicles (%)	2%	2%	1%	1%	8%	8%
Turn Type	Perm					custom
Protected Phases		1	1			
Permitted Phases	1				5	5
Actuated Green, G (s)		59.0	59.0		24.0	24.0
Effective Green, g (s)		61.0	61.0		25.0	25.0
Actuated g/C Ratio		0.61	0.61		0.25	0.25
Clearance Time (s)		6.0	6.0		5.0	5.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1532	1639		376	337
v/s Ratio Prot			0.42			
v/s Ratio Perm		c0.62			c0.26	0.02
v/c Ratio		1.01	0.69		1.04	0.07
Uniform Delay, d1		19.5	13.1		37.5	28.7
Progression Factor		0.92	1.00		1.00	1.00
Incremental Delay, d2		22.6	2.4		57.9	0.4
Delay (s)		40.6	15.5		95.4	29.1
Level of Service		D	B		F	C
Approach Delay (s)		40.6	15.5		82.0	
Approach LOS		D	B		F	

Intersection Summary			
HCM Average Control Delay	38.1	HCM Level of Service	D
HCM Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	94.7%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis | 2018 Build Conditions - Landmark
9: Park Dr SB & Park Dr | Weekday Evening Peak Hour

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	0	0	0	671	0	1021
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	0	706	0	1075
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)				157	718	
pX, platoon unblocked	0.93					
vC, conflicting volume	353	0	1075			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	221	0	1075			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	697	1091	656			

Direction, Lane #	NB 1	NB 2	SB 1	SB 2
Volume Total	353	353	537	537
Volume Left	0	0	0	0
Volume Right	0	0	537	537
cSH	1700	1700	1700	1700
Volume to Capacity	0.21	0.21	0.32	0.32
Queue Length 95th (ft)	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0
Lane LOS				
Approach Delay (s)	0.0		0.0	
Approach LOS				

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	43.0%	ICU Level of Service	A
Analysis Period (min)	15		

Queues

10: Park Dr & Riverway

2018 Build Conditions - Landmark
Weekday Evening Peak Hour

Lane Group	WBL2	WBL	SBT	SBR	NET
Lane Group Flow (vph)	451	902	531	616	120
v/c Ratio	0.83	0.83	0.58	1.51	0.25
Control Delay	41.2	35.0	35.5	273.2	37.7
Queue Delay	11.0	9.5	0.1	0.0	0.0
Total Delay	52.2	44.5	35.6	273.2	37.7
Queue Length 50th (ft)	293	292	159	~579	35
Queue Length 95th (ft)	#469	366	224	#811	60
Internal Link Dist (ft)		195	209		325
Turn Bay Length (ft)				100	
Base Capacity (vph)	542	1083	910	407	733
Starvation Cap Reductn	74	161	0	0	0
Spillback Cap Reductn	46	46	27	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.96	0.98	0.60	1.51	0.16

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

10: Park Dr & Riverway

2018 Build Conditions - Landmark
Weekday Evening Peak Hour

Movement	WBL2	WBL	SBT	SBR	NET
Lane Configurations					
Ideal Flow (vphpl)	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.91	0.91	0.95	1.00	0.95
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00
Flt Protected	0.95	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1464	2927	3185	1425	3185
Flt Permitted	0.95	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1464	2927	3185	1425	3185
Volume (vph)	454	858	473	548	114
Peak-hour factor, PHF	0.97	0.97	0.89	0.89	0.95
Adj. Flow (vph)	468	885	531	616	120
RTOR Reduction (vph)	0	0	0	0	0
Lane Group Flow (vph)	451	902	531	616	120
Confl. Bikes (#/hr)				11	
Heavy Vehicles (%)	1%	1%	2%	2%	2%
Turn Type	Split			Prot	
Protected Phases	1	1	4	4	2
Permitted Phases					
Actuated Green, G (s)	35.0	35.0	27.6	27.6	13.8
Effective Green, g (s)	36.0	36.0	28.6	28.6	14.8
Actuated g/C Ratio	0.36	0.36	0.29	0.29	0.15
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	0.2	0.2	2.0	2.0	2.0
Lane Grp Cap (vph)	527	1054	911	408	471
v/s Ratio Prot	0.31	c0.31	0.17	c0.43	c0.04
v/s Ratio Perm					
v/c Ratio	0.86	0.86	0.58	1.51	0.25
Uniform Delay, d1	29.6	29.6	30.6	35.7	37.7
Progression Factor	0.97	0.97	1.00	1.00	1.00
Incremental Delay, d2	14.2	7.7	0.6	241.8	0.1
Delay (s)	42.8	36.5	31.2	277.5	37.8
Level of Service	D	D	C	F	D
Approach Delay (s)		38.6	163.5		37.8
Approach LOS		D	F		D

Intersection Summary			
HCM Average Control Delay	93.2	HCM Level of Service	F
HCM Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	20.6
Intersection Capacity Utilization	55.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBR	SET
Lane Group Flow (vph)	756	997
v/c Ratio	0.69	0.44
Control Delay	25.3	9.6
Queue Delay	0.7	0.2
Total Delay	25.9	9.9
Queue Length 50th (ft)	215	103
Queue Length 95th (ft)	226	200
Internal Link Dist (ft)		173
Turn Bay Length (ft)		
Base Capacity (vph)	1102	2847
Starvation Cap Reductn	0	979
Spillback Cap Reductn	110	234
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.76	0.53

Intersection Summary

Movement	EBL	EBR	SET	SER	NWL	NWT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0			
Lane Util. Factor		0.88	0.91			
Frt		0.85	1.00			
Flt Protected		1.00	1.00			
Satd. Flow (prot)		2508	4668			
Flt Permitted		1.00	1.00			
Satd. Flow (perm)		2508	4668			
Volume (vph)	0	726	927	0	0	0
Peak-hour factor, PHF	0.96	0.96	0.93	0.93	0.95	0.95
Adj. Flow (vph)	0	756	997	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	756	997	0	0	0
Heavy Vehicles (%)	2%	2%	0%	0%	0%	0%
Turn Type						
Protected Phases		2	1			
Permitted Phases						
Actuated Green, G (s)		42.9	47.1			
Effective Green, g (s)		43.9	48.1			
Actuated g/C Ratio		0.44	0.48			
Clearance Time (s)		5.0	5.0			
Vehicle Extension (s)		3.0	2.0			
Lane Grp Cap (vph)		1101	2245			
v/s Ratio Prot		c0.30	c0.21			
v/s Ratio Perm						
v/c Ratio		0.69	0.44			
Uniform Delay, d1		22.5	17.1			
Progression Factor		1.00	0.49			
Incremental Delay, d2		1.8	0.4			
Delay (s)		24.3	8.9			
Level of Service		C	A			
Approach Delay (s)	24.3		8.9			0.0
Approach LOS	C		A			A

Intersection Summary			
HCM Average Control Delay	15.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	54.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBT	SBL	SBT	SBR
Lane Group Flow (vph)	1199	918	521	1097	140
v/c Ratio	0.79	0.82	0.71	0.72	0.22
Control Delay	29.7	52.0	27.1	23.8	16.8
Queue Delay	26.9	217.8	6.8	5.2	0.0
Total Delay	56.6	269.8	33.9	29.1	16.8
Queue Length 50th (ft)	235	331	247	261	36
Queue Length 95th (ft)	246	m283	484	452	m103
Internal Link Dist (ft)	23	183		268	
Turn Bay Length (ft)					
Base Capacity (vph)	1510	1116	732	1529	630
Starvation Cap Reductn	0	497	164	365	0
Spillback Cap Reductn	363	0	80	167	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.05	1.48	0.92	0.94	0.22

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1600	1900	1900	1600	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0					4.0	4.0	4.0
Lane Util. Factor		0.91			0.95					0.91	0.91	1.00
Frpb, ped/bikes		0.99			1.00					1.00	1.00	0.88
Flpb, ped/bikes		1.00			1.00					1.00	1.00	1.00
Frt		0.99			1.00					1.00	1.00	0.85
Flt Protected		1.00			1.00					0.95	0.99	1.00
Satd. Flow (prot)		3579			2656					1464	3058	1260
Flt Permitted		1.00			1.00					0.95	0.99	1.00
Satd. Flow (perm)		3579			2656					1464	3058	1260
Volume (vph)	0	897	62	0	863	0	0	0	0	647	874	132
Peak-hour factor, PHF	0.80	0.80	0.80	0.94	0.94	0.94	0.92	0.92	0.92	0.94	0.94	0.94
Adj. Flow (vph)	0	1121	78	0	918	0	0	0	0	688	930	140
RTOR Reduction (vph)	0	8	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1191	0	0	918	0	0	0	0	521	1097	140
Confl. Peds. (#/hr)			215									110
Confl. Bikes (#/hr)			7			6						2
Heavy Vehicles (%)	4%	4%	4%	3%	3%	3%	2%	2%	2%	1%	1%	1%
Bus Blockages (#/hr)	0	25	25	0	0	0	0	0	0	0	0	0
Turn Type										Split		Perm
Protected Phases		3			3					1	1	
Permitted Phases												1
Actuated Green, G (s)		41.0			41.0					49.0	49.0	49.0
Effective Green, g (s)		42.0			42.0					50.0	50.0	50.0
Actuated g/C Ratio		0.42			0.42					0.50	0.50	0.50
Clearance Time (s)		5.0			5.0					5.0	5.0	5.0
Vehicle Extension (s)		2.0			2.0					2.0	2.0	2.0
Lane Grp Cap (vph)		1503			1116					732	1529	630
v/s Ratio Prot		0.33			c0.35					0.36	c0.36	
v/s Ratio Perm												0.11
v/c Ratio		0.79			0.82					0.71	0.72	0.22
Uniform Delay, d1		25.2			25.7					19.4	19.5	14.1
Progression Factor		1.00			1.96					1.09	1.07	1.11
Incremental Delay, d2		4.4			0.7					4.9	2.5	0.7
Delay (s)		29.6			51.1					26.1	23.4	16.3
Level of Service		C			D					C	C	B
Approach Delay (s)		29.6			51.1			0.0			23.6	
Approach LOS		C			D			A			C	

Intersection Summary

HCM Average Control Delay	32.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	72.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBT	WBR	NBT	NBR	NWL	NWR
Lane Group Flow (vph)	120	471	1156	269	435	827	300	930	377
v/c Ratio	0.69	1.17	0.72	0.39	2.20	0.65	1.23	1.46	2.92
Control Delay	63.6	129.1	19.9	35.6	572.1	34.6	167.3	245.4	895.1
Queue Delay	0.0	182.9	55.0	91.6	117.4	0.3	0.0	107.2	0.0
Total Delay	63.6	312.1	74.8	127.2	689.5	34.8	167.3	352.6	895.1
Queue Length 50th (ft)	77	~372	361	85	~465	169	~237	~420	~459
Queue Length 95th (ft)	m104	m#540	399	m101	m#574	209	#389	m#519	m#561
Internal Link Dist (ft)		183		648		176		668	
Turn Bay Length (ft)					150				300
Base Capacity (vph)	175	402	1605	686	198	1271	244	635	129
Starvation Cap Reductn	0	105	567	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	457	21	88	0	89	2
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.69	1.59	1.11	1.17	2.46	0.70	1.23	1.70	2.97

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBT	WBR	NBL	NBT	NBR	NBR2	NWL	NWR	NWR2
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	0.88	0.95	1.00		0.91	1.00		0.97	0.91	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	0.71		1.00	0.61		1.00	0.46	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.85		1.00	0.85		0.94	0.85	
Flt Protected	0.95	1.00	1.00	1.00	1.00		0.99	1.00		0.97	1.00	
Satd. Flow (prot)	1593	1676	2508	2858	823		4543	873		3026	604	
Flt Permitted	0.95	1.00	1.00	1.00	1.00		0.99	1.00		0.97	1.00	
Satd. Flow (perm)	1593	1676	2508	2858	823		4543	873		3026	604	
Volume (vph)	107	419	1029	256	413	97	631	138	126	510	670	23
Peak-hour factor, PHF	0.89	0.89	0.89	0.95	0.95	0.88	0.88	0.88	0.88	0.92	0.92	0.92
Adj. Flow (vph)	120	471	1156	269	435	110	717	157	143	554	728	25
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	120	471	1156	269	435	0	827	300	0	930	375	0
Confl. Peds. (#/hr)					215	5		185	375			185
Confl. Bikes (#/hr)			8		12			25	34			2
Heavy Vehicles (%)	2%	2%	2%	4%	4%	2%	2%	2%	2%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	16	16	0	0	0	0	0	0	0
Parking (#/hr)				2	2							
Turn Type	Prot		custom		Perm	Perm		Perm			Perm	
Protected Phases	3	2	1 2 3	2			4			1		
Permitted Phases					2	4		4			1	
Actuated Green, G (s)	10.0	23.0	63.0	23.0	23.0		27.0	27.0		19.0	19.0	
Effective Green, g (s)	11.0	24.0	64.0	24.0	24.0		28.0	28.0		21.0	21.0	
Actuated g/C Ratio	0.11	0.24	0.64	0.24	0.24		0.28	0.28		0.21	0.21	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	175	402	1605	686	198		1272	244		635	127	
v/s Ratio Prot	0.08	0.28	c0.46	0.09						0.31		
v/s Ratio Perm					c0.53		0.18	c0.34			c0.62	
v/c Ratio	0.69	1.17	0.72	0.39	2.20		0.65	1.23		1.46	2.95	
Uniform Delay, d1	42.8	38.0	12.0	31.9	38.0		31.7	36.0		39.5	39.5	
Progression Factor	1.16	1.02	1.45	1.07	1.11		1.00	1.00		1.00	1.00	
Incremental Delay, d2	12.8	93.1	1.8	1.0	548.5		2.6	133.8		214.1	889.6	
Delay (s)	62.6	131.7	19.2	35.2	590.6		34.3	169.8		253.5	929.0	
Level of Service	E	F	B	D	F		C	F		F	F	
Approach Delay (s)		52.5		378.4			70.3			448.4		
Approach LOS		D		F			E			F		

Intersection Summary			
HCM Average Control Delay	209.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.81		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	110.6%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	WBT	NBL	NBT
Lane Group Flow (vph)	201	1202	676
v/c Ratio	0.43	0.55	0.30
Control Delay	40.7	8.7	6.6
Queue Delay	0.0	4.8	0.7
Total Delay	40.7	13.5	7.3
Queue Length 50th (ft)	61	190	95
Queue Length 95th (ft)	93	m173	m95
Internal Link Dist (ft)	48		235
Turn Bay Length (ft)			
Base Capacity (vph)	722	2193	2220
Starvation Cap Reductn	0	906	1148
Spillback Cap Reductn	0	447	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.28	0.93	0.63

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0				
Lane Util. Factor					0.95		0.97	0.95				
Frt					0.97		1.00	0.98				
Flt Protected					1.00		0.95	1.00				
Satd. Flow (prot)					3137		3152	3192				
Flt Permitted					1.00		0.95	1.00				
Satd. Flow (perm)					3137		3152	3192				
Volume (vph)	0	0	0	0	147	44	1166	579	77	0	0	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.97	0.97	0.97	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	0	155	46	1202	597	79	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	201	0	1202	676	0	0	0	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type							Split					
Protected Phases					2		1 4	1 4				
Permitted Phases												
Actuated Green, G (s)					13.8		67.6	67.6				
Effective Green, g (s)					14.8		68.6	68.6				
Actuated g/C Ratio					0.15		0.69	0.69				
Clearance Time (s)					5.0							
Vehicle Extension (s)					2.0							
Lane Grp Cap (vph)					464		2162	2190				
v/s Ratio Prot					c0.06		c0.38	0.21				
v/s Ratio Perm												
v/c Ratio					0.43		0.56	0.31				
Uniform Delay, d1					38.8		8.0	6.3				
Progression Factor					1.00		0.98	0.95				
Incremental Delay, d2					0.2		0.0	0.0				
Delay (s)					39.0		7.8	6.0				
Level of Service					D		A	A				
Approach Delay (s)		0.0			39.0			7.1			0.0	
Approach LOS		A			D			A			A	

Intersection Summary			
HCM Average Control Delay	10.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.6
Intersection Capacity Utilization	49.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	65	400	393	18	75	118
Peak Hour Factor	0.93	0.93	0.84	0.84	0.77	0.77
Hourly flow rate (vph)	70	430	468	21	97	153
Pedestrians		190	190		190	
Lane Width (ft)		14.0	12.0		10.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		18	16		13	
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)		592	1230			
pX, platoon unblocked					0.96	
vC, conflicting volume	679				1428	859
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	679				1447	859
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	91				0	39
cM capacity (veh/h)	792				92	252

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	500	489	251
Volume Left	70	0	97
Volume Right	0	21	153
cSH	792	1700	151
Volume to Capacity	0.09	0.29	1.66
Queue Length 95th (ft)	7	0	444
Control Delay (s)	2.4	0.0	378.4
Lane LOS	A		F
Approach Delay (s)	2.4	0.0	378.4
Approach LOS			F

Intersection Summary			
Average Delay	77.5		
Intersection Capacity Utilization	79.3%	ICU Level of Service	D
Analysis Period (min)	15		

Lane Group	NBT	NEL	NET
Lane Group Flow (vph)	656	51	69
v/c Ratio	0.30	0.14	0.18
Control Delay	4.6	0.9	1.4
Queue Delay	0.2	0.0	0.7
Total Delay	4.7	0.9	2.1
Queue Length 50th (ft)	43	0	0
Queue Length 95th (ft)	47	0	0
Internal Link Dist (ft)	128		116
Turn Bay Length (ft)			
Base Capacity (vph)	2216	390	411
Starvation Cap Reductn	726	0	174
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.44	0.13	0.29

Intersection Summary

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0					4.0	4.0				
Lane Util. Factor		0.95					0.95	0.95				
Frt		1.00					1.00	1.00				
Flt Protected		1.00					0.95	1.00				
Satd. Flow (prot)		3185					1513	1593				
Flt Permitted		1.00					0.95	1.00				
Satd. Flow (perm)		3185					1513	1593				
Volume (vph)	0	623	0	0	0	0	48	66	0	0	0	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	656	0	0	0	0	51	69	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	656	0	0	0	0	51	69	0	0	0	0
Turn Type							Split					
Protected Phases		1 4					2 3	2 3				
Permitted Phases												
Actuated Green, G (s)		67.6					22.4	22.4				
Effective Green, g (s)		68.6					23.4	23.4				
Actuated g/C Ratio		0.69					0.23	0.23				
Clearance Time (s)												
Vehicle Extension (s)												
Lane Grp Cap (vph)		2185					354	373				
v/s Ratio Prot		c0.21					0.03	c0.04				
v/s Ratio Perm												
v/c Ratio		0.30					0.14	0.18				
Uniform Delay, d1		6.2					30.4	30.7				
Progression Factor		0.62					0.00	0.02				
Incremental Delay, d2		0.0					0.1	0.1				
Delay (s)		3.9					0.2	0.6				
Level of Service		A					A	A				
Approach Delay (s)		3.9			0.0			0.4			0.0	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM Average Control Delay	3.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.27		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	43.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	631	602	39	69
v/c Ratio	0.42	0.40	0.07	0.14
Control Delay	14.0	14.5	15.1	18.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	14.0	14.5	15.1	18.3
Queue Length 50th (ft)	63	98	9	21
Queue Length 95th (ft)	115	134	24	20
Internal Link Dist (ft)	375	370	143	783
Turn Bay Length (ft)				
Base Capacity (vph)	1518	1493	593	507
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.42	0.40	0.07	0.14

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	13	13	13	13	13	13
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Frpb, ped/bikes		1.00			0.99			0.98			1.00	
Flpb, ped/bikes		1.00			1.00			0.99			0.98	
Frt		1.00			1.00			0.96			0.98	
Flt Protected		1.00			1.00			0.98			0.97	
Satd. Flow (prot)		2955			2903			1623			1473	
Flt Permitted		0.95			0.95			0.93			0.87	
Satd. Flow (perm)		2809			2762			1539			1318	
Volume (vph)	5	501	5	5	556	11	10	10	10	16	10	5
Peak-hour factor, PHF	0.81	0.81	0.81	0.95	0.95	0.95	0.79	0.79	0.79	0.45	0.45	0.45
Adj. Flow (vph)	6	619	6	5	585	12	13	13	13	36	22	11
RTOR Reduction (vph)	0	0	0	0	1	0	0	8	0	0	7	0
Lane Group Flow (vph)	0	631	0	0	601	0	0	31	0	0	62	0
Confl. Peds. (#/hr)	165		105	105		165	10		20	20		10
Confl. Bikes (#/hr)			19			20			2			
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	0%	0%	0%	0%	0%	0%
Parking (#/hr)		1	1		1	1					1	1
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		53.0			53.0			37.0			37.0	
Effective Green, g (s)		54.0			54.0			38.0			38.0	
Actuated g/C Ratio		0.54			0.54			0.38			0.38	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Lane Grp Cap (vph)		1517			1491			585			501	
v/s Ratio Prot												
v/s Ratio Perm		c0.22			0.22			0.02			c0.05	
v/c Ratio		0.42			0.40			0.05			0.12	
Uniform Delay, d1		13.6			13.5			19.6			20.2	
Progression Factor		0.96			1.00			1.00			1.00	
Incremental Delay, d2		0.7			0.8			0.2			0.5	
Delay (s)		13.8			14.3			19.8			20.7	
Level of Service		B			B			B			C	
Approach Delay (s)		13.8			14.3			19.8			20.7	
Approach LOS		B			B			B			C	

Intersection Summary			
HCM Average Control Delay	14.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.30		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	41.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	11	488	33	14	547	5	28	5	19	5	5	11
Peak Hour Factor	0.81	0.81	0.81	0.92	0.92	0.92	0.70	0.70	0.70	0.32	0.32	0.32
Hourly flow rate (vph)	14	602	41	15	595	5	40	7	27	16	16	34
Pedestrians		190			145			90			145	
Lane Width (ft)		12.0			12.0			10.0			10.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		16			12			6			10	
Right turn flare (veh)												
Median type								Raised			Raised	
Median storage veh)								0			0	
Upstream signal (ft)		504			455							
pX, platoon unblocked	0.91			0.86			0.91	0.91	0.86	0.91	0.91	0.91
vC, conflicting volume	745			733			1300	1515	557	1277	1533	635
vC1, stage 1 conf vol							740	740		773	773	
vC2, stage 2 conf vol							560	775		504	760	
vCu, unblocked vol	617			535			927	1164	331	902	1183	496
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			98			77	96	94	91	91	90
cM capacity (veh/h)	788			834			170	181	478	180	179	360

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	315	342	312	303	74	66
Volume Left	14	0	15	0	40	16
Volume Right	0	41	0	5	27	34
cSH	788	1700	834	1700	224	243
Volume to Capacity	0.02	0.20	0.02	0.18	0.33	0.27
Queue Length 95th (ft)	1	0	1	0	30	23
Control Delay (s)	0.6	0.0	0.7	0.0	28.8	25.2
Lane LOS	A		A		D	D
Approach Delay (s)	0.3		0.3		28.8	25.2
Approach LOS					D	D

Intersection Summary			
Average Delay	3.0		
Intersection Capacity Utilization	48.2%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	530	142	140	556	91	345	561
v/c Ratio	0.68	0.47	0.51	0.46	0.28	0.23	0.70
Control Delay	38.7	30.9	25.9	17.4	15.8	13.8	29.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.7	30.9	25.9	17.4	15.8	13.8	29.9
Queue Length 50th (ft)	141	56	32	68	25	52	136
Queue Length 95th (ft)	187	104	69	81	52	82	196
Internal Link Dist (ft)	679			424		602	497
Turn Bay Length (ft)		200	75		75		
Base Capacity (vph)	848	305	296	1212	330	1526	799
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.63	0.47	0.47	0.46	0.28	0.23	0.70

Intersection Summary

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	11	11	11	11	11	11
Total Lost time (s)		4.0	4.0		4.0	4.0		4.0	4.0			4.0
Lane Util. Factor		0.95	1.00		1.00	0.95		1.00	0.95			0.95
Frpb, ped/bikes		1.00	0.78		1.00	0.99		1.00	0.97			1.00
Flpb, ped/bikes		1.00	1.00		0.98	1.00		0.98	1.00			1.00
Frt		1.00	0.85		1.00	0.99		1.00	0.98			1.00
Flt Protected		1.00	1.00		0.95	1.00		0.95	1.00			1.00
Satd. Flow (prot)		3141	984		1522	3042		1511	2900			3071
Flt Permitted		1.00	1.00		0.28	1.00		0.37	1.00			0.61
Satd. Flow (perm)		3141	984		441	3042		582	2900			1890
Volume (vph)	0	488	131	5	121	463	38	85	268	53	32	468
Peak-hour factor, PHF	0.92	0.92	0.92	0.90	0.90	0.90	0.90	0.93	0.93	0.93	0.92	0.92
Adj. Flow (vph)	0	530	142	6	134	514	42	91	288	57	35	509
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	530	142	0	140	556	0	91	345	0	0	561
Confl. Peds. (#/hr)			150		150		155	120		160	160	
Confl. Bikes (#/hr)							24			25		
Heavy Vehicles (%)	0%	0%	0%	0%	1%	1%	1%	2%	2%	2%	1%	1%
Parking (#/hr)			1									
Turn Type			pm+ov	D.P+P	D.P+P			D.P+P			Perm	
Protected Phases		4	5	3	3	3 4		5	1 5			1
Permitted Phases			4	4	4			1			1	
Actuated Green, G (s)		22.8	30.0		34.3	37.3		48.7	51.7			41.5
Effective Green, g (s)		24.8	31.0		35.3	39.3		48.7	52.7			42.5
Actuated g/C Ratio		0.25	0.31		0.35	0.39		0.49	0.53			0.42
Clearance Time (s)		6.0	3.0		3.0			3.0				5.0
Vehicle Extension (s)		2.0	2.0		2.0			2.0				2.0
Lane Grp Cap (vph)		779	344		269	1196		341	1528			803
v/s Ratio Prot		c0.17	c0.03		0.05	c0.18		0.02	0.12			
v/s Ratio Perm			0.12		0.13			0.11				c0.30
v/c Ratio		0.68	0.41		0.52	0.46		0.27	0.23			0.70
Uniform Delay, d1		34.0	27.3		23.6	22.5		14.3	12.7			23.5
Progression Factor		1.00	1.00		0.98	0.73		1.00	1.00			1.00
Incremental Delay, d2		2.0	0.3		0.8	0.1		0.2	0.0			5.0
Delay (s)		36.0	27.6		24.1	16.5		14.5	12.7			28.5
Level of Service		D	C		C	B		B	B			C
Approach Delay (s)		34.2				18.0			13.1			28.5
Approach LOS		C				B			B			C

Intersection Summary			
HCM Average Control Delay	24.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	77.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBR
Lane Configurations	
Ideal Flow (vphpl)	1900
Lane Width	11
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Volume (vph)	16
Peak-hour factor, PHF	0.92
Adj. Flow (vph)	17
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	120
Confl. Bikes (#/hr)	26
Heavy Vehicles (%)	1%
Parking (#/hr)	
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	116	315	42	349	201	53	200	110
v/c Ratio	0.27	0.33	0.60	0.42	0.91	0.30	0.83	0.32
Control Delay	7.2	7.3	53.1	10.6	78.7	14.1	64.1	7.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.2	7.3	53.1	10.6	78.7	14.1	64.1	7.8
Queue Length 50th (ft)	17	46	12	80	99	0	96	0
Queue Length 95th (ft)	m36	m94	#66	130	#203	27	#162	24
Internal Link Dist (ft)		594		467	104		352	
Turn Bay Length (ft)	200		50			90		100
Base Capacity (vph)	431	945	70	832	228	180	248	339
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.27	0.33	0.60	0.42	0.88	0.29	0.81	0.32

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	11	11	10	10	10	12	12	12	11	11	11
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	1.00
Frpb, ped/bikes	1.00	0.93		1.00	0.94			1.00	0.50		1.00	0.74
Flpb, ped/bikes	0.85	1.00		1.00	1.00			0.95	1.00		0.95	1.00
Frt	1.00	0.98		1.00	0.98			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.99	1.00		0.99	1.00
Satd. Flow (prot)	1243	1296		1472	1342			1604	727		1542	1025
Flt Permitted	0.51	1.00		0.07	1.00			0.73	1.00		0.83	1.00
Satd. Flow (perm)	666	1296		112	1342			1179	727		1287	1025
Volume (vph)	104	247	37	37	279	32	42	135	47	27	133	88
Peak-hour factor, PHF	0.90	0.90	0.90	0.89	0.89	0.89	0.88	0.88	0.88	0.80	0.80	0.80
Adj. Flow (vph)	116	274	41	42	313	36	48	153	53	34	166	110
RTOR Reduction (vph)	0	2	0	0	5	0	0	0	43	0	0	83
Lane Group Flow (vph)	116	313	0	42	344	0	0	201	10	0	200	28
Confl. Peds. (#/hr)	305		230	230		305	270		140	140		270
Confl. Bikes (#/hr)			13			12			5			4
Heavy Vehicles (%)	4%	4%	4%	3%	3%	3%	0%	0%	0%	1%	1%	1%
Bus Blockages (#/hr)	0	0	0	0	16	16	0	0	0	0	0	0
Parking (#/hr)		1	1									
Turn Type	D.P+P			Perm			Perm		Perm	Perm		pm+ov
Protected Phases	3	1 3			1			2			2	3
Permitted Phases	1			1			2		2	2		2
Actuated Green, G (s)	59.5	65.5		55.5	55.5			16.5	16.5		16.5	20.5
Effective Green, g (s)	61.5	65.5		55.5	55.5			16.5	16.5		16.5	22.5
Actuated g/C Ratio	0.68	0.73		0.62	0.62			0.18	0.18		0.18	0.25
Clearance Time (s)	6.0			4.0	4.0			4.0	4.0		4.0	6.0
Vehicle Extension (s)	3.0			3.0	3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	494	943		69	828			216	133		236	302
v/s Ratio Prot	0.02	c0.24			0.26							0.01
v/s Ratio Perm	0.14			c0.38				c0.17	0.01		0.16	0.02
v/c Ratio	0.23	0.33		0.61	0.42			0.93	0.07		0.85	0.09
Uniform Delay, d1	5.1	4.4		10.6	8.9			36.2	30.4		35.5	25.9
Progression Factor	1.68	1.50		1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	0.1	0.1		34.0	1.5			42.2	0.2		23.5	0.1
Delay (s)	8.6	6.7		44.6	10.4			78.4	30.7		59.0	26.0
Level of Service	A	A		D	B			E	C		E	C
Approach Delay (s)		7.2			14.1			68.4			47.3	
Approach LOS		A			B			E			D	

Intersection Summary

HCM Average Control Delay	29.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	60.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	37	99	130	6	82	124
Peak Hour Factor	0.88	0.88	0.86	0.86	0.90	0.90
Hourly flow rate (vph)	42	112	151	7	91	138
Pedestrians			15			190
Lane Width (ft)			13.0			13.0
Walking Speed (ft/s)			4.0			4.0
Percent Blockage			1			17
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)			252			184
pX, platoon unblocked	0.92					
vC, conflicting volume	490	345			158	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	443	345			158	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	91	81			94	
cM capacity (veh/h)	486	580			1434	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	155	158	229
Volume Left	42	0	91
Volume Right	112	7	0
cSH	551	1700	1434
Volume to Capacity	0.28	0.09	0.06
Queue Length 95th (ft)	25	0	4
Control Delay (s)	14.1	0.0	3.4
Lane LOS	B		A
Approach Delay (s)	14.1	0.0	3.4
Approach LOS	B		

Intersection Summary			
Average Delay	5.4		
Intersection Capacity Utilization	44.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	1149	917	110	148	85
v/c Ratio	0.55	0.46	0.35	0.82	0.32
Control Delay	8.5	6.1	19.4	69.9	15.7
Queue Delay	0.0	0.1	0.0	0.0	0.0
Total Delay	8.5	6.2	19.4	69.9	15.7
Queue Length 50th (ft)	142	80	24	79	11
Queue Length 95th (ft)	214	98	52	#141	43
Internal Link Dist (ft)	625	229	480		172
Turn Bay Length (ft)				100	
Base Capacity (vph)	2080	1985	372	226	313
Starvation Cap Reductn	0	180	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.55	0.51	0.30	0.65	0.27

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	13	12	12	13	12	12	14	12	10	10	12
Total Lost time (s)		4.0			4.0			4.0		4.0	4.0	
Lane Util. Factor		0.95			0.95			1.00		1.00	1.00	
Frpb, ped/bikes		0.98			0.94			0.88		1.00	0.76	
Flpb, ped/bikes		1.00			1.00			0.95		0.88	1.00	
Frt		0.99			0.98			0.90		1.00	0.89	
Flt Protected		1.00			1.00			0.99		0.95	1.00	
Satd. Flow (prot)		3216			3073			1359		1323	1070	
Flt Permitted		0.90			0.89			0.95		0.62	1.00	
Satd. Flow (perm)		2888			2748			1306		868	1070	
Volume (vph)	33	982	42	26	751	94	16	11	63	129	21	53
Peak-hour factor, PHF	0.92	0.92	0.92	0.95	0.95	0.95	0.95	0.80	0.80	0.87	0.87	0.87
Adj. Flow (vph)	36	1067	46	27	791	99	17	14	79	148	24	61
RTOR Reduction (vph)	0	3	0	0	8	0	0	47	0	0	49	0
Lane Group Flow (vph)	0	1146	0	0	909	0	0	63	0	148	36	0
Confl. Peds. (#/hr)	175		195	195		175	330		115	115		330
Confl. Bikes (#/hr)			8			2			2			2
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Parking (#/hr)			1			1						
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		1			1			5			5	
Permitted Phases	1			1			5			5		
Actuated Green, G (s)		71.0			71.0			19.0		19.0	19.0	
Effective Green, g (s)		72.0			72.0			20.0		20.0	20.0	
Actuated g/C Ratio		0.72			0.72			0.20		0.20	0.20	
Clearance Time (s)		5.0			5.0			5.0		5.0	5.0	
Vehicle Extension (s)		4.0			4.0			2.0		2.0	2.0	
Lane Grp Cap (vph)		2079			1979			261		174	214	
v/s Ratio Prot											0.03	
v/s Ratio Perm		c0.40			0.33			0.05		c0.17		
v/c Ratio		0.55			0.46			0.24		0.85	0.17	
Uniform Delay, d1		6.5			5.9			33.6		38.6	33.1	
Progression Factor		1.00			0.83			1.00		1.00	1.00	
Incremental Delay, d2		1.1			0.7			0.2		29.8	0.1	
Delay (s)		7.6			5.6			33.8		68.3	33.3	
Level of Service		A			A			C		E	C	
Approach Delay (s)		7.6			5.6			33.8			55.5	
Approach LOS		A			A			C			E	

Intersection Summary			
HCM Average Control Delay	12.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	83.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBT	NBT
Lane Group Flow (vph)	1210	1091	115
v/c Ratio	0.57	0.73	0.53
Control Delay	7.8	14.8	29.9
Queue Delay	0.5	0.1	0.0
Total Delay	8.4	14.9	30.0
Queue Length 50th (ft)	79	71	35
Queue Length 95th (ft)	244	#395	49
Internal Link Dist (ft)	244	630	613
Turn Bay Length (ft)			
Base Capacity (vph)	2113	1488	404
Starvation Cap Reductn	462	0	0
Spillback Cap Reductn	0	20	13
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.73	0.74	0.29

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis — 2018 Build Conditions - Landmark

7: Boylston St & Yawkey Way — Saturday Midday Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	12	12	12	12	16	12
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		0.95			0.95			1.00				
Frpb, ped/bikes		0.99			0.99			0.86				
Flpb, ped/bikes		1.00			1.00			0.97				
Frt		0.99			0.99			0.91				
Flt Protected		1.00			1.00			0.99				
Satd. Flow (prot)		3060			3035			1201				
Flt Permitted		0.92			0.80			0.99				
Satd. Flow (perm)		2812			2449			1201				
Volume (vph)	25	1107	42	53	882	47	16	11	58	0	0	0
Peak-hour factor, PHF	0.97	0.97	0.97	0.90	0.90	0.90	0.74	0.74	0.74	0.25	0.25	0.25
Adj. Flow (vph)	26	1141	43	59	980	52	22	15	78	0	0	0
RTOR Reduction (vph)	0	2	0	0	3	0	0	36	0	0	0	0
Lane Group Flow (vph)	0	1208	0	0	1088	0	0	79	0	0	0	0
Confl. Peds. (#/hr)	115		110	110		115	145		190			
Confl. Bikes (#/hr)			5			2			7			2
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	3%	3%	3%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	8	8	8	0	0	0
Parking (#/hr)			1			1						
Turn Type	D.P+P			Perm			Perm					
Protected Phases	4	1 4			1			3				
Permitted Phases	1			1			3					
Actuated Green, G (s)		63.9			57.9			11.1				
Effective Green, g (s)		65.9			58.9			12.1				
Actuated g/C Ratio		0.73			0.65			0.13				
Clearance Time (s)					5.0			5.0				
Vehicle Extension (s)					3.0			2.0				
Lane Grp Cap (vph)		2078			1603			161				
v/s Ratio Prot		c0.05										
v/s Ratio Perm		0.38			c0.44			0.07				
v/c Ratio		0.58			0.68			0.49				
Uniform Delay, d1		5.6			9.7			36.1				
Progression Factor		1.00			0.86			1.00				
Incremental Delay, d2		1.2			1.9			0.9				
Delay (s)		6.8			10.2			36.9				
Level of Service		A			B			D				
Approach Delay (s)		6.8			10.2			36.9			0.0	
Approach LOS		A			B			D			A	

Intersection Summary			
HCM Average Control Delay	9.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	98.9%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Queues — 2018 Build Conditions - Landmark

8: Boylston St & Ipswich St — Saturday Midday Peak Hour

Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	1286	1101	214	118
v/c Ratio	0.81	0.63	0.59	0.32
Control Delay	16.8	14.4	36.0	13.3
Queue Delay	2.3	3.3	0.0	0.0
Total Delay	19.1	17.7	36.0	13.3
Queue Length 50th (ft)	260	159	92	15
Queue Length 95th (ft)	166	202	147	49
Internal Link Dist (ft)	630	157	243	
Turn Bay Length (ft)			50	
Base Capacity (vph)	1597	1752	361	370
Starvation Cap Reductn	0	534	0	0
Spillback Cap Reductn	189	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.91	0.90	0.59	0.32

Intersection Summary

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0
Lane Util. Factor		0.95	0.95		1.00	1.00
Frpb, ped/bikes		1.00	0.97		1.00	0.85
Flpb, ped/bikes		1.00	1.00		0.87	1.00
Frt		1.00	0.99		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		3208	3076		1300	1130
Flt Permitted		0.88	1.00		0.95	1.00
Satd. Flow (perm)		2819	3076		1300	1130
Volume (vph)	37	1133	919	94	182	100
Peak-hour factor, PHF	0.91	0.91	0.92	0.92	0.85	0.85
Adj. Flow (vph)	41	1245	999	102	214	118
RTOR Reduction (vph)	0	0	9	0	0	56
Lane Group Flow (vph)	0	1286	1092	0	214	62
Confl. Peds. (#/hr)	125			125	85	95
Confl. Bikes (#/hr)				2		1
Heavy Vehicles (%)	1%	1%	1%	1%	9%	9%
Turn Type	Perm					custom
Protected Phases		1	1			
Permitted Phases	1				5	5
Actuated Green, G (s)		50.0	50.0		24.0	24.0
Effective Green, g (s)		51.0	51.0		25.0	25.0
Actuated g/C Ratio		0.57	0.57		0.28	0.28
Clearance Time (s)		5.0	5.0		5.0	5.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1597	1743		361	314
v/s Ratio Prot			0.36			
v/s Ratio Perm		c0.46			c0.16	0.06
v/c Ratio		0.81	0.63		0.59	0.20
Uniform Delay, d1		15.5	13.1		28.1	24.8
Progression Factor		0.81	1.01		1.00	1.00
Incremental Delay, d2		3.8	1.1		7.0	1.4
Delay (s)		16.4	14.3		35.1	26.3
Level of Service		B	B		D	C
Approach Delay (s)		16.4	14.3		32.0	
Approach LOS		B	B		C	

Intersection Summary			
HCM Average Control Delay	17.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	86.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	0	0	0	434	0	657
Peak Hour Factor	0.25	0.25	0.25	0.93	0.25	0.93
Hourly flow rate (vph)	0	0	0	467	0	706
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)				167	682	
pX, platoon unblocked	0.95					
vC, conflicting volume	233	0	706			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	146	0	706			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	798	1091	901			

Direction, Lane #	NB 1	NB 2	SB 1	SB 2
Volume Total	233	233	353	353
Volume Left	0	0	0	0
Volume Right	0	0	353	353
cSH	1700	1700	1700	1700
Volume to Capacity	0.14	0.14	0.21	0.21
Queue Length 95th (ft)	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0
Lane LOS				
Approach Delay (s)	0.0		0.0	
Approach LOS				

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	28.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL2	WBL	SBT	SBR	NET
Lane Group Flow (vph)	253	506	406	300	121
v/c Ratio	0.53	0.53	0.46	0.77	0.22
Control Delay	30.9	28.6	30.2	46.4	31.9
Queue Delay	0.5	0.2	0.0	0.0	0.0
Total Delay	31.4	28.8	30.2	46.4	31.9
Queue Length 50th (ft)	120	121	90	140	27
Queue Length 95th (ft)	194	161	135	#277	47
Internal Link Dist (ft)		208	251		316
Turn Bay Length (ft)				100	
Base Capacity (vph)	480	960	874	391	814
Starvation Cap Reductn	45	92	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.58	0.58	0.46	0.77	0.15

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	WBL2	WBL	SBT	SBR	NET
Lane Configurations					
Ideal Flow (vphpl)	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.91	0.91	0.95	1.00	0.95
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00
Flt Protected	0.95	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1464	2927	3217	1439	3185
Flt Permitted	0.95	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1464	2927	3217	1439	3185
Volume (vph)	264	442	378	279	115
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.95
Adj. Flow (vph)	284	475	406	300	121
RTOR Reduction (vph)	0	0	0	0	0
Lane Group Flow (vph)	253	506	406	300	121
Confl. Peds. (#/hr)				60	
Confl. Bikes (#/hr)				13	
Heavy Vehicles (%)	1%	1%	1%	1%	2%
Turn Type	Split			Prot	
Protected Phases	1	1	4	4	2
Permitted Phases					
Actuated Green, G (s)	27.4	27.4	23.5	23.5	14.5
Effective Green, g (s)	28.4	28.4	24.5	24.5	15.5
Actuated g/C Ratio	0.32	0.32	0.27	0.27	0.17
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	0.2	0.2	2.0	2.0	2.0
Lane Grp Cap (vph)	462	924	876	392	549
v/s Ratio Prot	0.17	c0.17	0.13	c0.21	c0.04
v/s Ratio Perm					
v/c Ratio	0.55	0.55	0.46	0.77	0.22
Uniform Delay, d1	25.5	25.5	27.3	30.1	32.1
Progression Factor	1.02	1.03	1.00	1.00	1.00
Incremental Delay, d2	4.4	2.2	0.1	7.8	0.1
Delay (s)	30.3	28.4	27.4	37.9	32.1
Level of Service	C	C	C	D	C
Approach Delay (s)		29.0	31.9		32.1
Approach LOS		C	C		C

Intersection Summary

HCM Average Control Delay	30.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	21.6
Intersection Capacity Utilization	41.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBR	SET
Lane Group Flow (vph)	758	690
v/c Ratio	0.74	0.29
Control Delay	26.8	22.6
Queue Delay	0.0	0.2
Total Delay	26.8	22.8
Queue Length 50th (ft)	181	102
Queue Length 95th (ft)	167	127
Internal Link Dist (ft)		164
Turn Bay Length (ft)		
Base Capacity (vph)	1054	2677
Starvation Cap Reductn	0	1131
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.72	0.45

Intersection Summary

Movement	EBL	EBR	SET	SER	NWL	NWT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0			
Lane Util. Factor		0.88	0.91			
Frt		0.85	1.00			
Flt Protected		1.00	1.00			
Satd. Flow (prot)		2533	4622			
Flt Permitted		1.00	1.00			
Satd. Flow (perm)		2533	4622			
Volume (vph)	0	637	642	0	0	0
Peak-hour factor, PHF	0.84	0.84	0.93	0.93	0.25	0.25
Adj. Flow (vph)	0	758	690	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	758	690	0	0	0
Heavy Vehicles (%)	1%	1%	1%	1%	0%	0%
Turn Type						
Protected Phases		2	1			
Permitted Phases						
Actuated Green, G (s)		35.3	44.7			
Effective Green, g (s)		36.3	45.7			
Actuated g/C Ratio		0.40	0.51			
Clearance Time (s)		5.0	5.0			
Vehicle Extension (s)		3.0	3.0			
Lane Grp Cap (vph)		1022	2347			
v/s Ratio Prot		c0.30	c0.15			
v/s Ratio Perm						
v/c Ratio		0.74	0.29			
Uniform Delay, d1		22.9	12.8			
Progression Factor		1.00	1.54			
Incremental Delay, d2		2.9	0.3			
Delay (s)		25.8	20.1			
Level of Service		C	C			
Approach Delay (s)	25.8		20.1			0.0
Approach LOS	C		C			A

Intersection Summary			
HCM Average Control Delay	23.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	45.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBT	SBL	SBT	SBR
Lane Group Flow (vph)	743	746	365	767	166
v/c Ratio	0.37	0.50	0.56	0.57	0.31
Control Delay	8.0	32.2	28.8	27.3	23.1
Queue Delay	0.0	1.5	0.8	0.5	0.0
Total Delay	8.0	33.7	29.7	27.8	23.1
Queue Length 50th (ft)	50	153	193	203	80
Queue Length 95th (ft)	16	m117	m267	236	m72
Internal Link Dist (ft)	1113	237		268	
Turn Bay Length (ft)					
Base Capacity (vph)	2026	1486	651	1348	541
Starvation Cap Reductn	0	525	99	227	0
Spillback Cap Reductn	0	0	5	11	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.37	0.78	0.66	0.68	0.31

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0					4.0	4.0	4.0
Lane Util. Factor		0.91			0.95					0.91	0.91	1.00
Frpb, ped/bikes		0.99			1.00					1.00	1.00	0.85
Flpb, ped/bikes		1.00			1.00					1.00	1.00	1.00
Frt		0.99			1.00					1.00	1.00	0.85
Flt Protected		1.00			1.00					0.95	0.98	1.00
Satd. Flow (prot)		4316			3185					1464	3032	1218
Flt Permitted		1.00			1.00					0.95	0.98	1.00
Satd. Flow (perm)		4316			3185					1464	3032	1218
Volume (vph)	0	648	58	0	664	0	0	0	0	605	505	163
Peak-hour factor, PHF	0.95	0.95	0.95	0.89	0.89	0.89	0.25	0.25	0.25	0.98	0.98	0.98
Adj. Flow (vph)	0	682	61	0	746	0	0	0	0	617	515	166
RTOR Reduction (vph)	0	12	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	731	0	0	746	0	0	0	0	365	767	166
Confl. Peds. (#/hr)			210									150
Confl. Bikes (#/hr)			9									12
Heavy Vehicles (%)	0%	2%	2%	2%	2%	0%	0%	0%	0%	1%	1%	1%
Bus Blockages (#/hr)	0	25	25	0	0	0	0	0	0	0	0	0
Turn Type										Split		Perm
Protected Phases		3			3					1	1	
Permitted Phases		3										1
Actuated Green, G (s)		41.0			41.0					39.0	39.0	39.0
Effective Green, g (s)		42.0			42.0					40.0	40.0	40.0
Actuated g/C Ratio		0.47			0.47					0.44	0.44	0.44
Clearance Time (s)		5.0			5.0					5.0	5.0	5.0
Vehicle Extension (s)		2.0			2.0					2.0	2.0	2.0
Lane Grp Cap (vph)		2014			1486					651	1348	541
v/s Ratio Prot		0.17			c0.23					0.25	c0.25	
v/s Ratio Perm												0.14
v/c Ratio		0.36			0.50					0.56	0.57	0.31
Uniform Delay, d1		15.4			16.7					18.5	18.6	16.1
Progression Factor		0.50			1.89					1.35	1.36	1.31
Incremental Delay, d2		0.4			0.1					3.0	1.5	1.3
Delay (s)		8.2			31.7					27.9	26.9	22.4
Level of Service		A			C					C	C	C
Approach Delay (s)		8.2			31.7			0.0			26.6	
Approach LOS		A			C			A			C	

Intersection Summary			
HCM Average Control Delay	23.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	65.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBT	WBR	NBT	NBR	NWL	NWR
Lane Group Flow (vph)	84	305	918	230	207	464	224	658	231
v/c Ratio	0.42	0.68	0.60	0.28	0.76	0.33	0.77	1.79	3.67
Control Delay	42.3	40.2	13.6	22.0	42.9	24.6	47.6	392.5	1252.5
Queue Delay	0.7	0.9	0.7	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.0	41.1	14.3	22.0	42.9	24.6	47.6	392.5	1252.5
Queue Length 50th (ft)	39	137	173	34	78	64	101	~256	~230
Queue Length 95th (ft)	m73	209	219	m53	m#182	89	#206	#351	#371
Internal Link Dist (ft)		237		594		604		625	
Turn Bay Length (ft)					150				300
Base Capacity (vph)	198	451	1520	830	274	1425	292	368	63
Starvation Cap Reductn	0	33	273	0	0	0	0	0	0
Spillback Cap Reductn	20	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.47	0.73	0.74	0.28	0.76	0.33	0.77	1.79	3.67

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBT	WBR	NBL	NBT	NBR	NBR2	NWL	NWR	NWR2
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	0.88	0.95	1.00		0.91	1.00		0.97	0.91	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	0.76		1.00	0.65		1.00	0.35	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.85		1.00	0.85		0.95	0.85	
Flt Protected	0.95	1.00	1.00	1.00	1.00		0.99	1.00		0.97	1.00	
Satd. Flow (prot)	1624	1693	2533	3114	1026		4582	940		3014	459	
Flt Permitted	0.95	1.00	1.00	1.00	1.00		0.99	1.00		0.97	1.00	
Satd. Flow (perm)	1624	1693	2533	3114	1026		4582	940		3014	459	
Volume (vph)	80	290	872	207	186	68	364	66	142	389	389	32
Peak-hour factor, PHF	0.95	0.95	0.95	0.90	0.90	0.93	0.93	0.93	0.93	0.91	0.91	0.91
Adj. Flow (vph)	84	305	918	230	207	73	391	71	153	427	427	35
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	7	0
Lane Group Flow (vph)	84	305	918	230	207	0	464	224	0	658	224	0
Confl. Peds. (#/hr)					190	5		240	270			240
Confl. Bikes (#/hr)			3		15							2
Heavy Vehicles (%)	0%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	0	0	0	16	16	0	0	0	0	0	0	0
Turn Type	Prot		custom		Perm	Perm		Perm			Perm	
Protected Phases	3	2	1 2 3	2			4			1		
Permitted Phases					2	4		4			1	
Actuated Green, G (s)	10.0	23.0	53.0	23.0	23.0		27.0	27.0		9.0	9.0	
Effective Green, g (s)	11.0	24.0	54.0	24.0	24.0		28.0	28.0		11.0	11.0	
Actuated g/C Ratio	0.12	0.27	0.60	0.27	0.27		0.31	0.31		0.12	0.12	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	198	451	1520	830	274		1426	292		368	56	
v/s Ratio Prot	0.05	0.18	c0.36	0.07						0.22		
v/s Ratio Perm					c0.20		0.10	c0.24			c0.49	
v/c Ratio	0.42	0.68	0.60	0.28	0.76		0.33	0.77		1.79	4.00	
Uniform Delay, d1	36.6	29.5	11.3	26.1	30.3		23.8	28.0		39.5	39.5	
Progression Factor	0.97	1.09	1.03	0.80	0.81		1.00	1.00		1.00	1.00	
Incremental Delay, d2	5.9	7.2	1.6	0.8	16.1		0.6	17.4		365.4	1391.4	
Delay (s)	41.5	39.4	13.3	21.7	40.7		24.4	45.5		404.9	1430.9	
Level of Service	D	D	B	C	D		C	D		F	F	
Approach Delay (s)		21.2		30.7			31.2			671.5		
Approach LOS		C		C			C			F		

Intersection Summary

HCM Average Control Delay	198.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.18		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	80.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	WBT	NBL	NBT
Lane Group Flow (vph)	299	556	1034
v/c Ratio	0.56	0.28	0.56
Control Delay	37.8	9.9	12.9
Queue Delay	0.0	0.2	0.5
Total Delay	37.8	10.2	13.4
Queue Length 50th (ft)	71	78	170
Queue Length 95th (ft)	99	m82	m170
Internal Link Dist (ft)	177		240
Turn Bay Length (ft)			
Base Capacity (vph)	794	2010	1844
Starvation Cap Reductn	0	755	379
Spillback Cap Reductn	0	11	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.38	0.44	0.71

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0				
Lane Util. Factor					0.95		0.97	0.95				
Frpb, ped/bikes					1.00		1.00	0.98				
Flpb, ped/bikes					1.00		1.00	1.00				
Frt					0.96		1.00	0.90				
Flt Protected					1.00		0.95	1.00				
Satd. Flow (prot)					3108		3120	2864				
Flt Permitted					1.00		0.95	1.00				
Satd. Flow (perm)					3108		3120	2864				
Volume (vph)	0	0	0	0	188	69	517	333	169	0	0	0
Peak-hour factor, PHF	0.25	0.25	0.25	0.25	0.86	0.86	0.93	0.93	0.25	0.25	0.25	0.25
Adj. Flow (vph)	0	0	0	0	219	80	556	358	676	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	299	0	556	1034	0	0	0	0
Confl. Bikes (#/hr)						1			16			
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	1%	1%	0%	0%	0%	0%
Turn Type							Split					
Protected Phases					2		1 4	1 4				
Permitted Phases												
Actuated Green, G (s)					14.5		55.9	55.9				
Effective Green, g (s)					15.5		56.9	56.9				
Actuated g/C Ratio					0.17		0.63	0.63				
Clearance Time (s)					5.0							
Vehicle Extension (s)					2.0							
Lane Grp Cap (vph)					535		1973	1811				
v/s Ratio Prot					c0.10		0.18	c0.36				
v/s Ratio Perm												
v/c Ratio					0.56		0.28	0.57				
Uniform Delay, d1					34.1		7.4	9.5				
Progression Factor					1.00		1.21	1.18				
Incremental Delay, d2					0.7		0.0	0.1				
Delay (s)					34.8		9.0	11.3				
Level of Service					C		A	B				
Approach Delay (s)		0.0			34.8			10.5			0.0	
Approach LOS		A			C			B			A	

Intersection Summary			
HCM Average Control Delay	14.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	17.6
Intersection Capacity Utilization	31.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	11	305	321	11	5	11
Peak Hour Factor	0.82	0.82	0.89	0.89	0.53	0.53
Hourly flow rate (vph)	13	372	361	12	9	21
Pedestrians		175	175		175	
Lane Width (ft)		12.0	10.0		14.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		15	12		17	
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)		547				
pX, platoon unblocked						
vC, conflicting volume	548				1116	717
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	548				1116	717
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				94	93
cM capacity (veh/h)	839				166	307

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	385	373	30
Volume Left	13	0	9
Volume Right	0	12	21
cSH	839	1700	243
Volume to Capacity	0.02	0.22	0.12
Queue Length 95th (ft)	1	0	9
Control Delay (s)	0.5	0.0	21.9
Lane LOS	A		C
Approach Delay (s)	0.5	0.0	21.9
Approach LOS			C

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	47.7%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	NBT	NEL	NET
Lane Group Flow (vph)	423	34	87
v/c Ratio	0.21	0.08	0.19
Control Delay	4.9	0.3	1.7
Queue Delay	0.3	0.0	0.0
Total Delay	5.1	0.3	1.7
Queue Length 50th (ft)	25	0	0
Queue Length 95th (ft)	34	0	0
Internal Link Dist (ft)	132		156
Turn Bay Length (ft)			
Base Capacity (vph)	2052	450	474
Starvation Cap Reductn	975	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.39	0.08	0.18

Intersection Summary

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0					4.0	4.0				
Lane Util. Factor		0.95					0.95	0.95				
Frt		1.00					1.00	1.00				
Flt Protected		1.00					0.95	1.00				
Satd. Flow (prot)		3185					1513	1593				
Flt Permitted		1.00					0.95	1.00				
Satd. Flow (perm)		3185					1513	1593				
Volume (vph)	0	402	0	0	0	0	32	83	0	0	0	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	423	0	0	0	0	34	87	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	423	0	0	0	0	34	87	0	0	0	0
Turn Type							Split					
Protected Phases		1 4					2 3	2 3				
Permitted Phases												
Actuated Green, G (s)		55.9					24.1	24.1				
Effective Green, g (s)		56.9					25.1	25.1				
Actuated g/C Ratio		0.63					0.28	0.28				
Clearance Time (s)												
Vehicle Extension (s)												
Lane Grp Cap (vph)		2014					422	444				
v/s Ratio Prot		c0.13					0.02	c0.05				
v/s Ratio Perm												
v/c Ratio		0.21					0.08	0.20				
Uniform Delay, d1		7.0					23.9	24.8				
Progression Factor		0.61					0.00	0.04				
Incremental Delay, d2		0.0					0.0	0.1				
Delay (s)		4.3					0.0	1.0				
Level of Service		A					A	A				
Approach Delay (s)		4.3			0.0			0.7			0.0	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM Average Control Delay	3.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.21		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	28.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Detailed Level of Service Tables

	Morning Peak Operations				Evening Peak Operations				Saturday Peak Operations			
	LOS	Delay	V/C	95th Queue	LOS	Delay	V/C	95th Queue	LOS	Delay	V/C	95th Queue
Beacon Street / Mountfort Street / Maitland Street		**Unsignalized**				**Unsignalized**				**Unsignalized**		
Beacon EB left/thru/right	-	-	-	-	-	-	-	-	-	-	-	-
Beacon WB left/thru/right	-	-	-	-	-	-	-	-	-	-	-	-
Maitland NB left/thru/right	D	25.2	0.12	10	E	39.1	0.51	66	C	23.6	0.09	6
Mountfort SB left/thru	-	-	-	-	-	-	-	-	-	-	-	-
Mountfort SB right	-	-	-	-	-	-	-	-	-	-	-	-
Beacon Street / Miner Street / Arundel Street		**Unsignalized**				**Unsignalized**				**Unsignalized**		
Beacon EB left/thru/right	-	-	-	-	-	-	-	-	-	-	-	-
Beacon WB left/thru/right	-	-	-	-	-	-	-	-	-	-	-	-
Miner NB left/thru/right	E	35.5	0.33	34	F	59.1	0.64	91	D	29.4	0.25	21
Arundel SB left/thru/right	-	-	-	-	-	-	-	-	-	-	-	-
Beacon Street / Park Drive (Audubon Circle)	**C**	**34.1**	**0.78**	**-**	**E**	**56.7**	**>1.0**	**-**	**C**	**31.8**	**0.68**	**-**
Beacon EB u-turn/left/thru	D	36.1	0.79	229	C	29.8	0.49	149	D	37.9	0.78	130
Beacon EB right	C	32.0	0.59	188	C	28.3	0.35	133	C	31.4	0.50	107
Beacon WB u-turn/left/thru	B	15.5	0.79	m69	E	56.1	>1.0	m#241	C	31.6	0.79	163
Beacon WB right	A	3.7	0.01	m1	B	18.9	0.02	m4	B	17.2	0.03	15
Park NB left/thru	B	17.8	0.40	94	F	81.1	>1.0	#361	C	25.5	0.38	112
Park NB right	B	17.8	0.04	19	C	24.0	0.09	40	D	36.2	0.04	21
Park SB left/thru	E	63.7	0.84	#324	E	66.5	>1.0	#366	C	30.4	0.62	#197
Park SB right	E	61.6	0.05	m25	A	8.0	0.03	m3	C	22.1	0.01	14

Brookline Avenue / Fullerton Street / Kilmarnock Street	**C**	**20.8**	**0.86**	**-**	**C**	**31.5**	**0.84**	**-**	**B**	**15.4**	**0.57**	**-**
Brookline EB left	A	10.0	0.32	m51	A	9.1	0.22	m39	A	2.3	0.15	m12
Brookline EB thru/right	A	9.0	0.46	m162	A	10.0	0.41	m142	A	3.6	0.29	m76
Brookline WB left	F	>80	0.93	m#69	F	95.6	0.85	#88	D	36.9	0.57	#62
Brookline WB thru/right	B	10.2	0.59	m99	B	16.0	0.58	237	A	6.8	0.33	114
Kilmarnock NB left/thru/right	E	55.9	0.77	147	B	100.8	0.99	m169	E	55.7	0.70	79
Fullerton SB left/thru	D	38.1	0.36	66	D	41.0	0.62	128	D	36.7	0.23	35
Fullerton SB right	C	27.6	0.05	20	C	27.8	0.30	84	C	30.3	0.06	21
Van Ness Street / Kilmarnock Street		**Unsignalized**				**Unsignalized**				**Unsignalized**		
Van Ness WB left/right	B	14.6	0.25	24	C	17.5	0.45	-	B	10.8	0.12	9
Kilmarnock NB thru	-	-	-	-	-	-	-	-	-	-	-	-
Kilmarnock SB thru	-	-	-	-	-	-	-	-	-	-	-	-
Boylston Street / Kilmarnock Street	**A**	**8.3**	**0.70**	**-**	**B**	**18.0**	**0.73**	**-**	**B**	**10.4**	**0.54**	**-**
Boylston EB left/thru/right	A	8.6	0.73	371	B	18.3	0.69	m388	A	5.8	0.49	193
Boylston WB left/thru/right	A	3.1	0.62	m42	A	7.1	0.68	m100	A	4.9	0.37	128
Kilmarnock NB left/thru/right	C	33.3	0.18	48	C	32.1	0.19	62.00	D	35.8	0.22	44
Kilmarnock SB left	D	37.9	0.56	62	E	66.9	0.87	m#186	D	54.3	0.74	97
Kilmarnock SB thru/right	C	32.9	0.11	24	C	33.1	0.26	m73	D	35.5	0.18	41
Boylston Street / Yawkey Way / Jersey Street	**E**	**62.6**	**>1.0**	**-**	**D**	**39.9**	**1.00**	**-**	**B**	**11.9**	**0.74**	**-**
Boylston EB left/thru/right	B	10.3	0.80	#511	A	4.2	0.76	182	A	4.4	0.52	237
Boylston WB left/thru/right	F	>80	>1.0	#648	F	82.5	>1.0	#609	B	17.9	0.83	#394
Jersey NB left/thru/right	D	36.8	0.57	80	D	41.1	0.60	106	D	36.4	0.35	37

Boylston Street / Ipswich Street	**B**	**17.1**	**0.68**	**-**	**C**	**22.5**	**0.85**	**-**	**B**	**14.7**	**0.59**	**-**
Boylston EB left/thru	B	16.6	0.86	193	C	25.8	0.96	#631	B	13.7	0.73	113
Boylston WB thru/right	B	16.3	0.72	340	B	13.3	0.58	235	B	13.1	0.52	173
Ipswich SB left	C	28.4	0.29	73	D	38.6	0.56	193	C	27.9	0.31	80
Ipswich SB right	C	25.6	0.11	30	C	29.1	0.07	40	C	25.3	0.14	37
Park Drive Northbound/Southbound Split		**Unsignalized**				**Unsignalized**				**Unsignalized**		
Park NB thru	-	-	-	-	-	-	-	-	-	-	-	-
Park SB right	A	0.0	0.27	0	A	0.0	0.29	0	A	0.0	0.20	0
Riverway Westbound / Park Drive Southbound	**B**	**12.9**	**0.41**	**-**	**B**	**19.1**	**0.70**	**-**	**B**	**17.9**	**0.34**	**-**
Riverway WB left	B	10.4	0.18	29	C	21.2	0.31	100	A	5.6	0.10	35
Riverway WB thru	B	10.6	0.20	32	C	24.5	0.59	205	A	5.8	0.13	45
Park SB thru	B	13.6	0.40	m108	A	9.3	0.26	93	C	23.0	0.43	m102
Park SB right	B	16.8	0.66	m138	B	18.1	0.75	369	D	35.6	0.79	m221
Riverway Eastbound / Park Drive Southbound		**Unsignalized**				**Unsignalized**				**Unsignalized**		
Riverway EB right	B	14.1	0.53	79	F	Err	>1.0	Err	F	>80.0	>1.0	792
Park SB Thru	-	-	-	-	-	-	-	-	-	-	-	-
Riverway / Brookline Avenue / Fenway	**D**	**35.0**	**0.98**	**-**	**C**	**29.8**	**0.81**	**-**	**D**	**50.6**	**0.72**	**-**
Brookline EB thru/slight right/right	B	13.0	0.61	115	C	30.0	0.76	238	C	20.6	0.31	153
Brookline WB thru	C	25.5	0.85	#511	B	19.1	0.79	#333	A	5.7	0.42	58
Riverway SB left	F	>80	>1.0	#806	D	40.5	0.83	#470	F	>80.0	>1.0	#584
Riverway SB slight left/thru	C	22.8	0.58	273	C	34.5	0.83	380	C	32.4	0.55	172
Riverway right	B	18.9	0.29	140	C	22.3	0.22	96	C	29.7	0.33	109

Brookline Avenue / Park Drive / Boylston Street	**D**	**35.1**	**0.85**	**-**	**E**	**79.3**	**>1.0**	**-**	**D**	**39.6**	**0.94**	**-**
Brookline EB thru	C	33.6	0.56	m180	C	25.3	0.45	m143	C	26.5	0.31	m78
Brookline EB slight right	B	18.8	0.78	m389	C	28.2	0.95	#443	B	12.7	0.56	m77
Brookline WB thru	C	28.3	0.44	m96	C	27.6	0.31	m88	C	21.6	0.23	m53
Brookline WB right	C	33.2	0.57	m146	F	>80.0	>1.0	m#459	D	36.3	0.68	m#150
Park NB left/thru	C	33.2	0.56	180	D	41.3	0.82	258	C	26.5	0.39	102
Park NB right/hard right	F	94.2	1.00	#305	F	>80.0	>1.0	#267	D	54.8	0.81	#195
Boylston NWB slight left	D	39.6	0.83	305	C	25.8	0.82	306	C	33.8	0.72	198
Boylston NWB slight right/hard right	D	47.6	0.81	#361	F	>8.0	>1.0	#409	F	>80.0	>1.0	#293
Park Drive / Landmark Center Entrance Driveway		**Unsignalized**				**Unsignalized**				**Unsignalized**		
Park NB thru/right	A	0.0	0.18	0	A	0.0	0.28	0	A	0.0	0.15	0
Park Drive / Landmark Center Exit Driveway	**A**	**3.8**	**0.27**	**-**	**A**	**8.0**	**0.44**	**-**	**A**	**6.6**	**0.24**	**-**
Driveway WB thru	D	39.1	0.10	30	D	35.9	0.41	125	C	32.4	0.26	59
Driveway WB right	D	38.6	0.01	15	C	33.1	0.04	33	C	32.8	0.31	56
Park NB left	A	2.9	0.29	m86	A	5.1	0.45	m97	A	2.3	0.22	m32
Park NB thru	A	2.5	0.15	m45	A	4.4	0.25	m53	A	2.2	0.16	m24
Brookline Avenue / Overland Street		**Unsignalized**				**Unsignalized**				**Unsignalized**		
Brookline EB left/thru	-	-	-	-	-	-	-	-	-	-	-	-
Brookline WB thru/right	-	-	-	-	-	-	-	-	-	-	-	-
Overland SB left/right	C	20.8	0.16	14	D	31.3	0.38	43	C	20.7	0.11	8

	Morning Peak Operations				Evening Peak Operations				Saturday Peak Operations			
	LOS	Delay	V/C	95th Queue	LOS	Delay	V/C	95th Queue	LOS	Delay	V/C	95th Queue
Beacon Street / Mountfort Street / Maitland Street	**C**	**20.7**	**0.61**	**-**	**C**	**32**	**0.73**	**-**	**B**	**14.6**	**0.29**	**-**
Beacon EB left/thru/right	B	19.2	0.46	m192	C	30.0	0.42	m259	B	13.9	0.41	112
Beacon WB left/thru/right	B	19.2	0.70	m268	D	38.7	0.78	m437	B	14.3	0.40	132
Maitland NB left/thru/right	C	34.8	0.20	39	C	33.5	0.66	196	B	19.8	0.05	24
Mountfort SB left/thru/right	D	36.5	0.29	55	C	21.5	0.09	37	C	20.7	0.12	20
Beacon Street / Miner Street / Arundel Street		**Unsignalized**				**Unsignalized**				**Unsignalized**		
Beacon EB left/thru/right	-	-	-	-	-	-	-	-	-	-	-	-
Beacon WB left/thru/right	-	-	-	-	-	-	-	-	-	-	-	-
Miner NB left/thru/right	E	41.6	0.42	48	F	52.7	0.62	88	D	26.7	0.24	20
Arundel SB left/thru/right	-	-	-	-	-	-	-	-	-	-	-	-
Beacon Street / Park Drive (Audubon Circle)	**D**	**45.9**	**>1.0**	**-**	**D**	**54.8**	**0.98**	**-**	**C**	**23.7**	**0.61**	**-**
Beacon EB thru	F	>80	>1.0	#446	D	43.3	0.73	216	D	35.6	0.67	185
Beacon EB right	C	29.7	0.55	180	D	38.1	0.57	130	C	27.6	0.41	104
Beacon WB u-turn/left	E	64.2	0.92	m#219	F	>80.0	>1.0	m#445	C	23.9	0.52	68
Beacon WB thru/right	B	12.0	0.38	95	C	25.0	0.73	299	B	16.4	0.46	79
Park NB left	B	11.1	0.26	18	B	15.5	0.47	88	B	14.4	0.25	48
Park NB thru/right	A	8.4	0.29	46	B	11.5	0.36	169	B	12.7	0.23	82
Park SB left/thru*	F	>80	>1.0	m#97	-	-	-	-	-	-	-	-
Park SB thru/right*	C	28.2	0.90	#529	-	-	-	-	-	-	-	-
Park SB left/thru/right	-	-	-	-	B	10.8	0.67	85	C	26.9	0.66	188

Brookline Avenue / Fullerton Street / Kilmarnock Street	**B**	**15.9**	**0.67**	**-**	**C**	**29.9**	**0.94**	**-**	**B**	**16.9**	**0.61**	**-**
Brookline EB left	A	5.9	0.36	m15	A	6.9	0.28	m12	A	6.2	0.16	
Brookline EB thru/right	A	5.7	0.63	m56	A	5.8	0.54	m55	A	5.2	0.31	
Brookline WB left	C	21.0	0.37	m9	F	>80.0	0.98	#103	D	42.1	0.61	
Brookline WB thru/right	B	10.8	0.65	m142	C	25.0	0.79	371	A	7.2	0.35	
Kilmarnock NB left/thru/right	E	60.4	0.82	#181	F	84.1	0.94	m#180	E	59.0	0.73	
Fullerton SB left/thru	D	36.5	0.33	68	D	36.5	0.56	131	D	36.4	0.24	
Fullerton SB right	C	27.7	0.06	20	C	26.9	0.33	95	C	29.9	0.06	
Van Ness Street / Kilmarnock Street		**Unsignalized**				**Unsignalized**				**Unsignalized**		
Van Ness WB left/right	C	15.4	0.25	24	C	23.3	0.46	58	B	11.1	0.13	10
Kilmarnock NB thru/right	-	-	-	-	-	-	-	-	-	-	-	-
Kilmarnock SB left/thru	-	-	-	-	-	-	-	-	-	-	-	-
Boylston Street / Kilmarnock Street	**A**	**8.9**	**0.68**	**-**	**B**	**19.3**	**0.77**	**-**	**A**	**9.1**	**0.54**	**-**
Boylston EB left/thru/right	A	8.3	0.75	425	A	8.0	0.71	m247	A	5.4	0.52	197
Boylston WB left/thru/right	A	5.8	0.61	282	C	23.8	0.79	#490	A	3.8	0.39	91
Kilmarnock NB left/thru/right	C	34.9	0.25	55	D	37.6	0.34	68	D	37.7	0.30	53
Kilmarnock SB left	C	34.3	0.15	21	D	47.7	0.66	m93	D	48.5	0.65	77
Kilmarnock SB thru/right	C	34.3	0.15	27	D	47.8	0.68	m125	D	37.1	0.20	44
Boylston Street / Yawkey Way / Jersey Street	**C**	**23.0**	**0.88**	**-**	**C**	**20.2**	**0.84**	**-**	**A**	**9.6**	**0.60**	**-**
Boylston EB left/thru/right	B	16.1	0.84	#569	B	19.0	0.80	#429	A	6.4	0.55	225
Boylston WB left/thru/right	C	27.8	0.95	#619	B	17.2	0.88	#576	B	10.2	0.63	#346
Jersey NB left/thru/right	D	38.9	0.65	96	D	46.4	0.72	136	D	36.8	0.46	46

Boylston Street / Ipswich Street	**B**	**19.0**	**0.80**	**-**	**C**	**33.5**	**0.99**	**-**	**B**	**15.7**	**0.65**	**-**
Boylston EB left/thru	B	17.1	0.90	m275	D	36.3	1.00	#663	B	14.8	0.76	147
Boylston WB thru/right	B	18.0	0.78	391	B	14.5	0.65	279	B	13.3	0.54	181
Ipswich SB left	D	35.9	0.58	138	E	78.0	0.98	#416	C	30.1	0.42	105
Ipswich SB right	C	26.1	0.14	38	C	29.1	0.07	40	C	25.9	0.18	44
Park Drive Northbound/Southbound Split		**Unsignalized**				**Unsignalized**				**Unsignalized**		
Park NB thru	-	-	-	-	-	-	-	-	-	-	-	-
Park SB right	A	0.0	0.28	0	A	0.0	0.32	0	A	0.0	0.21	0
Riverway Westbound / Park Drive Southbound	**C**	**26.1**	**0.61**	**-**	**F**	**87.8**	**0.97**	**-**	**C**	**25.0**	**0.48**	**-**
Riverway WB left	C	26.3	0.53	262	D	41.1	0.84	#451	C	22.4	0.38	136
Riverway WB thru	C	24.8	0.53	228	D	36.3	0.85	365	C	22.3	0.42	128
Park SB thru	C	23.1	0.51	m221	C	30.1	0.56	219	C	24.1	0.40	130
Park SB right	C	28.2	0.74	m#351	F	>80.0	>1.0	#794	C	29.2	0.66	#256
Riverway NE thru	D	43.6	0.35	50	D	38.4	0.20	47	D	35.9	0.16	28
Riverway Eastbound / Park Drive Southbound	**C**	**23.5**	**0.6**	**-**	**B**	**15.8**	**0.55**	**-**	**C**	**20.7**	**0.47**	**-**
Riverway EB right	B	12.1	0.58	218	C	24.2	0.68	225	C	25.8	0.74	167
Park SB Thru	D	35.1	0.63	270	A	9.3	0.43	197	B	14.2	0.26	108
Riverway / Brookline Avenue / Fenway	**C**	**20.4**	**0.78**	**-**	**C**	**31.7**	**0.76**	**-**	**C**	**22.7**	**0.52**	**-**
Brookline EB thru/right	C	31.4	0.65	195	C	29.2	0.78	241	A	8.0	0.35	16
Brookline WB thru	B	15.5	0.89	m118	D	51.2	0.83	m287	C	31.6	0.50	m114
Riverway SB left	B	19.2	0.68	313	C	25.5	0.70	478	C	27.0	0.53	m246
Riverway SB thru	B	17.3	0.69	291	C	22.8	0.71	445	C	26.0	0.54	235
Riverway right	B	13.9	0.29	112	B	15.9	0.21	m98	C	22.7	0.28	m69

Brookline Avenue / Park Drive / Boylston Street	**F**	**>80**	**>1.0**	**-**	**F**	**>80.0**	**>1.0**	**-**	**F**	**>80.0**	**>1.0**	**-**
Brookline EB left	D	44.8	0.43	m70	E	59.9	0.63	m95	D	39.5	0.33	m59
Brookline EB thru	F	>80	>1.0	#660	F	128.0	>1.0	m#541	D	38.6	0.66	203
Brookline EB slight right	B	16.1	0.83	424	B	19.2	0.72	396	B	13.4	0.60	214
Brookline WB thru	D	40.6	0.58	m142	D	35.7	0.40	m112	C	22.1	0.27	m50
Brookline WB right	F	>80	0.95	m#272	F	>80.0	>1.0	m#631	D	36.9	0.68	m#166
Park NB left/thru	C	30.9	0.46	147	C	33.8	0.63	201	C	23.9	0.29	79
Park NB right/hard right	F	>80	>1.0	#461	F	>80.0	>1.0	#371	D	40.3	0.70	#181
Boylston NWB slight left	F	>80	>1.0	#542	F	>80.0	>1.0	#544	F	>80.0	>1.0	#351
Boylston NWB slight right/hard right	F	>80	>1.0	#409	F	>80.0	>1.0	m#590	F	>80.0	>1.0	#371
Park Drive / Landmark Center Entrance Driveway		**Unsignalized**				**Unsignalized**				**Unsignalized**		
Park NB thru/right	A	0.0	0.19	0	A	0.0	0.31	0	A	0.0	0.15	0
Park Drive / Landmark Center Exit Driveway	**A**	**8.2**	**0.32**	**-**	**A**	**9.8**	**0.54**	**-**	**B**	**11.1**	**0.27**	**-**
Driveway WB thru	D	42.6	0.13	23	D	40.1	0.47	95	D	37.3	0.44	56
Park NB left	A	7.6	0.34	m147	A	7.1	0.55	m162	A	6.9	0.25	m74
Park NB thru	A	6.3	0.16	m55	A	5.1	0.26	m77	A	6.2	0.16	m51
Brookline Avenue / Overland Street		**Unsignalized**				**Unsignalized**				**Unsignalized**		
Brookline EB left/thru	-	-	-	-	-	-	-	-	-	-	-	-
Brookline WB thru/right	-	-	-	-	-	-	-	-	-	-	-	-
Overland SB left/right	E	40.1	0.44	51	F	>80.0	>1.0	425	C	21.2	0.12	9

Park Drive Northbound / Riverway Extension	**A**	**0.6**	**0.16**	**-**	**A**	**3.8**	**0.26**	**-**	**A**	**2.5**	**0.17**	**-**
Park NB thru	A	0.7	0.16	8	A	4.2	0.30	55	A	2.9	0.19	30
Riverway NEB left	A	0.4	0.17	0	A	0.6	0.13	1	A	0.4	0.11	0
Riverway NEB left/thru	A	0.4	0.18	0	A	0.7	0.13	1	A	0.1	0.08	0

*Park Drive SB at Audubon Circle required a designated left during the morning peak hour
95th percentile volume exceeds capacity, queue may be longer.
m Volume for 95th percentile queue is metered by upstream signal.

	Morning Peak Operations				**Evening Peak Operations**				**Saturday Peak Operations**			
	LOS	**Delay**	**V/C**	**95th Queue**	**LOS**	**Delay**	**V/C**	**95th Queue**	**LOS**	**Delay**	**V/C**	**95th Queue**
Beacon Street / Mountfort Street / Maitland Street	**C**	**20.7**	**0.61**	**-**	**C**	**32**	**0.73**	**-**	**B**	**14.6**	**0.3**	**-**
Beacon EB left/thru/right	B	19.1	0.47	m214	B	19.9	0.42	m259	B	13.8	0.42	115
Beacon WB left/thru/right	B	19.2	0.70	m266	D	38.9	0.79	m440	B	14.3	0.40	134
Maitland NB left/thru/right	C	34.8	0.20	39	C	33.5	0.66	196	B	19.8	0.05	24
Mountfort SB left/thru/right	D	36.5	0.29	55	C	21.5	0.09	37	C	20.7	0.12	20
Beacon Street / Miner Street / Arundel Street		**Unsignalized**				**Unsignalized**				**Unsignalized**		
Beacon EB left/thru/right	-	-	-	-	-	-	-	-	-	-	-	-
Beacon WB left/thru/right	-	-	-	-	-	-	-	-	-	-	-	-
Miner NB left/thru/right	E	39.8	0.44	52	E	48.0	0.57	76	D	28.8	0.33	30
Arundel SB left/thru/right	-	-	-	-	-	-	-	-	-	-	-	-
Beacon Street / Park Drive (Audubon Circle)	**D**	**43.2**	**1.00**	**-**	**E**	**55.4**	**0.99**	**-**	**C**	**24.2**	**0.63**	**-**
Beacon EB thru	E	77.5	>1.0	#431	D	43.7	0.74	217	D	36.0	0.68	
Beacon EB right	C	29.7	0.55	180	D	38.1	0.57	131	C	27.6	0.41	
Beacon WB u-turn/left	E	64.0	0.92	m#220	F	>80.0	>1.0	m#442	C	24.1	0.52	
Beacon WB thru/right	B	12.0	0.38	95	C	24.8	0.73	294	B	16.5	0.46	
Park NB left	B	11.1	0.26	18	B	15.4	0.47	86	B	14.5	0.27	
Park NB thru/right	A	8.2	0.29	46	B	11.3	0.35	163	B	12.7	0.23	
Park SB left/thru*	F	>80	>1.0	m#96	-	-	-	-				
Park SB thru/right*	C	28.2	0.90	#529	-	-	-	-				
Park SB left/thru/right	-	-	-	-	B	11.1	0.69	86	C	28.5	0.70	

Brookline Avenue / Fullerton Street / Kilmarnock Street	**B**	**18.5**	**0.69**	**-**	**C**	**34.3**	**0.96**	**-**	**C**	**29.3**	**0.66**	**-**
Brookline EB left	A	4.7	0.26	m12	A	9.8	0.36	m14	A	8.6	0.23	m36
Brookline EB thru/right	A	5.8	0.64	m60	A	7.2	0.58	m57	A	6.7	0.33	m94
Brookline WB left	C	21.6	0.37	m11	F	>80.0	0.98	#103	D	44.6	0.61	#66
Brookline WB thru/right	A	9.9	0.60	m130	C	32.4	0.86	390	B	10.4	0.42	130
Kilmarnock NB left/thru	E	47.7	0.88	#181	F	>80.0	0.97	m#259	E	78.4	0.93	#203
Kilmarnock NB right	C	33.5	0.03	20	C	28.9	0.04	m13	C	30.7	0.07	27
Fullerton SB left/thru	D	40.6	0.57	109	D	38.8	0.68	180	E	59.0	0.85	#162
Fullerton SB right	C	27.7	0.06	21	C	24.5	0.28	85	C	26.0	0.09	24
Van Ness Street / Kilmarnock Street		**Unsignalized**				**Unsignalized**				**Unsignalized**		
Van Ness WB left/right	C	16.3	0.27	27	D	32.4	0.62	98	B	14.1	0.28	25
Kilmarnock NB thru/right	-	-	-	-	A	0	0.11	0	A	0	0.09	0
Kilmarnock SB left/thru	-	-	-	-	A	6.9	0.16	14	A	3.4	0.06	4
Boylston Street / Kilmarnock Street	**A**	**9.3**	**0.69**	**-**	**C**	**22.3**	**0.84**	**-**	**B**	**12.6**	**0.62**	**-**
Boylston EB left/thru/right	A	8.5	0.76	425	A	8.7	0.73	m246	A	7.6	0.55	214
Boylston WB left/thru/right	A	5.9	0.61	286	C	29.0	0.85	#525	A	5.6	0.46	98
Kilmarnock NB left/thru/right	C	34.7	0.24	54	D	36.1	0.29	68	C	33.8	0.24	52
Kilmarnock SB left	D	35.4	0.33	38	E	60.5	0.78	m117	E	68.3	0.85	#141
Kilmarnock SB thru/right	C	34.1	0.14	27	D	43.5	0.63	m123	C	33.3	0.17	43
Boylston Street / Yawkey Way / Jersey Street	**C**	**24.1**	**0.89**	**-**	**C**	**21.5**	**0.86**	**-**	**A**	**9.8**	**0.64**	**-**
Boylston EB left/thru/right	B	17.0	0.86	#584	B	19.7	0.82	#446	A	6.8	0.58	244
Boylston WB left/thru/right	C	29.3	0.96	#627	B	19.4	0.92	#589	B	10.2	0.68	#395
Jersey NB left/thru/right	D	39.2	0.65	97	D	46.8	0.72	138	D	36.9	0.49	49

Boylston Street / Ipswich Street	**B**	**19.8**	**0.84**	**-**	**D**	**38.1**	**>1.0**	**-**	**B**	**17.4**	**0.74**	**-**
Boylston EB left/thru	B	17.9	0.92	m#273	D	40.6	>1.0	#682	B	16.4	0.81	166
Boylston WB thru/right	B	18.3	0.79	398	B	15.5	0.69	310	B	14.3	0.63	202
Ipswich SB left	D	38.8	0.65	154	F	95.4	>1.0	#454	D	35.1	0.59	147
Ipswich SB right	C	26.2	0.15	38	C	29.1	0.07	40	C	26.3	0.20	49
Park Drive Northbound/Southbound Split		**Unsignalized**				**Unsignalized**				**Unsignalized**		
Park NB thru	-	-	-	-	-	-	-	-	-	-	-	-
Park SB right	A	0.0	0.28	0	A	0.0	0.32	0	A	0.0	0.21	0
Riverway Westbound / Park Drive Southbound	**C**	**27.0**	**0.62**	**-**	**F**	**93.2**	**0.98**	**-**	**C**	**30.5**	**0.55**	**-**
Riverway WB left	C	27.6	0.56	278	D	42.8	0.86	#469	C	30.3	0.55	194
Riverway WB thru	C	25.9	0.56	239	D	36.5	0.86	366	C	28.4	0.55	161
Park SB thru	C	23.5	0.51	m223	C	31.2	0.58	224	C	27.4	0.46	135
Park SB right	C	29.2	0.75	m#366	F	>80.0	>1.0	#811	D	37.9	0.77	#277
Riverway NE thru	D	43.3	0.38	55	D	37.8	0.25	60	C	32.1	0.22	47
Riverway Eastbound / Park Drive Southbound	**C**	**23**	**0.59**	**-**	**B**	**15.5**	**0.56**	**-**	**C**	**23.1**	**0.49**	**-**
Riverway EB right	B	13.4	0.59	215	C	24.3	0.69	226	C	25.8	0.74	167
Park SB Thru	C	32.1	0.60	276	A	8.9	0.44	200	C	20.1	0.29	127
Riverway / Brookline Avenue / Fenway	**C**	**20.4**	**0.78**	**-**	**C**	**32.0**	**0.77**	**-**	**C**	**23.0**	**0.53**	**-**
Brookline EB thru/right	C	31.3	0.64	193	C	29.6	0.79	246	A	8.2	0.36	16
Brookline WB thru	B	15.8	0.89	m120	D	51.1	0.82	m283	C	31.7	0.50	m177
Riverway SB left	B	19.3	0.68	314	C	26.1	0.71	484	C	27.9	0.56	m267
Riverway SB thru	B	17.3	0.69	292	C	23.4	0.72	452	C	26.9	0.57	236

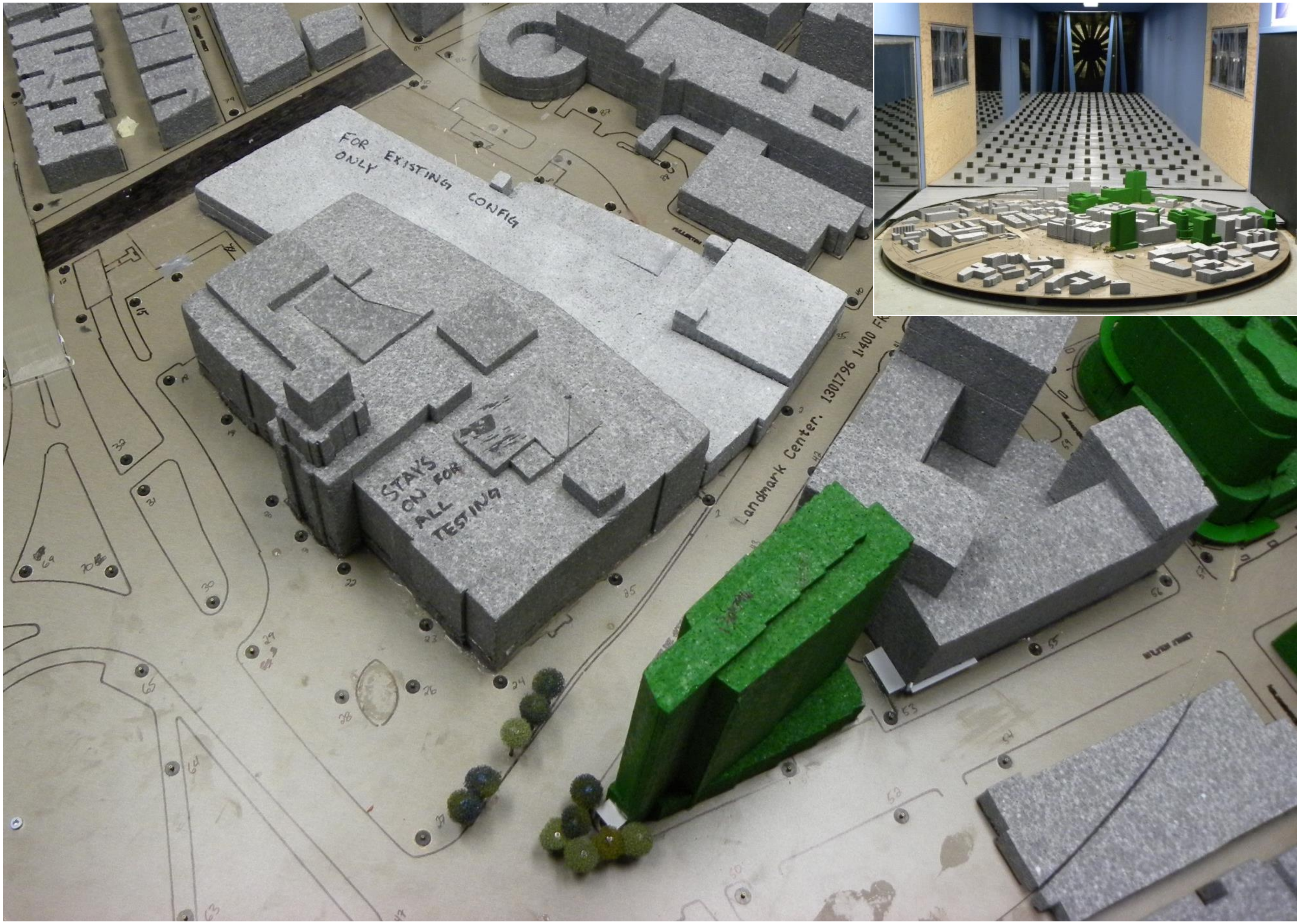
Riverway right	B	13.9	0.29	114	B	16.3	0.22	m103	C	22.4	0.31	m72
Brookline Avenue / Park Drive / Boylston Street	**F**	**>80**	**>1.0**	**-**	**F**	**>80.0**	**>1.0**	**-**	**F**	**>80.0**	**>1.0**	**-**
Brookline EB left	D	45.8	0.46	m76	E	62.6	0.69	m104	D	41.5	0.42	m73
Brookline EB thru	F	>80	>1.0	#610	F	>80.0	>1.0	m#540	D	39.4	0.68	209
Brookline EB slight right	B	16.4	0.83	424	B	19.2	0.72	399	B	13.3	0.60	219
Brookline WB thru	D	41.1	0.59	m143	D	35.2	0.39	m101	C	21.7	0.28	m53
Brookline WB right	F	>80	0.98	m#281	F	>80.0	>1.0	m#574	D	40.7	0.76	m#182
Park NB left/thru	C	30.8	0.45	146	C	34.3	0.65	209	C	24.4	0.33	89
Park NB right/hard right	F	>80	>1.0	#452	F	>80.0	>1.0	#389	D	45.5	0.77	#206
Boylston NWB slight left	F	>80	>1.0	#542	F	>80.0	>1.0	m#519	F	>80.0	>1.0	#351
Boylston NWB slight right/hard right	F	>80	>1.0	#409	F	>80.0	>1.0	m#561	F	>80.0	>1.0	#371
Park Drive / Landmark Center Exit Driveway	**A**	**9.0**	**0.33**	**-**	**B**	**10.2**	**0.53**	**-**	**B**	**14.4**	**0.57**	**-**
Driveway WB thru	D	42.4	0.21	35	D	39.0	0.43	93	C	34.8	0.56	99
Park NB left	A	7.8	0.34	m157	A	7.8	0.56	m173	A	9.0	0.28	m82
Park NB thru	A	6.6	0.19	m71	A	6.0	0.31	m95	B	11.3	0.57	m170
Brookline Avenue / Overland Street		**Unsignalized**				**Unsignalized**				**Unsignalized**		
Brookline EB left/thru	-	-	-	-	A	2.4	0.09	7	A	0.5	0.02	1
Brookline WB thru/right	-	-	-	-	A	0	0.29	0	A	0	0.22	0
Overland SB left/right	E	38.5	0.43	49	F	>80.0	>1.0	444	C	21.9	0.12	9
Park Drive Northbound / Riverway Extension	**A**	**0.6**	**0.17**	**-**	**A**	**3.3**	**0.27**	**-**	**A**	**3.5**	**0.21**	**-**
Park NB thru	A	0.6	0.16	6	A	3.9	0.30	74	A	4.3	0.21	34

Riverway NEB left	A	0.5	0.01	0	A	0.2	0.14	0	A	0.0	0.08	0
Riverway NEB left/thru	A	0.4	0.01	0	A	0.6	0.18	0	A	1.0	0.20	0

*Park Drive SB at Audubon Circle required a designated left during the morning peak hour
95th percentile volume exceeds capacity, queue may be longer.
m Volume for 95th percentile queue is metered by upstream signal.

Appendix C
Pedestrian Wind Supporting Documentation

FIGURES



Wind Tunnel Study Model
No Build Configuration

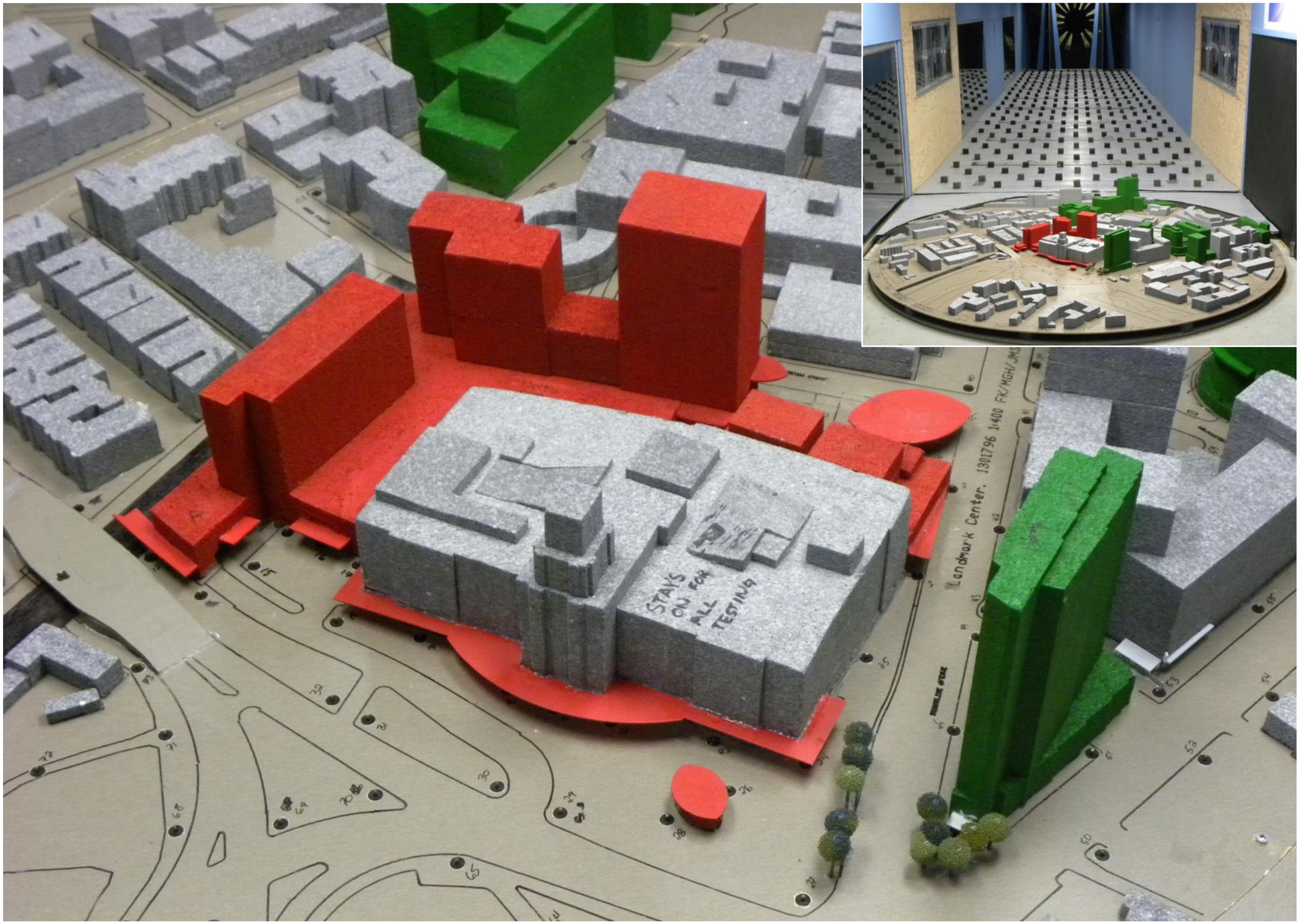
Landmark Center – Boston, MA

Project #1301796

Figure No. 1a

Date: July 18, 2013

RWDI



Wind Tunnel Study Model
Full Build Configuration

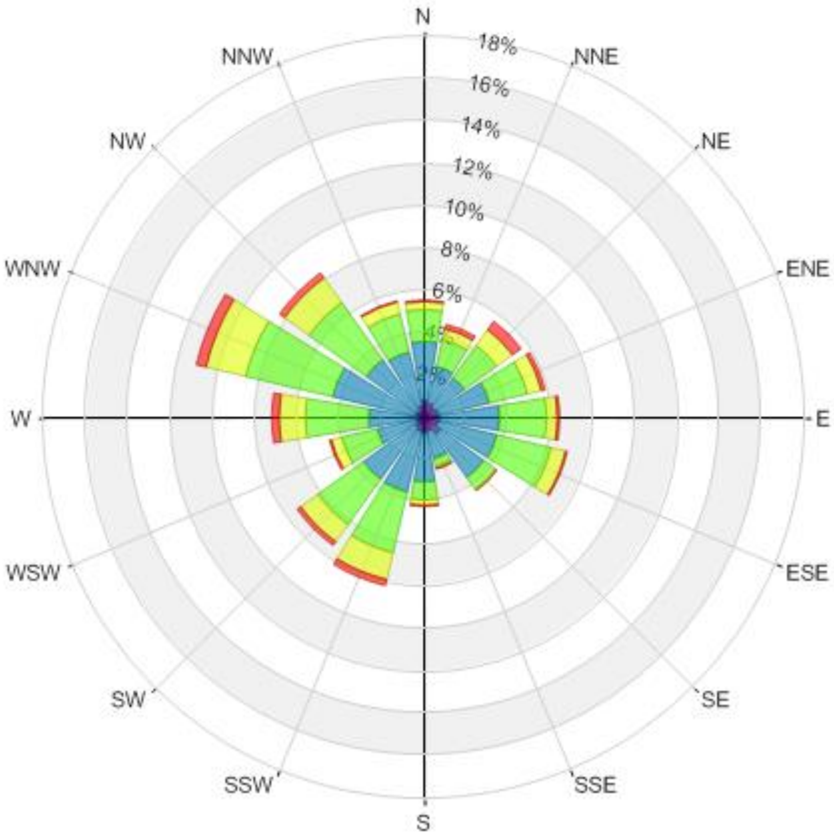
Landmark Center – Boston, MA

Project #1301796

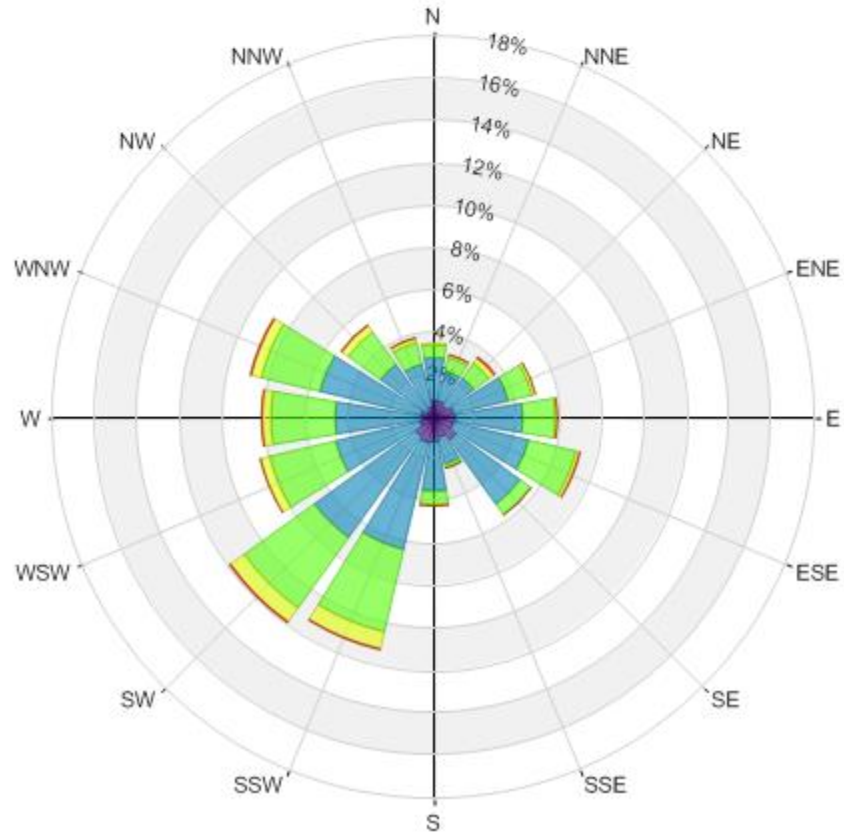
Figure No. 1b

Date: August 21, 2013

RWDI



Spring
(March - May)



Summer
(June - August)

Wind Speed (km/h)	Probability (%) Spring	Summer
Calm	1.7	1.8
1-10	9.8	13.7
11-20	40.4	50.8
21-30	33.0	28.6
31-40	12.1	4.6
>40	3.0	0.4

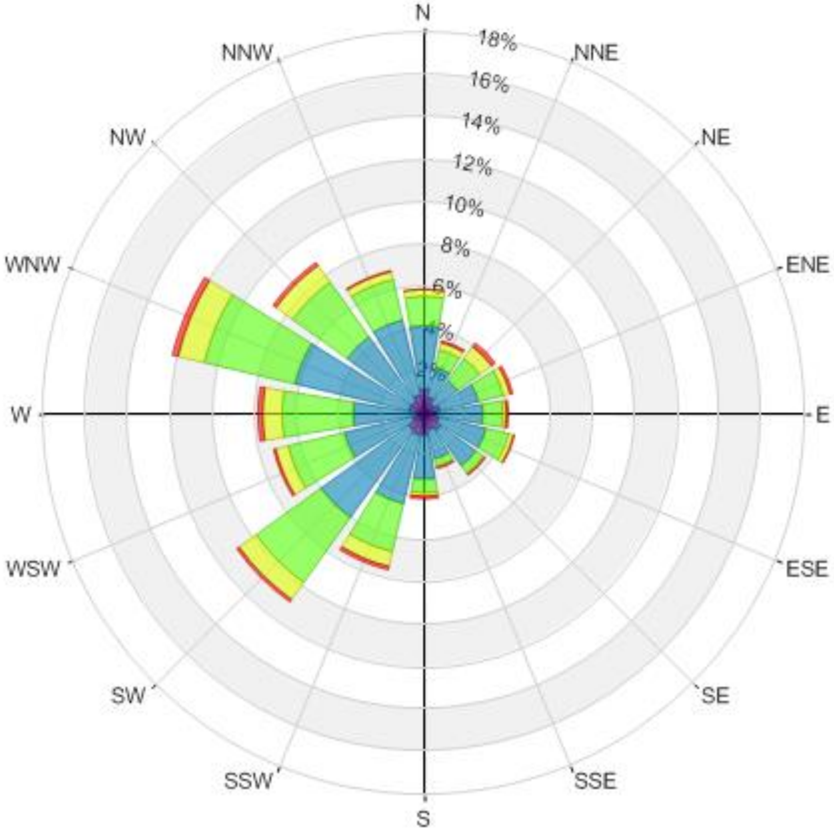
Directional Distribution (%) of Winds (Blowing From)
Boston Logan International Airport (1981 - 2011)

Landmark Center – Boston, MA

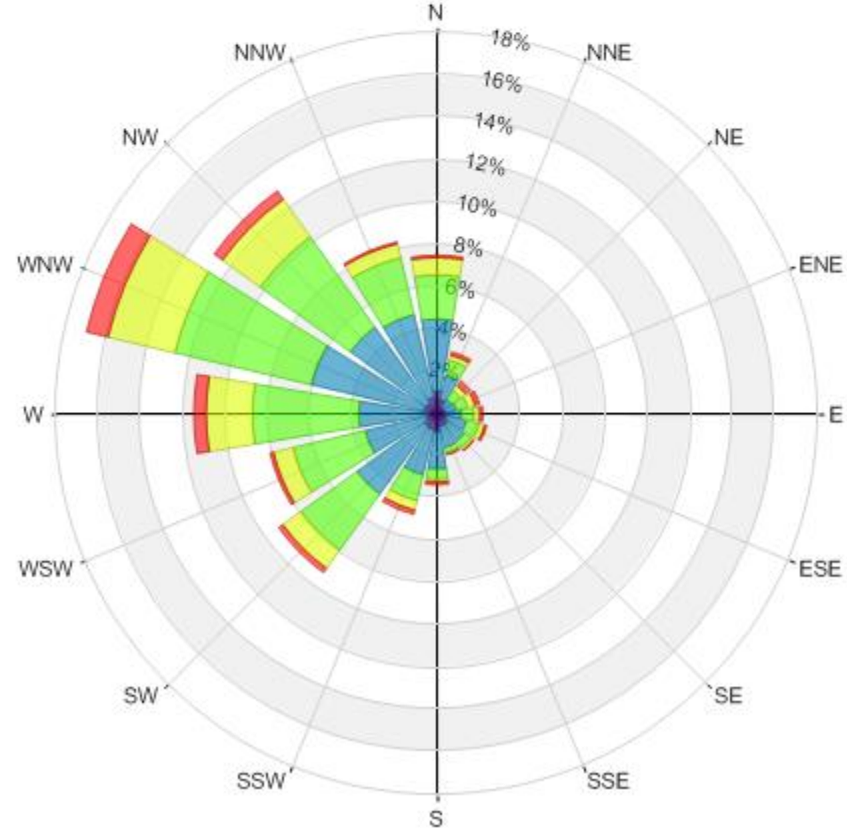
Project #1301796

Figure No. 2a

Date: August 21, 2013



Fall
(September - November)



Winter
(December - February)

Wind Speed (km/h)	Probability (%) Fall	Winter
Calm	1.9	1.5
1-10	12.6	9.8
11-20	45.3	37.6
21-30	30.0	33.7
31-40	8.2	13.3
>40	1.9	4.1

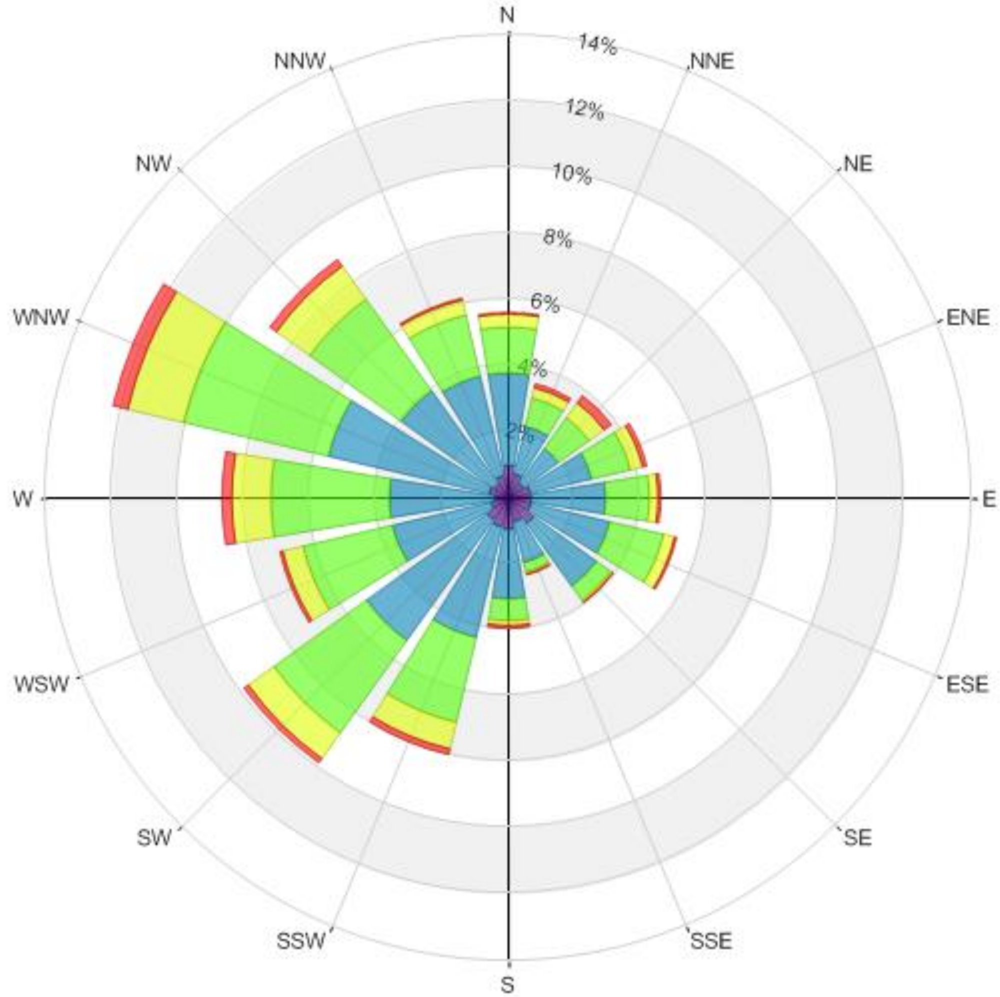
Directional Distribution (%) of Winds (Blowing From)
Boston Logan International Airport (1981 - 2011)

Landmark Center – Boston, MA

Project #1301796

Figure No. 2b

Date: August 21, 2013



Annual Winds

	Wind Speed (km/h)	Probability (%)
	Calm	1.7
	1-10	11.5
	11-20	43.5
	21-30	31.3
	31-40	9.5
	>40	2.3

Directional Distribution (%) of Winds (Blowing From)
Boston Logan International Airport (1981 - 2011)

Landmark Center – Boston, MA

Project #1301796

Figure No. 2c

Date: August 21, 2013

Pedestrian Wind Conditions - Mean Speed -No Build
Annual (January to December, 1:00 to 24:00)

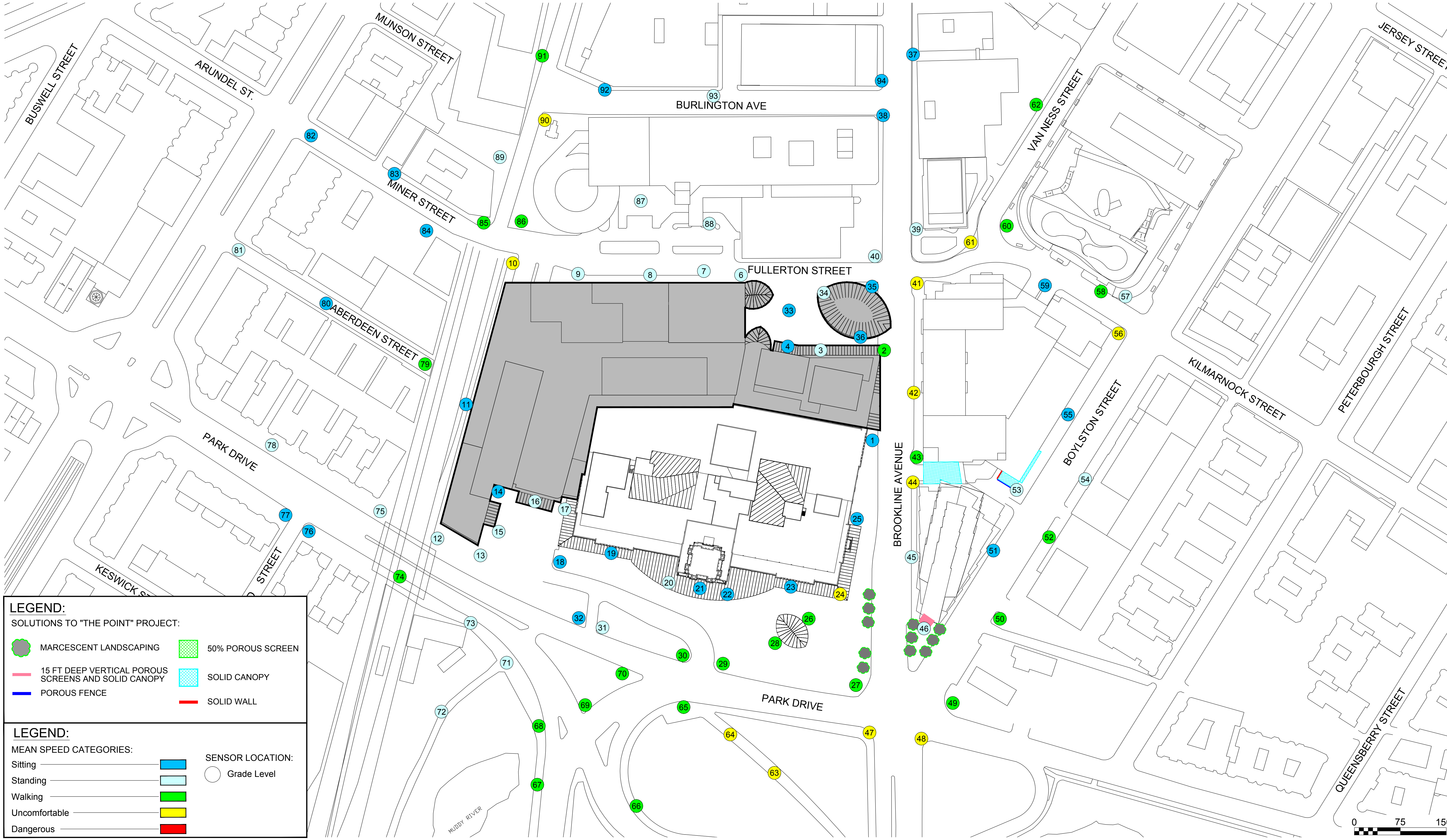
Landmark Center Boston, MA

True North

Project #1301796

Drawn by:	SMR	Figure:	3a
Approx. Scale:	1"=150'		
Date Revised:	Aug. 21, 2013		

RWDI



Pedestrian Wind Conditions - Mean Speed - Full Build
Annual (January to December, 1:00 to 24:00)

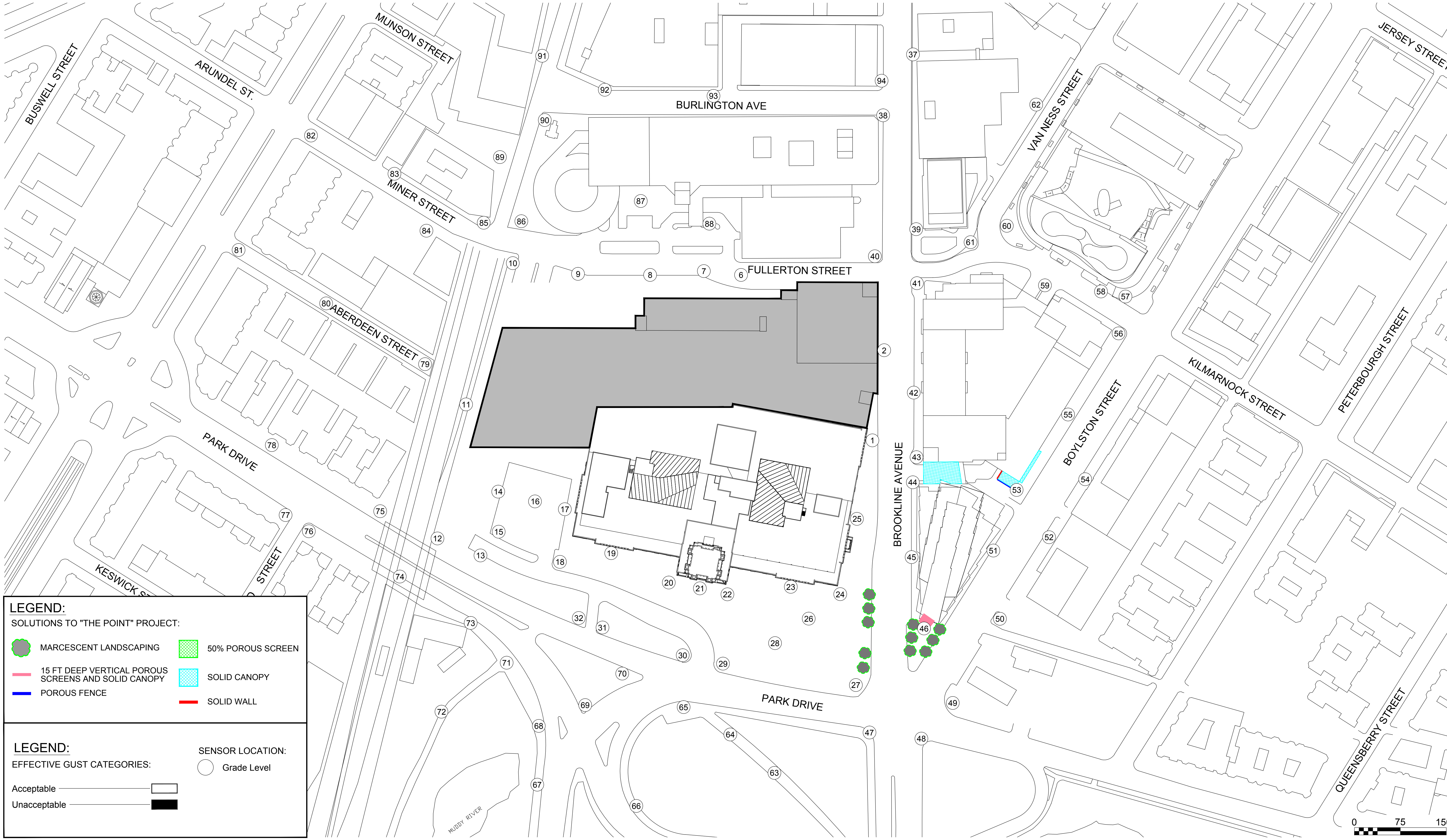
Landmark Center Boston, MA

True North

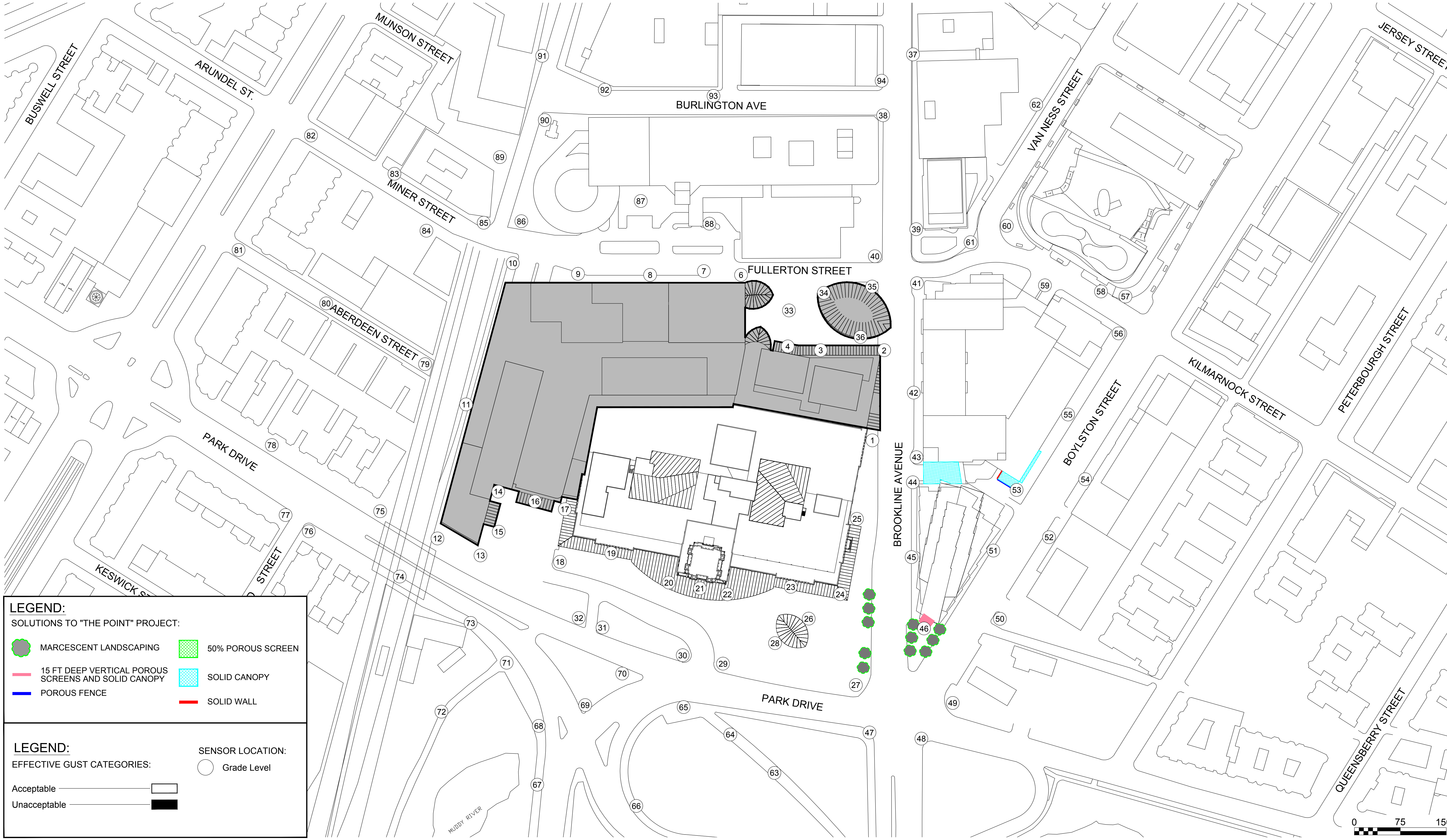
Project #1301796

Drawn by: SMR
Figure: 3b
Approx. Scale: 1"=150'
Date Revised: Aug. 21, 2013

RWDI



Pedestrian Wind Conditions - Mean Speed -No Build Annual (January to December, 1:00 to 24:00) Landmark Center Boston, MA	True North Project #1301796	Drawn by: SMR Approx. Scale: Date Revised:	Figure: 4a 1"=150' Aug. 21, 2013



Pedestrian Wind Conditions - Effective Gust - Full Build
Annual (January to December, 1:00 to 24:00)

Landmark Center Boston, MA

True North

Project #1301796

Drawn by: SMR	Figure: 4b
Approx. Scale:	1"=150'
Date Revised:	Aug. 21, 2013

RWDI

TABLES

Table 1: 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	15		Standing	22		Acceptable
		Summer	13		Standing	18		Acceptable
		Fall	14		Standing	20		Acceptable
		Winter	14		Standing	22		Acceptable
		Annual	14		Standing	21		Acceptable
	B	Spring	13	-13%	Standing	20		Acceptable
		Summer	11	-15%	Sitting	16	-11%	Acceptable
		Fall	12	-14%	Sitting	19		Acceptable
		Winter	13		Standing	20		Acceptable
		Annual	12	-14%	Sitting	19		Acceptable
2	A	Spring	14		Standing	20		Acceptable
		Summer	11		Sitting	16		Acceptable
		Fall	13		Standing	19		Acceptable
		Winter	15		Standing	22		Acceptable
		Annual	13		Standing	20		Acceptable
	B	Spring	19	+36%	Walking	26	+30%	Acceptable
		Summer	14	+27%	Standing	20	+25%	Acceptable
		Fall	17	+31%	Walking	24	+26%	Acceptable
		Winter	20	+33%	Uncomfortable	28	+27%	Acceptable
		Annual	18	+38%	Walking	25	+25%	Acceptable
3	A	Spring		**Data Not Available**				
		Summer		**Data Not Available**				
		Fall		**Data Not Available**				
		Winter		**Data Not Available**				
		Annual		**Data Not Available**				
	B	Spring	15		Standing	23		Acceptable
		Summer	13		Standing	18		Acceptable
		Fall	14		Standing	21		Acceptable
		Winter	16		Walking	24		Acceptable
		Annual	15		Standing	22		Acceptable
4	A	Spring		**Data Not Available**				
		Summer		**Data Not Available**				
		Fall		**Data Not Available**				
		Winter		**Data Not Available**				
		Annual		**Data Not Available**				

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.

<u>Configurations</u>

A - No Build
B – Full Build

<u>Mean Wind Speed Criteria</u>

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

<u>Effective Gust Criteria</u>

Acceptable:	≤ 31 mph
Unacceptable:	> 31 mph

Table 1: 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		Sitting	18		Acceptable
		Summer	10		Sitting	15		Acceptable
		Fall	11		Sitting	17		Acceptable
		Winter	13		Standing	19		Acceptable
		Annual	12		Sitting	18		Acceptable
5	A	Spring	11		Sitting	17		Acceptable
		Summer	8		Sitting	13		Acceptable
		Fall	10		Sitting	16		Acceptable
		Winter	11		Sitting	18		Acceptable
		Annual	10		Sitting	16		Acceptable
	B	Spring	11		Sitting	18		Acceptable
		Summer	9	+12%	Sitting	14		Acceptable
		Fall	11		Sitting	17		Acceptable
		Winter	12		Sitting	19		Acceptable
		Annual	11		Sitting	17		Acceptable
6	A	Spring	10		Sitting	16		Acceptable
		Summer	8		Sitting	13		Acceptable
		Fall	10		Sitting	15		Acceptable
		Winter	11		Sitting	17		Acceptable
		Annual	10		Sitting	16		Acceptable
	B	Spring	13	+30%	Standing	20	+25%	Acceptable
		Summer	11	+38%	Sitting	16	+23%	Acceptable
		Fall	12	+20%	Sitting	19	+27%	Acceptable
		Winter	14	+27%	Standing	21	+24%	Acceptable
		Annual	13	+30%	Standing	20	+25%	Acceptable
7	A	Spring	13		Standing	19		Acceptable
		Summer	10		Sitting	15		Acceptable
		Fall	12		Sitting	18		Acceptable
		Winter	14		Standing	20		Acceptable
		Annual	13		Standing	19		Acceptable
	B	Spring	14		Standing	21	+11%	Acceptable
		Summer	12	+20%	Sitting	17	+13%	Acceptable
		Fall	13		Standing	20	+11%	Acceptable
		Winter	15		Standing	22		Acceptable
		Annual	14		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

A - No Build
B – Full Build

Mean Wind Speed Criteria

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

Effective Gust Criteria

Acceptable:	≤ 31 mph
Unacceptable:	> 31 mph

Table 1: 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
8	A	Spring	16		Walking	23		Acceptable
		Summer	13		Standing	18		Acceptable
		Fall	15		Standing	22		Acceptable
		Winter	18		Walking	25		Acceptable
		Annual	16		Walking	23		Acceptable
	B	Spring	14	-12%	Standing	21		Acceptable
		Summer	10	-23%	Sitting	16	-11%	Acceptable
		Fall	13	-13%	Standing	20		Acceptable
		Winter	14	-22%	Standing	21	-16%	Acceptable
		Annual	13	-19%	Standing	20	-13%	Acceptable
9	A	Spring	15		Standing	22		Acceptable
		Summer	12		Sitting	18		Acceptable
		Fall	14		Standing	21		Acceptable
		Winter	16		Walking	23		Acceptable
		Annual	14		Standing	21		Acceptable
	B	Spring	16		Walking	25	+14%	Acceptable
		Summer	12		Sitting	19		Acceptable
		Fall	14		Standing	23		Acceptable
		Winter	16		Walking	25		Acceptable
		Annual	15		Standing	24	+14%	Acceptable
10	A	Spring	11		Sitting	18		Acceptable
		Summer	9		Sitting	14		Acceptable
		Fall	11		Sitting	17		Acceptable
		Winter	12		Sitting	19		Acceptable
		Annual	11		Sitting	17		Acceptable
	B	Spring	22	+100%	Uncomfortable	31	+72%	Acceptable
		Summer	17	+89%	Walking	24	+71%	Acceptable
		Fall	21	+91%	Uncomfortable	29	+71%	Acceptable
		Winter	24	+100%	Uncomfortable	33	+74%	Unacceptable
		Annual	22	+100%	Uncomfortable	30	+76%	Acceptable
11	A	Spring	13		Standing	21		Acceptable
		Summer	11		Sitting	17		Acceptable
		Fall	12		Sitting	20		Acceptable
		Winter	14		Standing	22		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.

<u>Configurations</u>

A - No Build
B – Full Build

<u>Mean Wind Speed Criteria</u>

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

<u>Effective Gust Criteria</u>

Acceptable:	≤ 31 mph
Unacceptable:	> 31 mph

Table 1: 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	-15%	Sitting	18	-14%	Acceptable
		Summer	9	-18%	Sitting	15	-12%	Acceptable
		Fall	11		Sitting	17	-15%	Acceptable
		Winter	12	-14%	Sitting	20		Acceptable
		Annual	11	-15%	Sitting	18		Acceptable
12	A	Spring	12		Sitting	19		Acceptable
		Summer	11		Sitting	16		Acceptable
		Fall	12		Sitting	18		Acceptable
		Winter	12		Sitting	19		Acceptable
		Annual	12		Sitting	18		Acceptable
	B	Spring	15	+25%	Standing	22	+16%	Acceptable
		Summer	13	+18%	Standing	19	+19%	Acceptable
		Fall	14	+17%	Standing	21	+17%	Acceptable
		Winter	15	+25%	Standing	22	+16%	Acceptable
		Annual	14	+17%	Standing	21	+17%	Acceptable
13	A	Spring	14		Standing	21		Acceptable
		Summer	12		Sitting	17		Acceptable
		Fall	13		Standing	19		Acceptable
		Winter	13		Standing	20		Acceptable
		Annual	13		Standing	19		Acceptable
	B	Spring	15		Standing	24	+14%	Acceptable
		Summer	12		Sitting	19	+12%	Acceptable
		Fall	14		Standing	23	+21%	Acceptable
		Winter	16	+23%	Walking	26	+30%	Acceptable
		Annual	15	+15%	Standing	24	+26%	Acceptable
14	A	Spring	18		Walking	26		Acceptable
		Summer	16		Walking	22		Acceptable
		Fall	17		Walking	24		Acceptable
		Winter	18		Walking	26		Acceptable
		Annual	17		Walking	25		Acceptable
	B	Spring	12	-33%	Sitting	17	-35%	Acceptable
		Summer	9	-44%	Sitting	13	-41%	Acceptable
		Fall	11	-35%	Sitting	16	-33%	Acceptable
		Winter	13	-28%	Standing	18	-31%	Acceptable
		Annual	11	-35%	Sitting	17	-32%	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.

<u>Configurations</u>

A - No Build
B – Full Build

<u>Mean Wind Speed Criteria</u>

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

<u>Effective Gust Criteria</u>

Acceptable:	≤ 31 mph
Unacceptable:	> 31 mph

Table 1: 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
15	A	Spring	20		Uncomfortable	27		Acceptable
		Summer	17		Walking	24		Acceptable
		Fall	19		Walking	25		Acceptable
		Winter	20		Uncomfortable	27		Acceptable
		Annual	19		Walking	26		Acceptable
	B	Spring	15	-25%	Standing	23	-15%	Acceptable
		Summer	12	-29%	Sitting	18	-25%	Acceptable
		Fall	14	-26%	Standing	21	-16%	Acceptable
		Winter	16	-20%	Walking	24	-11%	Acceptable
		Annual	15	-21%	Standing	22	-15%	Acceptable
16	A	Spring	19		Walking	27		Acceptable
		Summer	16		Walking	23		Acceptable
		Fall	18		Walking	25		Acceptable
		Winter	19		Walking	27		Acceptable
		Annual	18		Walking	26		Acceptable
	B	Spring	14	-26%	Standing	22	-19%	Acceptable
		Summer	11	-31%	Sitting	18	-22%	Acceptable
		Fall	13	-28%	Standing	20	-20%	Acceptable
		Winter	15	-21%	Standing	23	-15%	Acceptable
		Annual	13	-28%	Standing	21	-19%	Acceptable
17	A	Spring	16		Walking	26		Acceptable
		Summer	14		Standing	22		Acceptable
		Fall	15		Standing	25		Acceptable
		Winter	16		Walking	27		Acceptable
		Annual	16		Walking	25		Acceptable
	B	Spring	14	-12%	Standing	20	-23%	Acceptable
		Summer	12	-14%	Sitting	17	-23%	Acceptable
		Fall	13	-13%	Standing	19	-24%	Acceptable
		Winter	13	-19%	Standing	19	-30%	Acceptable
		Annual	13	-19%	Standing	19	-24%	Acceptable
18	A	Spring	22		Uncomfortable	31		Acceptable
		Summer	18		Walking	26		Acceptable
		Fall	20		Uncomfortable	29		Acceptable
		Winter	22		Uncomfortable	32		Unacceptable
		Annual	21		Uncomfortable	30		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.

<u>Configurations</u>

A - No Build
B – Full Build

<u>Mean Wind Speed Criteria</u>

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

<u>Effective Gust Criteria</u>

Acceptable:	≤ 31 mph
Unacceptable:	> 31 mph

Table 1: 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	13	-41%	Standing	20	-35%	Acceptable
		Summer	11	-39%	Sitting	18	-31%	Acceptable
		Fall	12	-40%	Sitting	19	-34%	Acceptable
		Winter	12	-45%	Sitting	20	-38%	Acceptable
		Annual	12	-43%	Sitting	19	-37%	Acceptable
19	A	Spring	12		Sitting	20		Acceptable
		Summer	11		Sitting	18		Acceptable
		Fall	11		Sitting	19		Acceptable
		Winter	11		Sitting	19		Acceptable
		Annual	12		Sitting	19		Acceptable
	B	Spring	11		Sitting	18		Acceptable
		Summer	9	-18%	Sitting	15	-17%	Acceptable
		Fall	10		Sitting	17	-11%	Acceptable
		Winter	11		Sitting	18		Acceptable
		Annual	10	-17%	Sitting	17	-11%	Acceptable
20	A	Spring	14		Standing	23		Acceptable
		Summer	11		Sitting	18		Acceptable
		Fall	14		Standing	22		Acceptable
		Winter	16		Walking	25		Acceptable
		Annual	14		Standing	23		Acceptable
	B	Spring	14		Standing	23		Acceptable
		Summer	11		Sitting	18		Acceptable
		Fall	13		Standing	22		Acceptable
		Winter	15		Standing	25		Acceptable
		Annual	14		Standing	23		Acceptable
21	A	Spring	15		Standing	23		Acceptable
		Summer	12		Sitting	18		Acceptable
		Fall	14		Standing	22		Acceptable
		Winter	16		Walking	25		Acceptable
		Annual	15		Standing	23		Acceptable
	B	Spring	12	-20%	Sitting	19	-17%	Acceptable
		Summer	10	-17%	Sitting	15	-17%	Acceptable
		Fall	11	-21%	Sitting	18	-18%	Acceptable
		Winter	13	-19%	Standing	20	-20%	Acceptable
		Annual	12	-20%	Sitting	18	-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 – Full Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 1: 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
22	A	Spring	12		Sitting	20		Acceptable
		Summer	9		Sitting	16		Acceptable
		Fall	11		Sitting	19		Acceptable
		Winter	12		Sitting	21		Acceptable
		Annual	11		Sitting	19		Acceptable
	B	Spring	9	-25%	Sitting	17	-15%	Acceptable
		Summer	8	-11%	Sitting	14	-12%	Acceptable
		Fall	9	-18%	Sitting	16	-16%	Acceptable
		Winter	9	-25%	Sitting	16	-24%	Acceptable
		Annual	9	-18%	Sitting	16	-16%	Acceptable
23	A	Spring	9		Sitting	14		Acceptable
		Summer	7		Sitting	12		Acceptable
		Fall	8		Sitting	14		Acceptable
		Winter	9		Sitting	15		Acceptable
		Annual	8		Sitting	14		Acceptable
	B	Spring	9		Sitting	13		Acceptable
		Summer	7		Sitting	11		Acceptable
		Fall	8		Sitting	13		Acceptable
		Winter	9		Sitting	13	-13%	Acceptable
		Annual	8		Sitting	13		Acceptable
24	A	Spring	22		Uncomfortable	31		Acceptable
		Summer	19		Walking	27		Acceptable
		Fall	21		Uncomfortable	30		Acceptable
		Winter	23		Uncomfortable	33		Unacceptable
		Annual	21		Uncomfortable	31		Acceptable
	B	Spring	21		Uncomfortable	29		Acceptable
		Summer	19		Walking	26		Acceptable
		Fall	20		Uncomfortable	28		Acceptable
		Winter	22		Uncomfortable	30		Acceptable
		Annual	21		Uncomfortable	28		Acceptable
25	A	Spring	13		Standing	19		Acceptable
		Summer	11		Sitting	15		Acceptable
		Fall	12		Sitting	18		Acceptable
		Winter	13		Standing	19		Acceptable
		Annual	12		Sitting	18		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

A - No Build
B – Full Build

Mean Wind Speed Criteria

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

Effective Gust Criteria

Acceptable:	≤ 31 mph
Unacceptable:	> 31 mph

Table 1: 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		Sitting	17	-11%	Acceptable
		Summer	10		Sitting	14		Acceptable
		Fall	11		Sitting	16	-11%	Acceptable
		Winter	12		Sitting	18		Acceptable
		Annual	11		Sitting	17		Acceptable
26	A	Spring	17		Walking	26		Acceptable
		Summer	14		Standing	22		Acceptable
		Fall	16		Walking	25		Acceptable
		Winter	19		Walking	28		Acceptable
		Annual	17		Walking	26		Acceptable
	B	Spring	17		Walking	25		Acceptable
		Summer	14		Standing	21		Acceptable
		Fall	16		Walking	24		Acceptable
		Winter	19		Walking	28		Acceptable
		Annual	17		Walking	25		Acceptable
27	A	Spring	19		Walking	27		Acceptable
		Summer	15		Standing	21		Acceptable
		Fall	18		Walking	25		Acceptable
		Winter	21		Uncomfortable	29		Acceptable
		Annual	19		Walking	26		Acceptable
	B	Spring	18		Walking	25		Acceptable
		Summer	14		Standing	19		Acceptable
		Fall	17		Walking	24		Acceptable
		Winter	19		Walking	27		Acceptable
		Annual	18		Walking	24		Acceptable
28	A	Spring	17		Walking	25		Acceptable
		Summer	14		Standing	20		Acceptable
		Fall	16		Walking	24		Acceptable
		Winter	19		Walking	27		Acceptable
		Annual	17		Walking	25		Acceptable
	B	Spring	16		Walking	23		Acceptable
		Summer	12	-14%	Sitting	18		Acceptable
		Fall	15		Standing	22		Acceptable
		Winter	17	-11%	Walking	26		Acceptable
		Annual	16		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

A - No Build
B – Full Build

Mean Wind Speed Criteria

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

Effective Gust Criteria

Acceptable:	≤ 31 mph
Unacceptable:	> 31 mph

Table 1: 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
29	A	Spring	18		Walking	25		Acceptable
		Summer	14		Standing	20		Acceptable
		Fall	17		Walking	24		Acceptable
		Winter	19		Walking	28		Acceptable
		Annual	17		Walking	25		Acceptable
	B	Spring	18		Walking	25		Acceptable
		Summer	14		Standing	20		Acceptable
		Fall	17		Walking	24		Acceptable
		Winter	20		Uncomfortable	27		Acceptable
		Annual	18		Walking	25		Acceptable
30	A	Spring	17		Walking	25		Acceptable
		Summer	13		Standing	20		Acceptable
		Fall	16		Walking	24		Acceptable
		Winter	19		Walking	27		Acceptable
		Annual	17		Walking	25		Acceptable
	B	Spring	17		Walking	25		Acceptable
		Summer	14		Standing	19		Acceptable
		Fall	16		Walking	24		Acceptable
		Winter	19		Walking	27		Acceptable
		Annual	17		Walking	24		Acceptable
31	A	Spring	16		Walking	25		Acceptable
		Summer	13		Standing	20		Acceptable
		Fall	16		Walking	24		Acceptable
		Winter	17		Walking	26		Acceptable
		Annual	16		Walking	24		Acceptable
	B	Spring	14	-12%	Standing	22	-12%	Acceptable
		Summer	11	-15%	Sitting	18		Acceptable
		Fall	13	-19%	Standing	21	-12%	Acceptable
		Winter	15	-12%	Standing	23	-12%	Acceptable
		Annual	14	-12%	Standing	21	-12%	Acceptable
32	A	Spring	16		Walking	25		Acceptable
		Summer	13		Standing	20		Acceptable
		Fall	15		Standing	23		Acceptable
		Winter	17		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 – Full Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 1: 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	-25%	Sitting	20	-20%	Acceptable
		Summer	11	-15%	Sitting	17	-15%	Acceptable
		Fall	11	-27%	Sitting	19	-17%	Acceptable
		Winter	12	-29%	Sitting	20	-23%	Acceptable
		Annual	12	-25%	Sitting	19	-21%	Acceptable
33	A	Spring			**Data Not Available**			
		Summer			**Data Not Available**			
		Fall			**Data Not Available**			
		Winter			**Data Not Available**			
		Annual			**Data Not Available**			
	B	Spring	13		Standing	21		Acceptable
		Summer	10		Sitting	16		Acceptable
		Fall	12		Sitting	19		Acceptable
		Winter	13		Standing	21		Acceptable
		Annual	12		Sitting	20		Acceptable
34	A	Spring			**Data Not Available**			
		Summer			**Data Not Available**			
		Fall			**Data Not Available**			
		Winter			**Data Not Available**			
		Annual			**Data Not Available**			
	B	Spring	13		Standing	21		Acceptable
		Summer	11		Sitting	18		Acceptable
		Fall	12		Sitting	20		Acceptable
		Winter	13		Standing	22		Acceptable
		Annual	13		Standing	20		Acceptable
35	A	Spring			**Data Not Available**			
		Summer			**Data Not Available**			
		Fall			**Data Not Available**			
		Winter			**Data Not Available**			
		Annual			**Data Not Available**			
	B	Spring	12		Sitting	21		Acceptable
		Summer	11		Sitting	17		Acceptable
		Fall	12		Sitting	20		Acceptable
		Winter	13		Standing	22		Acceptable
		Annual	12		Sitting	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

A - No Build
B – Full Build

Mean Wind Speed Criteria

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

Effective Gust Criteria

Acceptable:	≤ 31 mph
Unacceptable:	> 31 mph

Table 1: 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
36	A	Spring			**Data Not Available**			
		Summer			**Data Not Available**			
		Fall			**Data Not Available**			
		Winter			**Data Not Available**			
		Annual			**Data Not Available**			
	B	Spring	12		Sitting	19		Acceptable
		Summer	9		Sitting	15		Acceptable
		Fall	11		Sitting	18		Acceptable
		Winter	12		Sitting	20		Acceptable
		Annual	11		Sitting	18		Acceptable
37	A	Spring	11		Sitting	17		Acceptable
		Summer	8		Sitting	13		Acceptable
		Fall	10		Sitting	16		Acceptable
		Winter	11		Sitting	18		Acceptable
		Annual	10		Sitting	16		Acceptable
	B	Spring	11		Sitting	18		Acceptable
		Summer	9	+12%	Sitting	14		Acceptable
		Fall	10		Sitting	17		Acceptable
		Winter	12		Sitting	19		Acceptable
		Annual	11		Sitting	17		Acceptable
38	A	Spring	12		Sitting	19		Acceptable
		Summer	10		Sitting	15		Acceptable
		Fall	11		Sitting	18		Acceptable
		Winter	12		Sitting	20		Acceptable
		Annual	12		Sitting	19		Acceptable
	B	Spring	11		Sitting	18		Acceptable
		Summer	9		Sitting	15		Acceptable
		Fall	11		Sitting	17		Acceptable
		Winter	12		Sitting	19		Acceptable
		Annual	11		Sitting	18		Acceptable
39	A	Spring	12		Sitting	19		Acceptable
		Summer	9		Sitting	15		Acceptable
		Fall	11		Sitting	18		Acceptable
		Winter	12		Sitting	20		Acceptable
		Annual	12		Sitting	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 – Full Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 1: 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	13		Standing	21	+11%	Acceptable
		Summer	11	+22%	Sitting	17	+13%	Acceptable
		Fall	13	+18%	Standing	20	+11%	Acceptable
		Winter	14	+17%	Standing	23	+15%	Acceptable
		Annual	13		Standing	21	+11%	Acceptable
40	A	Spring	13		Standing	19		Acceptable
		Summer	10		Sitting	15		Acceptable
		Fall	11		Sitting	18		Acceptable
		Winter	12		Sitting	19		Acceptable
		Annual	12		Sitting	18		Acceptable
	B	Spring	13		Standing	21	+11%	Acceptable
		Summer	10		Sitting	17	+13%	Acceptable
		Fall	13	+18%	Standing	20	+11%	Acceptable
		Winter	14	+17%	Standing	23	+21%	Acceptable
		Annual	13		Standing	21	+17%	Acceptable
41	A	Spring	22		Uncomfortable	31		Acceptable
		Summer	17		Walking	24		Acceptable
		Fall	21		Uncomfortable	29		Acceptable
		Winter	24		Uncomfortable	34		Unacceptable
		Annual	22		Uncomfortable	31		Acceptable
	B	Spring	22		Uncomfortable	31		Acceptable
		Summer	17		Walking	25		Acceptable
		Fall	21		Uncomfortable	29		Acceptable
		Winter	24		Uncomfortable	34		Unacceptable
		Annual	22		Uncomfortable	31		Acceptable
42	A	Spring	19		Walking	28		Acceptable
		Summer	15		Standing	22		Acceptable
		Fall	18		Walking	26		Acceptable
		Winter	21		Uncomfortable	31		Acceptable
		Annual	19		Walking	28		Acceptable
	B	Spring	21	+11%	Uncomfortable	30		Acceptable
		Summer	17	+13%	Walking	24		Acceptable
		Fall	20	+11%	Uncomfortable	28		Acceptable
		Winter	23		Uncomfortable	33		Unacceptable
		Annual	21	+11%	Uncomfortable	30		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

A - No Build
B – Full Build

Mean Wind Speed Criteria

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

Effective Gust Criteria

Acceptable:	≤ 31 mph
Unacceptable:	> 31 mph

Table 1: 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
43	A	Spring	16		Walking	23		Acceptable
		Summer	12		Sitting	18		Acceptable
		Fall	15		Standing	22		Acceptable
		Winter	17		Walking	25		Acceptable
		Annual	15		Standing	23		Acceptable
	B	Spring	17		Walking	25		Acceptable
		Summer	13		Standing	20	+11%	Acceptable
		Fall	16		Walking	24		Acceptable
		Winter	18		Walking	27		Acceptable
		Annual	17	+13%	Walking	25		Acceptable
44	A	Spring	19		Walking	27		Acceptable
		Summer	15		Standing	22		Acceptable
		Fall	18		Walking	26		Acceptable
		Winter	20		Uncomfortable	29		Acceptable
		Annual	19		Walking	27		Acceptable
	B	Spring	20		Uncomfortable	29		Acceptable
		Summer	16		Walking	23		Acceptable
		Fall	19		Walking	27		Acceptable
		Winter	22		Uncomfortable	31		Acceptable
		Annual	20		Uncomfortable	28		Acceptable
45	A	Spring	15		Standing	22		Acceptable
		Summer	13		Standing	18		Acceptable
		Fall	14		Standing	21		Acceptable
		Winter	15		Standing	23		Acceptable
		Annual	14		Standing	21		Acceptable
	B	Spring	14		Standing	21		Acceptable
		Summer	13		Standing	18		Acceptable
		Fall	14		Standing	20		Acceptable
		Winter	15		Standing	22		Acceptable
		Annual	14		Standing	21		Acceptable
46	A	Spring	15		Standing	21		Acceptable
		Summer	12		Sitting	17		Acceptable
		Fall	14		Standing	20		Acceptable
		Winter	16		Walking	23		Acceptable
		Annual	15		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 – Full Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 1: 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	21		Acceptable
		Summer	12		Sitting	17		Acceptable
		Fall	14		Standing	20		Acceptable
		Winter	17		Walking	23		Acceptable
		Annual	15		Standing	21		Acceptable
47	A	Spring	21		Uncomfortable	28		Acceptable
		Summer	16		Walking	22		Acceptable
		Fall	20		Uncomfortable	27		Acceptable
		Winter	23		Uncomfortable	31		Acceptable
		Annual	21		Uncomfortable	28		Acceptable
	B	Spring	21		Uncomfortable	28		Acceptable
		Summer	16		Walking	22		Acceptable
		Fall	20		Uncomfortable	26		Acceptable
		Winter	22		Uncomfortable	30		Acceptable
		Annual	20		Uncomfortable	27		Acceptable
48	A	Spring	21		Uncomfortable	28		Acceptable
		Summer	16		Walking	22		Acceptable
		Fall	20		Uncomfortable	26		Acceptable
		Winter	23		Uncomfortable	30		Acceptable
		Annual	21		Uncomfortable	28		Acceptable
	B	Spring	20		Uncomfortable	27		Acceptable
		Summer	16		Walking	21		Acceptable
		Fall	19		Walking	26		Acceptable
		Winter	22		Uncomfortable	30		Acceptable
		Annual	20		Uncomfortable	27		Acceptable
49	A	Spring	20		Uncomfortable	28		Acceptable
		Summer	16		Walking	22		Acceptable
		Fall	19		Walking	26		Acceptable
		Winter	22		Uncomfortable	30		Acceptable
		Annual	20		Uncomfortable	28		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

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

A - No Build
B – Full Build

Mean Wind Speed Criteria

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

Effective Gust Criteria

Acceptable:	≤ 31 mph
Unacceptable:	> 31 mph

Table 1: 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
50	A	Spring	19		Walking	27		Acceptable
		Summer	17		Walking	22		Acceptable
		Fall	19		Walking	26		Acceptable
		Winter	21		Uncomfortable	29		Acceptable
		Annual	19		Walking	26		Acceptable
	B	Spring	19		Walking	27		Acceptable
		Summer	17		Walking	23		Acceptable
		Fall	19		Walking	26		Acceptable
		Winter	21		Uncomfortable	29		Acceptable
		Annual	19		Walking	27		Acceptable
51	A	Spring	11		Sitting	19		Acceptable
		Summer	9		Sitting	16		Acceptable
		Fall	11		Sitting	18		Acceptable
		Winter	12		Sitting	20		Acceptable
		Annual	11		Sitting	19		Acceptable
	B	Spring	11		Sitting	19		Acceptable
		Summer	9		Sitting	16		Acceptable
		Fall	11		Sitting	18		Acceptable
		Winter	12		Sitting	20		Acceptable
		Annual	11		Sitting	19		Acceptable
52	A	Spring	16		Walking	24		Acceptable
		Summer	12		Sitting	19		Acceptable
		Fall	15		Standing	23		Acceptable
		Winter	17		Walking	26		Acceptable
		Annual	15		Standing	24		Acceptable
	B	Spring	16		Walking	25		Acceptable
		Summer	13		Standing	19		Acceptable
		Fall	15		Standing	24		Acceptable
		Winter	18		Walking	27		Acceptable
		Annual	16		Walking	25		Acceptable
53	A	Spring	14		Standing	22		Acceptable
		Summer	11		Sitting	17		Acceptable
		Fall	13		Standing	21		Acceptable
		Winter	15		Standing	24		Acceptable
		Annual	13		Standing	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

A - No Build
B – Full Build

Mean Wind Speed Criteria

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

Effective Gust Criteria

Acceptable:	≤ 31 mph
Unacceptable:	> 31 mph

Table 1: 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	11		Sitting	17		Acceptable
		Fall	13		Standing	21		Acceptable
		Winter	15		Standing	24		Acceptable
		Annual	14		Standing	22		Acceptable
54	A	Spring	14		Standing	22		Acceptable
		Summer	11		Sitting	18		Acceptable
		Fall	13		Standing	21		Acceptable
		Winter	15		Standing	23		Acceptable
		Annual	14		Standing	21		Acceptable
	B	Spring	14		Standing	22		Acceptable
		Summer	11		Sitting	18		Acceptable
		Fall	13		Standing	21		Acceptable
		Winter	14		Standing	22		Acceptable
		Annual	13		Standing	21		Acceptable
55	A	Spring	13		Standing	20		Acceptable
		Summer	11		Sitting	17		Acceptable
		Fall	12		Sitting	19		Acceptable
		Winter	12		Sitting	20		Acceptable
		Annual	12		Sitting	19		Acceptable
	B	Spring	13		Standing	21		Acceptable
		Summer	11		Sitting	18		Acceptable
		Fall	12		Sitting	19		Acceptable
		Winter	12		Sitting	20		Acceptable
		Annual	12		Sitting	20		Acceptable
56	A	Spring	22		Uncomfortable	29		Acceptable
		Summer	18		Walking	24		Acceptable
		Fall	21		Uncomfortable	28		Acceptable
		Winter	23		Uncomfortable	30		Acceptable
		Annual	21		Uncomfortable	28		Acceptable
	B	Spring	22		Uncomfortable	29		Acceptable
		Summer	18		Walking	24		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 – Full Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 1: 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	21		Acceptable
		Summer	12		Sitting	18		Acceptable
		Fall	14		Standing	20		Acceptable
		Winter	14		Standing	21		Acceptable
		Annual	14		Standing	21		Acceptable
	B	Spring	15		Standing	22		Acceptable
		Summer	13		Standing	19		Acceptable
		Fall	14		Standing	21		Acceptable
		Winter	15		Standing	22		Acceptable
		Annual	14		Standing	21		Acceptable
58	A	Spring	18		Walking	26		Acceptable
		Summer	15		Standing	22		Acceptable
		Fall	17		Walking	24		Acceptable
		Winter	17		Walking	25		Acceptable
		Annual	17		Walking	24		Acceptable
	B	Spring	18		Walking	26		Acceptable
		Summer	15		Standing	22		Acceptable
		Fall	16		Walking	24		Acceptable
		Winter	17		Walking	25		Acceptable
		Annual	17		Walking	24		Acceptable
59	A	Spring	13		Standing	19		Acceptable
		Summer	10		Sitting	15		Acceptable
		Fall	12		Sitting	18		Acceptable
		Winter	14		Standing	20		Acceptable
		Annual	13		Standing	19		Acceptable
	B	Spring	12		Sitting	19		Acceptable
		Summer	9		Sitting	15		Acceptable
		Fall	11		Sitting	18		Acceptable
		Winter	12	-14%	Sitting	19		Acceptable
		Annual	11	-15%	Sitting	18		Acceptable
60	A	Spring	19		Walking	27		Acceptable
		Summer	15		Standing	21		Acceptable
		Fall	18		Walking	26		Acceptable
		Winter	20		Uncomfortable	28		Acceptable
		Annual	18		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

A - No Build
B – Full Build

Mean Wind Speed Criteria

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

Effective Gust Criteria

Acceptable:	≤ 31 mph
Unacceptable:	> 31 mph

Table 1: 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	28		Acceptable
		Summer	14		Standing	21		Acceptable
		Fall	18		Walking	26		Acceptable
		Winter	19		Walking	28		Acceptable
		Annual	18		Walking	26		Acceptable
61	A	Spring	24		Uncomfortable	32		Unacceptable
		Summer	19		Walking	25		Acceptable
		Fall	22		Uncomfortable	30		Acceptable
		Winter	26		Uncomfortable	34		Unacceptable
		Annual	24		Uncomfortable	31		Acceptable
	B	Spring	20	-17%	Uncomfortable	28	-12%	Acceptable
		Summer	16	-16%	Walking	22	-12%	Acceptable
		Fall	19	-14%	Walking	27		Acceptable
		Winter	22	-15%	Uncomfortable	31		Acceptable
		Annual	20	-17%	Uncomfortable	28		Acceptable
62	A	Spring	17		Walking	26		Acceptable
		Summer	13		Standing	20		Acceptable
		Fall	16		Walking	24		Acceptable
		Winter	18		Walking	27		Acceptable
		Annual	17		Walking	25		Acceptable
	B	Spring	16		Walking	25		Acceptable
		Summer	13		Standing	19		Acceptable
		Fall	15		Standing	23		Acceptable
		Winter	17		Walking	26		Acceptable
		Annual	16		Walking	24		Acceptable
63	A	Spring	20		Uncomfortable	27		Acceptable
		Summer	15		Standing	21		Acceptable
		Fall	18		Walking	26		Acceptable
		Winter	21		Uncomfortable	29		Acceptable
		Annual	19		Walking	27		Acceptable
	B	Spring	20		Uncomfortable	27		Acceptable
		Summer	16		Walking	21		Acceptable
		Fall	19		Walking	26		Acceptable
		Winter	22		Uncomfortable	30		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 – Full Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 1: 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
64	A	Spring	19		Walking	27		Acceptable
		Summer	15		Standing	21		Acceptable
		Fall	18		Walking	25		Acceptable
		Winter	21		Uncomfortable	29		Acceptable
		Annual	19		Walking	27		Acceptable
	B	Spring	20		Uncomfortable	27		Acceptable
		Summer	15		Standing	21		Acceptable
		Fall	18		Walking	26		Acceptable
		Winter	22		Uncomfortable	30		Acceptable
		Annual	20		Uncomfortable	27		Acceptable
65	A	Spring	18		Walking	25		Acceptable
		Summer	14		Standing	20		Acceptable
		Fall	17		Walking	24		Acceptable
		Winter	19		Walking	27		Acceptable
		Annual	17		Walking	25		Acceptable
	B	Spring	18		Walking	25		Acceptable
		Summer	14		Standing	20		Acceptable
		Fall	17		Walking	24		Acceptable
		Winter	19		Walking	28		Acceptable
		Annual	18		Walking	25		Acceptable
66	A	Spring	18		Walking	26		Acceptable
		Summer	14		Standing	21		Acceptable
		Fall	17		Walking	24		Acceptable
		Winter	20		Uncomfortable	28		Acceptable
		Annual	18		Walking	26		Acceptable
	B	Spring	18		Walking	26		Acceptable
		Summer	14		Standing	20		Acceptable
		Fall	17		Walking	25		Acceptable
		Winter	20		Uncomfortable	28		Acceptable
		Annual	18		Walking	26		Acceptable
67	A	Spring	17		Walking	25		Acceptable
		Summer	14		Standing	20		Acceptable
		Fall	16		Walking	24		Acceptable
		Winter	19		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

A - No Build
B – Full Build

Mean Wind Speed Criteria

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

Effective Gust Criteria

Acceptable:	≤ 31 mph
Unacceptable:	> 31 mph

Table 1: 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	25		Acceptable
		Summer	14		Standing	20		Acceptable
		Fall	16		Walking	24		Acceptable
		Winter	19		Walking	28		Acceptable
		Annual	17		Walking	25		Acceptable
68	A	Spring	16		Walking	24		Acceptable
		Summer	13		Standing	19		Acceptable
		Fall	15		Standing	23		Acceptable
		Winter	17		Walking	26		Acceptable
		Annual	16		Walking	24		Acceptable
	B	Spring	16		Walking	24		Acceptable
		Summer	12		Sitting	19		Acceptable
		Fall	15		Standing	23		Acceptable
		Winter	17		Walking	26		Acceptable
		Annual	16		Walking	24		Acceptable
69	A	Spring	16		Walking	25		Acceptable
		Summer	13		Standing	19		Acceptable
		Fall	16		Walking	23		Acceptable
		Winter	18		Walking	26		Acceptable
		Annual	16		Walking	24		Acceptable
	B	Spring	16		Walking	24		Acceptable
		Summer	13		Standing	19		Acceptable
		Fall	16		Walking	23		Acceptable
		Winter	18		Walking	26		Acceptable
		Annual	16		Walking	24		Acceptable
70	A	Spring	17		Walking	24		Acceptable
		Summer	13		Standing	19		Acceptable
		Fall	16		Walking	23		Acceptable
		Winter	18		Walking	26		Acceptable
		Annual	16		Walking	24		Acceptable
	B	Spring	16		Walking	24		Acceptable
		Summer	12		Sitting	19		Acceptable
		Fall	15		Standing	23		Acceptable
		Winter	17		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 – Full Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 1: 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
71	A	Spring	15		Standing	23		Acceptable
		Summer	13		Standing	18		Acceptable
		Fall	15		Standing	21		Acceptable
		Winter	16		Walking	24		Acceptable
		Annual	15		Standing	22		Acceptable
	B	Spring	14		Standing	22		Acceptable
		Summer	12		Sitting	18		Acceptable
		Fall	13	-13%	Standing	21		Acceptable
		Winter	15		Standing	23		Acceptable
		Annual	14		Standing	21		Acceptable
72	A	Spring	15		Standing	22		Acceptable
		Summer	12		Sitting	18		Acceptable
		Fall	14		Standing	21		Acceptable
		Winter	16		Walking	24		Acceptable
		Annual	15		Standing	22		Acceptable
	B	Spring	14		Standing	22		Acceptable
		Summer	11		Sitting	17		Acceptable
		Fall	13		Standing	20		Acceptable
		Winter	15		Standing	24		Acceptable
		Annual	14		Standing	21		Acceptable
73	A	Spring	15		Standing	21		Acceptable
		Summer	12		Sitting	17		Acceptable
		Fall	14		Standing	19		Acceptable
		Winter	14		Standing	21		Acceptable
		Annual	14		Standing	20		Acceptable
	B	Spring	14		Standing	20		Acceptable
		Summer	12		Sitting	17		Acceptable
		Fall	14		Standing	20		Acceptable
		Winter	15		Standing	21		Acceptable
		Annual	14		Standing	20		Acceptable
74	A	Spring	17		Walking	26		Acceptable
		Summer	15		Standing	22		Acceptable
		Fall	16		Walking	24		Acceptable
		Winter	17		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 – Full Build	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
	Comfortable for Walking:	> 15 and ≤ 19 mph		
	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 1: 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	25		Acceptable
		Summer	14		Standing	21		Acceptable
		Fall	17		Walking	24		Acceptable
		Winter	18		Walking	27		Acceptable
		Annual	17		Walking	25		Acceptable
75	A	Spring	18		Walking	26		Acceptable
		Summer	14		Standing	20		Acceptable
		Fall	17		Walking	24		Acceptable
		Winter	20		Uncomfortable	28		Acceptable
		Annual	18		Walking	25		Acceptable
	B	Spring	13	-28%	Standing	20	-23%	Acceptable
		Summer	11	-21%	Sitting	16	-20%	Acceptable
		Fall	13	-24%	Standing	19	-21%	Acceptable
		Winter	14	-30%	Standing	22	-21%	Acceptable
		Annual	13	-28%	Standing	20	-20%	Acceptable
76	A	Spring	12		Sitting	20		Acceptable
		Summer	10		Sitting	16		Acceptable
		Fall	12		Sitting	19		Acceptable
		Winter	13		Standing	21		Acceptable
		Annual	12		Sitting	19		Acceptable
	B	Spring	12		Sitting	19		Acceptable
		Summer	10		Sitting	16		Acceptable
		Fall	11		Sitting	18		Acceptable
		Winter	12		Sitting	20		Acceptable
		Annual	11		Sitting	19		Acceptable
77	A	Spring	11		Sitting	18		Acceptable
		Summer	8		Sitting	14		Acceptable
		Fall	10		Sitting	17		Acceptable
		Winter	11		Sitting	19		Acceptable
		Annual	10		Sitting	17		Acceptable
	B	Spring	11		Sitting	18		Acceptable
		Summer	8		Sitting	14		Acceptable
		Fall	10		Sitting	16		Acceptable
		Winter	10		Sitting	18		Acceptable
		Annual	10		Sitting	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.

<u>Configurations</u>

A - No Build
B – Full Build

<u>Mean Wind Speed Criteria</u>

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

<u>Effective Gust Criteria</u>

Acceptable:	≤ 31 mph
Unacceptable:	> 31 mph

Table 1: 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
78	A	Spring	15		Standing	24		Acceptable
		Summer	12		Sitting	19		Acceptable
		Fall	14		Standing	23		Acceptable
		Winter	17		Walking	27		Acceptable
		Annual	15		Standing	24		Acceptable
	B	Spring	14		Standing	23		Acceptable
		Summer	11		Sitting	18		Acceptable
		Fall	13		Standing	21		Acceptable
		Winter	15	-12%	Standing	25		Acceptable
		Annual	14		Standing	23		Acceptable
79	A	Spring	13		Standing	21		Acceptable
		Summer	11		Sitting	17		Acceptable
		Fall	12		Sitting	19		Acceptable
		Winter	13		Standing	20		Acceptable
		Annual	12		Sitting	19		Acceptable
	B	Spring	17	+31%	Walking	26	+24%	Acceptable
		Summer	13	+18%	Standing	20	+18%	Acceptable
		Fall	16	+33%	Walking	24	+26%	Acceptable
		Winter	19	+46%	Walking	28	+40%	Acceptable
		Annual	17	+42%	Walking	25	+32%	Acceptable
80	A	Spring	15		Standing	22		Acceptable
		Summer	12		Sitting	17		Acceptable
		Fall	14		Standing	20		Acceptable
		Winter	16		Walking	23		Acceptable
		Annual	15		Standing	21		Acceptable
	B	Spring	13	-13%	Standing	20		Acceptable
		Summer	10	-17%	Sitting	15	-12%	Acceptable
		Fall	12	-14%	Sitting	18		Acceptable
		Winter	13	-19%	Standing	21		Acceptable
		Annual	12	-20%	Sitting	19		Acceptable
81	A	Spring	15		Standing	22		Acceptable
		Summer	12		Sitting	17		Acceptable
		Fall	14		Standing	20		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

A - No Build
B – Full Build

Mean Wind Speed Criteria

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

Effective Gust Criteria

Acceptable:	≤ 31 mph
Unacceptable:	> 31 mph

Table 1: 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	13	-13%	Standing	20		Acceptable
		Summer	10	-17%	Sitting	16		Acceptable
		Fall	12	-14%	Sitting	19		Acceptable
		Winter	14	-12%	Standing	21		Acceptable
		Annual	13		Standing	19		Acceptable
82	A	Spring	14		Standing	21		Acceptable
		Summer	11		Sitting	16		Acceptable
		Fall	13		Standing	19		Acceptable
		Winter	14		Standing	21		Acceptable
		Annual	13		Standing	20		Acceptable
	B	Spring	13		Standing	20		Acceptable
		Summer	10		Sitting	15		Acceptable
		Fall	12		Sitting	18		Acceptable
		Winter	13		Standing	20		Acceptable
		Annual	12		Sitting	19		Acceptable
83	A	Spring	13		Standing	20		Acceptable
		Summer	11		Sitting	16		Acceptable
		Fall	12		Sitting	19		Acceptable
		Winter	14		Standing	21		Acceptable
		Annual	13		Standing	20		Acceptable
	B	Spring	11	-15%	Sitting	18		Acceptable
		Summer	10		Sitting	15		Acceptable
		Fall	11		Sitting	17	-11%	Acceptable
		Winter	12	-14%	Sitting	19		Acceptable
		Annual	11	-15%	Sitting	18		Acceptable
84	A	Spring	12		Sitting	19		Acceptable
		Summer	10		Sitting	16		Acceptable
		Fall	11		Sitting	18		Acceptable
		Winter	12		Sitting	19		Acceptable
		Annual	12		Sitting	18		Acceptable
	B	Spring	13		Standing	20		Acceptable
		Summer	11		Sitting	16		Acceptable
		Fall	12		Sitting	18		Acceptable
		Winter	13		Standing	20		Acceptable
		Annual	12		Sitting	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

A - No Build
B – Full Build

Mean Wind Speed Criteria

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

Effective Gust Criteria

Acceptable:	≤ 31 mph
Unacceptable:	> 31 mph

Table 1: 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
85	A	Spring	11		Sitting	18		Acceptable
		Summer	9		Sitting	15		Acceptable
		Fall	11		Sitting	17		Acceptable
		Winter	12		Sitting	20		Acceptable
		Annual	11		Sitting	18		Acceptable
	B	Spring	16	+45%	Walking	24	+33%	Acceptable
		Summer	12	+33%	Sitting	19	+27%	Acceptable
		Fall	15	+36%	Standing	22	+29%	Acceptable
		Winter	17	+42%	Walking	26	+30%	Acceptable
		Annual	16	+45%	Walking	24	+33%	Acceptable
86	A	Spring	11		Sitting	18		Acceptable
		Summer	9		Sitting	14		Acceptable
		Fall	11		Sitting	17		Acceptable
		Winter	12		Sitting	19		Acceptable
		Annual	11		Sitting	17		Acceptable
	B	Spring	18	+64%	Walking	27	+50%	Acceptable
		Summer	14	+56%	Standing	21	+50%	Acceptable
		Fall	17	+55%	Walking	25	+47%	Acceptable
		Winter	20	+67%	Uncomfortable	29	+53%	Acceptable
		Annual	18	+64%	Walking	27	+59%	Acceptable
87	A	Spring	10		Sitting	16		Acceptable
		Summer	8		Sitting	14		Acceptable
		Fall	9		Sitting	15		Acceptable
		Winter	10		Sitting	17		Acceptable
		Annual	10		Sitting	16		Acceptable
	B	Spring	13	+30%	Standing	20	+25%	Acceptable
		Summer	10	+25%	Sitting	16	+14%	Acceptable
		Fall	12	+33%	Sitting	19	+27%	Acceptable
		Winter	14	+40%	Standing	22	+29%	Acceptable
		Annual	13	+30%	Standing	20	+25%	Acceptable
88	A	Spring	11		Sitting	17		Acceptable
		Summer	9		Sitting	13		Acceptable
		Fall	11		Sitting	16		Acceptable
		Winter	12		Sitting	18		Acceptable
		Annual	11		Sitting	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.

<u>Configurations</u>

A - No Build
B – Full Build

<u>Mean Wind Speed Criteria</u>

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

<u>Effective Gust Criteria</u>

Acceptable:	≤ 31 mph
Unacceptable:	> 31 mph

Table 1: 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	+55%	Walking	25	+47%	Acceptable
		Summer	13	+44%	Standing	19	+46%	Acceptable
		Fall	15	+36%	Standing	23	+44%	Acceptable
		Winter	16	+33%	Walking	24	+33%	Acceptable
		Annual	15	+36%	Standing	23	+35%	Acceptable
89	A	Spring	13		Standing	20		Acceptable
		Summer	10		Sitting	17		Acceptable
		Fall	12		Sitting	19		Acceptable
		Winter	13		Standing	21		Acceptable
		Annual	12		Sitting	20		Acceptable
	B	Spring	15	+15%	Standing	23	+15%	Acceptable
		Summer	14	+40%	Standing	20	+18%	Acceptable
		Fall	15	+25%	Standing	22	+16%	Acceptable
		Winter	16	+23%	Walking	23		Acceptable
		Annual	15	+25%	Standing	22		Acceptable
90	A	Spring	18		Walking	25		Acceptable
		Summer	14		Standing	20		Acceptable
		Fall	17		Walking	24		Acceptable
		Winter	20		Uncomfortable	27		Acceptable
		Annual	18		Walking	25		Acceptable
	B	Spring	21	+17%	Uncomfortable	28	+12%	Acceptable
		Summer	16	+14%	Walking	22		Acceptable
		Fall	19	+12%	Walking	26		Acceptable
		Winter	23	+15%	Uncomfortable	30	+11%	Acceptable
		Annual	21	+17%	Uncomfortable	27		Acceptable
91	A	Spring	17		Walking	23		Acceptable
		Summer	14		Standing	19		Acceptable
		Fall	16		Walking	22		Acceptable
		Winter	18		Walking	24		Acceptable
		Annual	16		Walking	22		Acceptable
	B	Spring	16		Walking	22		Acceptable
		Summer	12	-14%	Sitting	17	-11%	Acceptable
		Fall	15		Standing	21		Acceptable
		Winter	17		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.

<u>Configurations</u>

A - No Build
B – Full Build

<u>Mean Wind Speed Criteria</u>

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

<u>Effective Gust Criteria</u>

Acceptable:	≤ 31 mph
Unacceptable:	> 31 mph

Table 1: 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
92	A	Spring	11		Sitting	19		Acceptable
		Summer	10		Sitting	16		Acceptable
		Fall	11		Sitting	18		Acceptable
		Winter	12		Sitting	19		Acceptable
		Annual	11		Sitting	18		Acceptable
	B	Spring	12		Sitting	19		Acceptable
		Summer	9		Sitting	15		Acceptable
		Fall	11		Sitting	18		Acceptable
		Winter	13		Standing	21	+11%	Acceptable
		Annual	11		Sitting	19		Acceptable
93	A	Spring	14		Standing	21		Acceptable
		Summer	11		Sitting	16		Acceptable
		Fall	13		Standing	19		Acceptable
		Winter	14		Standing	21		Acceptable
		Annual	13		Standing	20		Acceptable
	B	Spring	14		Standing	21		Acceptable
		Summer	11		Sitting	16		Acceptable
		Fall	12		Sitting	19		Acceptable
		Winter	13		Standing	20		Acceptable
		Annual	13		Standing	19		Acceptable
94	A	Spring	13		Standing	22		Acceptable
		Summer	10		Sitting	17		Acceptable
		Fall	12		Sitting	21		Acceptable
		Winter	14		Standing	24		Acceptable
		Annual	13		Standing	22		Acceptable
	B	Spring	11	-15%	Sitting	18	-18%	Acceptable
		Summer	8	-20%	Sitting	14	-18%	Acceptable
		Fall	10	-17%	Sitting	17	-19%	Acceptable
		Winter	11	-21%	Sitting	19	-21%	Acceptable
		Annual	10	-23%	Sitting	17	-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

A - No Build
B – Full Build

Mean Wind Speed Criteria

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

Effective Gust Criteria

Acceptable:	≤ 31 mph
Unacceptable:	> 31 mph

Appendix D
Solar Glare Supporting Documentation

Solar Glare Analysis of the Landmark Center Project Site in Boston, Massachusetts for City Code Ordinance Compliance

To:

Brian Scott, AIA, LEED AP
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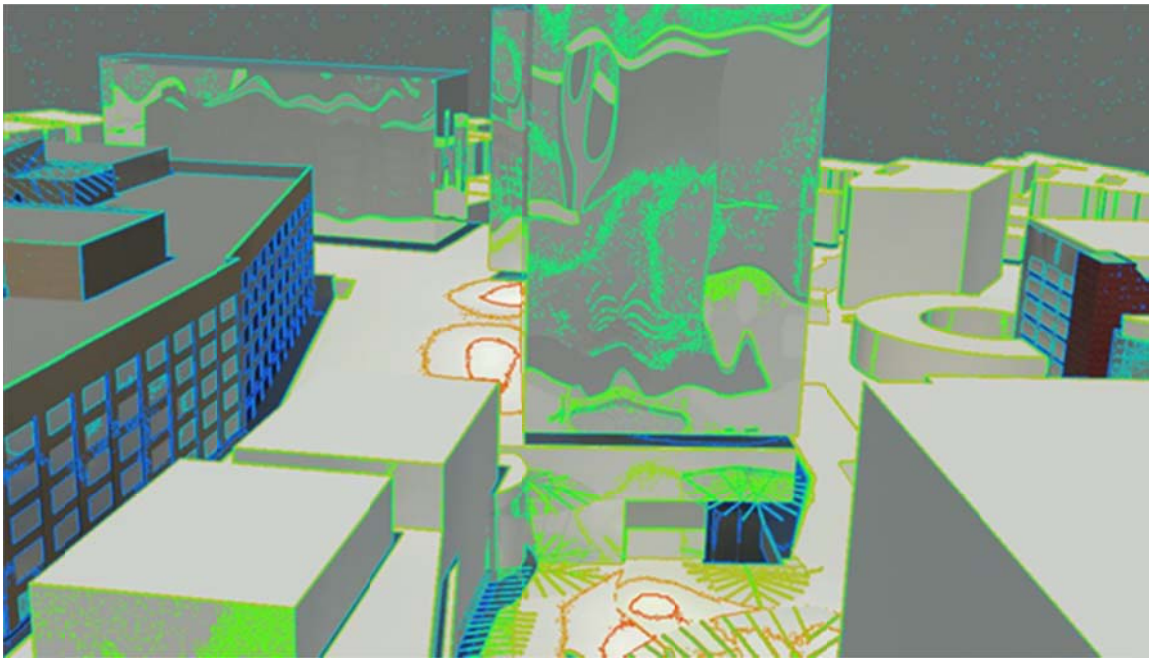

Final Report

From:
Mojtaba (Moji) Navvab, Ph.D., FIES.
AMCM Inc.,
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Final Report-03#07182013EMA-03

Advance Monitoring & Control Management, Inc.

July 18th, 2013

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Ann Arbor Michigan, 48113
Phone: 734-936-0228
E-mail: <moji@umich.edu>

Subject: The Solar Glare Analysis.
Project References: Reply to request for engineering services, on Wed, Jul 3, 2013 at 10:17 AM, Scott, Brian.
Engineering Services: The solar glare analysis of the Landmark Center project site in Boston, MA.

The following tasks were completed as part of the solar glare analysis of the landmark center project site in Boston, MA. The study outcomes and glass options as possible solutions to glare and solar heat gain were communicated at all levels with the design team and associated project MEP team members through **Brian Scott.**

Full Report - Executive Summary: This is a report on glare, reflected glare and the impact of the new tower’s solar reflection on its adjacent properties within the landmark center project in Boston, Massachusetts for city code ordinance compliance. The results show that the current latest design dated July 3rd, 2013 along with other building geometry within the site and the selected glazing system given their specific detail as designed within the elevations and the associated curtain walls design <u>do fully comply with typical city code ordinance on glare as relates to building facades with large glazing surfaces.</u> The solar heat reflected from the building surfaces do not impact the cooling load of the building itself or the adjacent buildings. In most cases large part of incoming solar rays are shielded by the tower shading or other adjacent buildings at various times from sun high intensities under the low solar altitude conditions. The buildings and landscape and special sun shade system designed within the site along with the associated specifications on selected glazing systems with their specific solar and optical characteristics will mitigate the reflected glare from the viewers’ viewing directions. The results show that the average glare index and or glare factor in most cases do <u>not exceed the 50 scale which is equal to just admissible</u> rating in accordance to the Illuminating Engineering Society of North America (IESNA), the USA lighting authority’s Standards (www.iesna.org) and the Glare Index rating in accordance with the International Commission on Illumination (CIE) (www.cie.co.at).

Glare: There are obvious glare related issues and requirements due to use of large size buildings utilizing over 15% but below 50% percent glazing system on their elevations. This section describes the visual aspect of the glass reflection as relates to glare. Glare is the loss in visual performance or visibility, or annoyance or discomfort produced by a luminance in the visual field greater than the luminance to which the eyes are adapted. There are three types of glare: veiling or disability glare, discomfort glare, and reflection glare. **<u>Veiling or disability glare</u>** occurs when the excessive light in the visual field interferes with visual performance and visibility. **<u>Discomfort glare</u>** occurs when the excessive luminance in the visual field results in annoyance or discomfort. Visual performance and visibility may be affected with or without annoyance or discomfort; i.e., veiling or disability glare may be experienced independent of discomfort glare. Conversely, discomfort glare may be experienced without a decrement in visual performance or visibility but is usually accompanied by losses in visibility and performance. The third type of glare, reflection glare, is often confused with disability glare and discomfort glare. **<u>Reflection glare</u>** results from excessive luminance reflected from surfaces. Typical examples include reflection from the automobile windshield that prevents the driver from seeing the street, reflections from water that prevent the fisherman from seeing below the water's surface, and reflections from the tower building within the site in this case study under different sun positions, season and or times of day. The above reflection glare condition is also associated with the reflected solar radiation, if and only if the glass has high level of reflection properties (exceeding 25% visible or within the range of 20% to 30% or more for the outward solar reflections). The glare study is required regardless of the glass reflection issues in a given project due to other city code compliance. The solar reflection varies as function of the sun position and sky condition. **Figures 1 to 3** show an overview of the site and possible areas of interest with identified and determined through simulation with respect to occurrences of sun reflection associated with glare and solar heat over the site.

The subjective scales for the evaluation of these reflections are described below in a format of a simple example.

1. **Perceptible -** The point at which you would prefer the light not to be present. Imagine that it is a pilot light on a computer and you are obliged to set the pilot light on/pilot light off. This is the level at which you would begin to care about such decision.
2. **Annoying -** You could live with this glare source present if you were using someone else's computer workstation for a day. If this glare source were present, you would prefer to remove the glare source if it were possible, but could live with this annoyance for the next hour or so.
3. **Disturbing -** This make you feel uncomfortable. If you had to work like this for any reasonable length of time (5 minutes or so) you would do something to cover the source. Shield your eyes, etc. In order to avoid the discomfort.
4. **Intolerable -** you could not imagine yourself working with the light source like this. You would certainly close your eyes or take another avoidance action.

Below is an example of city code ordinance - One of the regulatory approvals required in some cities is an approval from the city for the requirement in such that:

> "Glare from operation. No use of glass in any district shall be operated so as to produce direct or sky-reflected glare or direct illumination across any lot line from a visible source of illumination of such intensity as to create a nuisance or traffic hazard or detract from the use or enjoyment of adjacent property." and

> "The use of reflective materials may be allowed, provided that reflective surfaces do not have adverse impacts on surrounding uses, such as increasing the cooling loads of the structures upon which they reflect heat, causing visual discomfort and the like."

Discomfort glare is one of the important indicators for evaluation of lighting design. Disability glare from light sources, particularly windows with outdoor views are unavoidable. This should be permitted only to a level where human vision or viewing large outdoor displays is not seriously affected. The level of brightness of a source, the background luminance and the general luminance level within the visual field are the main variables that need to be considered. The photometry techniques are applied under simulated sky conditions using hourly weather data to obtain glare conditions within the critical field of view. The computer simulations results combined with the spread sheet calculations are used to determine the CIE Glare Index (CGI) and/or CIE Glare factors/ rating for a given site.

Glass selection and or options: Clear, tinted, color, fritted and or reflective glazing systems' reflectance characteristic or the outward reflectance varies from 7% to 55% respectively; however the amount of reflected sun that reaches the surface of interest varies as function of the sun intensity, position and the total inter-reflection within the surfaces in a given site. Based on the related glazing studies, various glass samples were selected by the project architect, design team and supported by the project MEP team for the energy use of the building given their ASHRAE energy compliance requirement for this climatic zone (zone-5) not to exceed SHGC of 0.40. The characteristics of these glass samples are evaluated for their solar and daylighting performance. The **TABLES 1A & 1B** and **Figures 4A & 4B** show the available data from the SELECTED manufacture web sites to be used by the ELKUS MANFREDI ARCHITECTS' design team.

1) http://www.viracon.com/index.php?option=com_viracon&category=39;
2) http://www.na.en.sunguardglass.com/SunguardProducts/IS20/index.htm;
3) http://glassconfigurator.ppg.com/,

Figure - 1: Areal view of the site

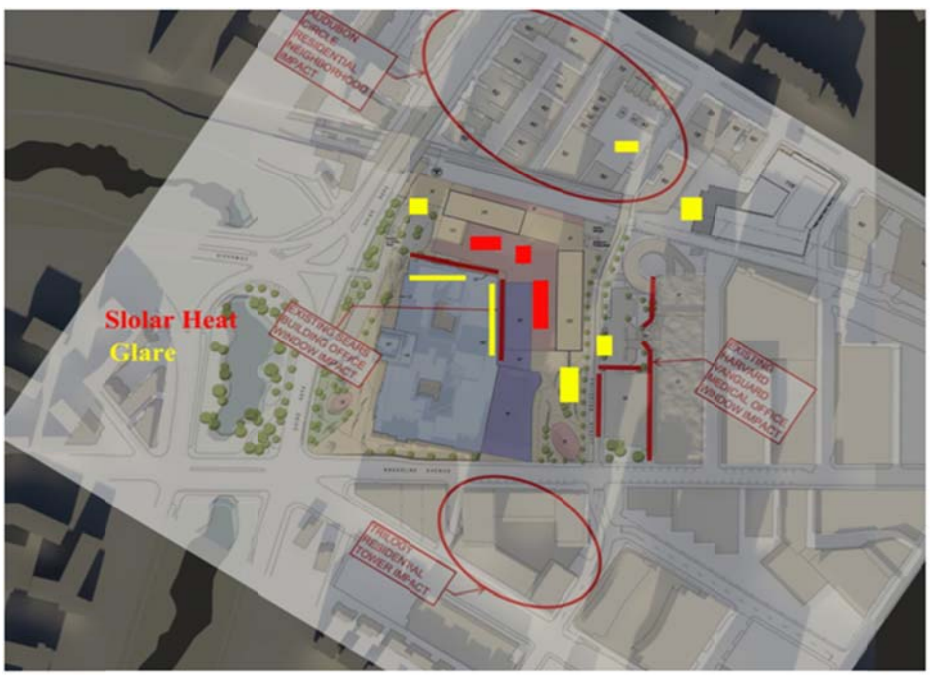
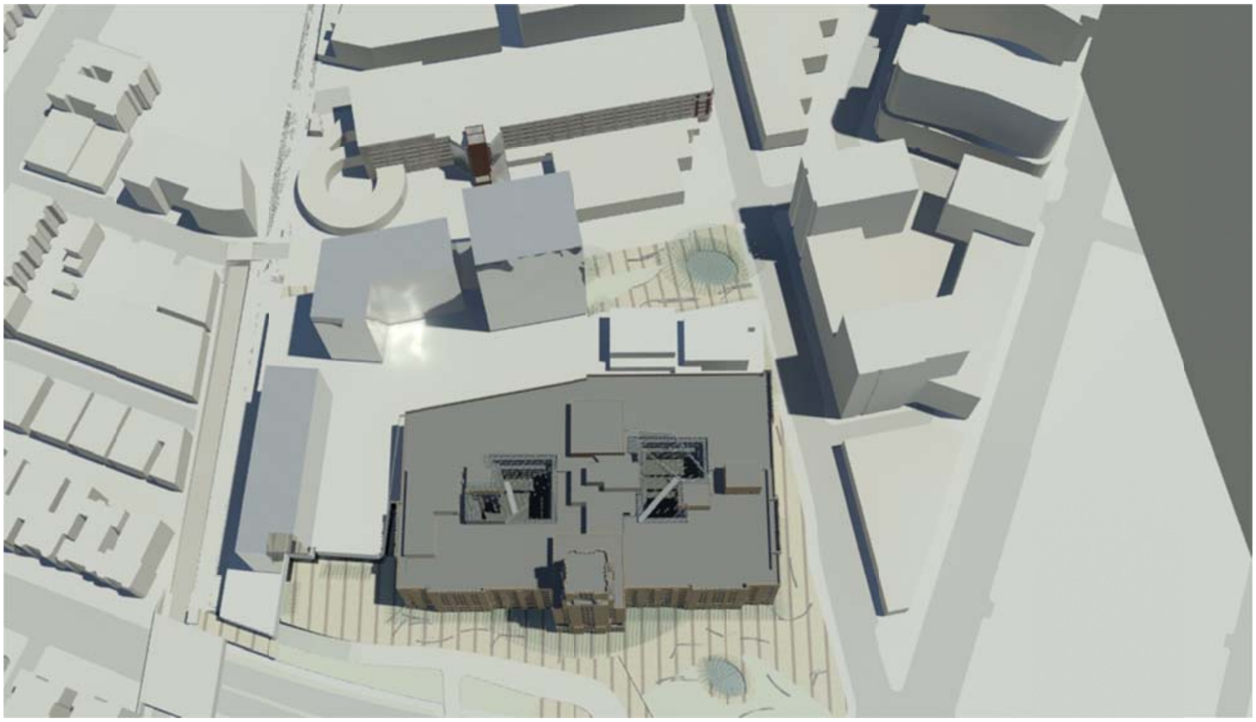


Figure - 2: Selected area within the site associated with glare or solar heat gain with respect the critical points of interest by design team, also see **Appendix C**



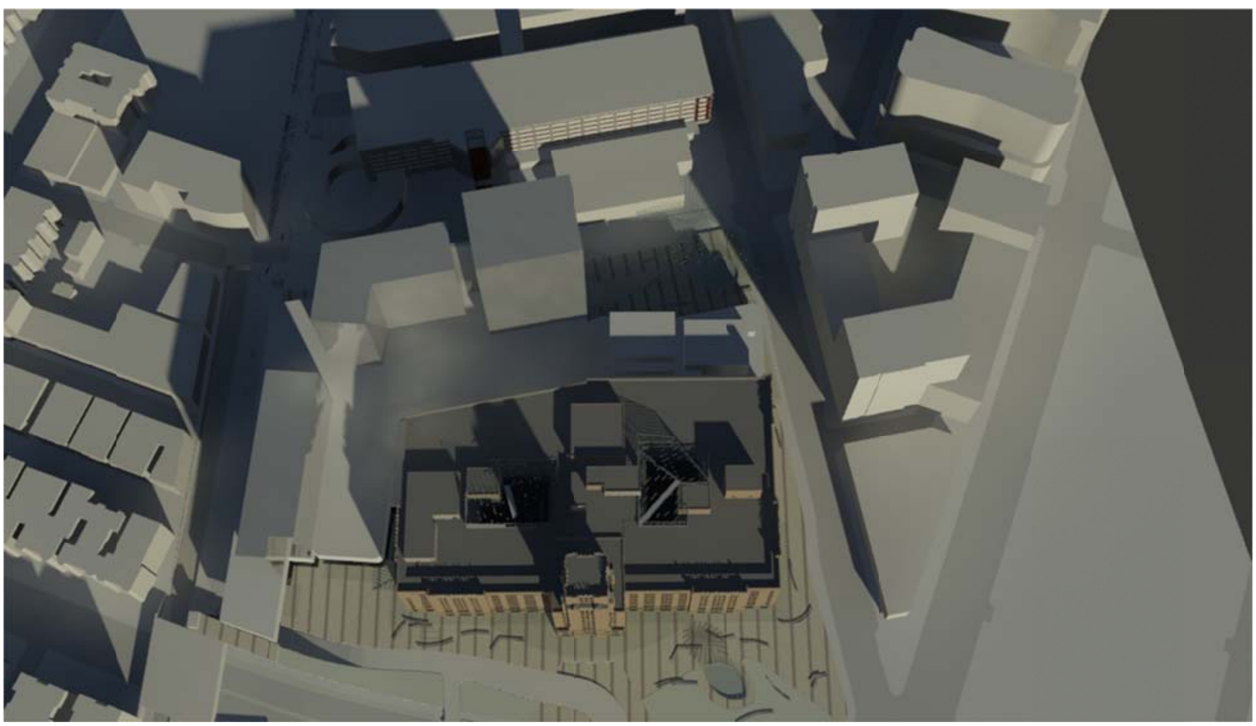


Figure - 3: Simulated sun reflection on the site – June and December 21st, Solar Noon*
*For monthly and hourly sun shade and reflection see also **Appendix C**

Executive summary of glazing systems selection: There are number of possible options from **Viracon, PPG** and **Guardian** glass manufacturers with special low-e coatings such as **VE1-2M, Solar ban 72 or 60, Low-e** and **Neutral 61 or 50** to meet the architectural esthetic as well as energy end use criteria for these types of double glazing with outward reflectance in range of 8% to 20%. The spectral characteristic of these samples were measured and data used as an input to the simulation models. The measured spectral transmittance and reflection of these samples for both outward visible (Out) and inward visible (In) are shown in **Figures 4A & 4B** and summarized in **TABLES 1A & 1B**. Ultra-violet is defined in range of 300 to 380 nanometers (nm) and the reflectance range is due to reported in literature vs. measured data. Now; Regardless of the building surface, glass types and how glass is utilized within the surface of the building façade and or within various elevations, the 10% reflectance of sun visible energy reaching a window surface or solar heat reflectance for that matter is not a small amount. Current building industry provides variety of roof surface treatments as a possible shield against the excess solar heat gain and reduces the cooling load for the building with respect to energy consumptions.

TABLE 1A: THE GLAZING SYSTEM OPTIONS AND THEIR CHARACTERISTIC FOR THE TOWER

Exterior	1/4" (6mm) clear VE1-2M #2	1/4" (6mm) clear PPG - Solar BAN 72 #2	1/4" (6mm) clear Guardian Neutral 61 #2
Air Gap	1/2" (13.2mm) airspace	1/2" (13.2mm) airspace	1/2" (13.2mm) airspace
Interior	1/4" (6mm) clear	1/4" (6mm) clear	1/4" (6mm) clear
Product Index	**Performance Data**	**Performance Data**	**Performance Data**
Transmittance			
Visible Light	70%	71%	61%
Solar Energy	33%	28%	34%
U-V*	10%	9%	27%
Reflectance			
Visible Light-Exterior **	11% - 14%	13% - 20%	19% - 20%
Visible Light-Interior **	12% - 14%	13% - 21%	15% - 19%
Solar Energy	31%	53%	31%
NFRC U-Value			
Winter	0.29 Btu/(hr x sqft x °F)	0.29 Btu/(hr x sqft x °F)	0.30 Btu/(hr x sqft x °F)
Summer	0.26 Btu/(hr x sqft x °F)	0.27 Btu/(hr x sqft x °F)	0.29 Btu/(hr x sqft x °F)
European U-Value	1.5	1.5	1.5
Shading Coefficient	0.44	0.34	0.45
Relative Heat Gain	91 Btu/(hr x sqft)		
Solar Factor (SHGC)	0.38	0.30	0.40
LSG	1.84	2.38	1.53
***Ultra-violet defined as 300 to 380 nanometers (nm) ** The range is due to reported vs. measured data**			

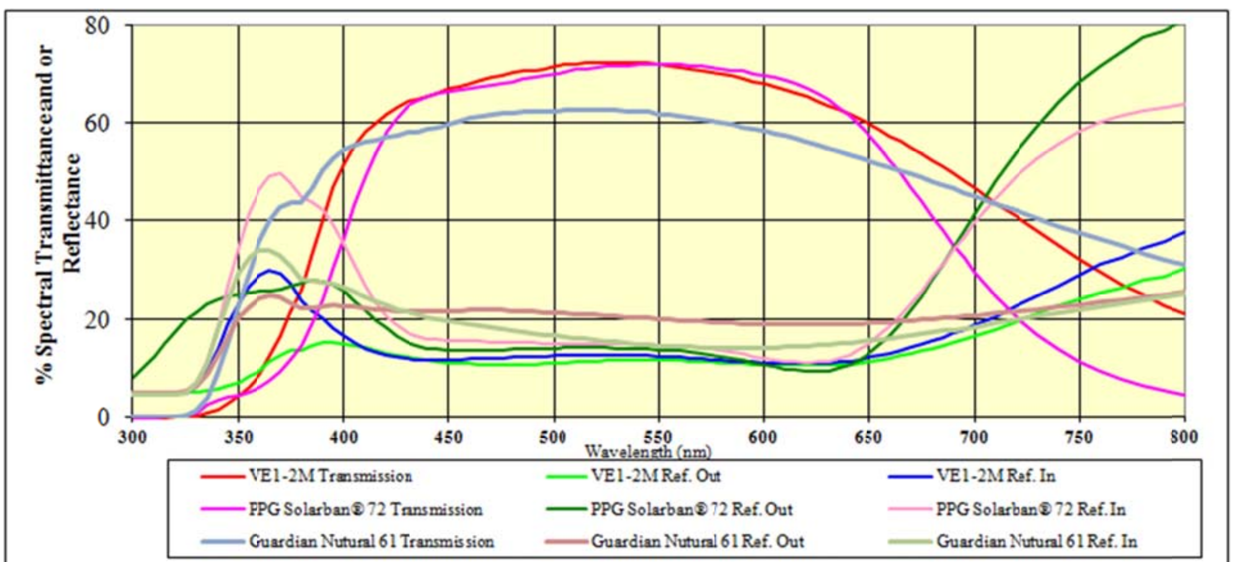


Figure – 4A: Spectral transmittance and outward and inward surfaces reflections of the selected 1/4" (6mm) thick glass samples. Viracon VE1_2M Low-E on Clear & PPG Solarban® 72XL & Guardian Neutral 61

TABLE 1B: THE GLAZING SYSTEM OPTIONS AND THEIR CHARACTERISTIC FOR THE TOWER

Exterior	1/4" (6mm) clear PPG - Solar BAN 60 #2	1/4" (6mm) clear PPG - Solar BAN z50 #2	1/4" (6mm) clear Guardian Neutral 50 #2
Air Gap	1/2" (13.2mm) airspace	1/2" (13.2mm) airspace	1/2" (13.2mm) airspace
Interior	1/4" (6mm) clear	1/4" (6mm) clear	1/4" (6mm) clear
Product Index	**Performance Data**	**Performance Data**	**Performance Data**
Transmittance			
Visible Light	70%	51%	50%
Solar Energy	33%	26%	31%
U-V*	19%	14%	30%
Reflectance			
Visible Light-Exterior **	8.5% - 13%	10% - 13%	15% - 16%
Visible Light-Interior **	11% - 14%	8% - 14%	11% - 12%
Solar Energy	43%	23%	19%
NFRC U-Value			
Winter	0.29 Btu/(hr x sqft x °F)	0.29 Btu/(hr x sqft x °F)	0.33 Btu/(hr x sqft x °F)
Summer	0.27 Btu/(hr x sqft x °F)	0.27 Btu/(hr x sqft x °F)	0.32 Btu/(hr x sqft x °F)
European U-Value	1.55	1.5	1.5
Shading Coefficient	0.46	0.36	0.45
Relative Heat Gain	91 Btu/(hr x sqft)		94
Solar Factor (SHGC)	0.40	0.31	0.39
LSG	1.85	1.64	1.28
***Ultra-violet defined as 300 to 380 nanometers (nm) ** The range is due to reported vs. measured data**			

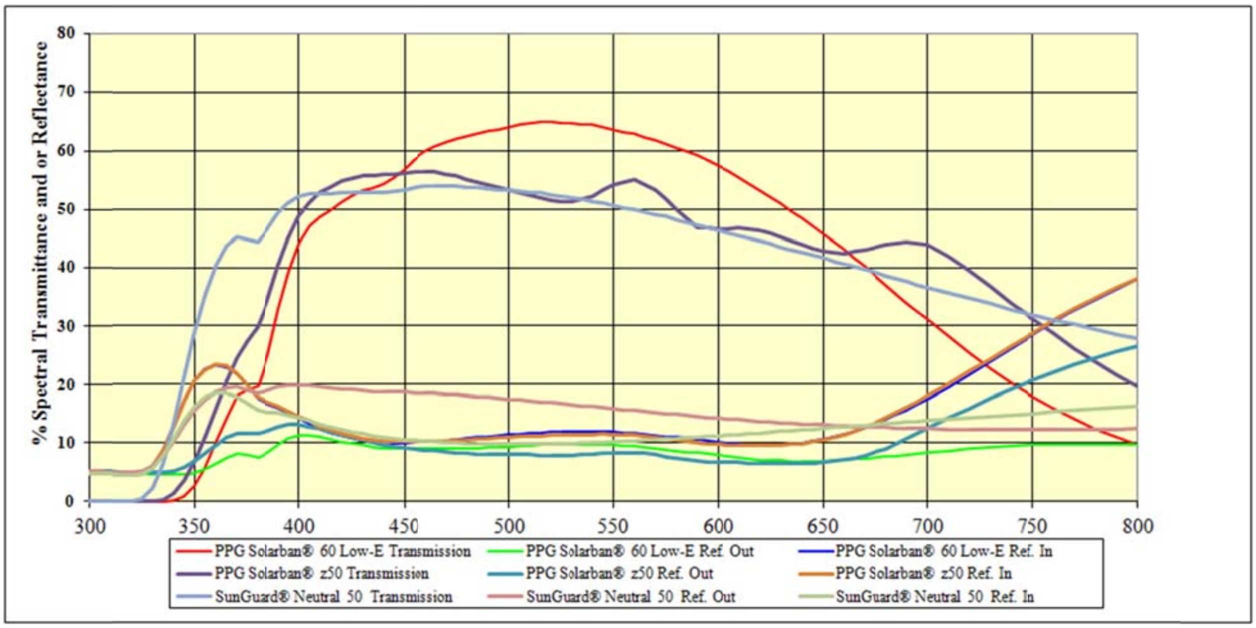


Figure – 4B: Spectral transmittance and outward and inward surfaces reflections of the selected 1/4" (6mm) thick glass samples. PPG Solarban® 60 Low-E on Clear & PPG Solarban® Z50 & Guardian Neutral 50

In subjective evaluation or assessment of glare, the eye response to bright light is not linear and this increase in reflectance does not equate to 10% increase in our Glare Index/Rating calculations. However a word of caution, the condition is not constant and it has to be evaluated for the dynamic of the day given the surrounding of the building itself. The solar geometry, atmospheric or seasonal variations in solar incident radiation and building reflectivity as part of the glazing system characteristics and sky luminance as a background due to clear, partly cloudy conditions are key variables in glare calculations. The shape of the towers and their orientations do affect this glare situation but the degree of impact varies as a function of season or time of day. These conditions are simulated as part of this study for various viewing direction and solar geometry. The typical measures taken in to account to reduce negative effects of glare are change of glazing system, surface reflectance or coating treatment such as low–e or anti-reflections of glass composite interlayer (e.g. use of glass utilizing antireflection coatings could be one last option), building orientations, landscape, change of building materials (other than glass) surface reflectance.

The change of glazing system tilt of angle upward, even reducing the fabric or venetian blinds interior shades' outward surface reflectance used as shading within the occupied spaces are used as a mean to reduce the outward reflectance or the perceived brightness. Adding specific shading system (overhang or vertical fins) are also possible options at early stage of the design. The major areas of the building that are currently affected are the interior rooms facing the direct glare, the close surrounding areas to the building and the roof surface areas of the low rise during the summer season. The distance surrounding areas to the building during the winter clear days are affected for a limited time by the reflected glare condition. **TABLE 2** shows the monthly Clearness Index for Boston area.

TABLE 2: MEASURED CLEARNESS INDEX

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Clearness Index	0.47	0.5	0.5	0.49	0.51	0.52	0.53	0.53	0.51	0.49	0.43	0.43	0.5

The **TABLES 3 and 4** show the average cumulative incident illuminance-hours (Klux-Hours) for clear and cloudy conditions at the site for the selected glazing system from **Viracon (VE1-2M) and PPG (Solar ban 72)** respectively. The cumulative direct incident irradiance-hours (Watt-Hours) could be estimated using direct normal luminous efficacy of 100 (watt/sq-m) for conversion. **Appendix B** shows the solar irradiance (insolations) falling on the site under clear sky condition as presented in a 3D representation (also see **Figure 16 - Pg19** as an example) while showing peak luminance reflected conditions during December 21st, solar noon time.

TABLE 3: AVERAGE INCIDENT ILLUMINANCE **(Klux-hr)** FOR MOSTLY CLEAR AND MOSTLY CLOUDY CONDITIONS- **VE1-2M**

AVERAGE INCIDENT ILLUMINANCE (klux-hr) FOR MOSTLY CLEAR AND MOSTLY CLOUDY CONDITIONS, Percentage Uncertainty = 9																					
VE1-2M				March					June					Sept					Dec		
		9am	11am	1pm	3pm	5pm	9am	11am	1pm	3pm	5pm	9am	11am	1pm	3pm	5pm	9am	11am	1pm	3pm	5pm
HORIZ.	M.Clear	31	50	54	40	13	38	61	70	64	43	23	48	58	50	27	11	26	28	13	0
	M.Cloudy	17	31	34	25	8	24	40	50	45	30	13	30	38	33	17	6	16	16	9	0
NORTH	M.Clear	7	10	11	9	4	10	12	12	12	11	6	10	11	11	8	4	6	7	4	0
	M.Cloudy	7	11	11	9	4	9	13	13	13	10	6	11	12	11	7	3	6	6	4	0
EAST	M.Clear	51	35	11	9	4	56	48	16	12	11	47	45	14	11	8	27	22	7	4	0
	M.Cloudy	18	20	11	9	4	26	28	16	13	10	17	23	13	11	7	8	11	6	4	0
SOUTH	M.Clear	33	55	59	43	13	9	28	37	31	13	19	44	55	46	23	28	55	57	33	0
	M.Cloudy	13	27	30	21	6	9	20	27	23	11	9	23	32	26	12	8	20	21	11	0
WEST	M.Clear	7	10	22	48	37	9	12	12	41	55	6	10	11	40	48	4	6	18	29	0
	M.Cloudy	7	11	16	23	11	9	13	13	28	30	6	11	12	24	21	3	6	10	9	0
M.Clear	(% hrs)	26	24	23	23	25	28	28	23	21	23	31	33	28	28	29	25	25	25	25	26

TABLE 4: AVERAGE INCIDENT ILLUMINANCE **(Klux-hr)** FOR MOSTLY CLEAR AND MOSTLY CLOUDY CONDITIONS- **PPG Solar ban 72**

AVERAGE INCIDENT ILLUMINANCE (klux-hr) FOR MOSTLY CLEAR AND MOSTLY CLOUDY CONDITIONS, Percentage Uncertainty = 9																					
PPG - Solar BAN 72 #2				March					June					Sept					Dec		
		9am	11am	1pm	3pm	5pm	9am	11am	1pm	3pm	5pm	9am	11am	1pm	3pm	5pm	9am	11am	1pm	3pm	5pm
HORIZ.	M.Clear	30	50	53	39	13	38	60	69	63	43	22	47	57	49	27	11	26	27	13	0
	M.Cloudy	17	31	34	25	8	24	39	49	45	29	13	29	38	32	17	6	15	16	8	0
NORTH	M.Clear	7	10	11	8	4	10	12	12	12	11	6	10	11	11	8	4	6	7	4	0
	M.Cloudy	7	11	11	9	4	9	13	13	13	10	6	11	12	11	7	3	6	6	4	0
EAST	M.Clear	50	34	11	8	4	55	47	16	12	11	46	44	14	11	8	27	22	7	4	0
	M.Cloudy	18	20	11	9	4	25	28	16	13	10	17	23	13	11	7	8	11	6	4	0
SOUTH	M.Clear	32	55	58	42	13	9	27	36	31	13	19	43	55	46	22	27	55	56	33	0
	M.Cloudy	13	27	29	21	6	9	20	27	23	11	9	22	32	26	12	8	20	20	11	0
WEST	M.Clear	7	10	22	48	36	9	12	12	41	54	6	10	11	40	47	4	6	18	29	0
	M.Cloudy	7	11	15	22	11	9	13	13	28	29	6	11	12	24	20	3	6	10	9	0
M.Clear	(% hrs)	26	24	22	22	25	27	27	22	21	22	31	32	28	28	29	25	25	25	25	26

The **TABLES 5, 6 and 7** show the average reflected solar radiation (Btu/sq-ft/day) under shaded and un-shaded for all sky conditions for the selected **points of interest 7 & 8** as shown in **Figure 5** within the site using glazing systems from **Viracon (VE1-2M)** with low-Ref.**, PPG Solar ban 72** with medium Ref. and **Guardian Neutral 61** with high Reflectance. These results indicate that there are no adverse effects on the adjacent buildings within the site. The solar heat reflected from the building surfaces do not impact the cooling load of the building itself or the adjacent buildings.

TABLE 5: AVERAGE REFLECTED SOLAR RADIATION (Btu/sq-ft./day) for DOUBLE GLAZING- **VE1-2M**

AVERAGE REFLECTED SOLAR RADIATION (Btu/sq.ft./day) FOR VE1-2M DOUBLE GLAZING, Percentage Uncertainty = 9														
VE1-2M		**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Year**
HORIZ.	**Unshaded**	275	391	514	638	761	819	815	726	587	423	276	225	546
NORTH	**Unshaded**	97	115	149	173	212	238	229	196	159	122	92	83	157
	Shaded	82	101	124	155	183	203	199	173	141	103	78	69	138
EAST	**Unshaded**	208	263	322	382	419	447	440	416	361	282	198	173	332
	Shaded	186	229	273	316	348	366	363	345	299	244	170	150	276
SOUTH	**Unshaded**	579	574	483	388	331	302	322	381	464	532	495	510	433
	Shaded	564	526	372	245	207	209	211	226	324	462	474	495	345
WEST	**Unshaded**	208	263	322	370	413	436	440	405	348	276	191	173	326
	Shaded	186	229	273	310	342	354	363	339	299	237	170	150	276

TABLE 6: AVERAGE REFLECTED SOLAR RADIATION (Btu/sq-ft./day) for DOUBLE GLAZING- **PPG Solar ban 72**

AVERAGE REFLECTED SOLAR RADIATION (Btu/sq.ft./day) FOR PPG - Solar BAN 72 DOUBLE GLAZING, Percentage Uncertainty = 9														
PPG - Solar BAN 72 #2		**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Year**
HORIZ.	**Unshaded**	470	669	879	1092	1302	1400	1393	1241	1003	724	472	385	933
NORTH	**Unshaded**	165	196	254	296	363	407	391	336	272	208	157	141	268
	Shaded	140	173	212	265	313	348	341	295	240	175	133	118	236
EAST	**Unshaded**	355	450	551	653	716	765	752	712	616	482	339	295	568
	Shaded	317	392	466	541	595	626	621	590	512	417	290	256	472
SOUTH	**Unshaded**	990	981	826	663	565	516	551	651	794	910	847	872	740
	Shaded	965	900	636	418	353	357	361	386	554	789	810	846	590
WEST	**Unshaded**	355	450	551	633	706	745	752	692	596	471	327	295	557
	Shaded	317	392	466	530	585	606	621	580	512	406	290	256	472

TABLE 7: AVERAGE REFLECTED SOLAR RADIATION (Btu/sq-ft./day) for DOUBLE GLAZING- **Guardian Neutral 61**

AVERAGE REFLECTED SOLAR RADIATION (Btu/sq.ft./day) FOR Guardian Neutral 61 DOUBLE GLAZING, Percentage Uncertainty = 9														
Guardian Neutral 61 #2		**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Year**
HORIZ.	**Unshaded**	558	795	1045	1298	1547	1664	1656	1475	1192	860	561	457	1109
NORTH	**Unshaded**	196	233	302	352	432	484	465	399	323	248	187	168	319
	Shaded	166	206	252	315	372	413	405	351	286	209	158	140	280
EAST	**Unshaded**	423	535	655	776	852	909	893	846	733	573	403	351	675
	Shaded	377	466	554	643	708	744	738	701	609	495	345	305	561
SOUTH	**Unshaded**	1177	1166	982	788	672	614	655	774	944	1082	1006	1037	879
	Shaded	1147	1070	756	497	420	425	429	459	658	938	963	1006	701
WEST	**Unshaded**	423	535	655	752	840	885	893	822	708	560	388	351	663
	Shaded	377	466	554	631	696	720	738	689	609	482	345	305	561

Photometric and Radiometric Calculations: The illuminance, irradiance and luminance levels at the adjacent property or within the property at various times of year were calculated using computer simulation in such a way as to satisfy the theoretical basis required by the glare functions for input variables in order to estimate the glare level for all seasons. Plans, elevations, surface finishes, and specific glazing systems characteristics for various towers shown in **TABLE 1A & 1B** were used for programming the input. The sun angles (altitude or incident) that could cause direct or reflected bi-directional reflected glare and the luminance levels that could create high luminance contrast conditions between the fenestration and the adjacent properties or within the site were determined.

Glare Criteria and Theoretical Background: The International Commission on Illumination (CIE) and the Illuminating Engineering Society of North America (IESNA)'s Publications on a wide variety of lighting were researched and reviewed **[1-11].** Discussions and review of the city codes and required data for compliance along with the experience on similar projects at this site have led to the daylighting condition and the **Glare criteria** that would satisfy the requirements of four types of spaces and users having different visual requirements within the project site.

1) The public walking around outside the property or within the property (e.g. pedestrians and building occupants or the regular employees during regular working daytime hours) should not have any significant visual discomfort problems

2) The pedestrians or building occupants entering and leaving the building site using cars should not have visual discomfort problems such as the traffic hazard or detract from the use or enjoyment of adjacent surrounding property during solar and daylight availability peak conditions.

3) The building surfaces with reflective materials should not have adverse impacts on surrounding uses whether on-site or off-site of the property, such as increasing the cooling loads of the structures upon which they reflect heat.

4) The building surfaces with reflective materials should not have adverse impacts on surrounding vegetation or plants whether on-site or off-site of the property during solar peak conditions.

A new basis for evaluation of the glare areas has been developed as part of this study. For the evaluation and comparison of subjective impressions of glare, the quantitative relation suggested by CIE is used as the basis for all glare calculations. The **TABLE 8** below describes the dependence of the glare on lighting parameters and introduces the variables used in glare evaluation by CIE for the tower daylighting and or the associated glazing systems.

TABLE 8: Glare evaluation using the subjective assessment of glare impression

CIE Glare Index Rating			Subjective assesment of glare impression
	CGI=<	10	No Glare
10	<=CGI=<	13	Not Perceptible
	CGI=<	13	Just Perceptible
13	<=CGI=<	16	Perceptible but acceptable
	CGI=<	16	Just acceptable
16	<=CGI=<	19	Unacceptable but lower that critical value
	CGI=<	19	Critical Value
19	<=CGI=<	22	Exceed critical value but not uncomfortable
	CGI=<	22	Uncomfortable
22	<=CGI=<	25	Just uncomfortable
	CGI=<	25	Uncomfortable but not unbearable
25	<=CGI=<	30	Just Unbearable
	CGI=<	30	Unbearable and Unacceptable

In order to express glare by a number between 0 and 100, with a higher figure denoting greater glare, CIE Technical Committee TC 5-04 adjusted the glare formula to change the scale and renamed the 'Glare Factor', GF as 'Glare Rating', GR defined by R.A. Hargroves **[12-18]. TABLE 9** shows the CIE Glare ratings scales. A value of 30 or below is the limit for this case study application.

TABLE 9: Glare evaluation using the subjective CIE Glare ratings scales of 0 to 100

90 = unbearable	**70** = disturbing	***50 = just admissible***	**30 = noticeable**	**10** = unnoticeable.

Application of the CGI and the Glare Rating: The admission of heat and light through the window/skylight is determined primarily by the intensity of solar radiation falling on the glazing system and by the solar optical properties: 1) transmittance, 2) reflectance, and 3) absorptance of the glazing material. The illuminance and luminance characteristics of the surfaces of the material (glass and the complex support structure system in this case) are also important since they determine the disposition of the radiant (solar) energy that is absorbed by the glass. The three properties listed above are optical in nature; the term "solar optical" is applied to the values of these properties within the spectral range of the solar radiation. The illuminance, luminance and spectral transmittance measurements and calculations were made at the glass surface as well as at the viewer's eye position. Outdoor reference measurements were compared to simulated data conditions in order to determine the dynamic ranges of daylight conditions **[19].**

Results: The solar-optical property calculations under simulated sky conditions using computer simulation studies provided the database in order to evaluate the performance of the building with its glazing system and the glare conditions within the building site. The results are based on the information provided by the project architects given the building site and the geometry, the exterior surfaces, and the layout of the adjacent properties. The daylighting /glazing system creates an overall high level of glare and solar reflected conditions within the site for various locations important to occupants' visual fields close to the property over the low rise "podium" and or pedestrian pathways or areas adjacent to the building during the summer season and the distance surrounding areas to the building during the winter clear sunny days. See computer output examples of such conditions in **Figures 2 to 8** and also more detail data or representation of the condition in time series are shown in full report along with **Appendixes A, B, and C**.

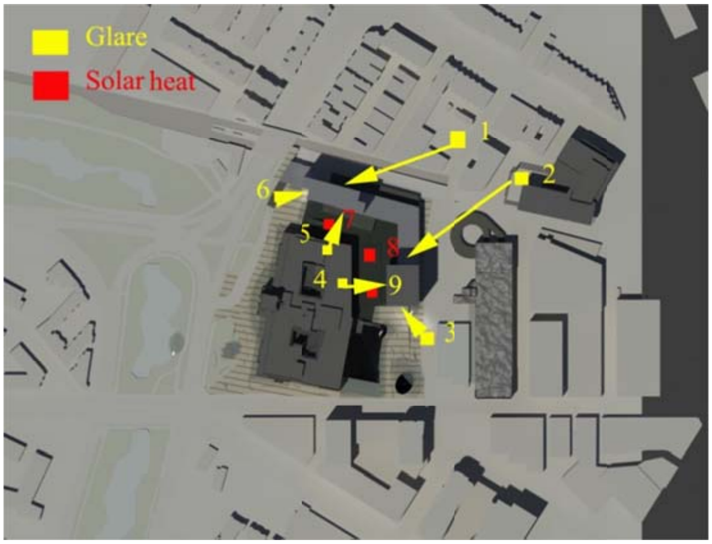


Figure - 5: The viewers' positions for glare and solar heat gain calculations points with respect to the site

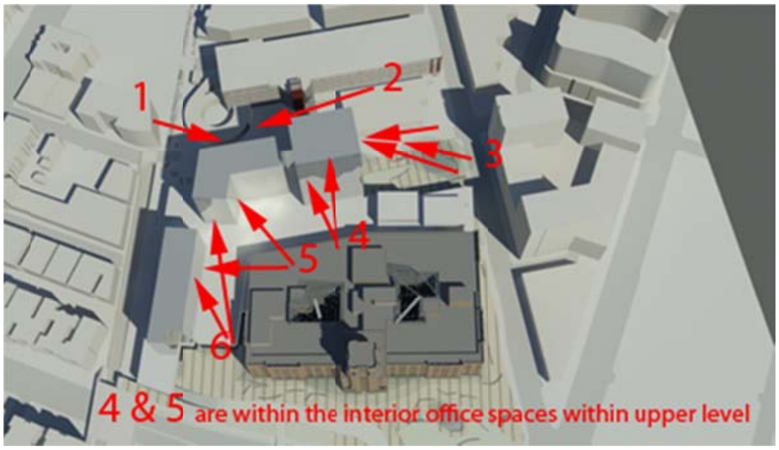


Figure - 6: The viewers' positions for glare calculation with respect to the tower's orientation and heights.

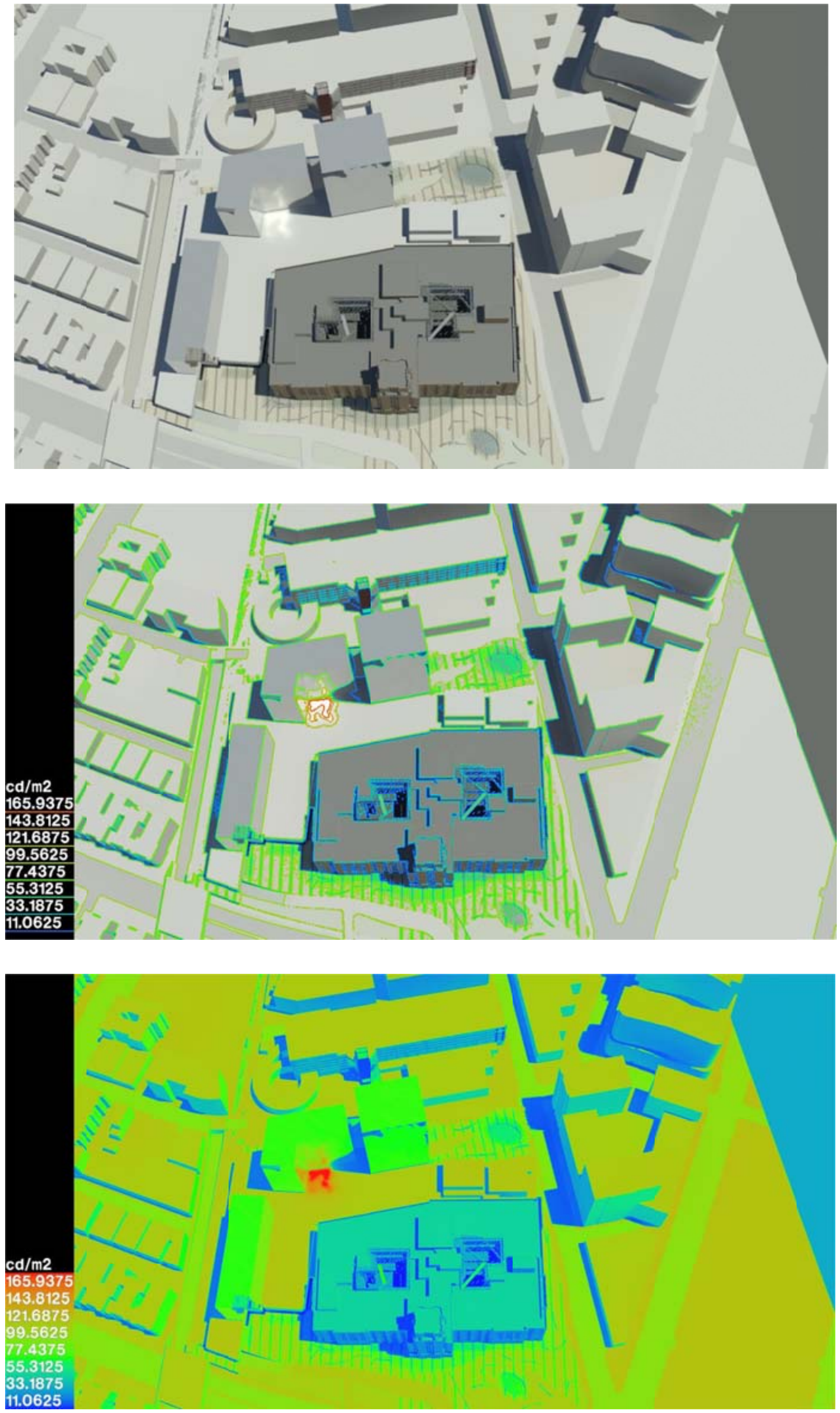


Figure -7: Surface peak luminance due to solar exposure in <u>summer season</u>

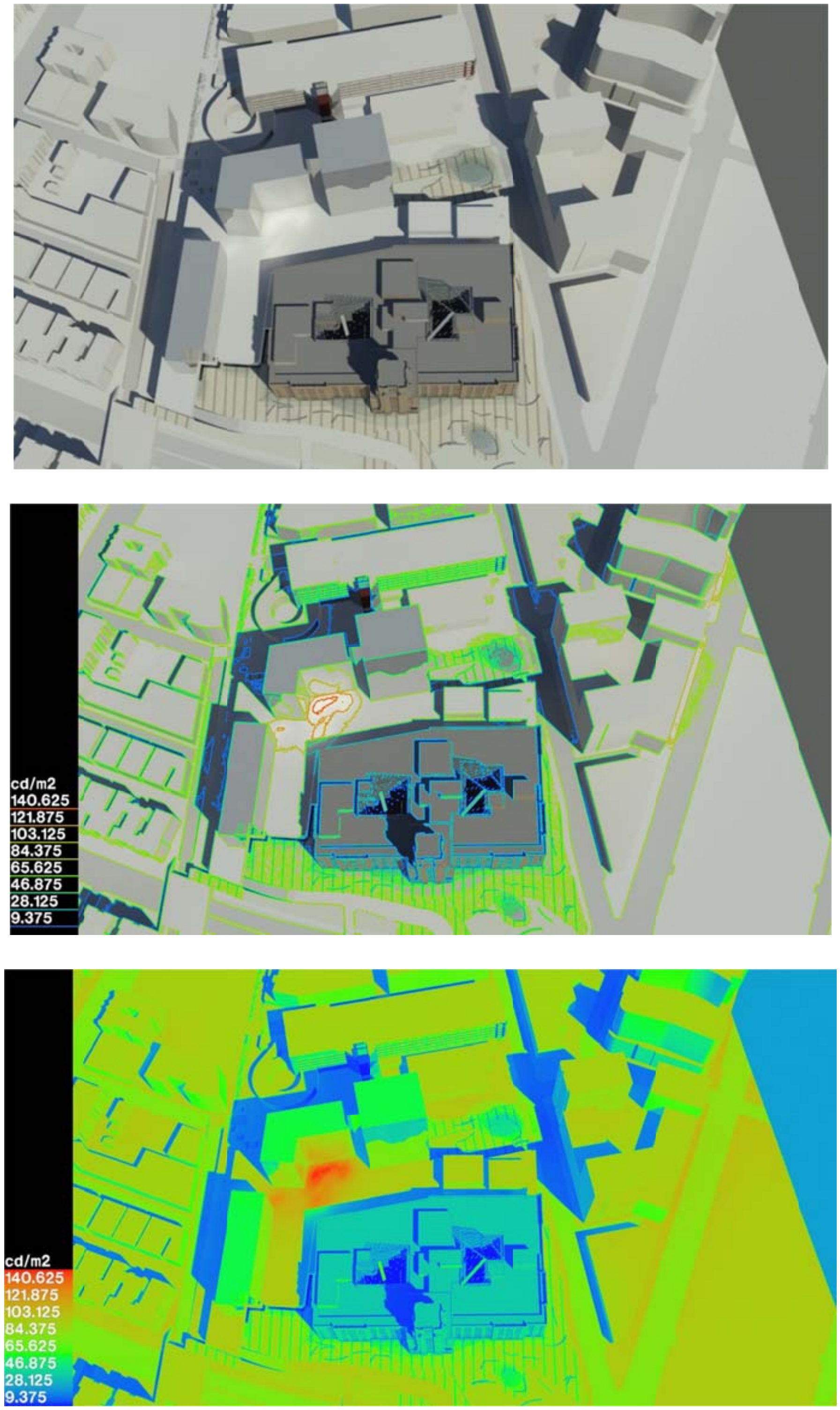


Figure -8: Surface peak luminance due to solar exposure in Fall/spring seasons

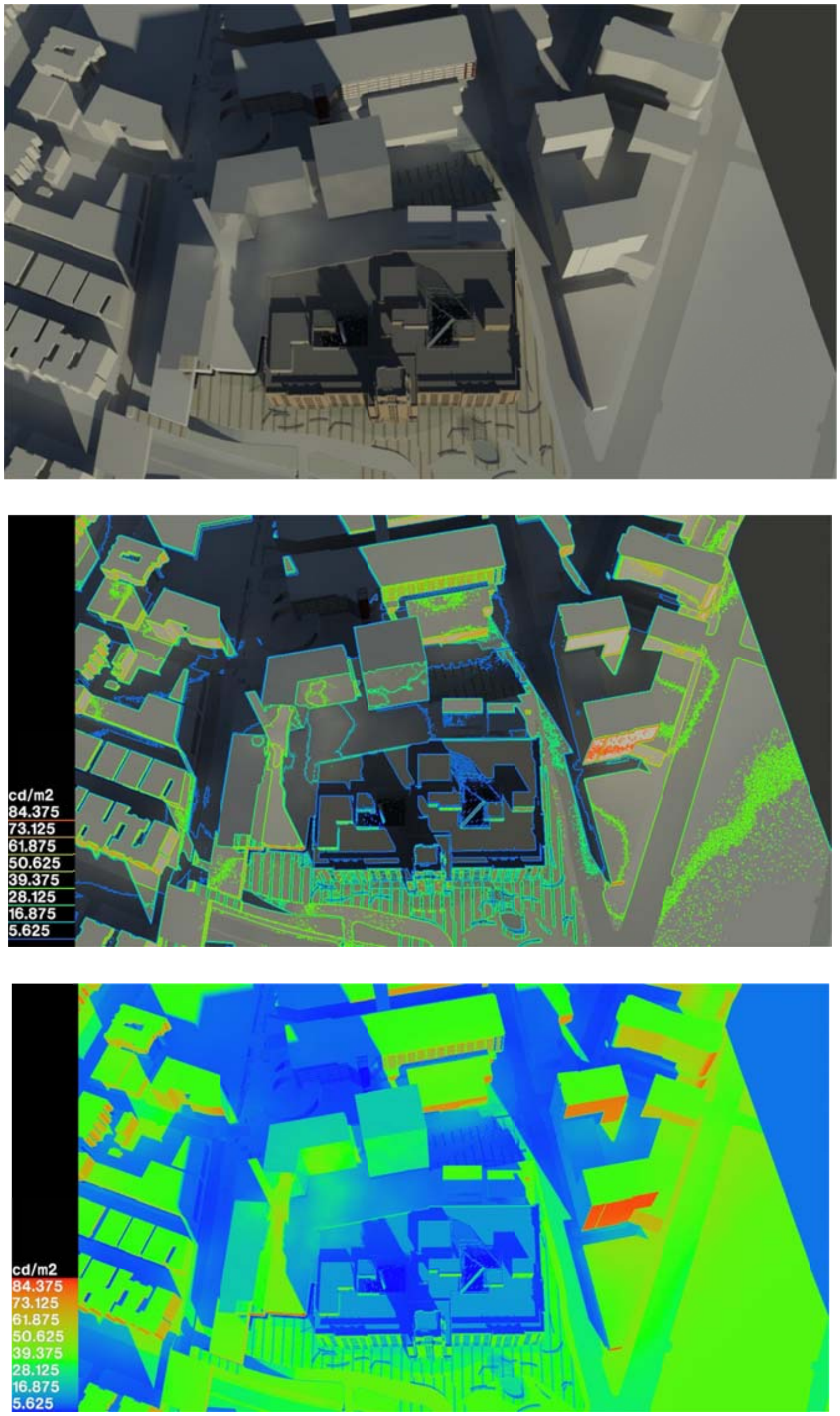


Figure -9: Surface peak luminance due to solar exposure in **winter season**

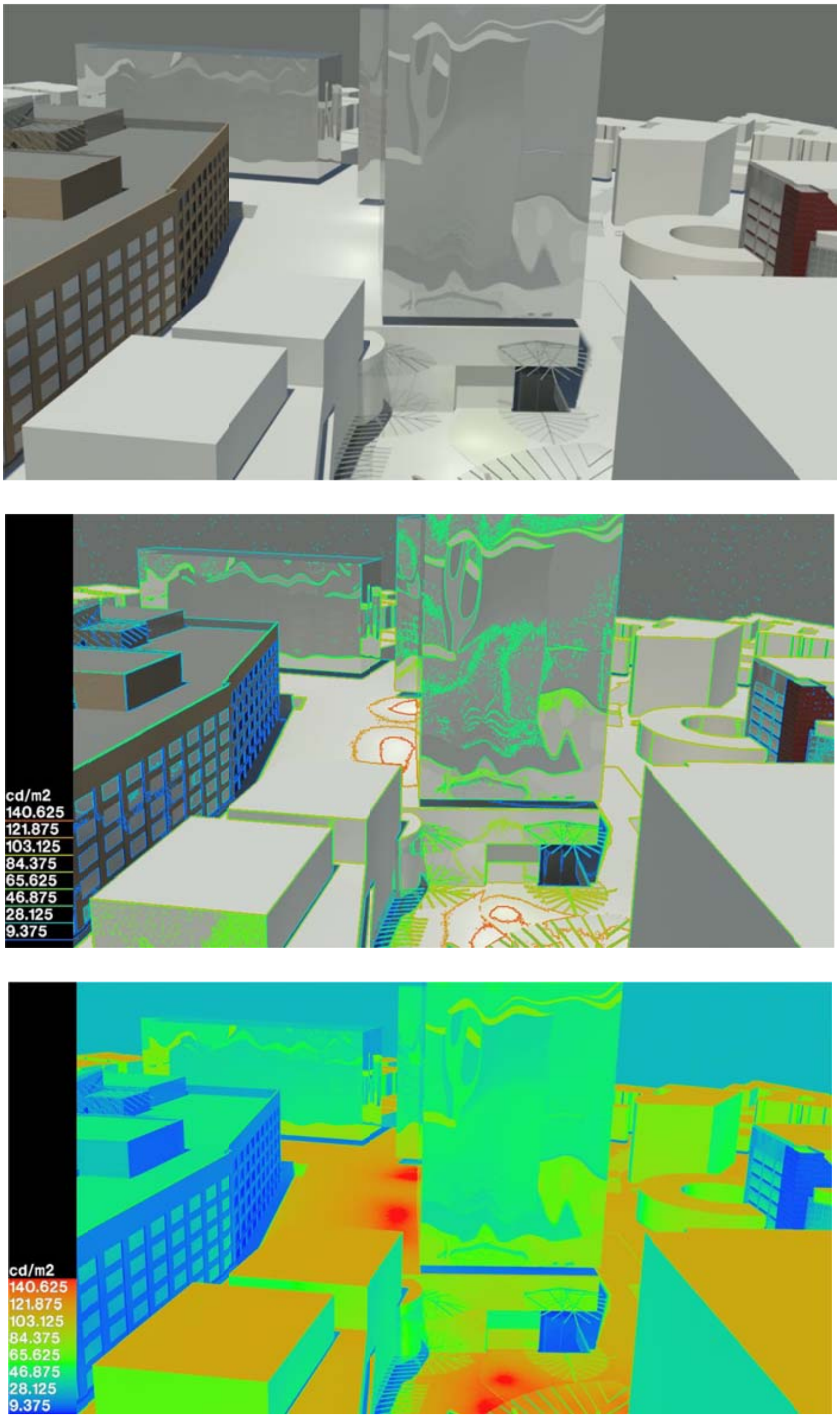


Figure -10: Surface peak luminance and inter-reflections due to solar exposure In summer season

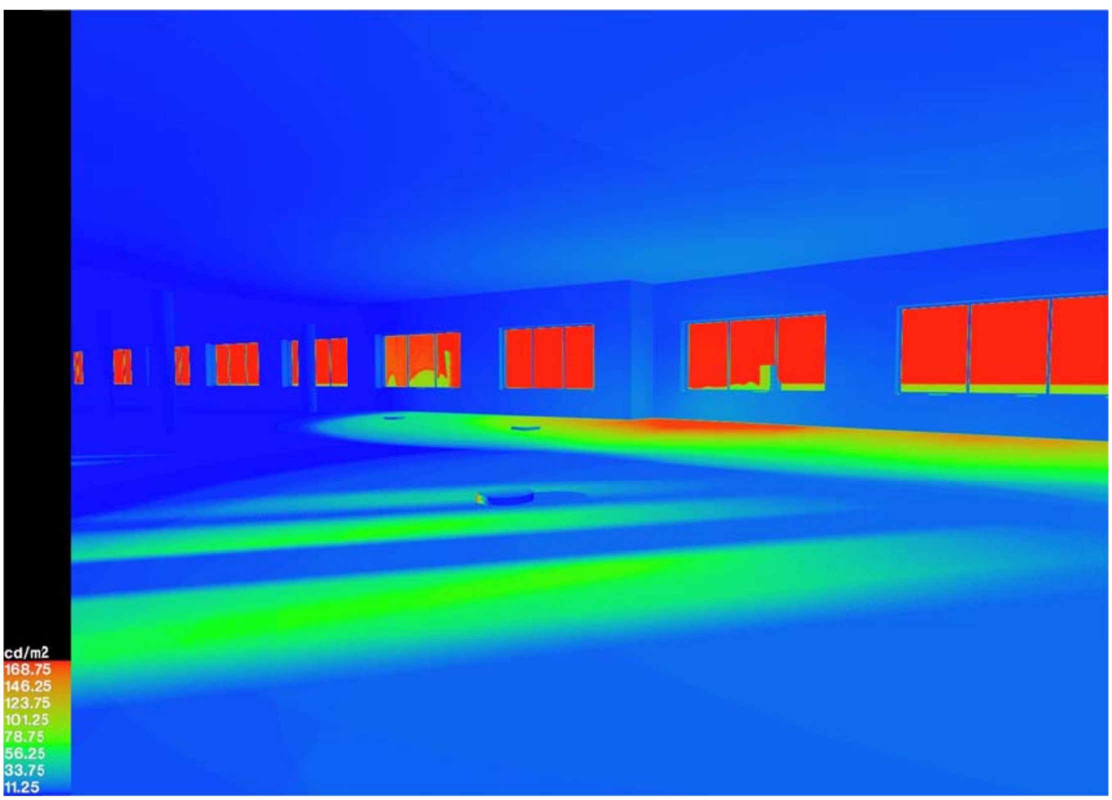


Figure -11: Interior surface peak luminance due to solar exposure in fall season.

Figure-5 shows the viewer's positions for glare and solar heat gain calculations points with respect to the site. **Figure-6** shows the viewers' locations and their relation between the viewer's position for glare calculation and the building height and orientations. Position 1 and 2 were specifically were selected by the design team. The amount of solar and daylight outside the building area under the daytime conditions was determined. Computer simulations and actual glazing sample spectral transmittance and reflectance data under simulated hourly weather and sky condition data identified problem areas near the building within the site. The examples of surface luminance due to solar exposure for the summer and winter clear sky conditions for building site are shown in **Figures 7 to 11** at Specific times within the site. Glazing systems input data were then used as an input to the computer model placed using the empirical models developed under real sky conditions for dawn-to-dusk, time-lapse glare analysis **[20-22]**. Glazing system position with respect to sun position were then tried and modified in the computer until glare was determined. Using this data would make it possible to locate the glare conditions within the site and determine the glare with respect to critical locations on the adjacent properties. The uniformity and intensity of horizontal illuminance varies within the site as a function of the outdoor daylighting conditions and from the reflection of the tower's windows. The selected glazing system's characteristics were used to generate the computer simulation results for the best estimate or calculation of the glare rating from various viewing**.** The vertical illuminance reaching the circulation paths and areas outside the adjacent property or within the property varies as a function of inter-reflection within the glazing surfaces. The higher the sun angle is with respect to the ground (altitude), the more illuminance (Lux= lm/m^2) are reaching the vertical or horizontal surfaces within the site and the lower the sun is in the sky the more luminance (Nit = cd/m^2) levels reaching the vertical building surface areas**.**

See computer output examples of such conditions in **Figures 7 to 11** and also more detail data or representation of the condition in time series are shown in **Appendix C**. There exists an average of 37 and minimum of 19 and maximum of 47 in glare rating (worst scenario) with some noticeable variations at various positions within a scale of 0 to 100. The high-rise tower' surfaces and the building orientation have created a cut-off angle in such a way that the direct sun is not reaching the vertical surfaces close to the building at all times of the day. This effect plus the selected glazing system and specific treatment of the upper third of the tower or above the podium combined with the tower shading condition on an elevation contributes to decrease the so-called **"Hot-Spot"** areas or **"High Luminance Contrast"** in the viewers' viewing field at various times of the year.

NOTE: For more detail information on simulation results see; **Appendix A:** Weather Summary and Solar Geometry, **Appendix B:** Solar Heat Gain, **Appendix C:** Solar shades, reflections and inter-reflections

The calculated **Glare Rating (GR)** was used for a clear day condition. The glare for the partly cloudy condition is constant when the clouds are more dominant. The higher the sun altitude; (lower the incident solar angle) the lower the glare condition is at the viewer's position facing the tower within the site. The adjacent properties are far away and the solid angles of the viewing areas are small to produce noticeable disability glare condition for a long exposure time. The viewer's directions were changed for these calculations in order to examine the dynamics of daylight within the luminous environment of the site. The highest CGI / Glare Rating (GR) are at the viewing directions 1, 2 and 3 positions for these calculations and they are identified in **Figures 5 or 6** and repeated as **1, 2 and 3** within **TABLES 12, 13 and 14** while showing the viewing direction/height of the tower in categories of **High (HIGH), Middle (MID) and Lower (LOW)** heights from the ground floors. Each letter ID refers to the positions on the elevation of the tower using the approximate floor levels as the ID or the cut off points for the viewing direction of the reflected glare source (e.g. sun). A value of 50 or below is the limit for this glare case study and its application.

The seasonal average glare given all the variables for each position is shown in the last row and labeled as "AVG". **TABLE 12** is using lower range **(8% to 10%)** of reflectance of glass samples such as PPG Solar ban® 60 Low-E on clear and or PPG Solar ban® Z50. **TABLE 13** is using middle range reflectance **(11% to15%)** by Viracon® VE1_2M with its Low-E on clear and or PPG Solar ban® 72 Low-E. **TABLE 14** is using higher range reflectance **(16% to 20%)** by Guardian Neutral® 50 and or Guardian Neutral® 60 Glass samples. In this case or scenario, looking up or facing sun would equate to an "unbearable" glare condition. The clear day data shows a high correlation between CGI and the Incident Solar Angle (ISA). It is important to note that understanding the correlation among these measured quantities helps to identify the appropriate variables to be examined or measured during the evaluation of the luminous environment. For example, on a clear day the luminance of the glass could be predicted over 90 percent of the time if the incident surface luminance were measured at the glazing surface. The same approach was taken to examine the relation between the Glare Rating (GR) and the luminance of the glazing system. The CIE Glare rating was estimated under clear day conditions by knowing the luminance of the glass under the same sky conditions. This may not be significant for a given point but when the geometry of the building elevation is very complex given the latest tower design and the orientation of the tower; this would be a useful variable (so called "vital sign") in building site diagnostic. Similarly, the GRs were computed using the tilted and vertical illuminance; then correlated to the incident solar angles (ISA). The results show the high GR comes from the low solar altitudes or the higher ISA. See **Figures. 12 & 13**.

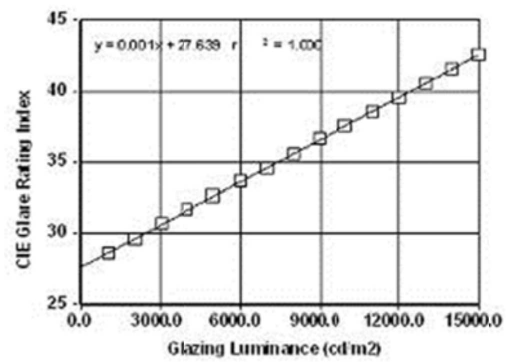


Figure - 12: The CIE Glare Rating Index vs. luminance from the glazing.

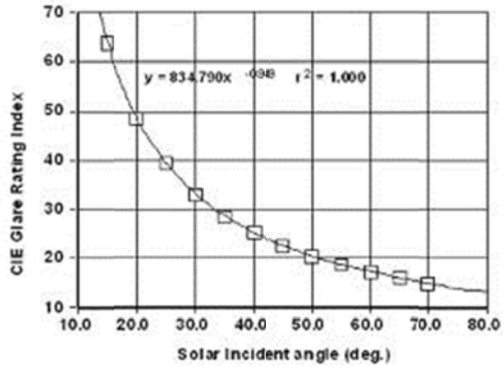


Figure -13: The CIE Glare Rating vs. solar incident angle.

The irradiance reaching the tower's exterior walls varies as a function of inter-reflection within the glazing surfaces. At the selected locations, the average CIE glare rating under clear skies varies from **13 (Minimum) to 64 (Maximum), (annual average 30 min and 44 max)** in the "disturbing" range as shown in **TABLE 9.** The proposed daylight glazing system is comprised of products from **Viracon or PPG and Guardian** industries. Some selected options has reduced the glare condition and brought the maximum glare rating from 64 which close to "disturbing" to 44 or below the **50 = *just admissible*** and or in some cases to acceptable level of **30 = noticeable**. However using glazing systems that do not exceed 15% visible reflectance would eliminate some of the major glare conditions and reduces the complexity of the elevation or curtain wall specifications. The CGI/GR calculation results are summarized for clear sky conditions for sun altitudes at peak seasonal conditions**.** **See TABLES 12, 13 and 14** for various glare results for a given viewing positions of the tower from various locations under different sun altitude position.

Findings: The on-site hourly weather data gave average horizontal illuminances that vary between 900 to 5000 dalux (fc) during the winter, reaching 8500 dalux (fc) in the summer. These are averages; hourly conditions could generate 8000 dalux (fc) or even more when internal inter-reflections occur. While the luminance and or illuminance levels reaching uncomfortable proportions for human vision, the irradiance levels are not producing any adverse effect on the vegetation if any nor increasing any large amount of cooling load at the adjacent properties specifically **locations 7, 8 and 9** as selected by the design team including roof surface for possible heat impact treatment. The data in this report is valuable information for users of the space and for future management of the spaces within the low rise area or at the ground levels or circulation areas. **Figures14 and 15** show the daylight and solar availability data and it distribution within the site in **Figure 16.**

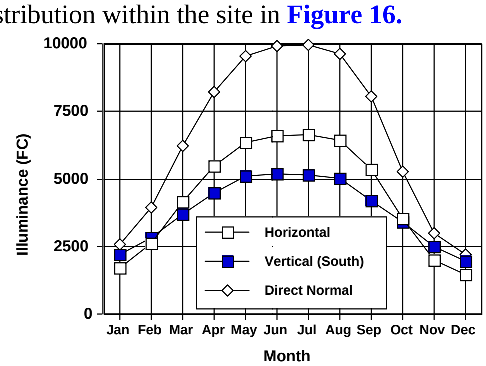


Figure -14: The daylight availability data of the location.

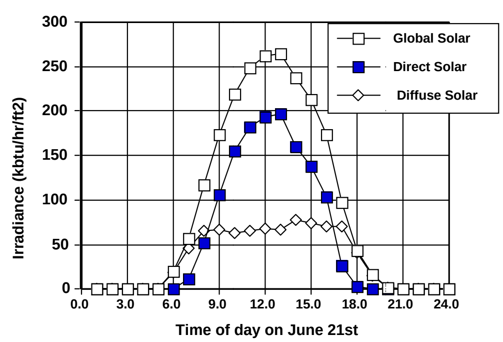


Figure - 15: The Solar availability data of the location.

The following sections summarize the major findings based on the analyses of the database using simulated data and the building architectural details. The careful integration of glazing system as a daylighting control system is an absolute must in transition areas between the main tower and the entry road to and within the site. This transition is particularly harsh at the **locations 2and 3** (see **Figures 5 & 6**)if facing the new tower during summer season, early morning and or afternoons while walking on specific pedestrian's path or driving toward the building.

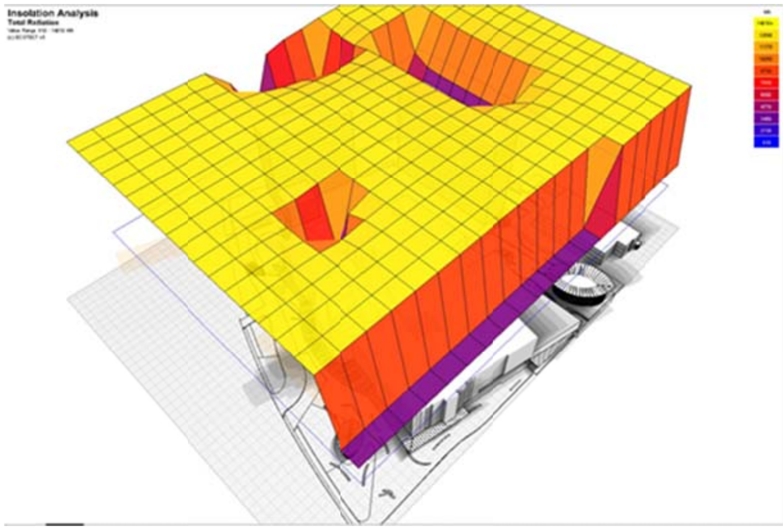


FIGURE - 16: Calculated results based on daylight & solar availability within the site.

The results show that there are major reflections and inter reflection condition created on the areas close to the tower during the summers with sun at high altitude positions. However; there are no major issues within the adjacent site and their boundaries given the proposed tower within the adjacent road leading toward this property. The proposed glazing system and its application in this building façade design will provide full compliance to the specific city code or ordinance for this site as mixed commercial site if any. **TABLE 10** shows the percent of the hours the Glare Rating exceeds the 50 = just admissible limits for annual and selected seasons**.** **TABLE 11** was generated using the hourly weather file and incorporating the measured and calculated data to show the percent of the hours, the glare rating exceed the 50= just admissible rating for each month and hours of the 21st day of the month. **TABLES 12, 13 and 14** show the same data for ease of interpretation or its application toward code compliance. In **TABLES 12, 13 and 14,** the **High, Mid and Low** refers to the positions on the elevation of the tower using the approximate floor levels as the ID or the cut off points for the viewing direction of the reflected glare source (e.g. sun) as shown **in Figures 5 (top view) and 6 (perspective view)**. A value of 50 or below is the limit for this case study application. The seasonal average glare taking all the required variables in to account for each position are shown for morning and afternoon conditions

TABLE 10: THE PERCENT OF THE HOURS THE GLARE RATING EXCEEDS THE 50 = JUST ADMISSIBLE LIMITS AS A FUNCTION OF SEASONS

Time	7-AM	8-AM	9-AM	10-AM	11-AM	NOON	1-PM	2-PM	3-PM	4-PM	5-PM	6-PM	7-PM
Annual AVG	32	23	22	18	14	11	7	7	13	18	23	28	5
Summer	43	32	31	30	26	21	12	12	25	32	36	40	12
Fall	27	19	17	12	8	6	4	4	7	12	19	24	1
Winter	20	15	13	9	4	3	3	3	3	4	11	16	0
Spring	36	27	27	22	18	13	7	9	15	24	29	33	6

TABLE 11: PERCENT OF THE HOURS THE GLARE RATING EXCEEDS THE **50 = JUST ADMISSIBLE** FOR CLEAR SKY CONDITION AS A FUNCTION OF MONTH & HOUR OF THE DAY.

MONTH/Hour	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
JAN	0	0	0	0	0	0	20	13	12	8	3	3	3	3	3	2	10	15	0	0	0	0	0	0
FEB	0	0	0	0	0	0	24	18	17	13	8	3	3	3	3	7	15	20	0	0	0	0	0	0
MAR	0	0	0	0	0	0	29	22	22	17	12	7	7	7	5	15	20	24	2	0	0	0	0	0
APR	0	0	0	0	0	5	37	28	27	22	18	12	5	5	15	22	29	34	5	0	0	0	0	0
MAY	0	0	0	0	2	#	42	32	32	27	23	20	10	15	27	34	37	39	10	0	0	0	0	0
JUN	0	0	0	0	5	#	44	32	33	32	28	22	13	17	29	34	37	42	13	5	0	0	0	0
JUL	0	0	0	0	2	#	44	33	30	30	25	23	15	12	24	32	37	42	15	3	0	0	0	0
AUG	0	0	0	0	0	7	42	30	28	27	25	18	8	7	22	29	34	37	8	0	0	0	0	0
SEP	0	0	0	0	0	2	34	25	23	18	15	8	2	2	12	20	24	32	2	0	0	0	0	0
OCT	0	0	0	0	0	0	27	18	17	12	7	7	7	7	5	12	20	24	0	0	0	0	0	0
NOV	0	0	0	0	0	0	20	13	10	7	3	3	3	3	3	5	12	17	0	0	0	0	0	0
DEC	0	0	0	0	0	0	17	13	10	7	2	2	2	2	2	2	7	15	0	0	0	0	0	0
ANNUAL	0	0	0	0	1	5	32	23	22	18	14	11	7	7	13	18	23	28	5	1	0	0	0	0

TABLE 12: GLARE RATING (GR) CALCULATIONS FOR CLEAR SKY CONDITION AS A FUNCTION OF VIEWING DIRECTION AND ORIENTATION USING LOWER RANGE **(8% - 10%)** REFLECTANCE GLASS SAMPLES SUCH AS PPG SOLAR BAN® 60 LOW-E ON CLEAR AND OR PPG SOLAR BAN® Z50. THE TIMES AND POSITIONS WITH NOTICEABLE GLARE SCALE RATING ARE IDENTIFIED IN **RED**.

June	Locations	Exterior	Exterior	Exterior	Interior	Interior	Exterior
	Viewer Direction	P1	P2	P3	P4	P5	P6
AM	TOP	45	30	60	60	60	30
	MID	32	42	42	42	42	30
	LOW	23	60	30	30	30	30
Noon	Viewer Direction	P1	P2	P3	P4	P5	P6
	TOP	18	30	60	18	30	42
	MID	30	42	42	30	42	36
	LOW	48	60	30	48	60	36
PM	Viewer Direction	P1	P2	P3	P4	P5	P6
	TOP	60	54	60	54	42	60
	MID	54	42	48	42	30	48
	LOW	42	30	36	30	18	36
SEP	Viewer Direction	P1	P2	P3	P4	P5	P6
AM	TOP	32	21	42	42	42	21
	MID	24	32	32	32	32	23
	LOW	17	45	23	23	23	23
Noon	Viewer Direction	P1	P2	P3	P4	P5	P6
	TOP	13	21	42	13	21	29
	MID	23	32	32	23	32	27
	LOW	36	45	23	36	45	27
PM	Viewer Direction	P1	P2	P3	P4	P5	P6
	TOP	42	38	42	38	29	42
	MID	41	32	36	32	23	36
	LOW	32	23	27	23	14	27
DEC	Viewer Direction	P1	P2	P3	P4	P5	P6
AM	TOP	27	18	36	36	36	18
	MID	19	25	25	25	25	18
	LOW	14	36	18	18	18	18
Noon	Viewer Direction	P1	P2	P3	P4	P5	P6
	TOP	11	18	36	11	18	25
	MID	18	25	25	18	25	22
	LOW	29	36	18	29	36	22
PM	Viewer Direction	P1	P2	P3	P4	P5	P6
	TOP	36	32	36	32	25	36
	MID	32	25	29	25	18	29
	LOW	25	18	22	18	11	22
	AVG	30	34	35	31	31	30

NOTE: These conditions hold true given the current proposed tower heights their building geometry configurations as designed with a selected glazing system and their curtain walls design specifications (below 50% WWR) for all tower elevations and the street landscape adjacent to the side roads.

TABLE 13: GLARE RATING (GR) CALCULATIONS FOR CLEAR SKY CONDITION AS A FUNCTION OF VIEWING DIRECTION AND ORIENTATION USING MIDDLE RANGE REFLECTANCE **(11% - 15%)** BY VIRACON® VE1_2M LOW-E ON CLEAR AND OR PPG SOLAR BAN® 72 LOW-E THE TIMES AND POSITIONS WITH NOTICEABLE GLARE SCALE RATING ARE IDENTIFIED IN **RED**

June	Locations	Exterior	Exterior	Exterior	Interior	Interior	Exterior
	Viewer'Direction	P1	P2	P3	P4	P5	P6
AM	TOP	48	32	64	64	64	32
	MID	33	45	45	45	45	32
	LOW	24	64	32	32	32	32
Noon	Viewer'Direction	P1	P2	P3	P4	P5	P6
	TOP	19	32	64	19	32	45
	MID	32	45	45	32	45	38
	LOW	51	64	32	51	64	38
PM	Viewer'Direction	P1	P2	P3	P4	P5	P6
	TOP	64	57	64	57	45	64
	MID	57	45	51	45	32	51
	LOW	45	32	38	32	19	38
SEP	Viewer'Direction	P1	P2	P3	P4	P5	P6
AM	TOP	33	22	45	45	45	22
	MID	25	33	33	33	33	24
	LOW	18	48	24	24	24	24
Noon	Viewer'Direction	P1	P2	P3	P4	P5	P6
	TOP	13	22	45	13	22	31
	MID	24	33	33	24	33	29
	LOW	38	48	24	38	48	29
PM	Viewer'Direction	P1	P2	P3	P4	P5	P6
	TOP	45	40	45	40	31	45
	MID	43	33	38	33	24	38
	LOW	33	24	29	24	14	29
DEC	Viewer'Direction	P1	P2	P3	P4	P5	P6
AM	TOP	29	19	38	38	38	19
	MID	20	27	27	27	27	19
	LOW	14	38	19	19	19	19
Noon	Viewer'Direction	P1	P2	P3	P4	P5	P6
	TOP	11	19	38	11	19	27
	MID	19	27	27	19	27	23
	LOW	31	38	19	31	38	23
PM	Viewer'Direction	P1	P2	P3	P4	P5	P6
	TOP	38	34	38	34	27	38
	MID	34	27	31	27	19	31
	LOW	27	19	23	19	11	23
	AVG	32	36	37	32	32	32

NOTE: These conditions hold true given the current proposed tower heights their building geometry configurations as designed with a selected glazing system and their curtain walls design specifications (below 50% WWR) for all tower elevations and the street landscape adjacent to the side roads.

TABLE 14: GLARE RATING (GR) CALCULATIONS FOR CLEAR SKY CONDITION AS A FUNCTION OF VIEWING DIRECTION AND ORIENTATION USING HIGHER RANGE REFLECTANCE **(16% - 20%)** BY GUARDIAN NEUTRAL® 50 AND OR GUARDIAN NEUTRAL® 60 GLASS SAMPLES. THE TIMES AND POSITIONS WITH NOTICEABLE GLARE SCALE RATING ARE IDENTIFIED IN **RED**

June	Locations	Exterior	Exterior	Exterior	Interior	Interior	Exterior
	Viewer'Direction	**P1**	**P2**	**P3**	**P4**	**P5**	**P6**
AM	TOP	51	34	68	68	68	34
	MID	35	47	47	47	47	34
	LOW	25	68	34	34	34	34
Noon	Viewer'Direction	**P1**	**P2**	**P3**	**P4**	**P5**	**P6**
	TOP	20	34	68	20	34	47
	MID	34	47	47	34	47	41
	LOW	54	68	34	54	68	41
PM	Viewer'Direction	**P1**	**P2**	**P3**	**P4**	**P5**	**P6**
	TOP	68	61	68	61	47	68
	MID	61	47	54	47	34	54
	LOW	47	34	41	34	20	41
SEP	Viewer'Direction	**P1**	**P2**	**P3**	**P4**	**P5**	**P6**
AM	TOP	35	24	47	47	47	24
	MID	27	35	35	35	35	25
	LOW	19	51	25	25	25	25
Noon	Viewer'Direction	**P1**	**P2**	**P3**	**P4**	**P5**	**P6**
	TOP	14	24	47	14	24	33
	MID	25	35	35	25	35	30
	LOW	41	51	25	41	51	30
PM	Viewer'Direction	**P1**	**P2**	**P3**	**P4**	**P5**	**P6**
	TOP	47	43	47	43	33	47
	MID	46	35	41	35	25	41
	LOW	35	25	30	25	15	30
DEC	Viewer'Direction	**P1**	**P2**	**P3**	**P4**	**P5**	**P6**
AM	TOP	30	20	41	41	41	20
	MID	21	28	28	28	28	20
	LOW	15	41	20	20	20	20
Noon	Viewer'Direction	**P1**	**P2**	**P3**	**P4**	**P5**	**P6**
	TOP	12	20	41	12	20	28
	MID	20	28	28	20	28	24
	LOW	32	41	20	32	41	24
PM	Viewer'Direction	**P1**	**P2**	**P3**	**P4**	**P5**	**P6**
	TOP	41	36	41	36	28	41
	MID	36	28	32	28	20	32
	LOW	28	20	24	20	12	24
	AVG	34	38	40	34	34	34

NOTE: These conditions hold true given the current proposed tower heights their building geometry configurations as designed with a selected glazing system and their curtain walls design specifications (below 50% WWR) for all tower elevations and the street landscape adjacent to the side roads.

TABLE 15: AVERGAE ANNUAL GLARE RATING (GR) CALCULATIONS FOR CLEAR SKY CONDITION AS A FUNCTION OF VIEWING DIRECTION AND ORIENTATION USING BUILDING GEOMETRY CONFIGURATIONS AS DESIGNED WITH A SELECTED GLAZING SYSTEMS AND THEIR CURTAIN WALLS DESIGN SPECIFICATIONS FOR WWR AS STATED BELOW.

Average Annual Glare at the Locations	Exterior	Exterior	Exterior	Interior	Interior	Exterior
Viewer'Direction	P1	P2	P3	P4	P5	P6
VE1-2M with over 50% WWR	38	42	44	38	38	38
PPG Solar Ban 72 at 35% WWR	30	34	35	31	31	30
VE1-2M at 35% WWR	32	36	37	32	32	32
Guardian Neutral 61 at 35% WWR	34	38	40	34	34	34

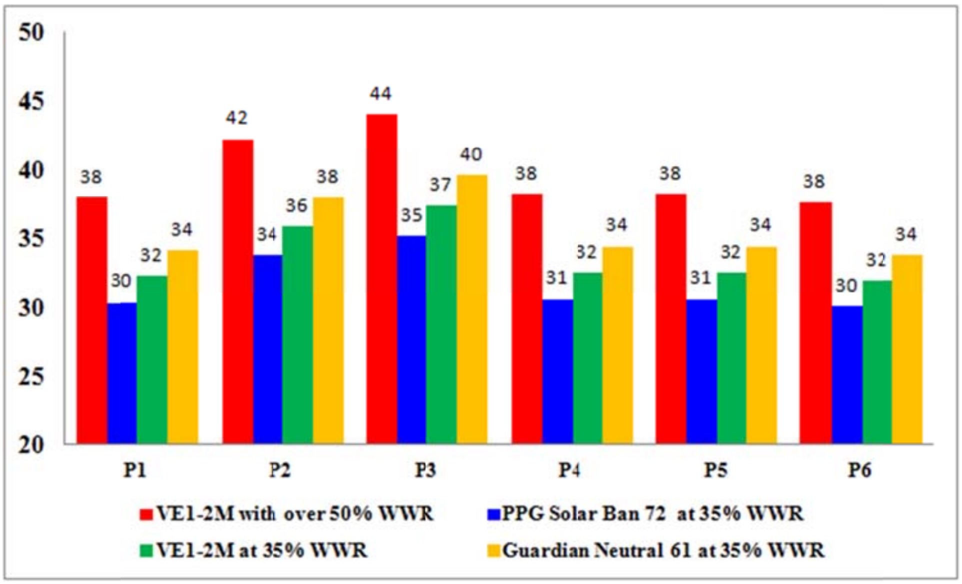


FIGURE 17: AVERGAE ANNUAL GLARE RATING (GR) CALCULATIONS FOR CLEAR SKY CONDITION UTILIZING ALL GLASS TYPES AND WWR AT 35% RATIOS

Conclusions: Given the stated criteria for glare and solar heat gain for this project within the this report ; the latest building design scheme and facade geometry **dated July 3rd, 2013** with specification of window to wall ratios (WWR) in range of 35% to 50%, along with the use of recommended glass from Viracon,VE1-2M with low-e on clear or PPG, Solar ban z50 or Guardian Neutral 61 coatings, as possible glazing system options allow **the Landmark Center Project site to comply fully with all requirements for glare free environment with no adverse thermal impact**.

NOTE: The L-Shape building within latest **design scheme dated July 3rd** creates high levels of solar and visible inter-reflections within limited times and selected days in a given season over the upper level offices that are facing the tower or spaces close to the windows within the existing Sears office building. The proposed tower design does require implementation of additional design solutions such as anti-reflective coating on selected glazing with a given elevation and high reflective coating on the roof surface only for areas exposed to high solar concentration over the duration of spring summer and fall seasons **(see Figures 7 , 8 and appendix C)** as part of a permanent or long term solutions (See text below for recommendations #6 and #7) to reduce the reflected solar glare and heat gain in case of proposed facades design with specification of **WWR exceeding 50%.**

The spectral characteristics of these selected glass samples were measured and used as an input to the simulation model. The glare conditions created at the site using glass with outwardly visible reflectance below 15% for a double glazing system composite are within admissible range; however, the glare conditions due to the use of glass with reflectance above 15% are not fully in compliance with visual comfort. Although the glare criterion is subjective; the heat gain or solar reflectance are measurable or quantifiable for this application. The uniform or even distribution of sun light on a clear day has expanded and/or reflected azimuthally to wider areas on the surrounding spaces along the site given the new tower design (e.g., within the boundary of the proposed new buildings within the site and the adjacent properties). The results indicate that there are no adverse impacts on surrounding spaces due to reflected sun light under the stated conditions as shown below. The results show that there are no adverse thermal or visual impacts on the surrounding spaces and or specifically selected points of interest by the design team using glass types with an outwardly visible reflectance below 15% and solar reflectance NOT exceeding 35% given the following conditions (see items #1 to #5). These conditions hold true given the current proposed tower heights their building geometry configurations as designed with a selected glazing system (below 15% reflectance) and their curtain walls design specifications (below 50% WWR) for all tower elevations and the street landscape adjacent to the side roads.

1) The proposed <u>new tower(s) within the site</u> will not produce reflected illumination or sky-reflected glare or direct illumination across any lot line from a visible source of illumination of such intensity to cause <u>visual discomfort to pedestrian traffic (public walking)</u> on the adjacent property or within the property (e.g. pedestrians or building occupants entering and leaving the building site or the regular employees / public during regular daytime working hours).

2) The proposed <u>new tower(s) within the site</u> will not produce reflected illumination or sky-reflected glare or direct illumination across any lot line from a visible source of illumination of such intensity to cause visual discomfort to pedestrians or building occupants entering and leaving the building site <u>using cars</u> and should not have <u>visual discomfort problems</u> such as <u>the traffic hazard</u> or detract from the use or enjoyment of adjacent surrounding property.

3) <u>The towers' glazing system</u> and all building exterior surfaces with the selected glazing material utilizing the proposed facades design with specification (current glass options with reflectance not exceeding 15% an outwardly visible reflectance and 35% solar reflectance) do not have adverse impacts on surrounding uses, such as <u>increasing the cooling loads</u> of the structures upon which they reflect heat under city of Boston solar, daylight availability and climatic conditions.

4) <u>The towers' glazing system</u> and all building exterior surfaces with the selected glazing material utilizing the proposed facades design with specification (current glass options with reflectance is not exceeding 15% an outwardly and 35% solar reflectance) do not have adverse impacts on surrounding <u>vegetation or plants within and or the adjacent property if any</u> under city of Boston solar, daylight availability and climatic conditions.

5) Given the above criteria and the latest building design and facade geometry dated July 3rd, 2013 along with specification of WWR in range of 35% to 50% WWR, the <u>Viracon, VE1-2M with low-e on clear or PPG, Solar ban z50 or Guardian Neutral 61</u> coating would be the possible options among all glazing choices on the use of double glazing system composites that <u>fully</u> comply with all requirements for glare free environment with no adverse thermal impact due to glass visible and solar reflectance.

The overall glare and thermal conditions will increased by 12% and 8% respectively for the latest building design and facade geometry dated July 3rd, 2013 in cases of façade design changes with WWR above 50%. More detail analysis are needed per new design options on use of specific glass to be selected outside of the recommended options or different from the current specifications or tolerances for visible reflectance (VR%) and or solar reflectance, (SR%) and or variation of window to wall ratios (WWR) for selected façade due to desire for design esthetic, occupants' view or privacy for this scheme to meet the Clint's expectation for the desired total net floor areas.

6) SCHOTT AMIRAN® anti-reflective glass products or equivalent is recommended on selected facades only in case of proposed facades design with specification of **WWR exceeding 50%.**

7) Nansulate® Translucent for high Heat and high performance protective thermal insulation & corrosion prevention coating are recommended for roof surfaces only in case of proposed facades design with specification of **WWR exceeding 50%.**

Note: list of selected manufacture web sites to be used by the ELKUS MANFREDI ARCHITECTS' design team.

1) http://www.viracon.com/index.php?option=com_viracon&category=39;
2) http://www.na.en.sunguardglass.com/SunguardProducts/IS20/index.htm;
3) http://glassconfigurator.ppg.com/,
4) http://www.us.schott.com/architecture/english/products/anti-reflective-glass/amiran.html,
5) http://www.nansulate.com/nansulate_translucent_HH.htm,

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1. Crouch C.L. "Derivation, Background and Use of the Scissors Curve," *Illuminating. Eng.*, Vol. LX, No. 6. pp. 399-402, June 1965.
2. Harrison, W. and P. Meaker. "Glare Factors," GE Publication, No. LS - 108, April 1947.
3. Philips Engineering Report, Lighting."The European Glare Limiting Method," Eng. Report, No. 4, April 1972.
4. CIE Publication No 29/2. "Guide on Interior Lighting."
5. Fischer, D. TC 3-13 Report, First Draft. Chapter 4 "Unified Glare Rating Curves," March 1989.
6. Commission International de I ‘Eclairage, ClE Publication No. 28. "The lighting of sports events for color television broadcasting," 1975. See Ref No.3.
7. CIE Publication No. 67. "Guide for Photometric specification and measurements for sports lighting installations," 1986.
8. CIE Publication No. 83, Technical Report. "Guide for the lighting for sports events for color television and film systems," 1989.
9. CIE Publication No.42. "Lighting for Tennis," 1978.
10. CIBSE Lighting Guide for Sports LG4, 1990.
11. CIE Publication, Technical Report-Technical Committee 5-4. "Glare evaluation system for outdoor sporting and area lighting," (draft).
12. Yu Li-hua and Shen Ying-Jiu, "The application of CGI Glare Index on Computers," Proceeding of the Lux, Pacifica, Lighting Conference, Bangkok, December 1993.
13. Poulton Kelvin. "The development of a CIE Glare Evaluation procedure - The Unified Glare Rating System," Proceeding of the Lux, Pacifica, Lighting Conference, Bangkok, December 1993.
14. Gulati, V.C. "Glare Assessment in Sport Lighting-A new Approach," Proceeding of the Lux Pacifica, Lighting Conference, Bangkok, December 1993.
15. Aldworth, J.R., Hugill and C. Hunt. "Modern Trends in floodlighting Sport Facilities," Proceeding of the Lux, Pacifica, Lighting Conference, Bangkok, December 1993.
16. CIE Publication, Technical Report -.55,"Discomfort Glare in the Working Environment" TC-3.4, 1983.
17. Hargroves R.A., I.C. Henry and Trezzi. "Glare Evaluation of Tennis Court Floodlighting," Lighting Research Technology, 18(4), pp. 157, (1986).
18. Hargroves R A, J R Hugill, and G Leslie. "Low Mounted Floodlighting for Club Tennis Courts," Thorn Lighting Ltd., (1992).
19. Love, J., M. Navvab. "Application of (V/H Ratio) a New Daylight Performance Indicator," *Journal of the Illuminating Engineering Society* (August 1994):50-61.
20. Navvab, M. and P. Chutiman. "Application of the New Standards for the Evaluation of Daylight and Solar Availability Measurements," *Journal of the Illuminating Engineering Society* (August 1995):113-130.
21. Navvab, M. "Scale Model Photometry Techniques Under Simulated Sky Conditions" Presented at the IESNA Annual Conference, New York, N.Y., August 1-4, 1995.
22. Navvab, M., M. Siminovitch., and J. Love. "Variability of Daylight in Luminous Environment," Presented at the IESNA Annual Conference, New York, N.Y., August 1-4, 1995.

Appendix A: **Weather Summary and Solar Geometry**

Psychometric chart and comfort analysis based on the hourly weather file data for the location
Solar Geometry for Summer
Solar Geometry for Spring/Fall
Solar Geometry for Winter
Monthly average incident solar radiation on horizontal and vertical surfaces (Btus/sq-ft./day)
Dry Bulb & Wet Bulb temperature based on the hourly weather file data for the location
Average temperature and radiation based on the hourly weather file data for the location
Global and direct solar radiation based on the hourly weather file data for the location
Sun charts and shade schedule based on the hourly weather file data for the location
(June 21st through December 21st)

Appendix B: Solar Heat Gain

The total solar irradiance (insolations) as cumulative incident irradiance-hours (Watt-Hours)

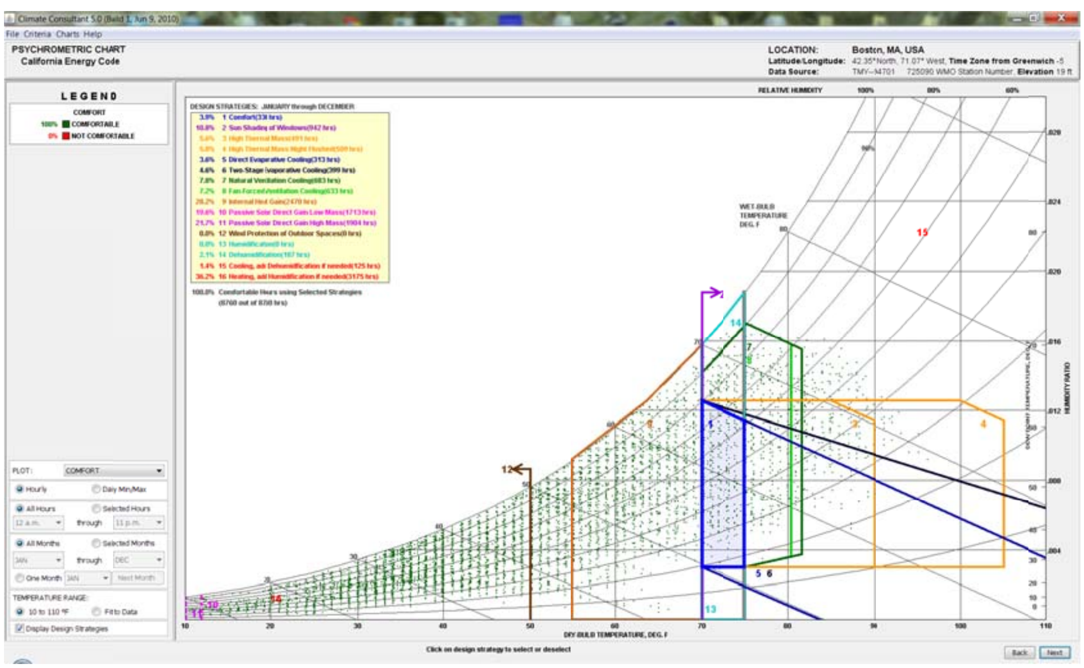
Appendix C: Calculated Surface Reflection at AM and Noon

Figure -1: Surface Reflection distributions for all seasons at specific time within the site for June, Sep and December **AM** only, given viewing **direction 1**
Figure -2: Surface Reflection distributions for all seasons at specific time within the site for June, Sep and December **AM** only, given viewing **direction 2**
Figure -3: Surface Reflection distributions for all seasons at specific time within the site for June, Sep and December **AM** only, given viewing **direction 3**
Figure -4: Surface Reflection distributions for all seasons at specific time within the site for June, Sep and December **Noon** only, given viewing **direction 1**
Figure -5: Surface Reflection distributions for all seasons at specific time within the site for June, Sep and December **Noon** only, given viewing **direction 2**
Figure -6: Surface Reflection distributions for all seasons at specific time within the site for June, Sep and December **Noon** only, given viewing **direction 3**
Figure -7: Surface Reflection distributions for all seasons at specific time within the site for June, Sep and December **PM** only, given viewing **direction 1**
Figure -8: Surface Reflection distributions for all seasons at specific time within the site for June, Sep and December **PM** only, given viewing **direction 2**
Figure -9: Surface Reflection distributions for all seasons at specific time within the site for June, Sep and December **PM** only, given viewing **direction 3**

Appendix A: Solar Geometry and Local Weather Data- Boston, MA.

The Solar Glare Analysis within the Landmark Center Project in Boston, Massachusetts
for City Code Ordinance Compliance

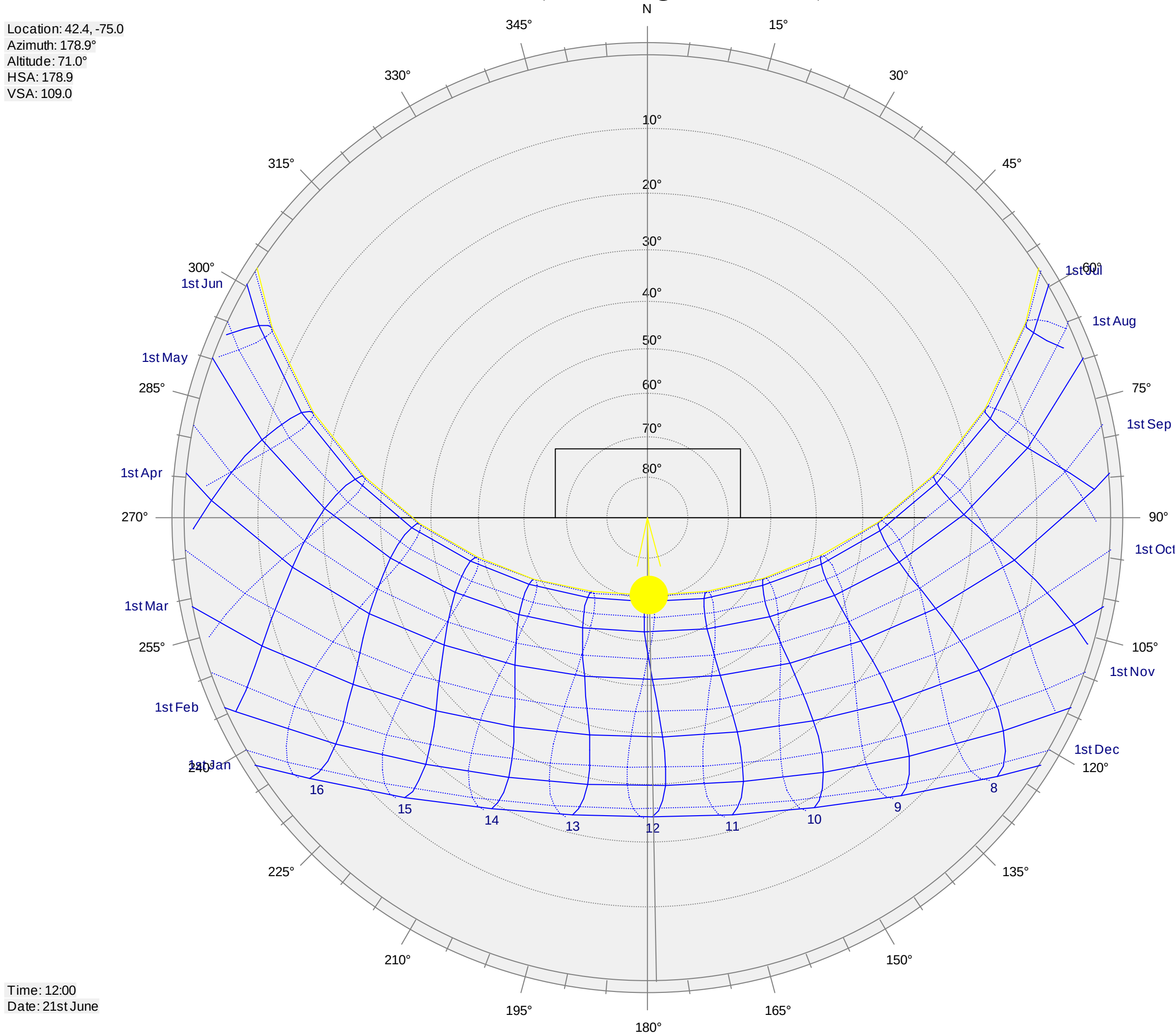
Local weather data summary with respect to solar and daylight availability and dry bulb and wet bulb temperature along with computed comfort chart utilizing psychometric chart are shown with the following figures



Psychometric chart and comfort analysis based on the hourly weather file data

Appendix A: Solar Geometry and Local Weather Data- Boston, MA.

for the location (Jan through December)

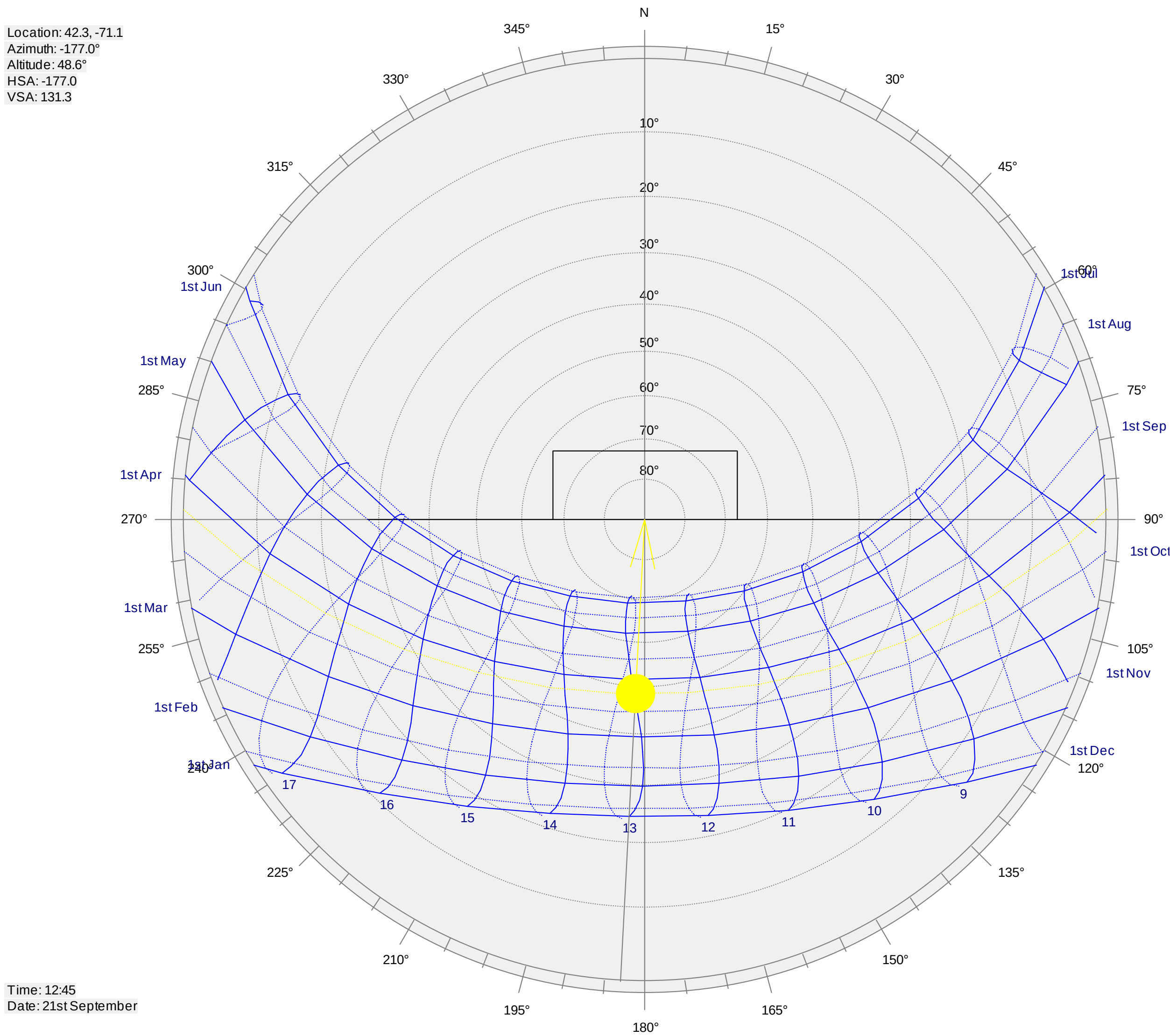


Latitude: 42.3°
Longitude: -71.1°
Local Correction: -45.9 mins
Local Sunrise: 05:12
Local Sunset: 20:18

Date: 21st June
Julian Date: 172
Equation of Time: -1.6 mins
Declination: 23.4°
Orientation: 0.0°

Local	(Solar)	Aziumuth	Altitude	HSA	VSA
05:30	(04:44)	60.3°	2.7°	60.3°	5.5°
06:00	(05:14)	65.1°	7.7°	65.1°	17.7°
06:30	(05:44)	69.8°	12.8°	69.8°	33.3°
07:00	(06:14)	74.4°	18.0°	74.4°	50.4°
07:30	(06:44)	79.0°	23.4°	79.0°	66.2°
08:00	(07:14)	83.6°	28.9°	83.6°	78.6°
08:30	(07:44)	88.4°	34.4°	88.4°	87.7°
09:00	(08:14)	93.6°	40.0°	93.6°	94.2°
09:30	(08:44)	99.2°	45.5°	99.2°	98.9°
10:00	(09:14)	105.6°	50.9°	105.6°	102.3°
10:30	(09:44)	113.1°	56.1°	113.1°	104.8°
11:00	(10:14)	122.4°	61.0°	122.4°	106.5°
11:30	(10:44)	134.3°	65.4°	134.3°	107.7°
12:00	(11:14)	149.7°	68.8°	149.7°	108.5°
12:30	(11:44)	168.9°	70.8°	168.9°	108.9°
13:00	(12:14)	-170.1°	70.9°	-170.1°	108.9°
13:30	(12:44)	-150.7°	69.0°	-150.7°	108.5°
14:00	(13:14)	-135.0°	65.6°	-135.0°	107.8°
14:30	(13:44)	-123.0°	61.3°	-123.0°	106.6°
15:00	(14:14)	-113.6°	56.4°	-113.6°	104.9°
15:30	(14:44)	-106.0°	51.2°	-106.0°	102.5°
16:00	(15:14)	-99.5°	45.8°	-99.5°	99.1°
16:30	(15:44)	-93.9°	40.3°	-93.9°	94.5°
17:00	(16:14)	-88.7°	34.8°	-88.7°	88.1°
17:30	(16:44)	-83.9°	29.2°	-83.9°	79.2°
18:00	(17:14)	-79.2°	23.7°	-79.2°	67.0°
18:30	(17:44)	-74.7°	18.3°	-74.7°	51.4°
19:00	(18:14)	-70.1°	13.1°	-70.1°	34.3°
19:30	(18:44)	-65.4°	7.9°	-65.4°	18.5°
20:00	(19:14)	-60.6°	3.0°	-60.6°	6.1°

Appendix A: Solar Geometry and Local Weather Data- Boston, MA.

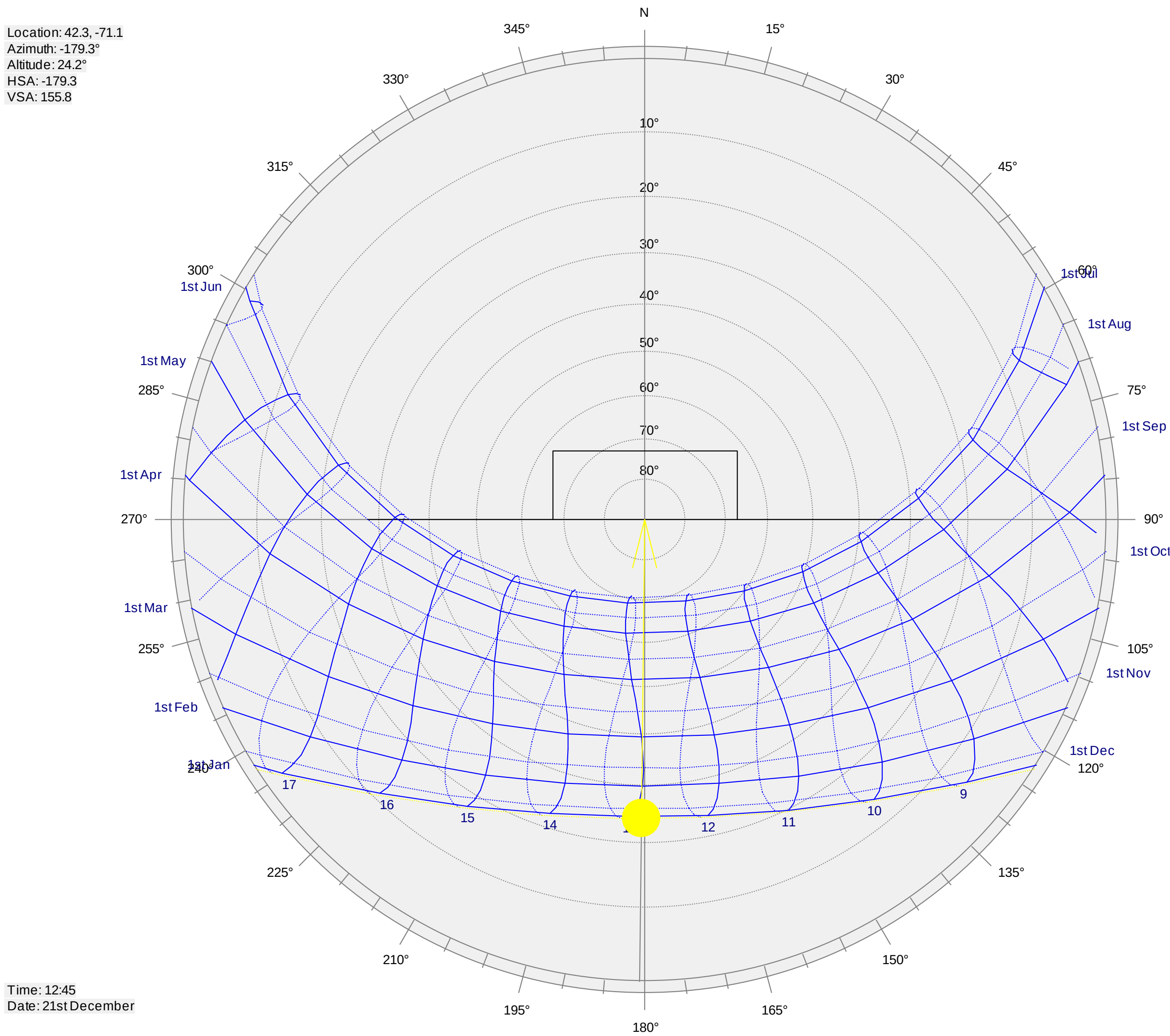


Latitude: 42.3°
Longitude: -71.1°
Local Correction: -37.5 mins
Local Sunrise: 06:33
Local Sunset: 18:41

Date: 21st September
Julian Date: 264
Equation of Time: 6.9 mins
Declination: 1.0°
Orientation: 0.0°

Local	(Solar)	Aziumuth	Altitude	HSA	VSA
07:00	(06:22)	93.1°	4.8°	93.1°	122.4°
07:30	(06:52)	98.2°	10.3°	98.2°	128.0°
08:00	(07:22)	103.5°	15.8°	103.5°	129.5°
08:30	(07:52)	109.1°	21.1°	109.1°	130.2°
09:00	(08:22)	115.0°	26.3°	115.0°	130.6°
09:30	(08:52)	121.5°	31.1°	121.5°	130.9°
10:00	(09:22)	128.7°	35.7°	128.7°	131.0°
10:30	(09:52)	136.6°	39.8°	136.6°	131.1°
11:00	(10:22)	145.5°	43.3°	145.5°	131.2°
11:30	(10:52)	155.3°	46.0°	155.3°	131.3°
12:00	(11:22)	166.0°	47.8°	166.0°	131.3°
12:30	(11:52)	177.2°	48.7°	177.2°	131.3°
13:00	(12:22)	-171.5°	48.4°	-171.5°	131.3°
13:30	(12:52)	-160.5°	47.0°	-160.5°	131.3°
14:00	(13:22)	-150.3°	44.7°	-150.3°	131.2°
14:30	(13:52)	-140.9°	41.6°	-140.9°	131.2°
15:00	(14:22)	-132.5°	37.8°	-132.5°	131.1°
15:30	(14:52)	-125.0°	33.5°	-125.0°	131.0°
16:00	(15:22)	-118.2°	28.7°	-118.2°	130.7°
16:30	(15:52)	-112.0°	23.7°	-112.0°	130.4°
17:00	(16:22)	-106.2°	18.5°	-106.2°	129.9°
17:30	(16:52)	-100.8°	13.1°	-100.8°	128.9°
18:00	(17:22)	-95.6°	7.6°	-95.6°	126.3°
18:30	(17:52)	-90.5°	2.0°	-90.5°	104.5°

Appendix A: Solar Geometry and Local Weather Data- Boston, MA.

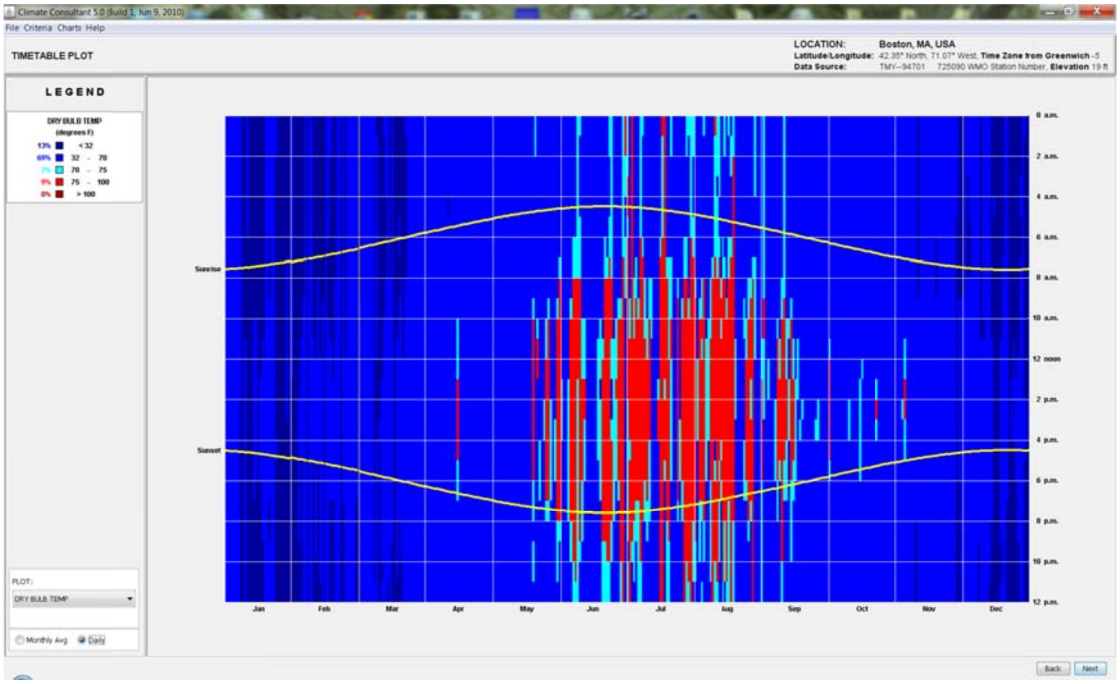


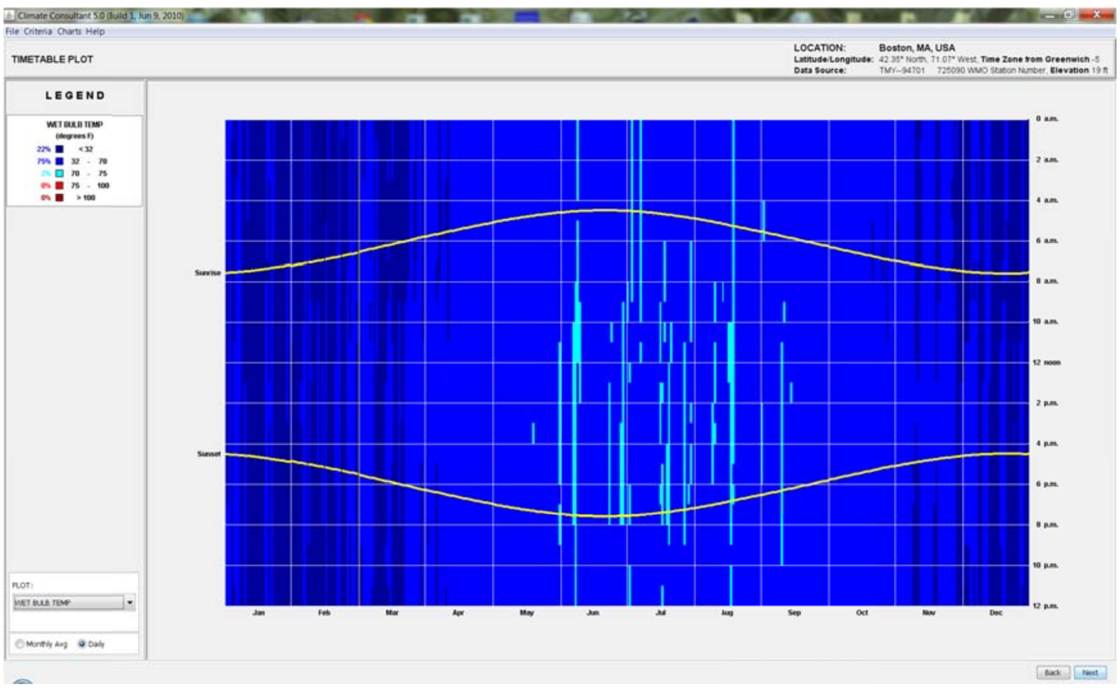
Latitude: 42.3°
Longitude: -71.1°
Local Correction: -42.3 mins
Local Sunrise: 08:15
Local Sunset: 17:09

Date: 21st December
Julian Date: 355
Equation of Time: 2.1 mins
Declination: -23.5°
Orientation: 0.0°

Local	(Solar)	Aziumuth	Altitude	HSA	VSA
08:30	(07:47)	125.1°	2.2°	125.1°	176.1°
09:00	(08:17)	130.4°	6.6°	130.4°	169.8°
09:30	(08:47)	136.0°	10.7°	136.0°	165.3°
10:00	(09:17)	142.0°	14.3°	142.0°	162.1°
10:30	(09:47)	148.3°	17.5°	148.3°	159.7°
11:00	(10:17)	155.1°	20.1°	155.1°	158.0°
11:30	(10:47)	162.1°	22.1°	162.1°	156.9°
12:00	(11:17)	169.4°	23.5°	169.4°	156.1°
12:30	(11:47)	176.9°	24.2°	176.9°	155.8°
13:00	(12:17)	-175.6°	24.1°	-175.6°	155.8°
13:30	(12:47)	-168.1°	23.3°	-168.1°	156.2°
14:00	(13:17)	-160.8°	21.8°	-160.8°	157.0°
14:30	(13:47)	-153.8°	19.7°	-153.8°	158.3°
15:00	(14:17)	-147.2°	16.9°	-147.2°	160.1°
15:30	(14:47)	-140.9°	13.7°	-140.9°	162.6°
16:00	(15:17)	-135.0°	10.0°	-135.0°	166.0°
16:30	(15:47)	-129.4°	5.9°	-129.4°	170.8°
17:00	(16:17)	-124.1°	1.4°	-124.1°	177.5°

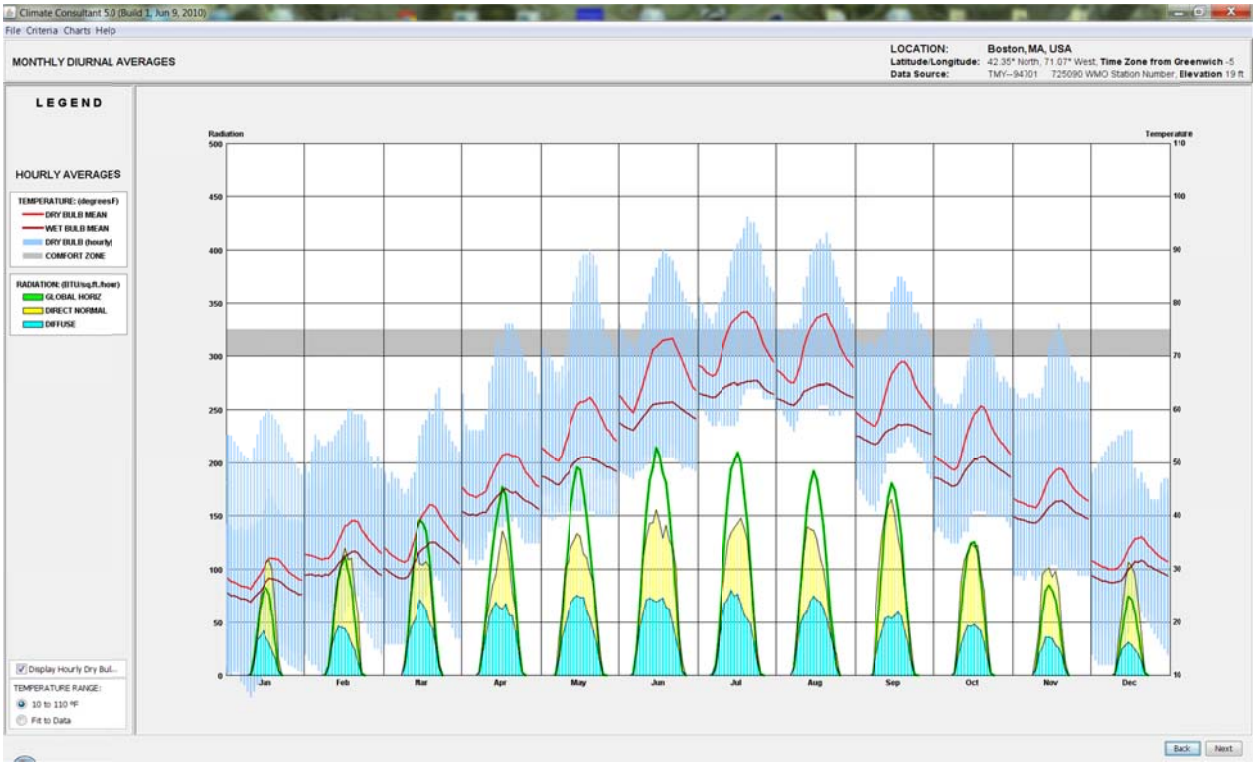
Appendix A: Solar Geometry and Local Weather Data- Boston, MA.

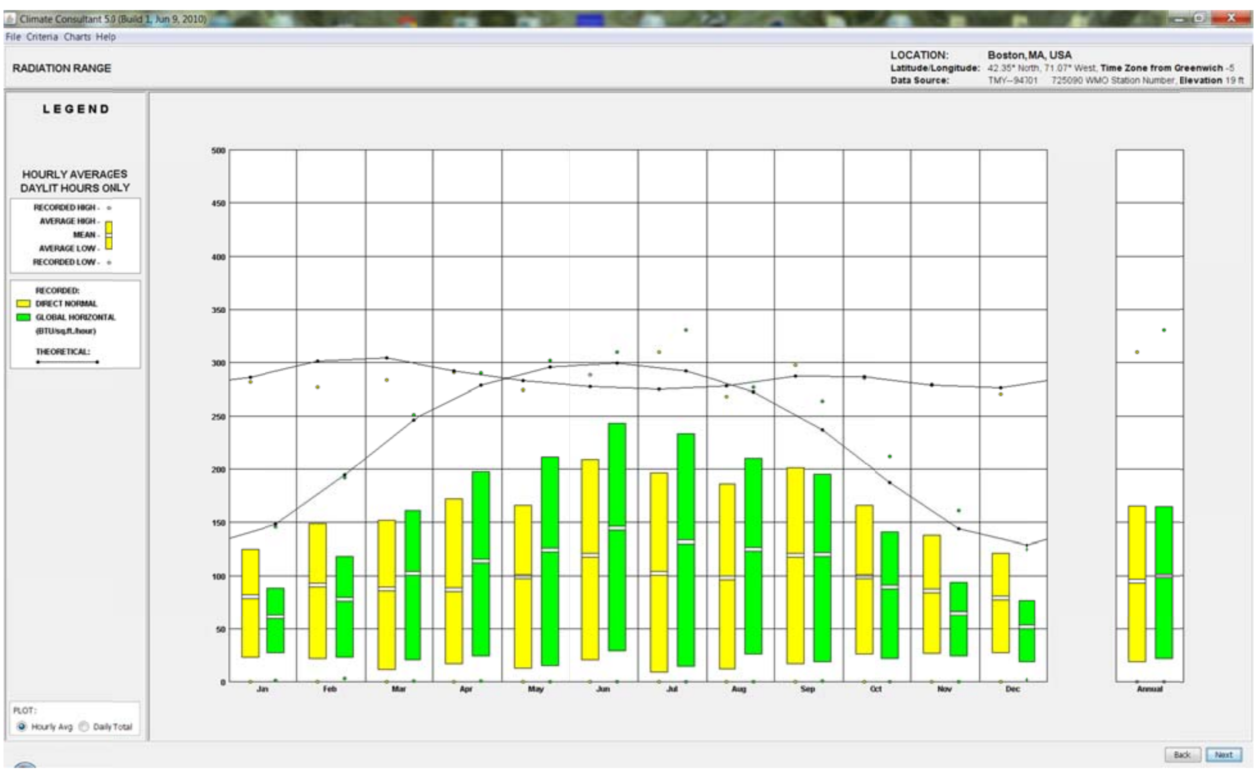




Dry Bulb & Wet Bulb temperature based on the hourly weather file data for the location

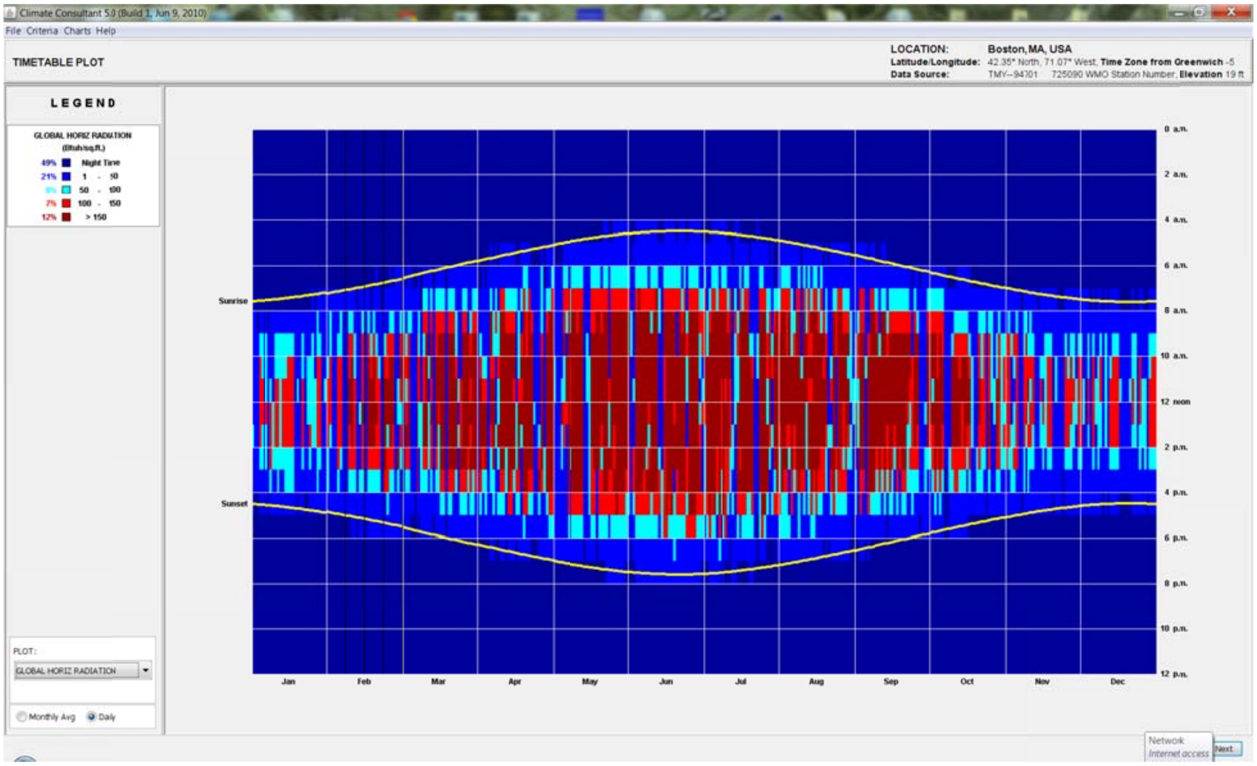
Appendix A: Solar Geometry and Local Weather Data- Boston, MA.

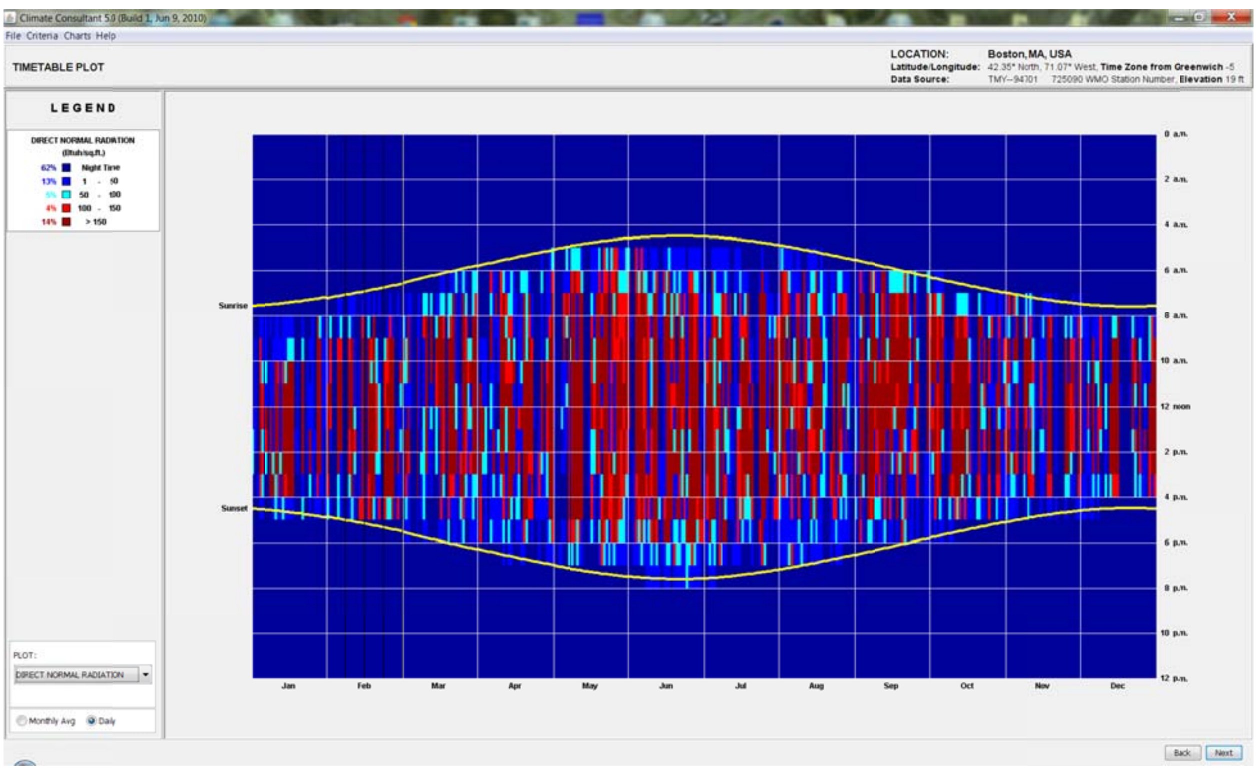




Average temperature and radiation based on the hourly weather file data for the location

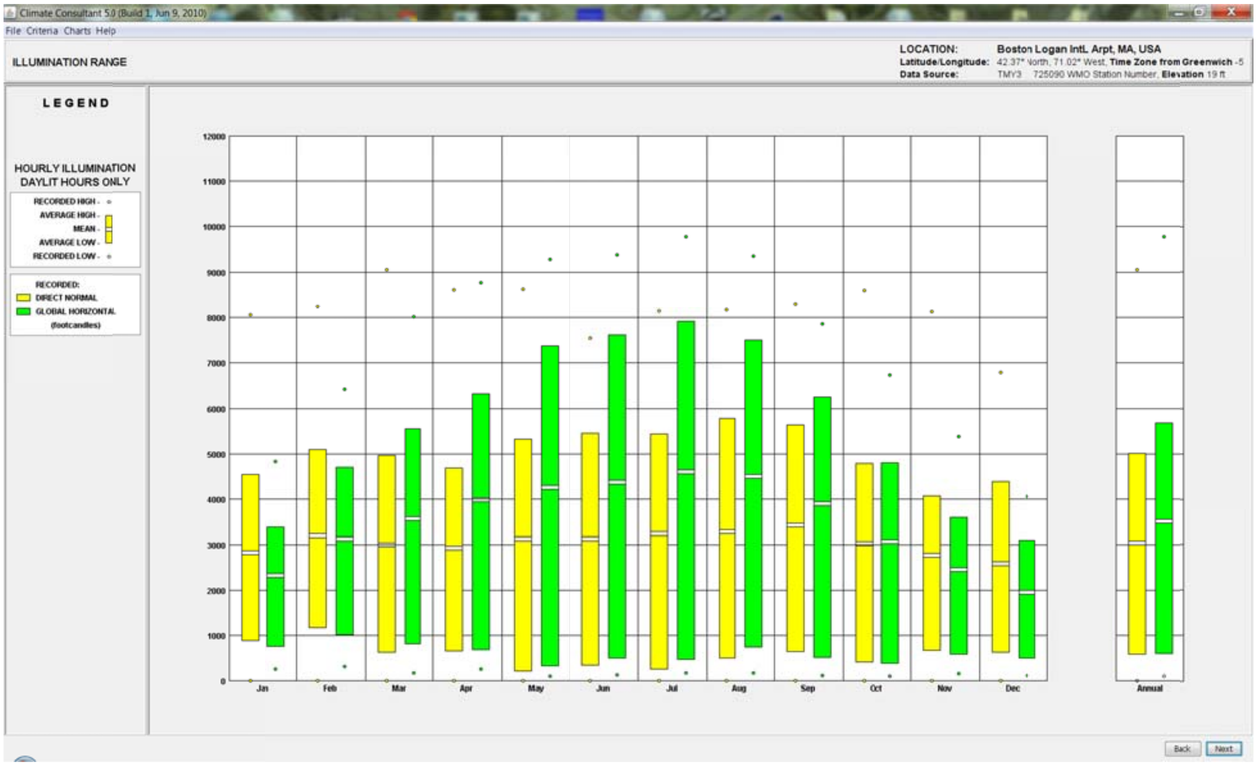
Appendix A: Solar Geometry and Local Weather Data- Boston, MA.

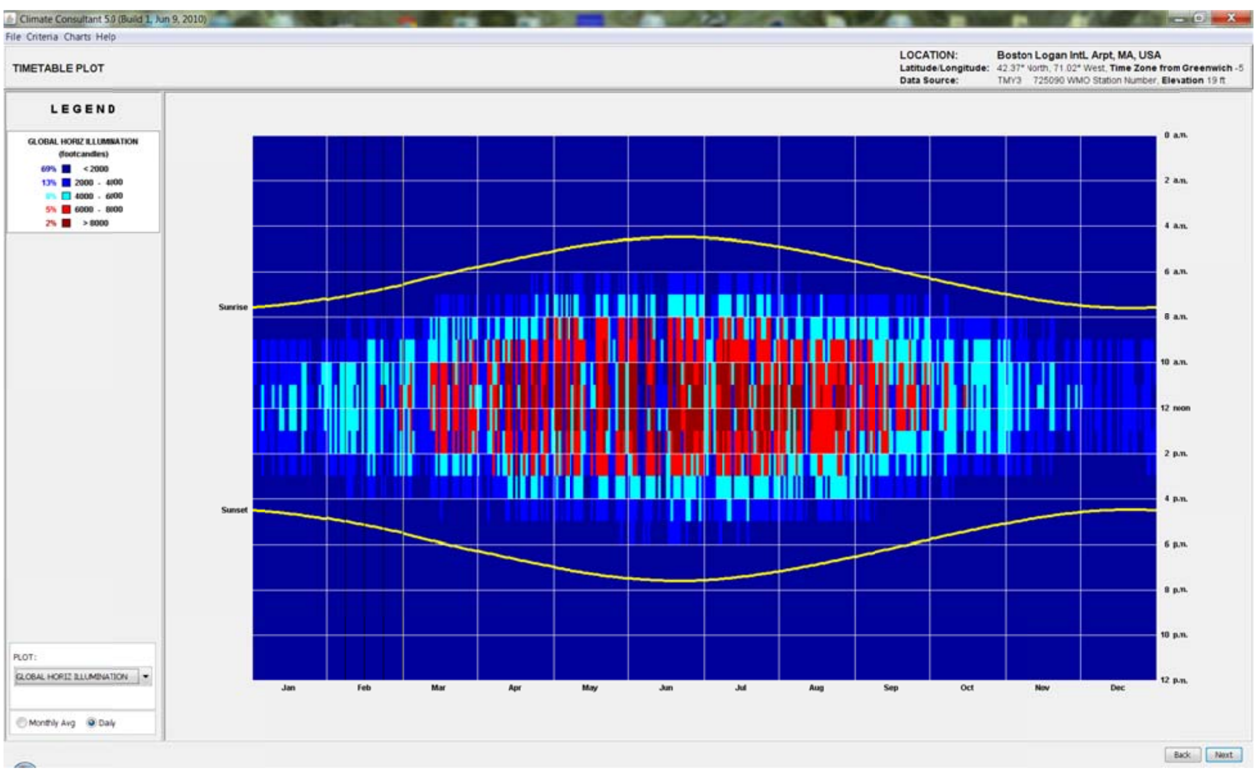




Global and direct solar radiation based on the hourly weather file data for the location

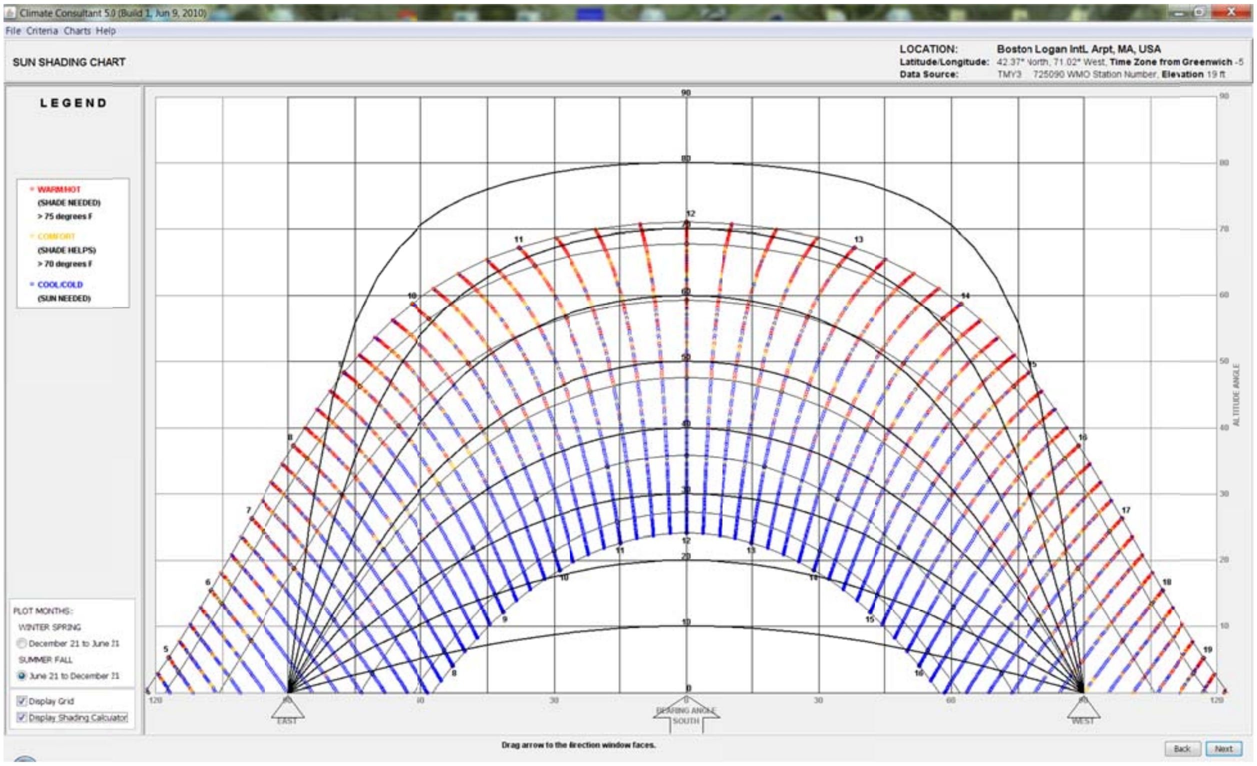
Appendix A: Solar Geometry and Local Weather Data- Boston, MA.

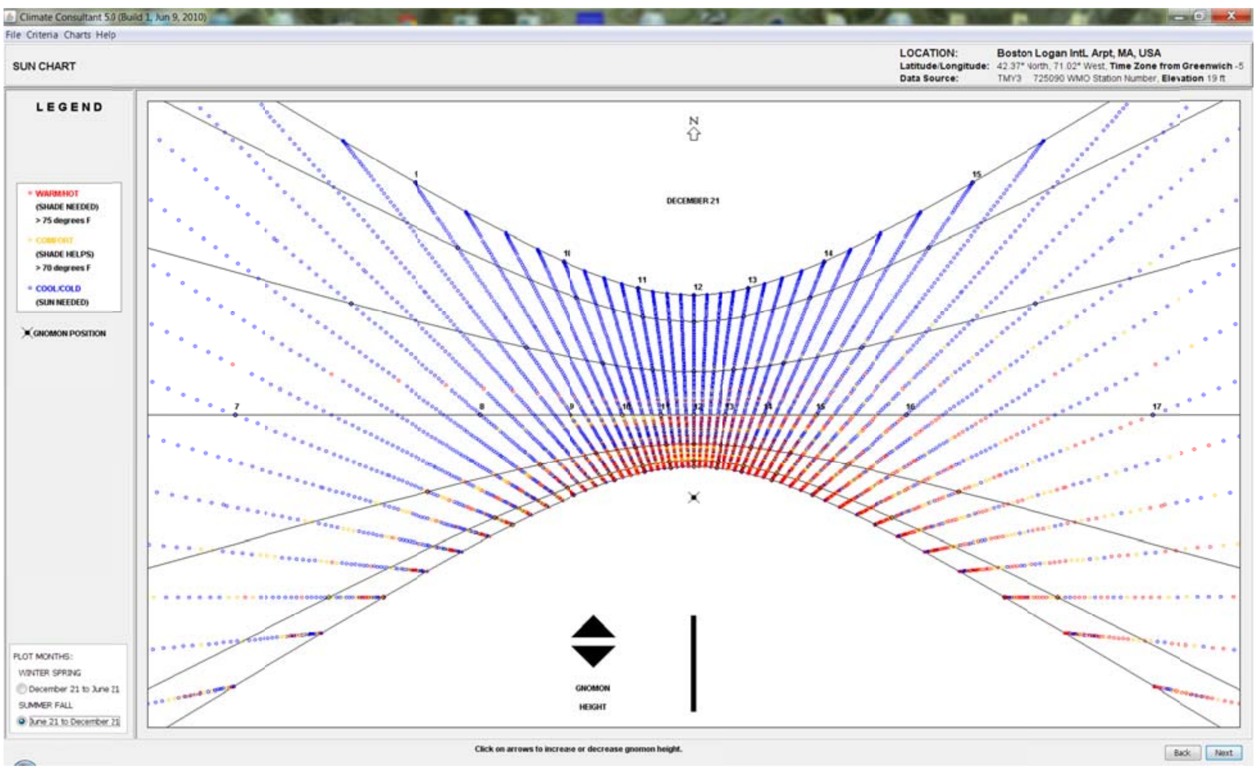




Global and direct daylight illumination based on the hourly weather file data

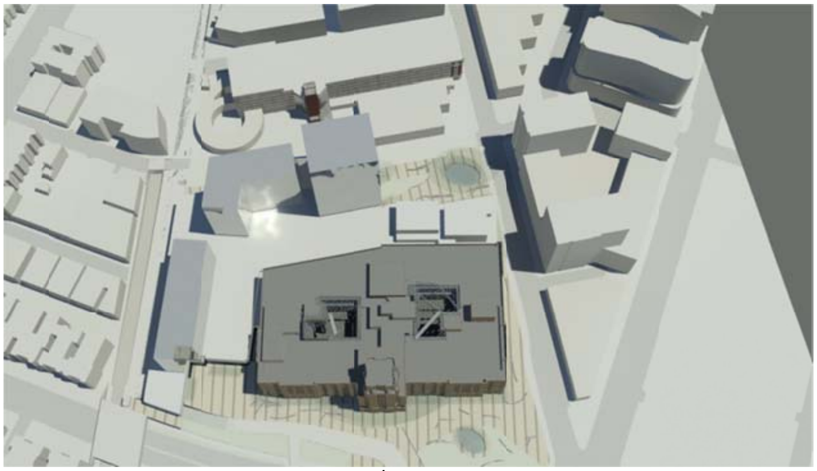
Appendix A: Solar Geometry and Local Weather Data- Boston, MA.





Sun charts and shade schedule based on the hourly weather file data for the location (June 21st through December 21st)

Appendix B - Solar Heat Gain



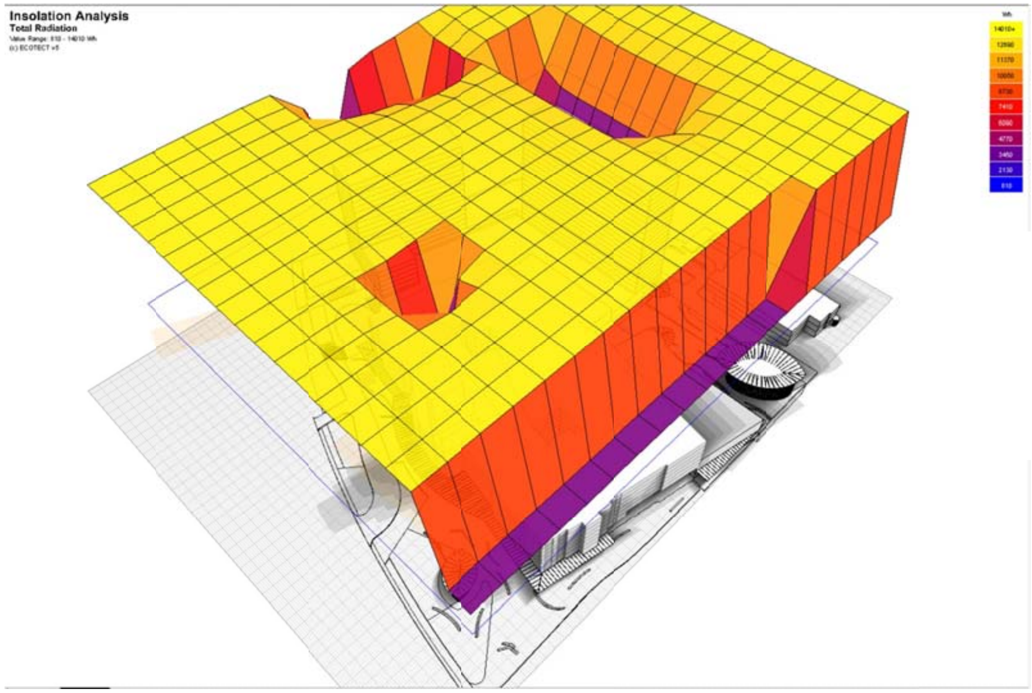
June 21st Solar Noon

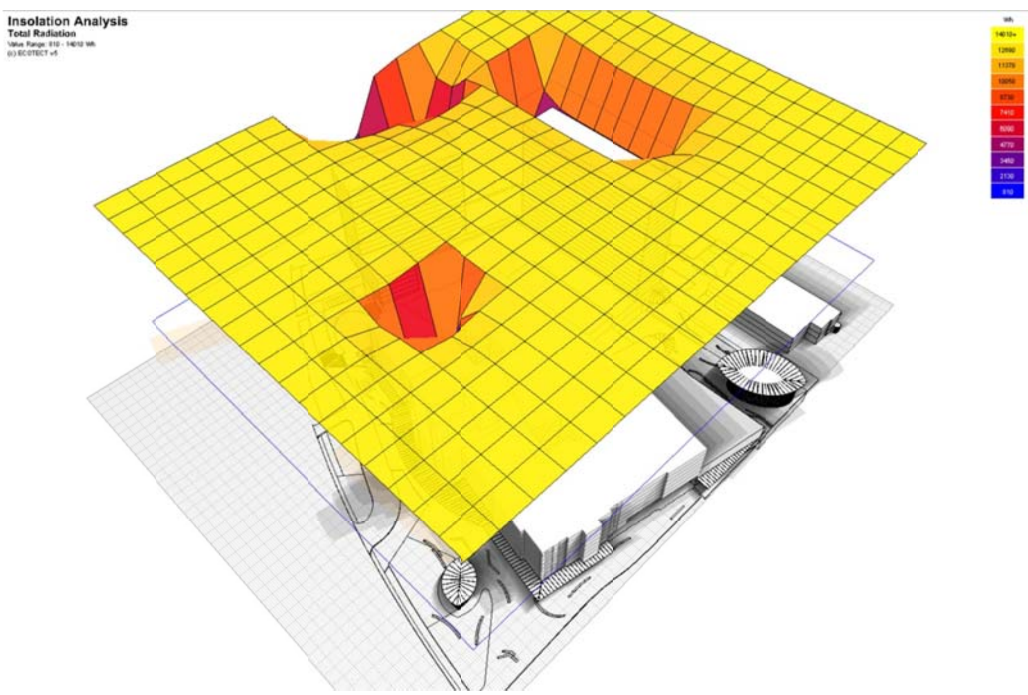
September 21st Solar Noon

December 21st Solar Noon

Solar heat gain due to solar reflection of building surfaces within the site

Appendix B - Solar Heat Gain





<u>Solar heat gain due to solar reflection of building surfaces within the site</u>

Appendix B - Solar Heat Gain

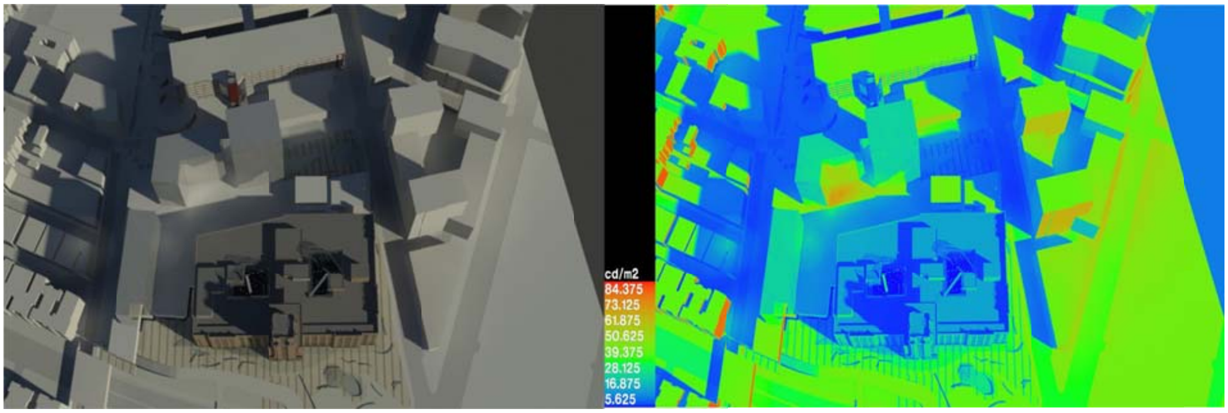
June 21st AM

September 21st AM

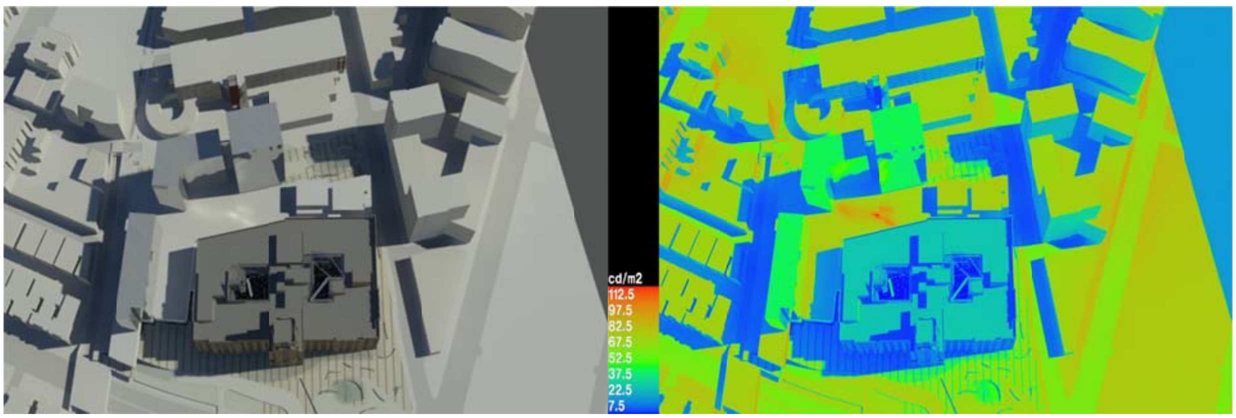
December 21st AM

<u>Solar heat gain due to solar reflection of building surfaces within the site</u>

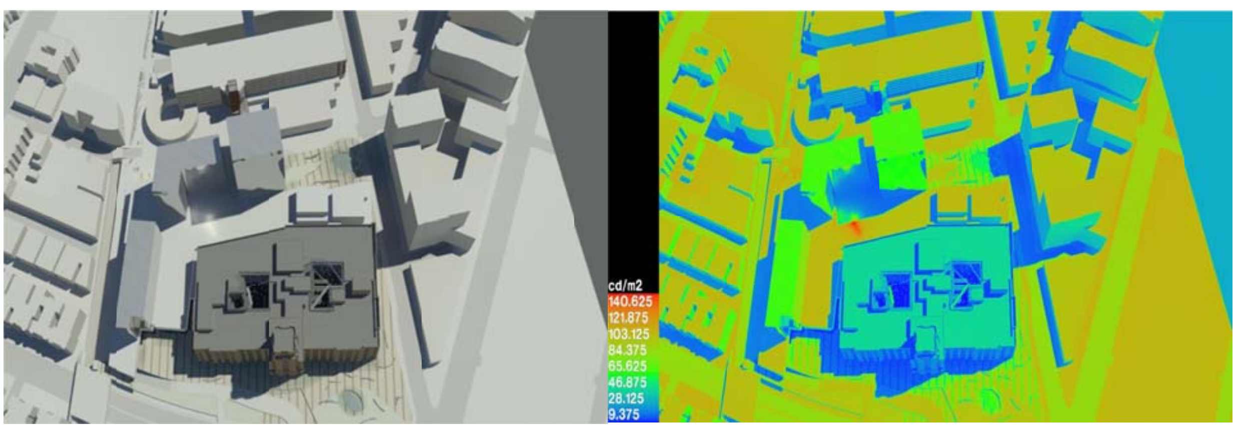
Appendix D – Surface luminance due to reflection



December 21st, Solar AM



September 21st Solar AM

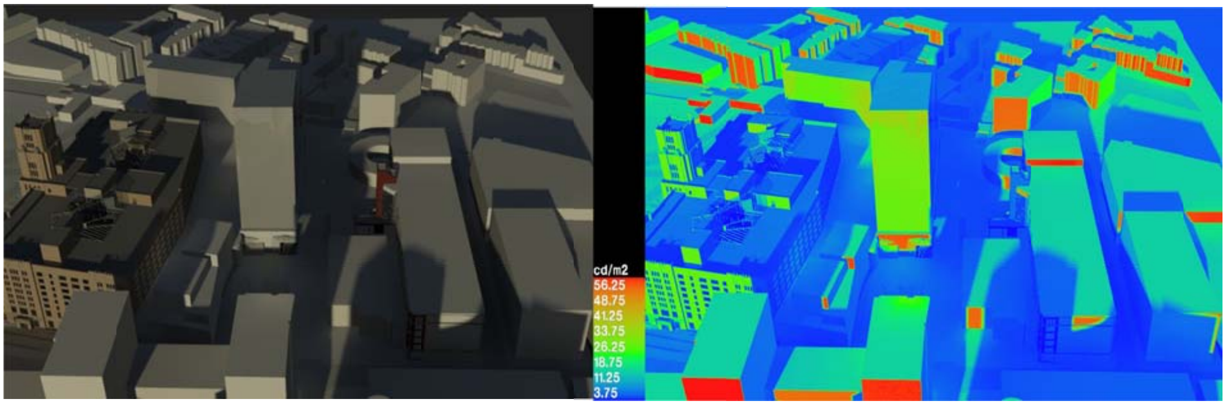


June 21st Solar AM

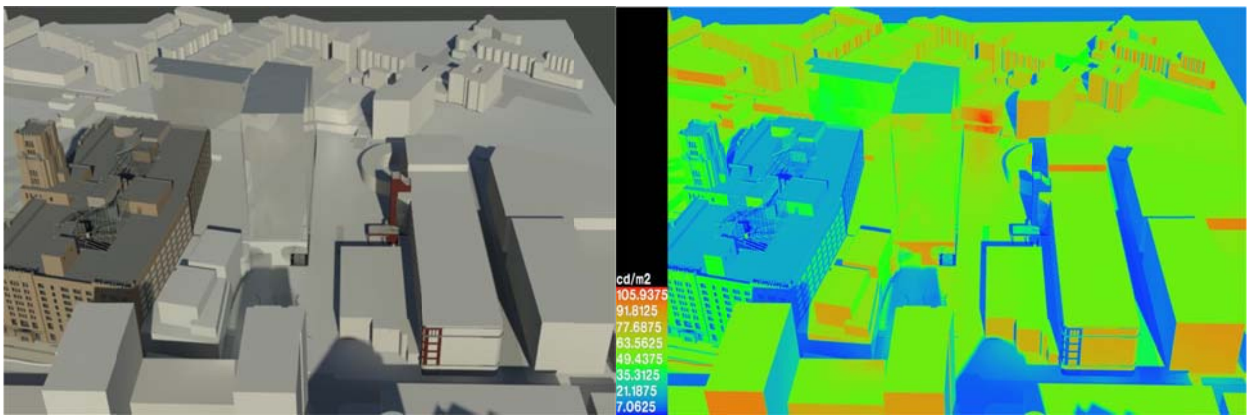
View-01

Figure -1: Surface Reflection distributions for all seasons at specific date within the site.

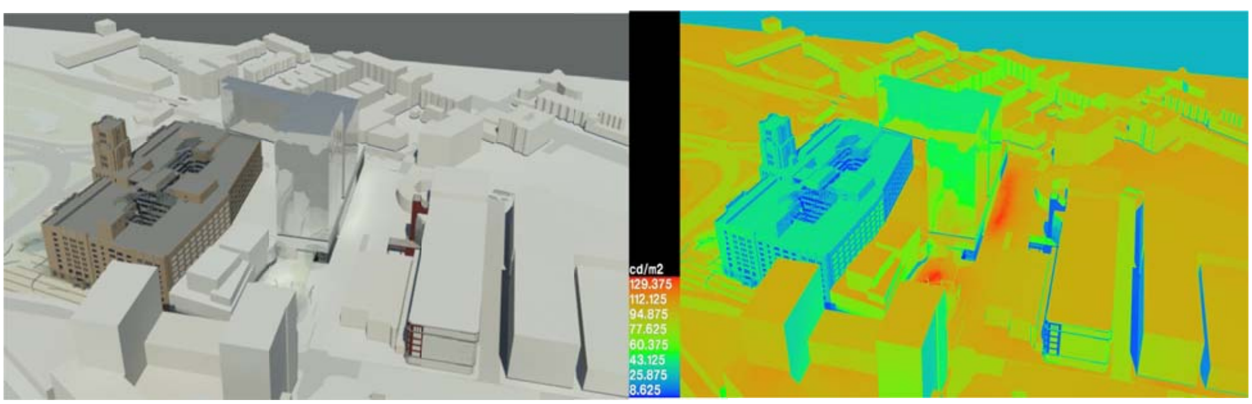
Appendix D – Surface luminance due to reflection



December 21st Solar AM



September 21st Solar AM

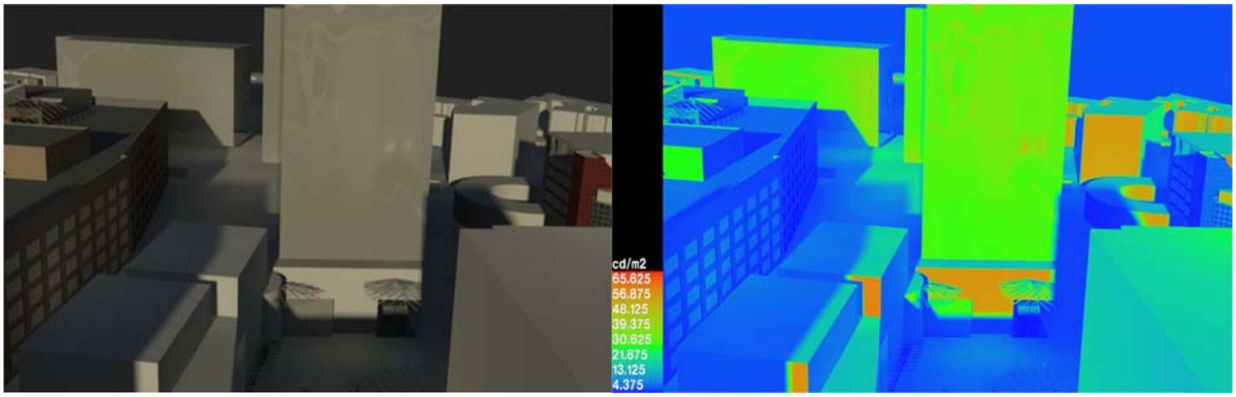


June 21st Solar AM

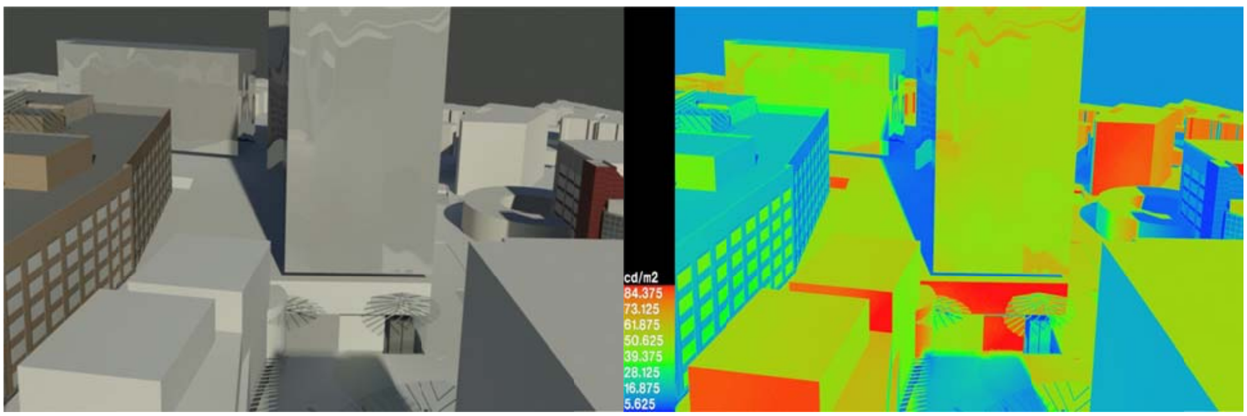
View-02

Figure -2: Surface Reflection distributions for all seasons at specific date within the site.

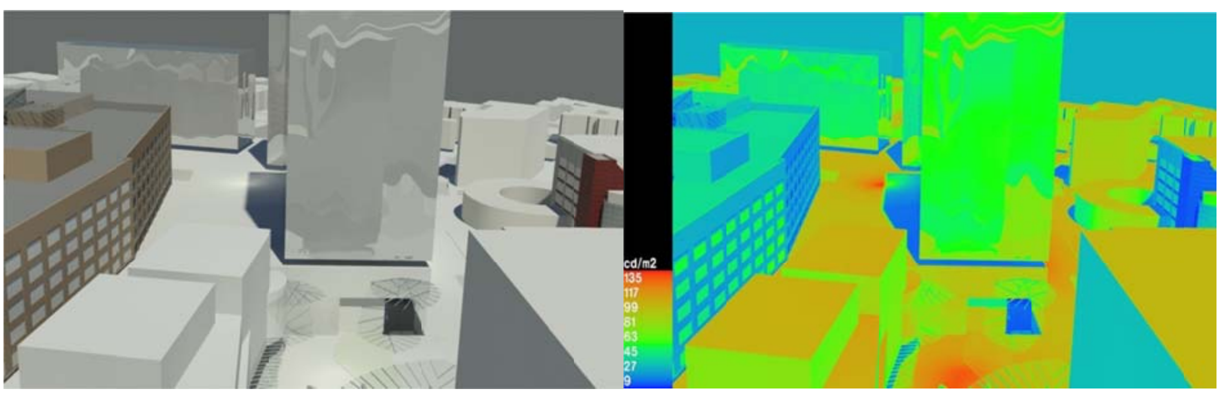
Appendix D – Surface luminance due to reflection



December 21st Solar AM



September 21st Solar AM

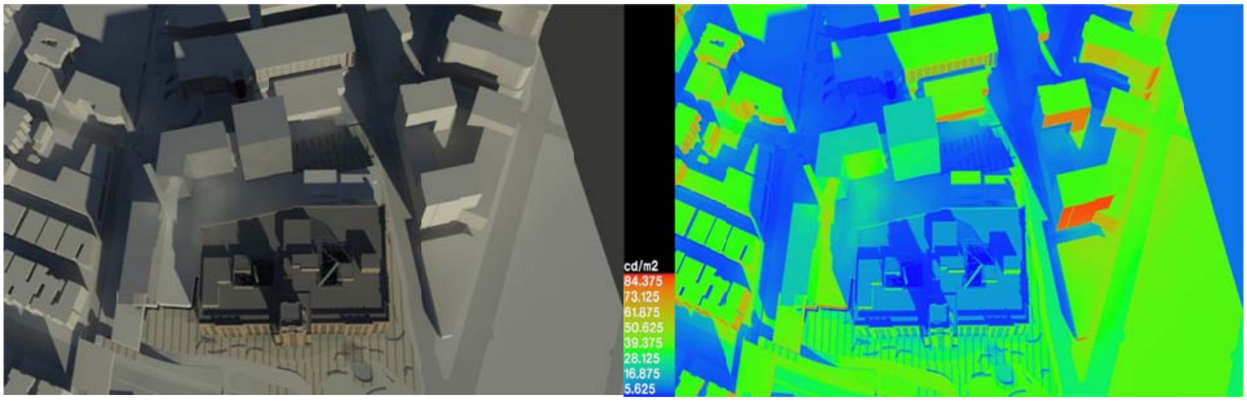


June 21st Solar AM

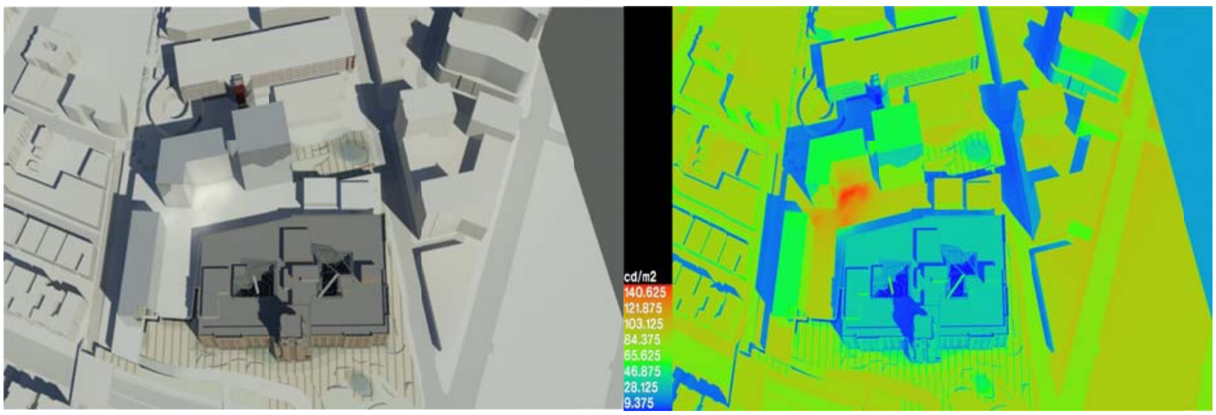
View-03

Figure -3: Surface Reflection distributions for all seasons at specific date within the site.

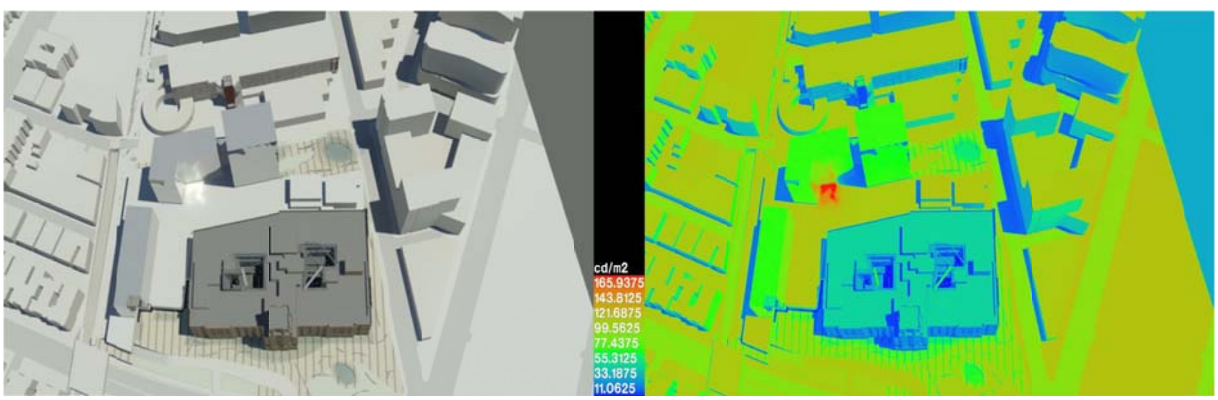
Appendix D – Surface luminance due to reflection



December 21st Solar NOON



September 21st Solar NOON

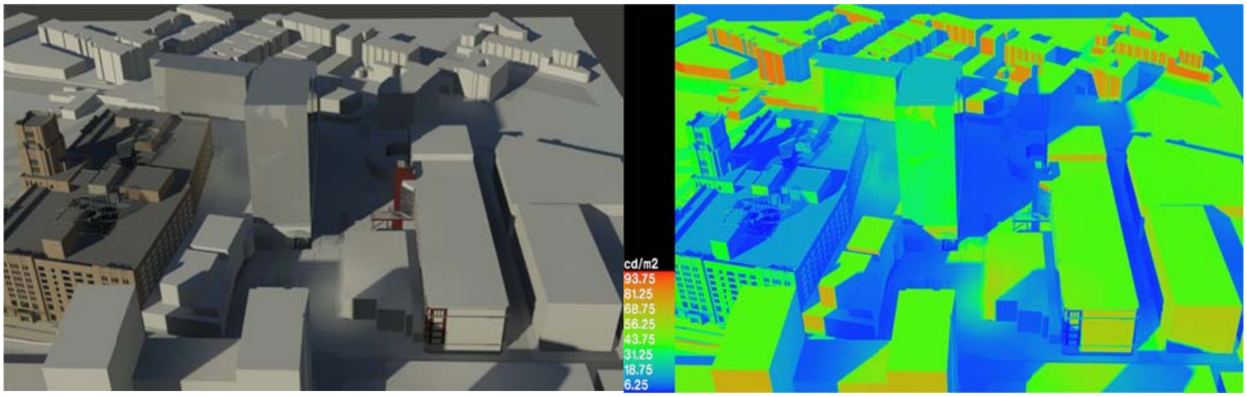


June 21st Solar NOON

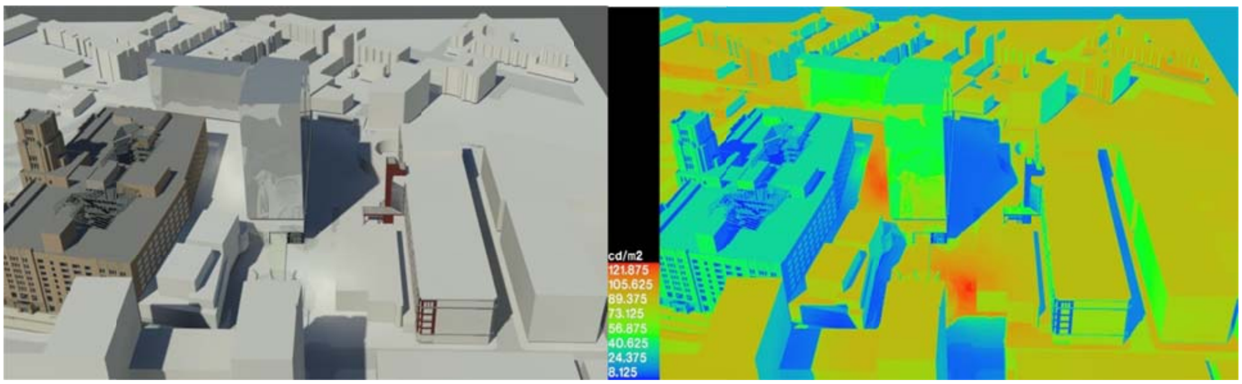
View-01

Figure -4: Surface Reflection distributions for all seasons at specific date within the site.

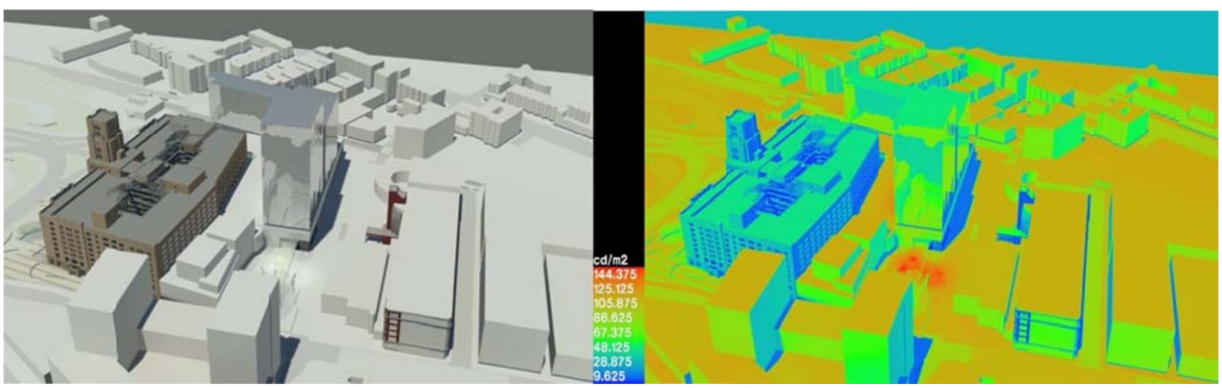
Appendix D – Surface luminance due to reflection



December 21st Solar NOON



September 21st Solar NOON

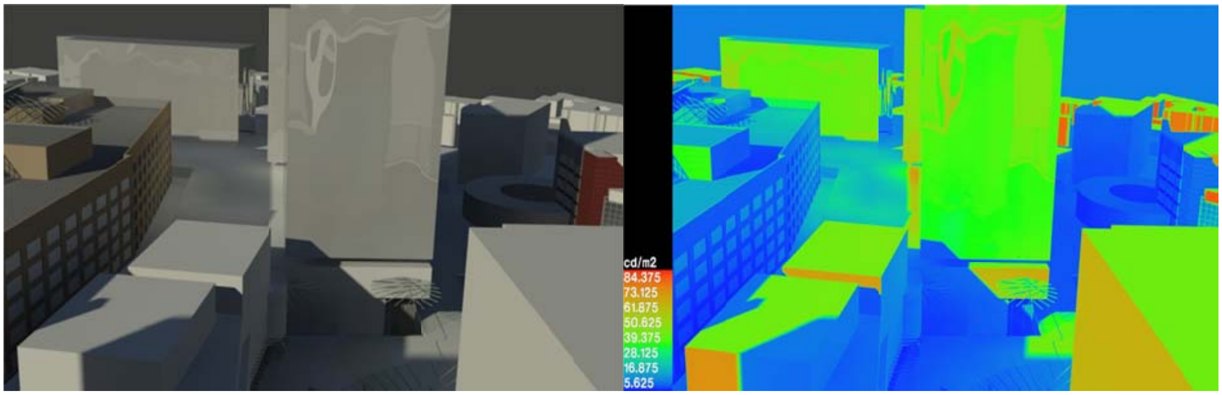


June 21st Solar NOON

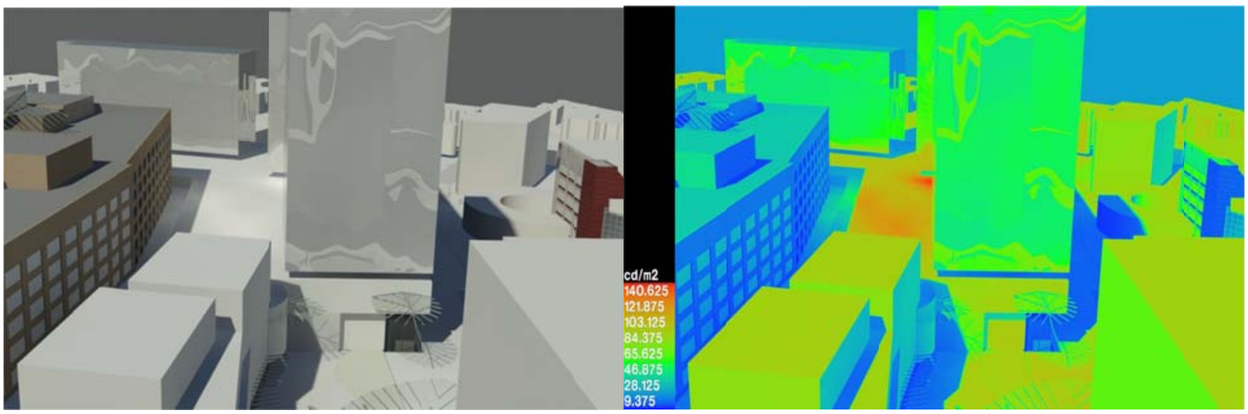
View-02

Figure -5: Surface Reflection distributions for all seasons at specific date within the site.

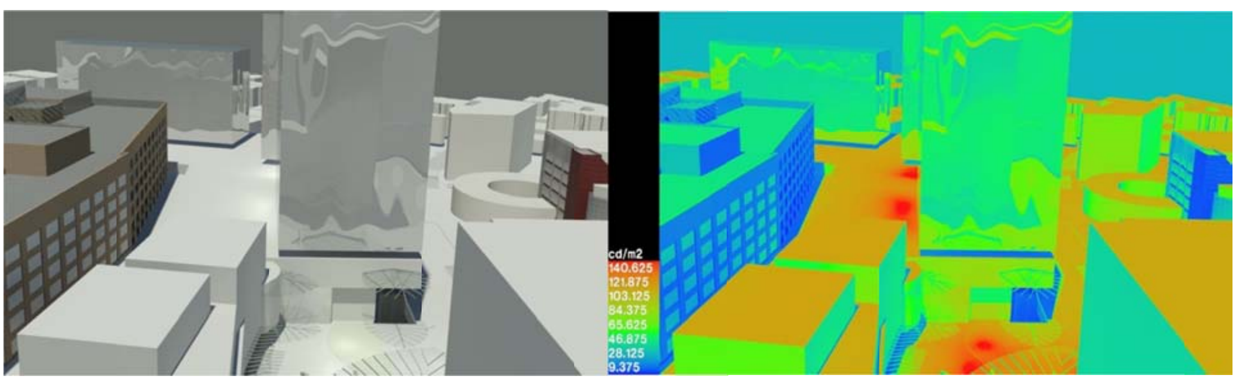
Appendix D – Surface luminance due to reflection



December 21st Solar NOON



September 21st Solar NOON

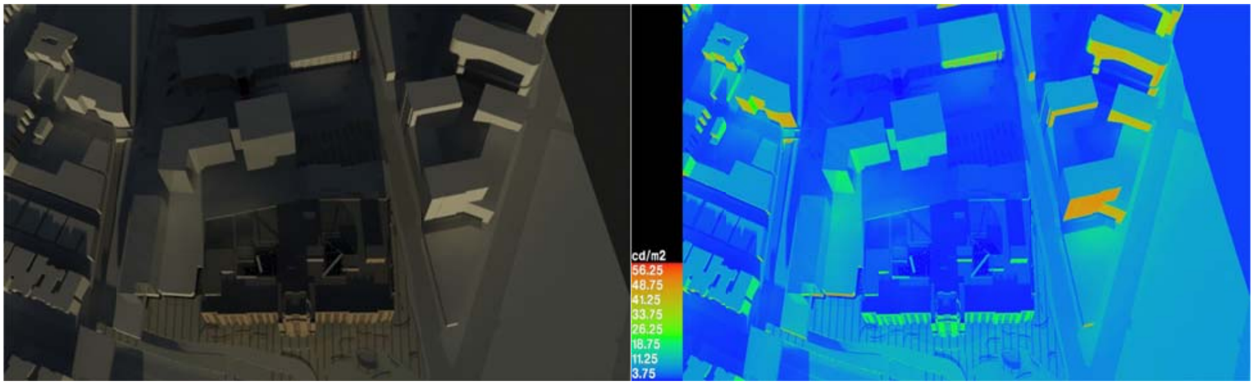


June 21st Solar NOON

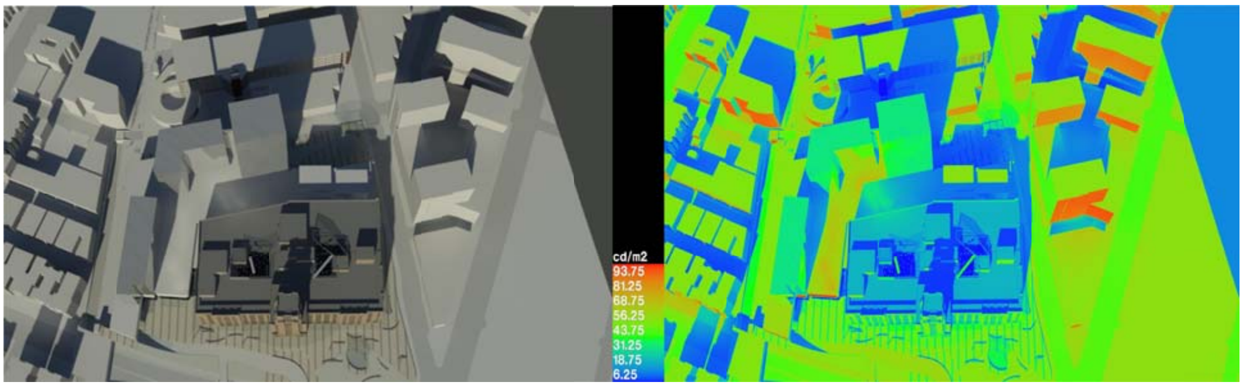
View-03

Figure -6: Surface Reflection distributions for all seasons at specific date within the site.

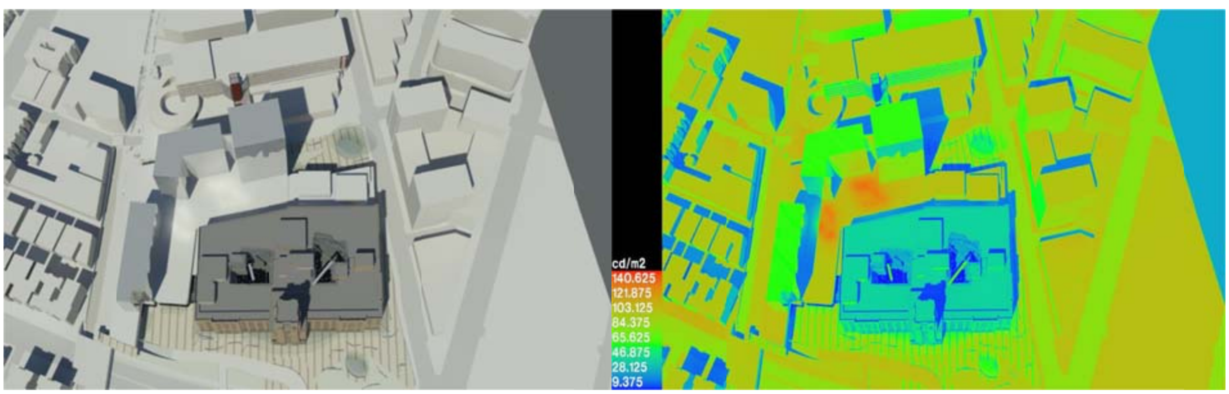
Appendix D – Surface luminance due to reflection



December 21st Solar PM



September 21st Solar PM

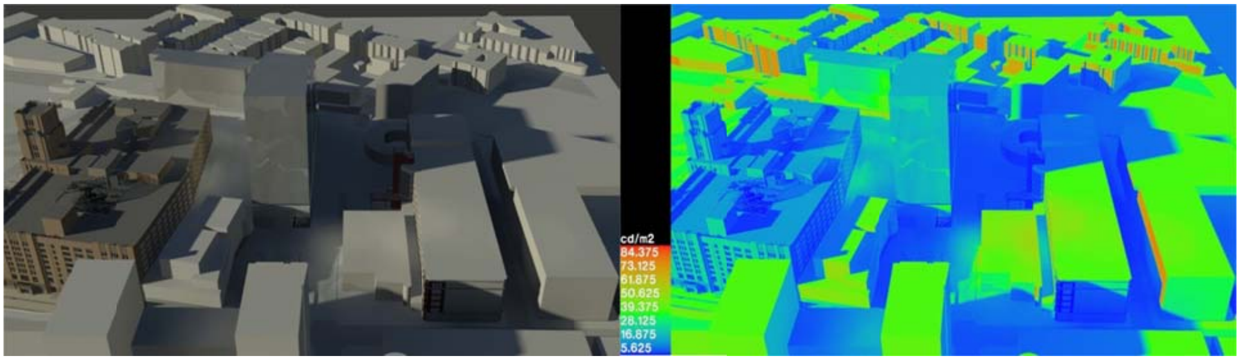


June 21st Solar PM

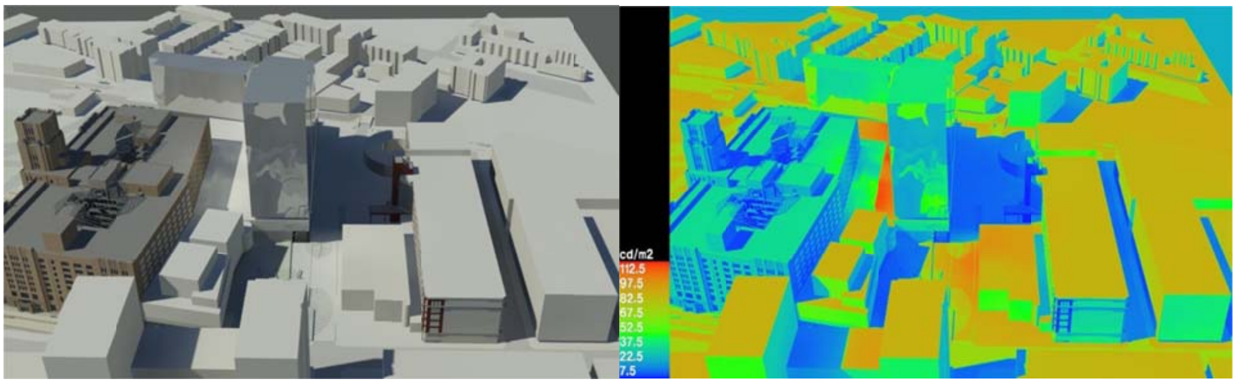
View-01

Figure -7: Surface Reflection distributions for all seasons at specific date within the site.

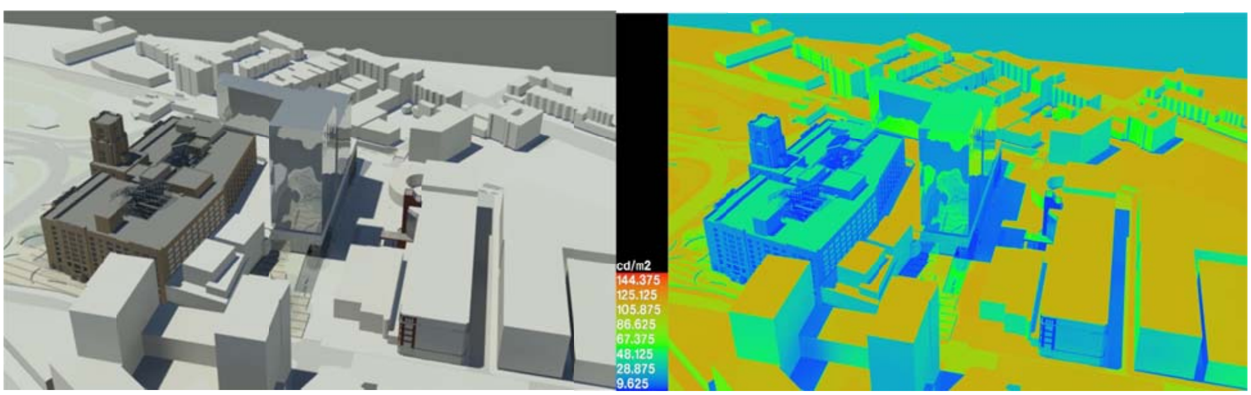
Appendix D – Surface luminance due to reflection



December 21st Solar PM



September 21st Solar PM

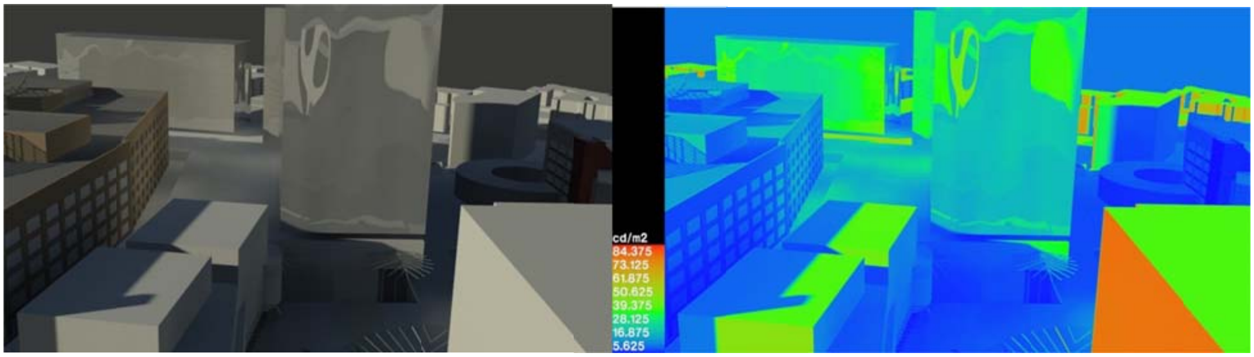


June 21st Solar PM

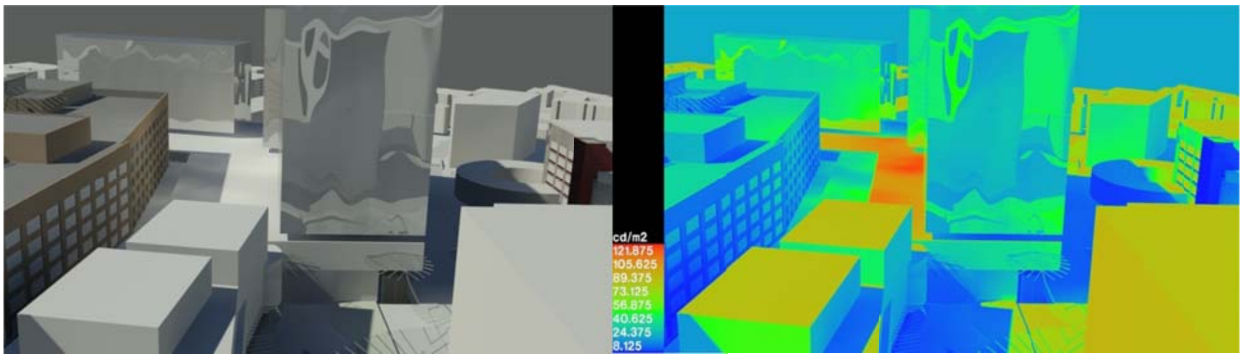
View-02

Figure -8: Surface Reflection distributions for all seasons at specific date within the site.

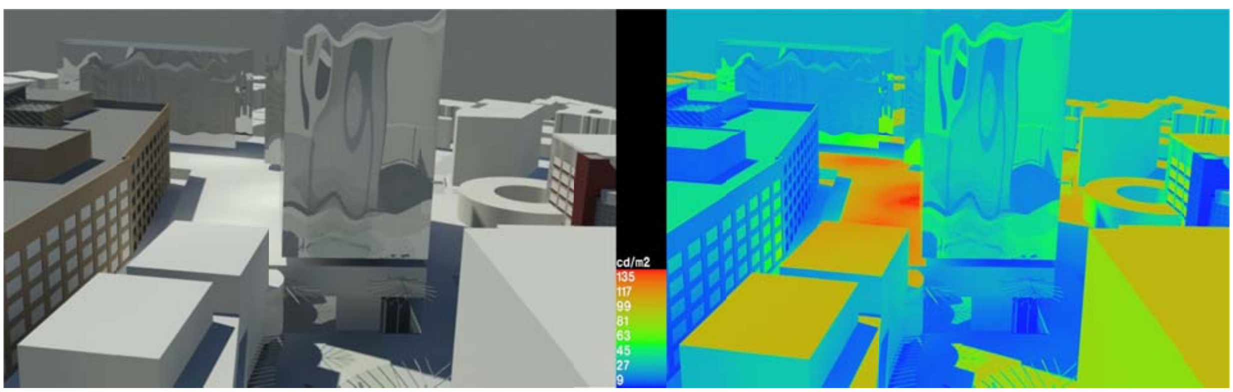
Appendix D – Surface luminance due to reflection



December 21st Solar PM



September 21st Solar PM



June 21st Solar PM

View-03

Figure -9: Surface Reflection distributions for all seasons at specific date within the site.

Appendix E
Air Quality Supporting Documentation

- MOBILE 6.2 Input Files
- MOBILE 6.2 Output Files
- Microscale Input Files
- Microscale Output Files
- Microscale Results

MOBILE 6.2 Input Files

```
* Calendar Year 2013 Generic MOBILE6 input file for Mesoscale Build/No-Build
Analyses
* Filename MA13_ALL.INP created by Craig Woleader, MADEP 617-348-4046,
craig.woleader@state.ma.us and Marc Bennett, MADEP 617-292-5597,
marc.bennett@state.ma.us
* revised 12/2/05 to include actual diesel rebuild effects
* revised 12/17/08 to include new IM program program for 2013
*
***************     Header Section     ***************
MOBILE6 INPUT FILE
*
PARTICULATES       :
POLLUTANTS         : HC CO NOX CO2
DATABASE OUTPUT    :
WITH FIELDNAMES    :
AGGREGATED OUTPUT  :
SPREADSHEET        :
EMISSIONS TABLE    : MA13_WIN.tb1 REPLACE
REPORT FILE        : MA13_WIN.txt REPLACE
*
RUN DATA
***************     Run Section     ***************
> *** Mass. 2013 with LEV II Program ***

* Pollutant output format
EXPRESS HC AS VOC  :

* Mass. specific user inputs -- require external data file
REG DIST           : 2005_REG.D
I/M DESC FILE      : 09NEWIM.D

STAGE II REFUELING :
91 3 84. 84.

* Set Diesel Rebuild effects to 10% as per EPA
REBUILD EFFECTS    : 0.10

* Inputs for LEV II
94+ LDG IMP        : MA_LEV2.D
T2 EXH PHASE-IN    : LEV2EXH.D

T2 EVAP PHASE-IN   : LEV2EVAP.D

T2 CERT            : LEV2CERT.D


* Meteorological inputs

MIN/MAX TEMP       : 22.8 38.3


* Fuel inputs
FUEL RVP           : 13.5
FUEL PROGRAM       : 2 N


DIESEL FRACTIONS   :

0.000   0.000   0.000   0.000   0.000   0.000   0.000   0.000   0.000   0.000
0.003   0.003   0.002   0.002   0.002   0.002   0.001   0.001   0.001   0.000
0.001   0.001   0.003   0.001   0.002
0.001   0.001   0.001   0.001   0.001   0.001   0.001   0.001   0.001   0.001
0.001   0.001   0.001   0.001   0.001   0.000   0.001   0.001   0.001   0.001
0.001   0.001   0.002   0.002   0.003
0.001   0.001   0.001   0.001   0.001   0.001   0.001   0.001   0.001   0.001
0.001   0.001   0.001   0.001   0.001   0.000   0.001   0.001   0.001   0.001
```

```
0.001   0.001   0.002   0.002   0.003
0.005   0.005   0.005   0.005   0.005   0.005   0.005   0.005   0.005   0.005
0.005   0.005   0.005   0.005   0.006   0.005   0.012   0.012   0.017   0.015
0.014   0.016   0.017   0.014   0.018
0.005   0.005   0.005   0.005   0.005   0.005   0.005   0.005   0.005   0.005
0.005   0.005   0.005   0.005   0.006   0.005   0.012   0.012   0.017   0.015
0.014   0.016   0.017   0.014   0.018
0.176   0.176   0.176   0.176   0.176   0.176   0.176   0.176   0.176   0.176
0.170   0.207   0.202   0.206   0.243   0.176   0.285   0.267   0.212   0.255
0.295   0.249   0.251   0.188   0.175
0.385   0.385   0.385   0.385   0.385   0.385   0.385   0.385   0.385   0.385
0.407   0.433   0.467   0.464   0.480   0.375   0.472   0.480   0.366   0.400
0.344   0.285   0.333   0.314   0.253
0.674   0.674   0.674   0.674   0.674   0.674   0.674   0.674   0.674   0.674
0.634   0.664   0.719   0.717   0.744   0.715   0.565   0.810   0.803   0.644
0.654   0.605   0.525   0.389   0.356
0.830   0.830   0.830   0.830   0.830   0.830   0.830   0.830   0.830   0.830
0.845   0.860   0.840   0.819   0.813   0.610   0.686   0.570   0.733   0.607
0.729   0.685   0.725   0.631   0.350
0.884   0.884   0.884   0.884   0.884   0.884   0.884   0.884   0.884   0.884
0.840   0.887   0.931   0.917   0.914   0.923   0.901   0.908   0.898   0.903
0.876   0.804   0.844   0.782   0.702
0.977   0.977   0.977   0.977   0.977   0.977   0.977   0.977   0.977   0.977
0.972   0.953   0.993   0.992   0.992   0.990   0.981   0.976   0.975   0.959
0.982   0.965   0.963   0.945   0.902
0.972   0.972   0.972   0.972   0.972   0.972   0.972   0.972   0.972   0.972
0.955   0.984   0.995   0.992   0.991   0.995   0.993   0.993   0.995   0.992
0.986   0.995   0.981   0.993   0.971
1.000   1.000   1.000   1.000   1.000   1.000   1.000   1.000   1.000   1.000
1.000   1.000   1.000   1.000   1.000   1.000   1.000   1.000   1.000   1.000
1.000   1.000   1.000   1.000   1.000
0.786   0.786   0.786   0.786   0.786   0.786   0.786   0.786   0.786   0.786
0.917   0.884   0.925   0.968   0.961   0.972   0.985   0.971   0.941   0.905
0.965   0.940   0.907   0.964   0.609


***************     Scenario Section PM 2.5    ***************

****************** Freeway Scenarios *******************


SCENARIO RECORD    : MA Freeway 2.71 mph (= minimum allowed freeway speed)

CALENDAR YEAR      : 2013

EVALUATION MONTH   : 1

AVERAGE SPEED      : 2.71 Freeway 92.0 0.0 0.0 8.0
PARTICULATE EF     : PMGZML.CSV  PMGDR1.CSV  PMGDR2.CSV  PMDZML.CSV
PMDDR1.CSV  PMDDR2.CSV
PARTICLE SIZE      : 2.5
DIESEL SULFUR      : 15


SCENARIO RECORD    : MA Freeway speed 3 mph
CALENDAR YEAR      : 2013
EVALUATION MONTH   : 1
AVERAGE SPEED      : 3 Freeway 92.0 0.0 0.0 8.0
PARTICULATE EF     : PMGZML.CSV  PMGDR1.CSV  PMGDR2.CSV  PMDZML.CSV
PMDDR1.CSV  PMDDR2.CSV
PARTICLE SIZE      : 2.5
DIESEL SULFUR      : 15


SCENARIO RECORD    : MA Freeway speed 4 mph
```

```
CALENDAR YEAR      : 2013
EVALUATION MONTH   : 1
AVERAGE SPEED      : 4 Freeway 92.0 0.0 0.0 8.0
PARTICULATE EF     : PMGZML.CSV  PMGDR1.CSV  PMGDR2.CSV  PMDZML.CSV
PMDDR1.CSV  PMDDR2.CSV
PARTICLE SIZE      : 2.5
DIESEL SULFUR      : 15


SCENARIO RECORD    : MA Freeway speed 5 mph
CALENDAR YEAR      : 2013
EVALUATION MONTH   : 1
AVERAGE SPEED      : 5 Freeway 92.0 0.0 0.0 8.0
PARTICULATE EF     : PMGZML.CSV  PMGDR1.CSV  PMGDR2.CSV  PMDZML.CSV
PMDDR1.CSV  PMDDR2.CSV
PARTICLE SIZE      : 2.5
DIESEL SULFUR      : 15


SCENARIO RECORD    : MA Freeway speed 6 mph
CALENDAR YEAR      : 2013
EVALUATION MONTH   : 1
AVERAGE SPEED      : 6 Freeway 92.0 0.0 0.0 8.0
PARTICULATE EF     : PMGZML.CSV  PMGDR1.CSV  PMGDR2.CSV  PMDZML.CSV
PMDDR1.CSV  PMDDR2.CSV
PARTICLE SIZE      : 2.5
DIESEL SULFUR      : 15


SCENARIO RECORD    : MA Freeway speed 7 mph
CALENDAR YEAR      : 2013
EVALUATION MONTH   : 1
AVERAGE SPEED      : 7 Freeway 92.0 0.0 0.0 8.0
PARTICULATE EF     : PMGZML.CSV  PMGDR1.CSV  PMGDR2.CSV  PMDZML.CSV
PMDDR1.CSV  PMDDR2.CSV
PARTICLE SIZE      : 2.5
DIESEL SULFUR      : 15


SCENARIO RECORD    : MA Freeway speed 8 mph
CALENDAR YEAR      : 2013
EVALUATION MONTH   : 1
AVERAGE SPEED      : 8 Freeway 92.0 0.0 0.0 8.0
PARTICULATE EF     : PMGZML.CSV  PMGDR1.CSV  PMGDR2.CSV  PMDZML.CSV
PMDDR1.CSV  PMDDR2.CSV
PARTICLE SIZE      : 2.5
DIESEL SULFUR      : 15


SCENARIO RECORD    : MA Freeway speed 9 mph
CALENDAR YEAR      : 2013
EVALUATION MONTH   : 1
AVERAGE SPEED      : 9 Freeway 92.0 0.0 0.0 8.0
PARTICULATE EF     : PMGZML.CSV  PMGDR1.CSV  PMGDR2.CSV  PMDZML.CSV
PMDDR1.CSV  PMDDR2.CSV
PARTICLE SIZE      : 2.5
DIESEL SULFUR      : 15


SCENARIO RECORD    : MA Freeway speed 10 mph
CALENDAR YEAR      : 2013
EVALUATION MONTH   : 1
AVERAGE SPEED      : 10 Freeway 92.0 0.0 0.0 8.0
PARTICULATE EF     : PMGZML.CSV  PMGDR1.CSV  PMGDR2.CSV  PMDZML.CSV
PMDDR1.CSV  PMDDR2.CSV
PARTICLE SIZE      : 2.5
```

```
PARTICULATE EF     : PMGZML.CSV  PMGDR1.CSV  PMGDR2.CSV  PMDZML.CSV
PMDDR1.CSV  PMDDR2.CSV
PARTICLE SIZE      : 10
DIESEL SULFUR      : 15


SCENARIO RECORD    : MA Arterial speed 62 mph
CALENDAR YEAR      : 2013
EVALUATION MONTH   : 1
AVERAGE SPEED      : 62 Arterial 0.0 100.0 0.0 0.0
PARTICULATE EF     : PMGZML.CSV  PMGDR1.CSV  PMGDR2.CSV  PMDZML.CSV
PMDDR1.CSV  PMDDR2.CSV
PARTICLE SIZE      : 10
DIESEL SULFUR      : 15


SCENARIO RECORD    : MA Arterial speed 63 mph
CALENDAR YEAR      : 2013
EVALUATION MONTH   : 1
AVERAGE SPEED      : 63 Arterial 0.0 100.0 0.0 0.0
PARTICULATE EF     : PMGZML.CSV  PMGDR1.CSV  PMGDR2.CSV  PMDZML.CSV
PMDDR1.CSV  PMDDR2.CSV
PARTICLE SIZE      : 10
DIESEL SULFUR      : 15


SCENARIO RECORD    : MA Arterial speed 64 mph
CALENDAR YEAR      : 2013
EVALUATION MONTH   : 1
AVERAGE SPEED      : 64 Arterial 0.0 100.0 0.0 0.0
PARTICULATE EF     : PMGZML.CSV  PMGDR1.CSV  PMGDR2.CSV  PMDZML.CSV
PMDDR1.CSV  PMDDR2.CSV
PARTICLE SIZE      : 10
DIESEL SULFUR      : 15


SCENARIO RECORD    : MA Arterial speed 65 mph
CALENDAR YEAR      : 2013
EVALUATION MONTH   : 1
AVERAGE SPEED      : 65 Arterial 0.0 100.0 0.0 0.0
PARTICULATE EF     : PMGZML.CSV  PMGDR1.CSV  PMGDR2.CSV  PMDZML.CSV
PMDDR1.CSV  PMDDR2.CSV
PARTICLE SIZE      : 10
DIESEL SULFUR      : 15

***************     End of This Run     ***************
END OF RUN
```

```
* Calendar Year 2018 Generic MOBILE6 input file for Mesoscale Build/No-Build
Analyses
* Filename MA18_ALL.INP created by Craig Woleader, MADEP 617-348-4046,
craig.woleader@state.ma.us and Marc Bennett, MADEP 617-292-5597,
marc.bennett@state.ma.us
* revised 12/2/05 to include actual diesel rebuild effects
* revised 12/17/08 to include new IM program program for 2018
*
***************     Header Section     ***************
MOBILE6 INPUT FILE
*
PARTICULATES        :
POLLUTANTS          : HC CO NOX CO2
DATABASE OUTPUT     :
WITH FIELDNAMES     :
AGGREGATED OUTPUT   :
SPREADSHEET         :
EMISSIONS TABLE     : MA18_WIN.tb1 REPLACE
REPORT FILE         : MA18_WIN.txt REPLACE
*
RUN DATA
***************     Run Section     ***************
> *** Mass. 2013 with LEV II Program ***

* Pollutant output format
EXPRESS HC AS VOC  :

* Mass. specific user inputs -- require external data file
REG DIST            : 2005_REG.D
I/M DESC FILE       : 09NEWIM.D

STAGE II REFUELING :
91 3 84. 84.

* Set Diesel Rebuild effects to 10% as per EPA
REBUILD EFFECTS     : 0.10

* Inputs for LEV II
94+ LDG IMP         : MA_LEV2.D
T2 EXH PHASE-IN     : LEV2EXH.D

T2 EVAP PHASE-IN    : LEV2EVAP.D

T2 CERT             : LEV2CERT.D


* Meteorological inputs

MIN/MAX TEMP        : 22.8 38.3


* Fuel inputs
FUEL RVP            : 13.5
FUEL PROGRAM        : 2 N


DIESEL FRACTIONS    :

0.000   0.000   0.000   0.000   0.000   0.000   0.000   0.000   0.000   0.000
0.000   0.000   0.000   0.000   0.000   0.003   0.003   0.002   0.002   0.002
0.002   0.001   0.001   0.001   0.000
0.001   0.001   0.001   0.001   0.001   0.001   0.001   0.001   0.001   0.001
0.001   0.001   0.001   0.001   0.001   0.001   0.001   0.001   0.001   0.001
0.000   0.001   0.001   0.001   0.001
0.001   0.001   0.001   0.001   0.001   0.001   0.001   0.001   0.001   0.001
0.001   0.001   0.001   0.001   0.001   0.001   0.001   0.001   0.001   0.001
```

0.000	0.001	0.001	0.001	0.001					
0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.006
0.005	0.012	0.012	0.017	0.015					
0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.006
0.005	0.012	0.012	0.017	0.015					
0.176	0.176	0.176	0.176	0.176	0.176	0.176	0.176	0.176	0.176
0.176	0.176	0.176	0.176	0.176	0.170	0.207	0.202	0.206	0.243
0.176	0.285	0.267	0.212	0.255					
0.385	0.385	0.385	0.385	0.385	0.385	0.385	0.385	0.385	0.385
0.385	0.385	0.385	0.385	0.385	0.407	0.433	0.467	0.464	0.480
0.375	0.472	0.480	0.366	0.400					
0.674	0.674	0.674	0.674	0.674	0.674	0.674	0.674	0.674	0.674
0.674	0.674	0.674	0.674	0.674	0.634	0.664	0.719	0.717	0.744
0.715	0.565	0.810	0.803	0.644					
0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830
0.830	0.830	0.830	0.830	0.830	0.845	0.860	0.840	0.819	0.813
0.610	0.686	0.570	0.733	0.607					
0.884	0.884	0.884	0.884	0.884	0.884	0.884	0.884	0.884	0.884
0.884	0.884	0.884	0.884	0.884	0.840	0.887	0.931	0.917	0.914
0.923	0.901	0.908	0.898	0.903					
0.977	0.977	0.977	0.977	0.977	0.977	0.977	0.977	0.977	0.977
0.977	0.977	0.977	0.977	0.977	0.972	0.953	0.993	0.992	0.992
0.990	0.981	0.976	0.975	0.959					
0.972	0.972	0.972	0.972	0.972	0.972	0.972	0.972	0.972	0.972
0.972	0.972	0.972	0.972	0.972	0.955	0.984	0.995	0.992	0.991
0.995	0.993	0.993	0.995	0.992					
1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
1.000	1.000	1.000	1.000	1.000					
0.786	0.786	0.786	0.786	0.786	0.786	0.786	0.786	0.786	0.786
0.786	0.786	0.786	0.786	0.786	0.917	0.884	0.925	0.968	0.961
0.972	0.985	0.971	0.941	0.905					

```
***************     Scenario Section PM 2.5    ***************

****************** Freeway Scenarios *******************


SCENARIO RECORD    : MA Freeway 2.71 mph (= minimum allowed freeway speed)

CALENDAR YEAR      : 2018

EVALUATION MONTH   : 1

AVERAGE SPEED      : 2.71 Freeway 92.0 0.0 0.0 8.0
PARTICULATE EF     : PMGZML.CSV  PMGDR1.CSV  PMGDR2.CSV  PMDZML.CSV
PMDDR1.CSV  PMDDR2.CSV
PARTICLE SIZE      : 2.5
DIESEL SULFUR      : 15


SCENARIO RECORD    : MA Freeway speed 3 mph
CALENDAR YEAR      : 2018
EVALUATION MONTH   : 1
AVERAGE SPEED      : 3 Freeway 92.0 0.0 0.0 8.0
PARTICULATE EF     : PMGZML.CSV  PMGDR1.CSV  PMGDR2.CSV  PMDZML.CSV
PMDDR1.CSV  PMDDR2.CSV
PARTICLE SIZE      : 2.5
DIESEL SULFUR      : 15


SCENARIO RECORD    : MA Freeway speed 4 mph
```

```
CALENDAR YEAR      : 2018
EVALUATION MONTH   : 1
AVERAGE SPEED      : 4 Freeway 92.0 0.0 0.0 8.0
PARTICULATE EF     : PMGZML.CSV  PMGDR1.CSV  PMGDR2.CSV  PMDZML.CSV
PMDDR1.CSV  PMDDR2.CSV
PARTICLE SIZE      : 2.5
DIESEL SULFUR      : 15


SCENARIO RECORD    : MA Freeway speed 5 mph
CALENDAR YEAR      : 2018
EVALUATION MONTH   : 1
AVERAGE SPEED      : 5 Freeway 92.0 0.0 0.0 8.0
PARTICULATE EF     : PMGZML.CSV  PMGDR1.CSV  PMGDR2.CSV  PMDZML.CSV
PMDDR1.CSV  PMDDR2.CSV
PARTICLE SIZE      : 2.5
DIESEL SULFUR      : 15


SCENARIO RECORD    : MA Freeway speed 6 mph
CALENDAR YEAR      : 2018
EVALUATION MONTH   : 1
AVERAGE SPEED      : 6 Freeway 92.0 0.0 0.0 8.0
PARTICULATE EF     : PMGZML.CSV  PMGDR1.CSV  PMGDR2.CSV  PMDZML.CSV
PMDDR1.CSV  PMDDR2.CSV
PARTICLE SIZE      : 2.5
DIESEL SULFUR      : 15


SCENARIO RECORD    : MA Freeway speed 7 mph
CALENDAR YEAR      : 2018
EVALUATION MONTH   : 1
AVERAGE SPEED      : 7 Freeway 92.0 0.0 0.0 8.0
PARTICULATE EF     : PMGZML.CSV  PMGDR1.CSV  PMGDR2.CSV  PMDZML.CSV
PMDDR1.CSV  PMDDR2.CSV
PARTICLE SIZE      : 2.5
DIESEL SULFUR      : 15


SCENARIO RECORD    : MA Freeway speed 8 mph
CALENDAR YEAR      : 2018
EVALUATION MONTH   : 1
AVERAGE SPEED      : 8 Freeway 92.0 0.0 0.0 8.0
PARTICULATE EF     : PMGZML.CSV  PMGDR1.CSV  PMGDR2.CSV  PMDZML.CSV
PMDDR1.CSV  PMDDR2.CSV
PARTICLE SIZE      : 2.5
DIESEL SULFUR      : 15


SCENARIO RECORD    : MA Freeway speed 9 mph
CALENDAR YEAR      : 2018
EVALUATION MONTH   : 1
AVERAGE SPEED      : 9 Freeway 92.0 0.0 0.0 8.0
PARTICULATE EF     : PMGZML.CSV  PMGDR1.CSV  PMGDR2.CSV  PMDZML.CSV
PMDDR1.CSV  PMDDR2.CSV
PARTICLE SIZE      : 2.5
DIESEL SULFUR      : 15


SCENARIO RECORD    : MA Freeway speed 10 mph
CALENDAR YEAR      : 2018
EVALUATION MONTH   : 1
AVERAGE SPEED      : 10 Freeway 92.0 0.0 0.0 8.0
PARTICULATE EF     : PMGZML.CSV  PMGDR1.CSV  PMGDR2.CSV  PMDZML.CSV
PMDDR1.CSV  PMDDR2.CSV
PARTICLE SIZE      : 2.5
```

```
PARTICULATE EF     : PMGZML.CSV  PMGDR1.CSV  PMGDR2.CSV  PMDZML.CSV
PMDDR1.CSV  PMDDR2.CSV
PARTICLE SIZE      : 10
DIESEL SULFUR      : 15


SCENARIO RECORD    : MA Arterial speed 62 mph
CALENDAR YEAR      : 2018
EVALUATION MONTH   : 1
AVERAGE SPEED      : 62 Arterial 0.0 100.0 0.0 0.0
PARTICULATE EF     : PMGZML.CSV  PMGDR1.CSV  PMGDR2.CSV  PMDZML.CSV
PMDDR1.CSV  PMDDR2.CSV
PARTICLE SIZE      : 10
DIESEL SULFUR      : 15


SCENARIO RECORD    : MA Arterial speed 63 mph
CALENDAR YEAR      : 2018
EVALUATION MONTH   : 1
AVERAGE SPEED      : 63 Arterial 0.0 100.0 0.0 0.0
PARTICULATE EF     : PMGZML.CSV  PMGDR1.CSV  PMGDR2.CSV  PMDZML.CSV
PMDDR1.CSV  PMDDR2.CSV
PARTICLE SIZE      : 10
DIESEL SULFUR      : 15


SCENARIO RECORD    : MA Arterial speed 64 mph
CALENDAR YEAR      : 2018
EVALUATION MONTH   : 1
AVERAGE SPEED      : 64 Arterial 0.0 100.0 0.0 0.0
PARTICULATE EF     : PMGZML.CSV  PMGDR1.CSV  PMGDR2.CSV  PMDZML.CSV
PMDDR1.CSV  PMDDR2.CSV
PARTICLE SIZE      : 10
DIESEL SULFUR      : 15


SCENARIO RECORD    : MA Arterial speed 65 mph
CALENDAR YEAR      : 2018
EVALUATION MONTH   : 1
AVERAGE SPEED      : 65 Arterial 0.0 100.0 0.0 0.0
PARTICULATE EF     : PMGZML.CSV  PMGDR1.CSV  PMGDR2.CSV  PMDZML.CSV
PMDDR1.CSV  PMDDR2.CSV
PARTICLE SIZE      : 10
DIESEL SULFUR      : 15

***************     End of This Run     ***************
END OF RUN
```

MOBILE 6.2 Output Files

Converting Date: 6/17/2009

Mobile Output File: C:\Run\MA13_SUM.TXT
Excel File: C:\Run\MA13_SUM.TXT

Mobile Emission Rate

Speed	Type	CO
2.7	Freeway	13.8500
3	Freeway	12.9000
4	Freeway	10.6700
5	Freeway	9.3300
6	Freeway	8.3700
7	Freeway	7.6500
8	Freeway	7.1100
9	Freeway	6.6900
10	Freeway	6.3500
11	Freeway	6.0800
12	Freeway	5.8500
13	Freeway	5.6600
14	Freeway	5.4900
15	Freeway	5.3500
16	Freeway	5.2300
17	Freeway	5.1600
18	Freeway	5.1000
19	Freeway	5.0400
20	Freeway	4.9900
21	Freeway	4.9500
22	Freeway	4.9100
23	Freeway	4.8800
24	Freeway	4.8500
25	Freeway	4.8200
26	Freeway	4.8000
27	Freeway	4.7700
28	Freeway	4.7500
29	Freeway	4.7300
30	Freeway	4.7200
31	Freeway	4.7100
32	Freeway	4.7200
33	Freeway	4.7200
34	Freeway	4.7200
35	Freeway	4.7300
36	Freeway	4.7800
37	Freeway	4.8200
38	Freeway	4.8700
39	Freeway	4.9100
40	Freeway	4.9500
41	Freeway	5.0000
42	Freeway	5.0500
43	Freeway	5.1000
44	Freeway	5.1400
45	Freeway	5.2000
46	Freeway	5.2500
47	Freeway	5.3000
48	Freeway	5.3500
49	Freeway	5.4100
50	Freeway	5.4600
51	Freeway	5.5200
52	Freeway	5.5700
53	Freeway	5.6400
54	Freeway	5.7100
55	Freeway	5.7700
56	Freeway	5.8400
57	Freeway	5.9100
58	Freeway	5.9900
59	Freeway	6.0600
60	Freeway	6.1400
60.7	Freeway	6.1800
60.7	Freeway	6.1800
60.7	Freeway	6.1800
60.7	Freeway	6.1800
60.7	Freeway	6.1800
2.5	Arterial	14.5500
3	Arterial	12.7600
4	Arterial	10.5400
5	Arterial	9.2000

Converting Date: 6/17/2009

Mobile Output File: C:\Run\MA13_SUM.TXT
Excel File: C:\Run\MA13_SUM.TXT

Mobile Emission Rate

Speed	Type	CO
6	Arterial	8.3000
7	Arterial	7.6500
8	Arterial	7.1600
9	Arterial	6.7900
10	Arterial	6.4800
11	Arterial	6.2200
12	Arterial	6.0100
13	Arterial	5.8200
14	Arterial	5.6700
15	Arterial	5.5300
16	Arterial	5.3900
17	Arterial	5.2700
18	Arterial	5.1600
19	Arterial	5.0600
20	Arterial	4.9700
21	Arterial	4.9100
22	Arterial	4.8500
23	Arterial	4.7900
24	Arterial	4.7400
25	Arterial	4.6900
26	Arterial	4.6700
27	Arterial	4.6400
28	Arterial	4.6200
29	Arterial	4.5900
30	Arterial	4.5700
31	Arterial	4.5800
32	Arterial	4.5800
33	Arterial	4.5800
34	Arterial	4.5900
35	Arterial	4.5900
36	Arterial	4.6400
37	Arterial	4.6800
38	Arterial	4.7300
39	Arterial	4.7700
40	Arterial	4.8100
41	Arterial	4.8600
42	Arterial	4.9100
43	Arterial	4.9500
44	Arterial	4.9900
45	Arterial	5.0400
46	Arterial	5.0900
47	Arterial	5.1400
48	Arterial	5.1900
49	Arterial	5.2400
50	Arterial	5.2800
51	Arterial	5.3400
52	Arterial	5.3900
53	Arterial	5.4400
54	Arterial	5.4900
55	Arterial	5.5400
56	Arterial	5.6100
57	Arterial	5.6700
58	Arterial	5.7300
59	Arterial	5.7900
60	Arterial	5.8500
61	Arterial	5.9200
62	Arterial	5.9900
63	Arterial	6.0500
64	Arterial	6.1200
65	Arterial	6.1800

2018 Mobile Emission Rates: Freeway

Speed	Type	VOC	CO	NOx	CO2	PM2.5	PM10
2.7	Freeway	1.3310	18.4810	0.5890	566.7200	0.0141	0.0289
3	Freeway	1.1850	17.4900	0.5780	566.7200	0.0141	0.0289
4	Freeway	0.8450	15.1760	0.5530	566.7200	0.0141	0.0289
5	Freeway	0.6410	13.7880	0.5380	566.7200	0.0141	0.0289
6	Freeway	0.5340	12.7660	0.5100	566.7200	0.0141	0.0289
7	Freeway	0.4710	11.9900	0.4810	566.7200	0.0141	0.0289
8	Freeway	0.4250	11.4070	0.4600	566.7200	0.0141	0.0289
9	Freeway	0.3880	10.9540	0.4430	566.7200	0.0141	0.0289
10	Freeway	0.3590	10.5910	0.4300	566.7200	0.0141	0.0289
11	Freeway	0.3360	10.2990	0.4160	566.7200	0.0141	0.0289
12	Freeway	0.3190	10.0600	0.4010	566.7200	0.0141	0.0289
13	Freeway	0.3040	9.8580	0.3890	566.7200	0.0141	0.0289
14	Freeway	0.2920	9.6850	0.3780	566.7200	0.0141	0.0289
15	Freeway	0.2810	9.5350	0.3690	566.7200	0.0141	0.0289
16	Freeway	0.2720	9.4230	0.3620	566.7200	0.0141	0.0289
17	Freeway	0.2650	9.3670	0.3590	566.7200	0.0141	0.0289
18	Freeway	0.2600	9.3170	0.3570	566.7200	0.0141	0.0289
19	Freeway	0.2540	9.2730	0.3540	566.7200	0.0141	0.0289
20	Freeway	0.2500	9.2330	0.3520	566.7200	0.0141	0.0289
21	Freeway	0.2460	9.1960	0.3510	566.7200	0.0141	0.0289
22	Freeway	0.2420	9.1630	0.3490	566.7200	0.0141	0.0289
23	Freeway	0.2380	9.1320	0.3470	566.7200	0.0141	0.0289
24	Freeway	0.2350	9.1040	0.3460	566.7200	0.0141	0.0289
25	Freeway	0.2320	9.0780	0.3450	566.7200	0.0141	0.0289
26	Freeway	0.2290	9.0540	0.3440	566.7200	0.0141	0.0289
27	Freeway	0.2260	9.0330	0.3430	566.7200	0.0141	0.0289
28	Freeway	0.2230	9.0130	0.3420	566.7200	0.0141	0.0289
29	Freeway	0.2210	8.9940	0.3420	566.7200	0.0141	0.0289
30	Freeway	0.2190	8.9770	0.3410	566.7200	0.0141	0.0289
31	Freeway	0.2170	8.9730	0.3410	566.7200	0.0141	0.0289
32	Freeway	0.2150	8.9750	0.3410	566.7200	0.0141	0.0289
33	Freeway	0.2130	8.9780	0.3410	566.7200	0.0141	0.0289
34	Freeway	0.2110	8.9800	0.3410	566.7200	0.0141	0.0289
35	Freeway	0.2090	8.9830	0.3410	566.7200	0.0141	0.0289
36	Freeway	0.2080	9.0370	0.3420	566.7200	0.0141	0.0289
37	Freeway	0.2070	9.0870	0.3440	566.7200	0.0141	0.0289
38	Freeway	0.2060	9.1350	0.3450	566.7200	0.0141	0.0289
39	Freeway	0.2050	9.1800	0.3470	566.7200	0.0141	0.0289
40	Freeway	0.2050	9.2300	0.3490	566.7200	0.0141	0.0289
41	Freeway	0.2040	9.2860	0.3520	566.7200	0.0141	0.0289
42	Freeway	0.2030	9.3380	0.3550	566.7200	0.0141	0.0289
43	Freeway	0.2030	9.3890	0.3570	566.7200	0.0141	0.0289
44	Freeway	0.2020	9.4370	0.3600	566.7200	0.0141	0.0289
45	Freeway	0.2010	9.4980	0.3640	566.7200	0.0141	0.0289
46	Freeway	0.2010	9.5550	0.3690	566.7200	0.0141	0.0289
47	Freeway	0.2000	9.6100	0.3730	566.7200	0.0141	0.0289
48	Freeway	0.1990	9.6630	0.3760	566.7200	0.0141	0.0289
49	Freeway	0.1990	9.7240	0.3820	566.7200	0.0141	0.0289
50	Freeway	0.1980	9.7860	0.3880	566.7200	0.0141	0.0289
51	Freeway	0.1980	9.8460	0.3940	566.7200	0.0141	0.0289
52	Freeway	0.1970	9.9040	0.3990	566.7200	0.0141	0.0289
53	Freeway	0.1970	9.9690	0.4070	566.7200	0.0141	0.0289
54	Freeway	0.1970	10.0410	0.4150	566.7200	0.0141	0.0289
55	Freeway	0.1970	10.1111	0.4230	566.7200	0.0141	0.0289
56	Freeway	0.1970	10.1790	0.4310	566.7200	0.0141	0.0289
57	Freeway	0.1970	10.2500	0.4410	566.7200	0.0141	0.0289
58	Freeway	0.1970	10.3290	0.4530	566.7200	0.0141	0.0289
59	Freeway	0.1970	10.4060	0.4650	566.7200	0.0141	0.0289
60	Freeway	0.1980	10.4800	0.4760	566.7200	0.0141	0.0289
60.7	Freeway	0.1980	10.5310	0.4840	566.7200	0.0141	0.0289
60.7	Freeway	0.1980	10.5310	0.4840	566.7200	0.0141	0.0289
60.7	Freeway	0.1980	10.5310	0.4840	566.7200	0.0141	0.0289
60.7	Freeway	0.1980	10.5310	0.4840	566.7200	0.0141	0.0289
60.7	Freeway	0.1980	10.5310	0.4840	566.7200	0.0141	0.0289

2018 Mobile Emission Rates: Arterial

Speed	Type	VOC	CO	NOx	CO2	PM2.5	PM10
2.5	Arterial	1.4330	19.1650	0.5880	566.7200	0.0141	0.0289
3	Arterial	1.1610	17.3140	0.5680	566.7200	0.0141	0.0289
4	Arterial	0.8210	15.0000	0.5430	566.7200	0.0141	0.0289
5	Arterial	0.6170	13.6110	0.5280	566.7200	0.0141	0.0289
6	Arterial	0.5350	12.6470	0.4990	566.7200	0.0141	0.0289
7	Arterial	0.4760	11.9580	0.4780	566.7200	0.0141	0.0289
8	Arterial	0.433	11.442	0.4630	566.7200	0.0141	0.0289
9	Arterial	0.3980	11.0400	0.4500	566.7200	0.0141	0.0289
10	Arterial	0.3710	10.7180	0.4410	566.7200	0.0141	0.0289
11	Arterial	0.3510	10.4490	0.4250	566.7200	0.0141	0.0289
12	Arterial	0.3350	10.2240	0.4120	566.7200	0.0141	0.0289
13	Arterial	0.3210	10.0340	0.4010	566.7200	0.0141	0.0289
14	Arterial	0.3090	9.8710	0.3920	566.7200	0.0141	0.0289
15	Arterial	0.2980	9.7290	0.3840	566.7200	0.0141	0.0289
16	Arterial	0.2880	9.6000	0.3760	566.7200	0.0141	0.0289
17	Arterial	0.2800	9.4860	0.3690	566.7200	0.0141	0.0289
18	Arterial	0.2720	9.3840	0.3620	566.7200	0.0141	0.0289
19	Arterial	0.2650	9.2930	0.3570	566.7200	0.0141	0.0289
20	Arterial	0.2590	9.2120	0.3520	566.7200	0.0141	0.0289
21	Arterial	0.2530	9.1400	0.3470	566.7200	0.0141	0.0289
22	Arterial	0.2480	9.0750	0.3430	566.7200	0.0141	0.0289
23	Arterial	0.2430	9.0160	0.3390	566.7200	0.0141	0.0289
24	Arterial	0.2380	8.9610	0.3350	566.7200	0.0141	0.0289
25	Arterial	0.2340	8.9110	0.3320	566.7200	0.0141	0.0289
26	Arterial	0.2310	8.8840	0.3300	566.7200	0.0141	0.0289
27	Arterial	0.2270	8.8590	0.3270	566.7200	0.0141	0.0289
28	Arterial	0.2240	8.8350	0.3250	566.7200	0.0141	0.0289
29	Arterial	0.2210	8.8140	0.3230	566.7200	0.0141	0.0289
30	Arterial	0.2190	8.7930	0.3210	566.7200	0.0141	0.0289
31	Arterial	0.2160	8.7950	0.3200	566.7200	0.0141	0.0289
32	Arterial	0.2140	8.7970	0.3200	566.7200	0.0141	0.0289
33	Arterial	0.2120	8.7980	0.3190	566.7200	0.0141	0.0289
34	Arterial	0.2100	8.7990	0.3199	566.7200	0.0141	0.0289
35	Arterial	0.2080	8.8010	0.3180	566.7200	0.0141	0.0289
36	Arterial	0.2070	8.8540	0.3200	566.7200	0.0141	0.0289
37	Arterial	0.2060	8.9010	0.3210	566.7200	0.0141	0.0289
38	Arterial	0.2050	8.9520	0.2320	566.7200	0.0141	0.0289
39	Arterial	0.2040	8.9970	0.3240	566.7200	0.0141	0.0289
40	Arterial	0.2030	9.0400	0.3250	566.7200	0.0141	0.0289
41	Arterial	0.2030	9.0950	0.3280	566.7200	0.0141	0.0289
42	Arterial	0.2020	9.1480	0.3310	566.7200	0.0141	0.0289
43	Arterial	0.2010	9.1990	0.3340	566.7200	0.0141	0.0289
44	Arterial	0.2010	9.2470	0.3360	566.7200	0.0141	0.0289
45	Arterial	0.2000	9.2920	0.3390	566.7200	0.0141	0.0289
46	Arterial	0.1990	9.3500	0.3430	566.7200	0.0141	0.0289
47	Arterial	0.1990	9.4050	0.3470	566.7200	0.0141	0.0289
48	Arterial	0.1980	9.4580	0.3510	566.7200	0.0141	0.0289
49	Arterial	0.1980	9.5090	0.3540	566.7200	0.0141	0.0289
50	Arterial	0.1970	9.5570	0.3580	566.7200	0.0141	0.0289
51	Arterial	0.1970	9.6170	0.3640	566.7200	0.0141	0.0289
52	Arterial	0.1960	9.6750	0.3690	566.7200	0.0141	0.0289
53	Arterial	0.1960	9.7300	0.3750	566.7200	0.0141	0.0289
54	Arterial	0.1950	9.7830	0.3800	566.7200	0.0141	0.0289
55	Arterial	0.1950	9.8350	0.3850	566.7200	0.0141	0.0289
56	Arterial	0.1950	9.9020	0.3930	566.7200	0.0141	0.0289
57	Arterial	0.1950	9.9680	0.4010	566.7200	0.0141	0.0289
58	Arterial	0.1950	10.0310	0.0408	566.7200	0.0141	0.0289
59	Arterial	0.0195	10.0910	0.4150	566.7200	0.0141	0.0289
60	Arterial	0.0195	10.1500	0.4220	566.7200	0.0141	0.0289
61	Arterial	0.0195	10.2220	0.4330	566.7200	0.0141	0.0289
62	Arterial	0.0195	10.2910	0.4440	566.7200	0.0141	0.0289
63	Arterial	0.0195	10.3590	0.4540	566.7200	0.0141	0.0289
64	Arterial	0.1950	10.4240	0.4640	566.7200	0.0141	0.0289
65	Arterial	0.1950	10.4870	0.4740	566.7200	0.0141	0.0289

Microscale (CAL3QHC) Input Files

Carbon Monoxide:
- **2013 Existing**
- **2018 No-Build Condition**
- **2018 Build Condition**

Particulate Matter 10:
- **2013 Existing**
- **2018 No-Build Condition**
- **2018 Build Condition**

Particulate Matter 2.5:
- **2013 Existing**
- **2018 No-Build Condition**
- **2018 Build Condition**

2013 Existing
Microscale Input Files
(Carbon Monoxide (CO))

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'Landmark Center'   60   175   0   0   45   0.3048   1   0
'Fen/Brook NE1'   2376.5   3444   6
'Fen/Brook NE2'   2429.68   3390.99   6
'Fen/Brook NE3'   2484.5   3339.81   6
'Fen/Brook NE4'   2530.67   3398.92   6
'Fen/Brook NE5'   2576.84   3458.03   6
'Fen/Brook SE1'   2660.24   3364.92   6
'Fen/Brook SE2'   2609.62   3308.81   6
'Fen/Brook SE3'   2560.72   3252.69   6
'Fen/Brook SE4'   2604   3191.43   6
'Fen/Brook SE5'   2647.27   3130.17   6
'Fen/Brook SW1'   2588.73   3084.78   6
'Fen/Brook SW2'   2545.46   3146.04   6
'Fen/Brook SW3'   2502.19   3207.29   6
'Fen/Brook SW4'   2458.45   3146.37   6
'Fen/Brook SW5'   2414.7   3085.45   6
'Fen/Brook NW1'   2353.53   3168.28   6
'Fen/Brook NW2'   2397.27   3229.2   6
'Fen/Brook NW3'   2441.01   3290.12   6
'Fen/Brook NW4'   2386.19   3341.3   6
'Fen/Brook NW5'   2331.38   3392.49   6
'Park/Brook NE1'   2546.71   3655.11   6
'Park/Brook NE2'   2600.77   3603.13   6
'Park/Brook NE3'   2654.83   3551.15   6
'Park/Brook NE4'   2699.88   3611.11   6
'Park/Brook NE5'   2744.93   3671.08   6
'Park/Brook SE1'   2888.96   3493.9   6
'Park/Brook SE2'   2818.15   3468.13   6
'Park/Brook SE3'   2747.67   3442.47   6
'Park/Brook SE4'   2791.37   3381.51   6
'Park/Brook SE5'   2834.83   3320.29   6
'Park/Brook SW1'   2758.81   3278.82   6
'Park/Brook SW2'   2715.39   3339.97   6
'Park/Brook SW3'   2671.97   3401.13   6
'Park/Brook SW4'   2625.81   3342.02   6
'Park/Brook SW5'   2579.64   3282.92   6
'Park/Brook NW1'   2506.28   3367.69   6
'Park/Brook NW2'   2552.44   3426.8   6
'Park/Brook NW3'   2598.61   3485.9   6
'Park/Brook NW4'   2544.55   3537.89   6
'Park/Brook NW5'   2490.48   3589.87   6
'Park/Brook E1'   2853.5   3672.42   6
'Park/Brook E2'   2811.94   3617.1   6
'Park/Brook E3'   2763.4   3552.49   6
'Park/Brook E4'   2838.4   3579.78   6
'Park/Brook E5'   2904.36   3603.79   6
'2013EX'   54   1   0   'C'
 2
'Fen/Brook WB TT'   'AG'   2508.32   3314.76   2567.48   3392.01   1   20   2
100   59   3   790   54.3875   1600   1   3
 2
'Fen/Brook EB TTTR'   'AG'   2469.88   3221.1   2419.79   3152.05   1   30   3
100   59   3   875   54.3875   1600   1   3
 2
'Fen/Brook SB L'   'AG'   2487.62   3319   2439.29   3364.86   1   10   1
100   57   3   545   54.3875   1600   1   3
 2
'Fen/Brook SB LTT'   'AG'   2476.25   3307.23   2427.92   3351.87   1   20   2
100   57   3   825   54.3875   1600   1   3
 2
'Fen/Brook SB R'   'AG'   2463.25   3293.43   2416.55   3338.48   1   10   1
100   57   3   115   54.3875   1600   1   3
 2
'Park/Brook WB TTR'   'AG'   2701.33   3561.7   2759.96   3639.18   1   30   3
100   68   3   550   54.3875   1600   1   3
 2
'Park/Brook NWB LLRRR'   'AG'   2745.91   3510.38   2903.87   3571.39   1   30   3
100   62   3   1085   54.3875   1600   1   3
 2
'Park/Brook NB LTTTR'   'AG'   2715.39   3403.84   2792.43   3305.54   1   40   4
100   70   3   1030   54.3875   1600   1   3
 2
'Park/Brook EB TT'   'AG'   2632.53   3431.93   2548.22   3322.98   1   20   2
100   68   3   355   54.3875   1600   1   3
 2
'Park/Brook EB RR'   'AG'   2648.52   3416.92   2569.06   3311.84   1   20   2
100   30   3   955   54.3875   1600   1   3
 2
'River/Park SB'   'AG'   2213.27   3801.84   2235.59   3847.49   1   10   1
100   50   3   500   54.3875   1600   1   3
 2
'River/Park SB East'   'AG'   2256.21   3801.18   2265.6   3851.79   1   20   2
100   50   3   440   54.3875   1600   1   3
 2
'River/Park WB North'   'AG'   2272.82   3765.17   2338.24   3765.5   1   30   3
100   50   3   875   54.3875   1600   1   3
 2
'River/Park WB South'   'AG'   2270.48   3707.91   2328.96   3732.95   1   20   2
100   50   3   385   54.3875   1600   1   3
 2
'Beacon/Park SB LTT'   'AG'   1962.93   4712.56   1934.73   4800.99   1   20   2
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110   79   3   595   54.3875   1600   1   3
 2
'Beacon/Park WB LTT'   'AG'   2055.3   4691.67   2155.45   4728.6   1   20   2
110   95   3   940   54.3875   1600   1   3
 2
'Beacon/Park NB LTT'   'AG'   2041.69   4597.41   2076.21   4496.84   1   20   2
110   101   3   580   54.3875   1600   1   3
 2
'Beacon/Park EB LTTT'   'AG'   1966.34   4608.1   1839.93   4551.25   1   30   3
110   70   3   495   54.3875   1600   1   3
 2
'Beacon/Park EB R'   'AG'   1975.57   4560.48   1931.82   4567.29   1   20   2
110   70   3   130   54.3875   1600   1   3
 2
'Beacon/Park SB R '   'AG'   1917.23   4688.27   1941.05   4726.65   1   10   1
110   79   3   15   54.3875   1600   1   3
 2
'Beacon/Park WB R '   'AG'   2019.81   4741.23   2072.32   4722.77   1   10   1
110   95   3   15   54.3875   1600   1   3
 2
'Beacon/Park NB R'   'AG'   2095.17   4627.53   2077.67   4580.89   1   10   1
110   101   3   60   54.3875   1600   1   3
 2
'Boyl/Kil SB LTR'   'AG'   3321.98   3753.82   3294.42   3839.17   1   20   2
100   71   3   260   54.3875   1600   1   3
 2
'Boyl/Kil WB LTTR'   'AG'   3373.33   3738.7   3489.55   3785.69   1   20   2
100   29   3   980   54.3875   1600   1   3
 2
'Boyl/Kil NB LTR'   'AG'   3365.22   3677.65   3399.29   3591.62   1   10   1
100   71   3   80   54.3875   1600   1   3
 2
'Boyl/Kil EB LTTR'   'AG'   3320.38   3695.34   3212.27   3655.91   1   20   2
100   29   3   1165   54.3875   1600   1   3
 1
'Fenway/Brook South'   'AG'   2496.93   3278.87   2636.65   3081.07   775   9.783   1   54
 1
'Fenway/Brook West'   'AG'   2481.8   3262.91   2347.32   3075.62   1780   9.783   1   78
 1
'Fenway/Brook North'   'AG'   2491.04   3288.56   2373.12   3398.66   1485   9.783   1   66
 1
'Fenway/Brook East'   'AG'   2497.77   3264.59   2608.73   3389.73   2090   9.783   1   90
 1
'Park/Brook South'   'AG'   2691.91   3447.33   2838.26   3241.18   1030   9.783   1   66
 1
'Park/Brook West'   'AG'   2672.16   3490.72   2502.75   3273.82   2100   9.783   1   90
 1
'Park/Brook North'   'AG'   2656.67   3489.73   2496.11   3644.11   1675   9.873   1   66
 1
'Park/Brook East'   'AG'   2663.31   3490.84   2801.72   3675.09   1010   9.783   1   66
 1
'Park/Brook SE'   'AG'   2681.03   3470.37   2968.37   3574.94   2135   9.783   1   78
 1
'River/Park N'   'AG'   2254.71   3768.23   2266.44   3911.9   440   9.783   1   42
 1
'River/Park SE'   'AG'   2239.06   3675.39   2343.7   3750.15   260   9.783   1   42
 1
'River/Park NE'   'AG'   2237.1   3772.14   2377.44   3769.21   750   9.783   1   54
 1
'River/Park S'   'AG'   2231.15   3745.07   2210.13   3564.26   700   9.783   1   54
 1
'River/Park SW'   'AG'   2211.1   3765.1   2058.06   3624.36   1250   9.783   1   54
 1
'River/Park NW'   'AG'   2193.99   3770.21   2250.71   3886.02   500   9.783   1   30
 1
'Beacon/Park N'   'AG'   1996.01   4667.5   1894.21   4948.36   1105   9.783   1   78
 1
'Beacon/Park NR'   'AG'   1907.99   4673.8   1956.12   4744.74   15   9.783   1   30
 1
'Beacon/Park E'   'AG'   1997.77   4657.71   2274.41   4755.75   1470   9.783   1   78
 1
'Beacon/Park ER'   'AG'   1991.42   4750.81   2112.09   4710.61   15   9.783   1   30
 1
'Beacon/Park S'   'AG'   2009.06   4646.43   2098.69   4400.99   1610   9.783   1   78
 1
'Beacon/Park SR'   'AG'   2102.46   4662.03   2076.21   4571.17   60   9.783   1   42
 1
'Beacon/Park W EB'   'AG'   1995.65   4607.64   1704.19   4488.44   495   9.783   1   66
 1
'Beacon/Park W EBR'   'AG'   2009.06   4551.22   1907.44   4575.2   130   9.783   1   38
 1
'Beacon/Park W WB'   'AG'   1989.3   4675.35   1658.32   4556.15   825   9.783   1   78
 1
'Boyl/Kil N'   'AG'   3344.49   3716.98   3289.05   3876.33   320   9.783   1   54
 1
'Boyl/Kil E'   'AG'   3348.9   3715.02   3516.2   3780.72   2250   9.783   1   78
 1
'Boyl/Kil S'   'AG'   3349.91   3702.12   3425.46   3502.07   205   9.783   1   54
 1
'Boyl/Kil W'   'AG'   3345.98   3717.81   3141.89   3641.32   2195   9.783   1   78
1   0   4   1000   0   'Y'   10   0   36
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'Landmark Center'   60   175   0   0   60   0.3048   1   0
'Beacon/Park NE1'   1956   4921.67   6
'Beacon/Park NE2'   1981.56   4851.16   6
'Beacon/Park NE3'   2059.66   4754.43   6
'Beacon/Park NE4'   2163.51   4768.43   6
'Beacon/Park NE5'   2234.2   4793.49   6
'Beacon/Park SE1'   2273.61   4703.48   6
'Beacon/Park SE2'   2202.92   4678.43   6
'Beacon/Park SE3'   2119.12   4608   6
'Beacon/Park SE4'   2120.16   4485.05   6
'Beacon/Park SE5'   2146.81   4412.06   6
'Beacon/Park SW1'   2053.38   4382.21   6
'Beacon/Park SW2'   2027.66   4452.66   6
'Beacon/Park SW3'   1951.59   4534.99   6
'Beacon/Park SW4'   1869.49   4509.59   6
'Beacon/Park SW5'   1800.07   4481.2   6
'Beacon/Park NW1'   1748.74   4640.8   6
'Beacon/Park NW2'   1819.31   4666.21   6
'Beacon/Park NW3'   1911.37   4723.31   6
'Beacon/Park NW4'   1893.82   4805.63   6
'Beacon/Park NW5'   1868.27   4876.14   6
'Riverway/Park NE1'   2301.27   3957.57   6
'Riverway/Park NE2'   2295.17   3882.81   6
'Riverway/Park NE3'   2289.07   3808.06   6
'Riverway/Park NE4'   2364.05   3806.5   6
'Riverway/Park NE5'   2439.05   3805.99   6
'Riverway/Park SE1'   2427.53   3594.67   6
'Riverway/Park SE2'   2406.62   3667.75   6
'Riverway/Park SE3'   2309.4   3687.55   6
'Riverway/Park SE4'   2248.83   3576.74   6
'Riverway/Park SE5'   2296.57   3506.87   6
'Riverway/Park SW1'   2170.58   3544.51   6
'Riverway/Park SW2'   2179.24   3619   6
'Riverway/Park SW3'   2187.91   3693.5   6
'Riverway/Park SW4'   2132.7   3642.73   6
'Riverway/Park SW5'   2077.5   3591.97   6
'Riverway/Park NW1'   2059.15   3675.63   6
'Riverway/Park NW2'   2114.35   3726.4   6
'Riverway/Park NW3'   2169.56   3777.16   6
'Riverway/Park NW4'   2202.55   3844.52   6
'Riverway/Park NW5'   2235.34   3911.97   6
'Boyl/Kil NE1'   3320.78   3917.23   6
'Boyl/Kil NE2'   3339.33   3844.42   6
'Boyl/Kil NE3'   3363.97   3773.58   6
'Boyl/Kil NE4'   3433.78   3801   6
'Boyl/Kil NE5'   3503.59   3828.41   6
'Boyl/Kil SE1'   3537.24   3736.34   6
'Boyl/Kil SE2'   3467.1   3708.8   6
'Boyl/Kil SE3'   3397.29   3681.38   6
'Boyl/Kil SE4'   3423.79   3611.22   6
'Boyl/Kil SE5'   3450.29   3541.06   6
'Boyl/Kil SW1'   3379.89   3518   6
'Boyl/Kil SW2'   3353.07   3589.02   6
'Boyl/Kil SW3'   3326.9   3658.33   6
'Boyl/Kil SW4'   3256.67   3632.01   6
'Boyl/Kil SW5'   3186.44   3605.69   6
'Boyl/Kil NW1'   3153.18   3697.88   6
'Boyl/Kil NW2'   3223.41   3724.2   6
'Boyl/Kil NW3'   3293.64   3750.52   6
'Boyl/Kil NW4'   3269   3821.36   6
'Boyl/Kil NW5'   3244.48   3891.85   6
'2013EX'   54   1   0   'C'
 2
'Fen/Brook WB TT'   'AG'   2508.32   3314.76   2567.48   3392.01   1   20   2
100   59   3   790   54.3875   1600   1   3
 2
'Fen/Brook EB TTTR'   'AG'   2469.88   3221.1   2419.79   3152.05   1   30   3
100   59   3   875   54.3875   1600   1   3
 2
'Fen/Brook SB L'   'AG'   2487.62   3319   2439.29   3364.86   1   10   1
100   57   3   545   54.3875   1600   1   3
 2
'Fen/Brook SB LTT'   'AG'   2476.25   3307.23   2427.92   3351.87   1   20   2
100   57   3   825   54.3875   1600   1   3
 2
'Fen/Brook SB R'   'AG'   2463.25   3293.43   2416.55   3338.48   1   10   1
100   57   3   115   54.3875   1600   1   3
 2
'Park/Brook WB TTR'   'AG'   2701.33   3561.7   2759.96   3639.18   1   30   3
100   68   3   550   54.3875   1600   1   3
 2
'Park/Brook NWB LLRRR'   'AG'   2745.91   3510.38   2903.87   3571.39   1   30   3
100   62   3   1085   54.3875   1600   1   3
 2
'Park/Brook NB LTTTR'   'AG'   2715.39   3403.84   2792.43   3305.54   1   40   4
100   70   3   1030   54.3875   1600   1   3
 2
'Park/Brook EB TT'   'AG'   2632.53   3431.93   2548.22   3322.98   1   20   2
100   68   3   355   54.3875   1600   1   3
 2
'Park/Brook EB RR'   'AG'   2648.52   3416.92   2569.06   3311.84   1   20   2
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100   30   3   955   54.3875   1600   1   3
 2
'River/Park SB'   'AG'   2213.27   3801.84   2235.59   3847.49   1   10   1
100   50   3   500   54.3875   1600   1   3
 2
'River/Park SB East'   'AG'   2256.21   3801.18   2265.6   3851.79   1   20   2
100   50   3   440   54.3875   1600   1   3
 2
'River/Park WB North'   'AG'   2272.82   3765.17   2338.24   3765.5   1   30   3
100   50   3   875   54.3875   1600   1   3
 2
'River/Park WB South'   'AG'   2270.48   3707.91   2328.96   3732.95   1   20   2
100   50   3   385   54.3875   1600   1   3
 2
'Beacon/Park SB LTT'   'AG'   1962.93   4712.56   1934.73   4800.99   1   20   2
110   79   3   595   54.3875   1600   1   3
 2
'Beacon/Park WB LTT'   'AG'   2055.3   4691.67   2155.45   4728.6   1   20   2
110   95   3   940   54.3875   1600   1   3
 2
'Beacon/Park NB LTT'   'AG'   2041.69   4597.41   2076.21   4496.84   1   20   2
110   101   3   580   54.3875   1600   1   3
 2
'Beacon/Park EB LTTT'   'AG'   1966.34   4608.1   1839.93   4551.25   1   30   3
110   70   3   495   54.3875   1600   1   3
 2
'Beacon/Park EB R'   'AG'   1975.57   4560.48   1931.82   4567.29   1   20   2
110   70   3   130   54.3875   1600   1   3
 2
'Beacon/Park SB R '   'AG'   1917.23   4688.27   1941.05   4726.65   1   10   1
110   79   3   15   54.3875   1600   1   3
 2
'Beacon/Park WB R '   'AG'   2019.81   4741.23   2072.32   4722.77   1   10   1
110   95   3   15   54.3875   1600   1   3
 2
'Beacon/Park NB R'   'AG'   2095.17   4627.53   2077.67   4580.89   1   10   1
110   101   3   60   54.3875   1600   1   3
 2
'Boyl/Kil SB LTR'   'AG'   3321.98   3753.82   3294.42   3839.17   1   20   2
100   71   3   260   54.3875   1600   1   3
 2
'Boyl/Kil WB LTTR'   'AG'   3373.33   3738.7   3489.55   3785.69   1   20   2
100   29   3   980   54.3875   1600   1   3
 2
'Boyl/Kil NB LTR'   'AG'   3365.22   3677.65   3399.29   3591.62   1   10   1
100   71   3   80   54.3875   1600   1   3
 2
'Boyl/Kil EB LTTR'   'AG'   3320.38   3695.34   3212.27   3655.91   1   20   2
100   29   3   1165   54.3875   1600   1   3
 1
'Fenway/Brook South'   'AG'   2496.93   3278.87   2636.65   3081.07   775   9.783   1   54
 1
'Fenway/Brook West'   'AG'   2481.8   3262.91   2347.32   3075.62   1780   9.783   1   78
 1
'Fenway/Brook North'   'AG'   2491.04   3288.56   2373.12   3398.66   1485   9.783   1   66
 1
'Fenway/Brook East'   'AG'   2497.77   3264.59   2608.73   3389.73   2090   9.783   1   90
 1
'Park/Brook South'   'AG'   2691.91   3447.33   2838.26   3241.18   1030   9.783   1   66
 1
'Park/Brook West'   'AG'   2672.16   3490.72   2502.75   3273.82   2100   9.783   1   90
 1
'Park/Brook North'   'AG'   2656.67   3489.73   2496.11   3644.11   1675   9.783   1   66
 1
'Park/Brook East'   'AG'   2663.31   3490.84   2801.72   3675.09   1010   9.783   1   66
 1
'Park/Brook SE'   'AG'   2681.03   3470.37   2968.37   3574.94   2135   9.783   1   78
 1
'River/Park N'   'AG'   2254.71   3768.23   2266.44   3911.9   440   9.783   1   42
 1
'River/Park SE'   'AG'   2239.06   3675.39   2343.7   3750.15   260   9.783   1   42
 1
'River/Park NE'   'AG'   2237.1   3772.14   2377.44   3769.21   750   9.783   1   54
 1
'River/Park S'   'AG'   2231.15   3745.07   2210.13   3564.26   700   9.783   1   54
 1
'River/Park SW'   'AG'   2211.1   3765.1   2058.06   3624.36   1250   9.783   1   54
 1
'River/Park NW'   'AG'   2193.99   3770.21   2250.71   3886.02   500   9.783   1   30
 1
'Beacon/Park N'   'AG'   1996.01   4667.5   1894.21   4948.36   1105   9.783   1   78
 1
'Beacon/Park NR'   'AG'   1907.99   4673.8   1956.12   4744.74   15   9.783   1   30
 1
'Beacon/Park E'   'AG'   1997.77   4657.71   2274.41   4755.75   1470   9.783   1   78
 1
'Beacon/Park ER'   'AG'   1991.42   4750.81   2112.09   4710.61   60   9.783   1   30
 1
'Beacon/Park S'   'AG'   2009.06   4646.43   2098.69   4400.99   1610   9.783   1   78
 1
'Beacon/Park SR'   'AG'   2102.46   4662.03   2076.21   4571.17   15   9.783   1   42
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 1
'Beacon/Park W EB'   'AG'   1995.65   4607.64   1704.19   4488.44   495   9.783   1   66
 1
'Beacon/Park W EBR'   'AG'   2009.06   4551.22   1907.44   4575.2   130   9.783   1   38
 1
'Beacon/Park W WB'   'AG'   1989.3   4675.35   1658.32   4556.15   825   9.783   1   78
 1
'Boyl/Kil N'   'AG'   3344.49   3716.98   3289.05   3876.33   320   9.783   1   54
 1
'Boyl/Kil E'   'AG'   3348.9   3715.02   3516.2   3780.72   2250   9.783   1   78
 1
'Boyl/Kil S'   'AG'   3349.91   3702.12   3425.46   3502.07   205   9.783   1   54
 1
'Boyl/Kil W'   'AG'   3345.98   3717.81   3141.89   3641.32   2195   9.783   1   78
1   0   4   1000   0   'Y'   10   0   36
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'LANDMARKCENTER'   60   175   0   0   20   0.3048   1   0
'Brook/Full NE1'   2962.21   4181.21   6
'Brook/Full NE2'   3023.74   4138.31   6
'Brook/Full NE3'   3085.26   4095.42   6
'Brook/Full NE4'   3133.26   4153.04   6
'Brook/Full NE5'   3188.74   4204.01   6
'Brook/Full SE1'   3234.98   4159.54   6
'Brook/Full SE2'   3186.98   4101.91   6
'Brook/Full SE3'   3130.3   4049.49   6
'Brook/Full SE4'   3203.31   4005.73   6
'Brook/Full SE5'   3267.63   3967.16   6
'Brook/Full SW1'   3228.25   3918.49   6
'Brook/Full SW2'   3163.92   3957.05   6
'Brook/Full SW3'   3099.59   3995.61   6
'Brook/Full SW4'   3055.49   3934.94   6
'Brook/Full SW5'   3011.4   3874.28   6
'Brook/Full NW1'   2950.49   3916.35   6
'Brook/Full NW2'   2994.59   3977.01   6
'Brook/Full NW3'   3038.69   4037.68   6
'Brook/Full NW4'   2977.16   4080.57   6
'Brook/Full NW5'   2915.64   4123.47   6
'2013_EX_CO_3'   10   1   0   'C'
 2
'Brook/Full EB L'   'AG'   3074.73   4018.45   2990.41   3908.28   1   10   1
100   33   3   90   54.3875   1600   1   3
 2
'Brook/Full EB TR'   'AG'   3083.58   4011.97   3001.61   3902.98   1   10   1
100   33   3   350   54.3875   1600   1   3
 2
'Brook/Full NB LTR'   'AG'   3121.31   4022.57   3170.85   3996.06   1   10   1
100   33   3   170   54.3875   1600   1   3
 2
'Brook/Full WB LTR'   'AG'   3127.21   4100.92   3172.02   4159.83   1   20   2
100   43   3   390   54.3875   1600   1   3
 2
'Brook/Full SB LT'   'AG'   3068.25   4050.85   2998.08   4102.69   1   10   1
100   67   3   125   54.3875   1600   1   3
 2
'Brook/Full SB R'   'AG'   3061.17   4041.42   2989.82   4092.67   1   10   1
100   57   3   135   54.3875   1600   1   3
 1
'Brook/Full N'   'AG'   3091.95   4045.65   2925.79   4161.49   420   9.783   1   54
 1
'Brook/Full E'   'AG'   3091.95   4045.65   3246.16   4230.76   815   9.783   1   54
 1
'Brook/Full S'   'AG'   3100.32   4031.31   3189.98   3977.57   305   9.783   1   42
 1
'Brook/Full W'   'AG'   3091.95   4048.03   2946.11   3847.39   980   9.783   1   54
1   0   4   1000   0   'Y'   10   0   36
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2018 No-Build
Microscale Input Files
(Carbon Monoxide (CO))

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'Landmark Center'   60   175   0   0   45   0.3048   1   0
'Fen/Brook NE1'   2376.5   3444   6
'Fen/Brook NE2'   2429.68   3390.99   6
'Fen/Brook NE3'   2484.5   3339.81   6
'Fen/Brook NE4'   2530.67   3398.92   6
'Fen/Brook NE5'   2576.84   3458.03   6
'Fen/Brook SE1'   2660.24   3364.92   6
'Fen/Brook SE2'   2609.62   3308.81   6
'Fen/Brook SE3'   2560.72   3252.69   6
'Fen/Brook SE4'   2604   3191.43   6
'Fen/Brook SE5'   2647.27   3130.17   6
'Fen/Brook SW1'   2588.73   3084.78   6
'Fen/Brook SW2'   2545.46   3146.04   6
'Fen/Brook SW3'   2502.19   3207.29   6
'Fen/Brook SW4'   2458.45   3146.37   6
'Fen/Brook SW5'   2414.7   3085.45   6
'Fen/Brook NW1'   2353.53   3168.28   6
'Fen/Brook NW2'   2397.27   3229.2   6
'Fen/Brook NW3'   2441.01   3290.12   6
'Fen/Brook NW4'   2386.19   3341.3   6
'Fen/Brook NW5'   2331.38   3392.49   6
'Park/Brook NE1'   2546.71   3655.11   6
'Park/Brook NE2'   2600.77   3603.13   6
'Park/Brook NE3'   2654.83   3551.15   6
'Park/Brook NE4'   2699.88   3611.11   6
'Park/Brook NE5'   2744.93   3671.08   6
'Park/Brook SE1'   2888.96   3493.9   6
'Park/Brook SE2'   2818.15   3468.13   6
'Park/Brook SE3'   2747.67   3442.47   6
'Park/Brook SE4'   2791.37   3381.51   6
'Park/Brook SE5'   2834.83   3320.29   6
'Park/Brook SW1'   2758.81   3278.82   6
'Park/Brook SW2'   2715.39   3339.97   6
'Park/Brook SW3'   2671.97   3401.13   6
'Park/Brook SW4'   2625.81   3342.02   6
'Park/Brook SW5'   2579.64   3282.92   6
'Park/Brook NW1'   2506.28   3367.69   6
'Park/Brook NW2'   2552.44   3426.8   6
'Park/Brook NW3'   2598.61   3485.9   6
'Park/Brook NW4'   2544.55   3537.89   6
'Park/Brook NW5'   2490.48   3589.87   6
'Park/Brook E1'   2853.5   3672.42   6
'Park/Brook E2'   2811.94   3617.1   6
'Park/Brook E3'   2763.4   3552.49   6
'Park/Brook E4'   2838.4   3579.78   6
'Park/Brook E5'   2904.36   3603.79   6
'2018NB'   56   1   0   'C'
 2
'Fen/Brook WB TT'   'AG'   2508.32   3314.76   2567.48   3392.01   1   20   2
100   54   3   870   47.9125   1600   1   3
 2
'Fen/Brook EB TTTR'   'AG'   2469.88   3221.1   2419.79   3152.05   1   30   3
100   54   3   947   47.9125   1600   1   3
 2
'Fen/Brook SB L'   'AG'   2487.62   3319   2439.29   3364.86   1   10   1
100   46   3   648   47.9125   1600   1   3
 2
'Fen/Brook SB LTT'   'AG'   2476.25   3307.23   2427.92   3351.87   1   20   2
100   46   3   854   47.9125   1600   1   3
 2
'Fen/Brook SB R'   'AG'   2463.25   3293.43   2416.55   3338.48   1   10   1
100   46   3   126   47.9125   1600   1   3
 2
'Park/Brook WB TTR'   'AG'   2701.33   3561.7   2759.96   3639.18   1   30   3
100   68   3   550   47.9125   1600   1   3
 2
'Park/Brook NWB LLRRR'   'AG'   2745.91   3510.38   2903.87   3571.39   1   30   3
100   75   3   1203   47.9125   1600   1   3
 2
'Park/Brook NB LTTTR'   'AG'   2715.39   3403.84   2792.43   3305.54   1   40   4
100   68   3   958   47.9125   1600   1   3
 2
'Park/Brook EB L'   'AG'   2628.58   3434.99   2544.27   3326.04   1   10   1
100   85   3   98   47.9125   1600   1   3
 2
'Park/Brook EB T'   'AG'   2637.53   3428.06   2552.21   3319.05   1   10   1
100   57   3   416   47.9125   1600   1   3
 2
'Park/Brook EB RR'   'AG'   2648.52   3416.92   2569.06   3311.84   1   20   2
100   32   3   1029   47.9125   1600   1   3
 2
'River/Park SB'   'AG'   2213.27   3801.84   2235.59   3847.49   1   10   1
100   78   3   548   47.9125   1600   1   3
 2
'River/Park SB East'   'AG'   2256.21   3801.18   2265.6   3851.79   1   20   2
100   78   3   473   47.9125   1600   1   3
 2
'River/Park WB North'   'AG'   2272.82   3765.17   2338.24   3765.5   1   30   3
100   59   3   875   47.9125   1600   1   3
 2
'River/Park WB South'   'AG'   2270.48   3707.91   2328.96   3732.95   1   20   2
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100   59   3   385   47.9125   1600   1   3
 2
'River/Park NEB'   'AG'   2169.88   3720.6   2100.81   3654.06   1   20   2
100   73   3   84   47.9125   1600   1   3
 2
'Beacon/Park SB LTT'   'AG'   1962.93   4712.56   1934.73   4800.99   1   20   2
110   61   3   629   47.9125   1600   1   3
 2
'Beacon/Park WB LTT'   'AG'   2055.3   4691.67   2155.45   4728.6   1   20   2
110   56   3   1020   47.9125   1600   1   3
 2
'Beacon/Park NB LTT'   'AG'   2041.69   4597.41   2076.21   4496.84   1   20   2
110   103   3   609   47.9125   1600   1   3
 2
'Beacon/Park EB LTTT'   'AG'   1966.34   4608.1   1839.93   4551.25   1   30   3
110   68   3   466   47.9125   1600   1   3
 2
'Beacon/Park EB R'   'AG'   1975.57   4560.48   1931.82   4567.29   1   20   2
110   61   3   134   47.9125   1600   1   3
 2
'Beacon/Park SB R '   'AG'   1917.23   4688.27   1941.05   4726.65   1   10   1
110   61   3   15   47.9125   1600   1   3
 2
'Beacon/Park WB R '   'AG'   2019.81   4741.23   2072.32   4722.77   1   10   1
110   68   3   33   47.9125   1600   1   3
 2
'Beacon/Park NB R'   'AG'   2095.17   4627.53   2077.67   4580.89   1   10   1
110   61   3   71   47.9125   1600   1   3
 2
'Boyl/Kil SB LTR'   'AG'   3321.98   3753.82   3294.42   3839.17   1   20   2
100   71   3   244   47.9125   1600   1   3
 2
'Boyl/Kil WB LTTR'   'AG'   3373.33   3738.7   3489.55   3785.69   1   20   2
100   29   3   1060   47.9125   1600   1   3
 2
'Boyl/Kil NB LTR'   'AG'   3365.22   3677.65   3399.29   3591.62   1   10   1
100   71   3   82   47.9125   1600   1   3
 2
'Boyl/Kil EB LTTR'   'AG'   3320.38   3695.34   3212.27   3655.91   1   20   2
100   29   3   1274   47.9125   1600   1   3
 1
'Fenway/Brook South'   'AG'   2496.93   3278.87   2636.65   3081.07   916   8.793   1   54
 1
'Fenway/Brook West'   'AG'   2481.8   3262.91   2347.32   3075.62   1881   8.793   1   78
 1
'Fenway/Brook North'   'AG'   2491.04   3288.56   2373.12   3398.66   1628   8.793   1   66
 1
'Fenway/Brook East'   'AG'   2497.77   3264.59   2608.73   3389.73   2403   8.793   1   90
 1
'Park/Brook South'   'AG'   2691.91   3447.33   2838.26   3241.18   958   8.793   1   66
 1
'Park/Brook West'   'AG'   2672.16   3490.72   2502.75   3273.82   2413   8.793   1   90
 1
'Park/Brook North'   'AG'   2656.67   3489.73   2496.11   3644.11   1794   8.793   1   66
 1
'Park/Brook East'   'AG'   2663.31   3490.84   2801.72   3675.09   1249   8.793   1   66
 1
'Park/Brook SE'   'AG'   2681.03   3470.37   2968.37   3574.94   2358   8.793   1   78
 1
'River/Park N'   'AG'   2254.71   3768.23   2266.44   3911.9   473   8.793   1   42
 1
'River/Park SE'   'AG'   2239.06   3675.39   2343.7   3750.15   428   8.793   1   42
 1
'River/Park NE'   'AG'   2237.1   3772.14   2377.44   3769.21   872   8.793   1   54
 1
'River/Park S'   'AG'   2231.15   3745.07   2210.13   3564.26   901   8.793   1   54
 1
'River/Park SW'   'AG'   2211.1   3765.1   2058.06   3624.36   1420   8.793   1   54
 1
'River/Park NW'   'AG'   2193.99   3770.21   2250.71   3886.02   548   8.793   1   30
 1
'Beacon/Park N'   'AG'   1996.01   4667.5   1894.21   4948.36   1153   8.793   1   78
 1
'Beacon/Park NR'   'AG'   1907.99   4673.8   1956.12   4744.74   15   8.793   1   30
 1
'Beacon/Park E'   'AG'   1997.77   4657.71   2274.41   4755.75   1621   8.793   1   78
 1
'Beacon/Park ER'   'AG'   1991.42   4750.81   2112.09   4710.61   33   8.793   1   30
 1
'Beacon/Park S'   'AG'   2009.06   4646.43   2098.69   4400.99   1732   8.793   1   78
 1
'Beacon/Park SR'   'AG'   2102.46   4662.03   2076.21   4571.17   71   8.793   1   42
 1
'Beacon/Park W EB'   'AG'   1995.65   4607.64   1704.19   4488.44   600   8.793   1   66
 1
'Beacon/Park W EBR'   'AG'   2009.06   4551.22   1907.44   4575.2   134   8.793   1   38
 1
'Beacon/Park W WB'   'AG'   1989.3   4675.35   1658.32   4556.15   843   8.793   1   78
 1
'Boyl/Kil N'   'AG'   3344.49   3716.98   3289.05   3876.33   320   8.793   1   54
 1
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'Boyl/Kil E'   'AG'   3348.9   3715.02   3516.2   3780.72   2366   8.793   1   78
 1
'Boyl/Kil S'   'AG'   3349.91   3702.12   3425.46   3502.07   242   8.793   1   54
 1
'Boyl/Kil W'   'AG'   3345.98   3717.81   3141.89   3641.32   2392   8.793   1   78
1   0   4   1000   0   'Y'   10   0   36
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'Landmark Center'   60   175   0   0   60   0.3048   1   0
'Beacon/Park NE1'   1956   4921.67   6
'Beacon/Park NE2'   1981.56   4851.16   6
'Beacon/Park NE3'   2059.66   4754.43   6
'Beacon/Park NE4'   2163.51   4768.43   6
'Beacon/Park NE5'   2234.2   4793.49   6
'Beacon/Park SE1'   2273.61   4703.48   6
'Beacon/Park SE2'   2202.92   4678.43   6
'Beacon/Park SE3'   2119.12   4608   6
'Beacon/Park SE4'   2120.16   4485.05   6
'Beacon/Park SE5'   2146.81   4412.06   6
'Beacon/Park SW1'   2053.38   4382.21   6
'Beacon/Park SW2'   2027.66   4452.66   6
'Beacon/Park SW3'   1951.59   4534.99   6
'Beacon/Park SW4'   1869.49   4509.59   6
'Beacon/Park SW5'   1800.07   4481.2   6
'Beacon/Park NW1'   1748.74   4640.8   6
'Beacon/Park NW2'   1819.31   4666.21   6
'Beacon/Park NW3'   1911.37   4723.31   6
'Beacon/Park NW4'   1893.82   4805.63   6
'Beacon/Park NW5'   1868.27   4876.14   6
'Riverway/Park NE1'   2301.27   3957.57   6
'Riverway/Park NE2'   2295.17   3882.81   6
'Riverway/Park NE3'   2289.07   3808.06   6
'Riverway/Park NE4'   2364.05   3806.5   6
'Riverway/Park NE5'   2439.05   3805.99   6
'Riverway/Park SE1'   2427.53   3594.67   6
'Riverway/Park SE2'   2406.62   3667.75   6
'Riverway/Park SE3'   2309.4   3687.55   6
'Riverway/Park SE4'   2248.83   3576.74   6
'Riverway/Park SE5'   2296.57   3506.87   6
'Riverway/Park SW1'   2170.58   3544.51   6
'Riverway/Park SW2'   2179.24   3619   6
'Riverway/Park SW3'   2187.91   3693.5   6
'Riverway/Park SW4'   2132.7   3642.73   6
'Riverway/Park SW5'   2077.5   3591.97   6
'Riverway/Park NW1'   2059.15   3675.63   6
'Riverway/Park NW2'   2114.35   3726.4   6
'Riverway/Park NW3'   2169.56   3777.16   6
'Riverway/Park NW4'   2202.55   3844.52   6
'Riverway/Park NW5'   2235.34   3911.97   6
'Boyl/Kil NE1'   3320.78   3917.23   6
'Boyl/Kil NE2'   3339.33   3844.42   6
'Boyl/Kil NE3'   3363.97   3773.58   6
'Boyl/Kil NE4'   3433.78   3801   6
'Boyl/Kil NE5'   3503.59   3828.41   6
'Boyl/Kil SE1'   3537.24   3736.34   6
'Boyl/Kil SE2'   3467.1   3708.8   6
'Boyl/Kil SE3'   3397.29   3681.38   6
'Boyl/Kil SE4'   3423.79   3611.22   6
'Boyl/Kil SE5'   3450.29   3541.06   6
'Boyl/Kil SW1'   3379.89   3518   6
'Boyl/Kil SW2'   3353.07   3589.02   6
'Boyl/Kil SW3'   3326.9   3658.33   6
'Boyl/Kil SW4'   3256.67   3632.01   6
'Boyl/Kil SW5'   3186.44   3605.69   6
'Boyl/Kil NW1'   3153.18   3697.88   6
'Boyl/Kil NW2'   3223.41   3724.2   6
'Boyl/Kil NW3'   3293.64   3750.52   6
'Boyl/Kil NW4'   3269   3821.36   6
'Boyl/Kil NW5'   3244.48   3891.85   6
'2018NB'   56   1   0   'C'
 2
'Fen/Brook WB TT'   'AG'   2508.32   3314.76   2567.48   3392.01   1   20   2
100   54   3   870   47.9125   1600   1   3
 2
'Fen/Brook EB TTTR'   'AG'   2469.88   3221.1   2419.79   3152.05   1   30   3
100   54   3   947   47.9125   1600   1   3
 2
'Fen/Brook SB L'   'AG'   2487.62   3319   2439.29   3364.86   1   10   1
100   46   3   648   47.9125   1600   1   3
 2
'Fen/Brook SB LTT'   'AG'   2476.25   3307.23   2427.92   3351.87   1   20   2
100   46   3   854   47.9125   1600   1   3
 2
'Fen/Brook SB R'   'AG'   2463.25   3293.43   2416.55   3338.48   1   10   1
100   46   3   126   47.9125   1600   1   3
 2
'Park/Brook WB TTR'   'AG'   2701.33   3561.7   2759.96   3639.18   1   30   3
100   68   3   550   47.9125   1600   1   3
 2
'Park/Brook NWB LLRRR'   'AG'   2745.91   3510.38   2903.87   3571.39   1   30   3
100   75   3   1203   47.9125   1600   1   3
 2
'Park/Brook NB LTTTR'   'AG'   2715.39   3403.84   2792.43   3305.54   1   40   4
100   68   3   958   47.9125   1600   1   3
 2
'Park/Brook EB L'   'AG'   2628.58   3434.99   2544.27   3326.04   1   10   1
100   85   3   98   47.9125   1600   1   3
 2
'Park/Brook EB T'   'AG'   2637.53   3428.06   2552.21   3319.05   1   10   1
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100   57   3   416   47.9125   1600   1   3
 2
'Park/Brook EB RR'   'AG'   2648.52   3416.92   2569.06   3311.84   1   20   2
100   32   3   1029   47.9125   1600   1   3
 2
'River/Park SB'   'AG'   2213.27   3801.84   2235.59   3847.49   1   10   1
100   78   3   548   47.9125   1600   1   3
 2
'River/Park SB East'   'AG'   2256.21   3801.18   2265.6   3851.79   1   20   2
100   78   3   473   47.9125   1600   1   3
 2
'River/Park WB North'   'AG'   2272.82   3765.17   2338.24   3765.5   1   30   3
100   59   3   875   47.9125   1600   1   3
 2
'River/Park WB South'   'AG'   2270.48   3707.91   2328.96   3732.95   1   20   2
100   59   3   385   47.9125   1600   1   3
 2
'River/Park NEB'   'AG'   2169.88   3720.6   2100.81   3654.06   1   20   2
100   73   3   84   47.9125   1600   1   3
 2
'Beacon/Park SB LTT'   'AG'   1962.93   4712.56   1934.73   4800.99   1   20   2
110   61   3   629   47.9125   1600   1   3
 2
'Beacon/Park WB LTT'   'AG'   2055.3   4691.67   2155.45   4728.6   1   20   2
110   56   3   1020   47.9125   1600   1   3
 2
'Beacon/Park NB LTT'   'AG'   2041.69   4597.41   2076.21   4496.84   1   20   2
110   103   3   609   47.9125   1600   1   3
 2
'Beacon/Park EB LTTT'   'AG'   1966.34   4608.1   1839.93   4551.25   1   30   3
110   68   3   466   47.9125   1600   1   3
 2
'Beacon/Park EB R'   'AG'   1975.57   4560.48   1931.82   4567.29   1   20   2
110   61   3   134   47.9125   1600   1   3
 2
'Beacon/Park SB R '   'AG'   1917.23   4688.27   1941.05   4726.65   1   10   1
110   61   3   15   47.9125   1600   1   3
 2
'Beacon/Park WB R '   'AG'   2019.81   4741.23   2072.32   4722.77   1   10   1
110   68   3   33   47.9125   1600   1   3
 2
'Beacon/Park NB R'   'AG'   2095.17   4627.53   2077.67   4580.89   1   10   1
110   61   3   71   47.9125   1600   1   3
 2
'Boyl/Kil SB LTR'   'AG'   3321.98   3753.82   3294.42   3839.17   1   20   2
100   71   3   244   47.9125   1600   1   3
 2
'Boyl/Kil WB LTTR'   'AG'   3373.33   3738.7   3489.55   3785.69   1   20   2
100   29   3   1060   47.9125   1600   1   3
 2
'Boyl/Kil NB LTR'   'AG'   3365.22   3677.65   3399.29   3591.62   1   10   1
100   71   3   82   47.9125   1600   1   3
 2
'Boyl/Kil EB LTTR'   'AG'   3320.38   3695.34   3212.27   3655.91   1   20   2
100   29   3   1274   47.9125   1600   1   3
 1
'Fenway/Brook South'   'AG'   2496.93   3278.87   2636.65   3081.07   916   8.793   1   54
 1
'Fenway/Brook West'   'AG'   2481.8   3262.91   2347.32   3075.62   1881   8.793   1   78
 1
'Fenway/Brook North'   'AG'   2491.04   3288.56   2373.12   3398.66   1628   8.793   1   66
 1
'Fenway/Brook East'   'AG'   2497.77   3264.59   2608.73   3389.73   2403   8.793   1   90
 1
'Park/Brook South'   'AG'   2691.91   3447.33   2838.26   3241.18   958   8.793   1   66
 1
'Park/Brook West'   'AG'   2672.16   3490.72   2502.75   3273.82   2413   8.793   1   90
 1
'Park/Brook North'   'AG'   2656.67   3489.73   2496.11   3644.11   1794   8.793   1   66
 1
'Park/Brook East'   'AG'   2663.31   3490.84   2801.72   3675.09   1249   8.793   1   66
 1
'Park/Brook SE'   'AG'   2681.03   3470.37   2968.37   3574.94   2358   8.793   1   78
 1
'River/Park N'   'AG'   2254.71   3768.23   2266.44   3911.9   473   8.793   1   42
 1
'River/Park SE'   'AG'   2239.06   3675.39   2343.7   3750.15   428   8.793   1   42
 1
'River/Park NE'   'AG'   2237.1   3772.14   2377.44   3769.21   872   8.793   1   54
 1
'River/Park S'   'AG'   2231.15   3745.07   2210.13   3564.26   901   8.793   1   54
 1
'River/Park SW'   'AG'   2211.1   3765.1   2058.06   3624.36   1420   8.793   1   54
 1
'River/Park NW'   'AG'   2193.99   3770.21   2250.71   3886.02   548   8.793   1   30
 1
'Beacon/Park N'   'AG'   1996.01   4667.5   1894.21   4948.36   1153   8.793   1   78
 1
'Beacon/Park NR'   'AG'   1907.99   4673.8   1956.12   4744.74   15   8.793   1   30
 1
'Beacon/Park E'   'AG'   1997.77   4657.71   2274.41   4755.75   1621   8.793   1   78
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 1
'Beacon/Park ER'   'AG'   1991.42   4750.81   2112.09   4710.61   33   8.793   1   30
 1
'Beacon/Park S'   'AG'   2009.06   4646.43   2098.69   4400.99   1732   8.793   1   78
 1
'Beacon/Park SR'   'AG'   2102.46   4662.03   2076.21   4571.17   71   8.793   1   42
 1
'Beacon/Park W EB'   'AG'   1995.65   4607.64   1704.19   4488.44   600   8.793   1   66
 1
'Beacon/Park W EBR'   'AG'   2009.06   4551.22   1907.44   4575.2   134   8.793   1   38
 1
'Beacon/Park W WB'   'AG'   1989.3   4675.35   1658.32   4556.15   843   8.793   1   78
 1
'Boyl/Kil N'   'AG'   3344.49   3716.98   3289.05   3876.33   320   8.793   1   54
 1
'Boyl/Kil E'   'AG'   3348.9   3715.02   3516.2   3780.72   2366   8.793   1   78
 1
'Boyl/Kil S'   'AG'   3349.91   3702.12   3425.46   3502.07   242   8.793   1   54
 1
'Boyl/Kil W'   'AG'   3345.98   3717.81   3141.89   3641.32   2392   8.793   1   78
1   0   4   1000   0   'Y'   10   0   36
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'LANDMARKCENTER'   60   175   0   0   20   0.3048   1   0
'Brook/Full NE1'   2962.21   4181.21   6
'Brook/Full NE2'   3023.74   4138.31   6
'Brook/Full NE3'   3085.26   4095.42   6
'Brook/Full NE4'   3133.26   4153.04   6
'Brook/Full NE5'   3188.74   4204.01   6
'Brook/Full SE1'   3234.98   4159.54   6
'Brook/Full SE2'   3186.98   4101.91   6
'Brook/Full SE3'   3130.3   4049.49   6
'Brook/Full SE4'   3203.31   4005.73   6
'Brook/Full SE5'   3267.63   3967.16   6
'Brook/Full SW1'   3228.25   3918.49   6
'Brook/Full SW2'   3163.92   3957.05   6
'Brook/Full SW3'   3099.59   3995.61   6
'Brook/Full SW4'   3055.49   3934.94   6
'Brook/Full SW5'   3011.4   3874.28   6
'Brook/Full NW1'   2950.49   3916.35   6
'Brook/Full NW2'   2994.59   3977.01   6
'Brook/Full NW3'   3038.69   4037.68   6
'Brook/Full NW4'   2977.16   4080.57   6
'Brook/Full NW5'   2915.64   4123.47   6
'2018_NB_CO_3'   10   1   0   'C'
 2
'Brook/Full EB L'   'AG'   3074.73   4018.45   2990.41   3908.28   1   10   1
100   33   3   92   47.9125   1600   1   3
 2
'Brook/Full EB TR'   'AG'   3083.58   4011.97   3001.61   3902.98   1   10   1
100   33   3   439   47.9125   1600   1   3
 2
'Brook/Full NB LTR'   'AG'   3121.31   4022.57   3170.85   3996.06   1   10   1
100   33   3   172   47.9125   1600   1   3
 2
'Brook/Full WB LTR'   'AG'   3127.21   4100.92   3172.02   4159.83   1   20   2
100   43   3   517   47.9125   1600   1   3
 2
'Brook/Full SB LT'   'AG'   3068.25   4050.85   2998.08   4102.69   1   10   1
100   67   3   129   47.9125   1600   1   3
 2
'Brook/Full SB R'   'AG'   3061.17   4041.42   2989.82   4092.67   1   10   1
100   57   3   138   47.9125   1600   1   3
 1
'Brook/Full N'   'AG'   3091.95   4045.65   2925.79   4161.49   431   8.793   1   54
 1
'Brook/Full E'   'AG'   3091.95   4045.65   3246.16   4230.76   989   8.793   1   54
 1
'Brook/Full S'   'AG'   3100.32   4031.31   3189.98   3977.57   341   8.793   1   42
 1
'Brook/Full W'   'AG'   3091.95   4048.03   2946.11   3847.39   1213   8.793   1   54
1   0   4   1000   0   'Y'   10   0   36
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2018 Build
Microscale Input Files
(Carbon Monoxide (CO))

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'Landmark Center'   60   175   0   0   45   0.3048   1   0
'Fen/Brook NE1'   2376.5   3444   6
'Fen/Brook NE2'   2429.68   3390.99   6
'Fen/Brook NE3'   2484.5   3339.81   6
'Fen/Brook NE4'   2530.67   3398.92   6
'Fen/Brook NE5'   2576.84   3458.03   6
'Fen/Brook SE1'   2660.24   3364.92   6
'Fen/Brook SE2'   2609.62   3308.81   6
'Fen/Brook SE3'   2560.72   3252.69   6
'Fen/Brook SE4'   2604   3191.43   6
'Fen/Brook SE5'   2647.27   3130.17   6
'Fen/Brook SW1'   2588.73   3084.78   6
'Fen/Brook SW2'   2545.46   3146.04   6
'Fen/Brook SW3'   2502.19   3207.29   6
'Fen/Brook SW4'   2458.45   3146.37   6
'Fen/Brook SW5'   2414.7   3085.45   6
'Fen/Brook NW1'   2353.53   3168.28   6
'Fen/Brook NW2'   2397.27   3229.2   6
'Fen/Brook NW3'   2441.01   3290.12   6
'Fen/Brook NW4'   2386.19   3341.3   6
'Fen/Brook NW5'   2331.38   3392.49   6
'Park/Brook NE1'   2546.71   3655.11   6
'Park/Brook NE2'   2600.77   3603.13   6
'Park/Brook NE3'   2654.83   3551.15   6
'Park/Brook NE4'   2699.88   3611.11   6
'Park/Brook NE5'   2744.93   3671.08   6
'Park/Brook SE1'   2888.96   3493.9   6
'Park/Brook SE2'   2818.15   3468.13   6
'Park/Brook SE3'   2747.67   3442.47   6
'Park/Brook SE4'   2791.37   3381.51   6
'Park/Brook SE5'   2834.83   3320.29   6
'Park/Brook SW1'   2758.81   3278.82   6
'Park/Brook SW2'   2715.39   3339.97   6
'Park/Brook SW3'   2671.97   3401.13   6
'Park/Brook SW4'   2625.81   3342.02   6
'Park/Brook SW5'   2579.64   3282.92   6
'Park/Brook NW1'   2506.28   3367.69   6
'Park/Brook NW2'   2552.44   3426.8   6
'Park/Brook NW3'   2598.61   3485.9   6
'Park/Brook NW4'   2544.55   3537.89   6
'Park/Brook NW5'   2490.48   3589.87   6
'Park/Brook E1'   2853.5   3672.42   6
'Park/Brook E2'   2811.94   3617.1   6
'Park/Brook E3'   2763.4   3552.49   6
'Park/Brook E4'   2838.4   3579.78   6
'Park/Brook E5'   2904.36   3603.79   6
'2018NB'   56   1   0   'C'
 2
'Fen/Brook WB TT'   'AG'   2508.32   3314.76   2567.48   3392.01   1   20   2
100   54   3   863   47.9125   1600   1   3
 2
'Fen/Brook EB TTTR'   'AG'   2469.88   3221.1   2419.79   3152.05   1   30   3
100   54   3   959   47.9125   1600   1   3
 2
'Fen/Brook SB L'   'AG'   2487.62   3319   2439.29   3364.86   1   10   1
100   46   3   647   47.9125   1600   1   3
 2
'Fen/Brook SB LTT'   'AG'   2476.25   3307.23   2427.92   3351.87   1   20   2
100   46   3   874   47.9125   1600   1   3
 2
'Fen/Brook SB R'   'AG'   2463.25   3293.43   2416.55   3338.48   1   10   1
100   46   3   132   47.9125   1600   1   3
 2
'Park/Brook WB TTR'   'AG'   2701.33   3561.7   2759.96   3639.18   1   30   3
100   68   3   669   47.9125   1600   1   3
 2
'Park/Brook NWB LLRRR'   'AG'   2745.91   3510.38   2903.87   3571.39   1   30   3
100   75   3   1203   47.9125   1600   1   3
 2
'Park/Brook NB LTTTR'   'AG'   2715.39   3403.84   2792.43   3305.54   1   40   4
100   68   3   992   47.9125   1600   1   3
 2
'Park/Brook EB L'   'AG'   2628.58   3434.99   2544.27   3326.04   1   10   1
100   85   3   107   47.9125   1600   1   3
 2
'Park/Brook EB T'   'AG'   2637.53   3428.06   2552.21   3319.05   1   10   1
100   57   3   419   47.9125   1600   1   3
 2
'Park/Brook EB RR'   'AG'   2648.52   3416.92   2569.06   3311.84   1   20   2
100   32   3   1029   47.9125   1600   1   3
 2
'River/Park SB'   'AG'   2213.27   3801.84   2235.59   3847.49   1   10   1
100   78   3   548   47.9125   1600   1   3
 2
'River/Park SB East'   'AG'   2256.21   3801.18   2265.6   3851.79   1   20   2
100   78   3   473   47.9125   1600   1   3
 2
'River/Park WB North'   'AG'   2272.82   3765.17   2338.24   3765.5   1   30   3
100   59   3   858   47.9125   1600   1   3
 2
'River/Park WB South'   'AG'   2270.48   3707.91   2328.96   3732.95   1   20   2
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100   59   3   454   47.9125   1600   1   3
 2
'River/Park NEB'   'AG'   2169.88   3720.6   2100.81   3654.06   1   20   2
100   73   3   114   47.9125   1600   1   3
 2
'Beacon/Park SB LTT'   'AG'   1962.93   4712.56   1934.73   4800.99   1   20   2
110   61   3   632   47.9125   1600   1   3
 2
'Beacon/Park WB LTT'   'AG'   2055.3   4691.67   2155.45   4728.6   1   20   2
110   56   3   1012   47.9125   1600   1   3
 2
'Beacon/Park NB LTT'   'AG'   2041.69   4597.41   2076.21   4496.84   1   20   2
110   103   3   591   47.9125   1600   1   3
 2
'Beacon/Park EB LTTT'   'AG'   1966.34   4608.1   1839.93   4551.25   1   30   3
110   68   3   469   47.9125   1600   1   3
 2
'Beacon/Park EB R'   'AG'   1975.57   4560.48   1931.82   4567.29   1   20   2
110   61   3   134   47.9125   1600   1   3
 2
'Beacon/Park SB R '   'AG'   1917.23   4688.27   1941.05   4726.65   1   10   1
110   61   3   15   47.9125   1600   1   3
 2
'Beacon/Park WB R '   'AG'   2019.81   4741.23   2072.32   4722.77   1   10   1
110   68   3   36   47.9125   1600   1   3
 2
'Beacon/Park NB R'   'AG'   2095.17   4627.53   2077.67   4580.89   1   10   1
110   61   3   71   47.9125   1600   1   3
 2
'Boyl/Kil SB LTR'   'AG'   3321.98   3753.82   3294.42   3839.17   1   20   2
100   71   3   267   47.9125   1600   1   3
 2
'Boyl/Kil WB LTTR'   'AG'   3373.33   3738.7   3489.55   3785.69   1   20   2
100   29   3   1096   47.9125   1600   1   3
 2
'Boyl/Kil NB LTR'   'AG'   3365.22   3677.65   3399.29   3591.62   1   10   1
100   71   3   82   47.9125   1600   1   3
 2
'Boyl/Kil EB LTTR'   'AG'   3320.38   3695.34   3212.27   3655.91   1   20   2
100   29   3   1274   47.9125   1600   1   3
 1
'Fenway/Brook South'   'AG'   2496.93   3278.87   2636.65   3081.07   936   8.793   1   54
 1
'Fenway/Brook West'   'AG'   2481.8   3262.91   2347.32   3075.62   1965   8.793   1   78
 1
'Fenway/Brook North'   'AG'   2491.04   3288.56   2373.12   3398.66   1653   8.793   1   66
 1
'Fenway/Brook East'   'AG'   2497.77   3264.59   2608.73   3389.73   2407   8.793   1   90
 1
'Park/Brook South'   'AG'   2691.91   3447.33   2838.26   3241.18   992   8.793   1   66
 1
'Park/Brook West'   'AG'   2672.16   3490.72   2502.75   3273.82   2418   8.793   1   90
 1
'Park/Brook North'   'AG'   2656.67   3489.73   2496.11   3644.11   1821   8.793   1   66
 1
'Park/Brook East'   'AG'   2663.31   3490.84   2801.72   3675.09   1249   8.793   1   66
 1
'Park/Brook SE'   'AG'   2681.03   3470.37   2968.37   3574.94   2358   8.793   1   78
 1
'River/Park N'   'AG'   2254.71   3768.23   2266.44   3911.9   473   8.793   1   42
 1
'River/Park SE'   'AG'   2239.06   3675.39   2343.7   3750.15   454   8.793   1   42
 1
'River/Park NE'   'AG'   2237.1   3772.14   2377.44   3769.21   858   8.793   1   54
 1
'River/Park S'   'AG'   2231.15   3745.07   2210.13   3564.26   927   8.793   1   54
 1
'River/Park SW'   'AG'   2211.1   3765.1   2058.06   3624.36   1520   8.793   1   54
 1
'River/Park NW'   'AG'   2193.99   3770.21   2250.71   3886.02   548   8.793   1   30
 1
'Beacon/Park N'   'AG'   1996.01   4667.5   1894.21   4948.36   1143   8.793   1   78
 1
'Beacon/Park NR'   'AG'   1907.99   4673.8   1956.12   4744.74   15   8.793   1   30
 1
'Beacon/Park E'   'AG'   1997.77   4657.71   2274.41   4755.75   1622   8.793   1   78
 1
'Beacon/Park ER'   'AG'   1991.42   4750.81   2112.09   4710.61   36   8.793   1   30
 1
'Beacon/Park S'   'AG'   2009.06   4646.43   2098.69   4400.99   1714   8.793   1   78
 1
'Beacon/Park SR'   'AG'   2102.46   4662.03   2076.21   4571.17   71   8.793   1   42
 1
'Beacon/Park W EB'   'AG'   1995.65   4607.64   1704.19   4488.44   603   8.793   1   66
 1
'Beacon/Park W EBR'   'AG'   2009.06   4551.22   1907.44   4575.2   134   8.793   1   38
 1
'Beacon/Park W WB'   'AG'   1989.3   4675.35   1658.32   4556.15   833   8.793   1   78
 1
'Boyl/Kil N'   'AG'   3344.49   3716.98   3289.05   3876.33   379   8.793   1   54
 1
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'Boyl/Kil E'   'AG'   3348.9   3715.02   3516.2   3780.72   2426   8.793   1   78
 1
'Boyl/Kil S'   'AG'   3349.91   3702.12   3425.46   3502.07   241   8.793   1   54
 1
'Boyl/Kil W'   'AG'   3345.98   3717.81   3141.89   3641.32   2392   8.793   1   78
1   0   4   1000   0   'Y'   10   0   36
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'Landmark Center'   60   175   0   0   60   0.3048   1   0
'Beacon/Park NE1'   1956   4921.67   6
'Beacon/Park NE2'   1981.56   4851.16   6
'Beacon/Park NE3'   2059.66   4754.43   6
'Beacon/Park NE4'   2163.51   4768.43   6
'Beacon/Park NE5'   2234.2   4793.49   6
'Beacon/Park SE1'   2273.61   4703.48   6
'Beacon/Park SE2'   2202.92   4678.43   6
'Beacon/Park SE3'   2119.12   4608   6
'Beacon/Park SE4'   2120.16   4485.05   6
'Beacon/Park SE5'   2146.81   4412.06   6
'Beacon/Park SW1'   2053.38   4382.21   6
'Beacon/Park SW2'   2027.66   4452.66   6
'Beacon/Park SW3'   1951.59   4534.99   6
'Beacon/Park SW4'   1869.49   4509.59   6
'Beacon/Park SW5'   1800.07   4481.2   6
'Beacon/Park NW1'   1748.74   4640.8   6
'Beacon/Park NW2'   1819.31   4666.21   6
'Beacon/Park NW3'   1911.37   4723.31   6
'Beacon/Park NW4'   1893.82   4805.63   6
'Beacon/Park NW5'   1868.27   4876.14   6
'Riverway/Park NE1'   2301.27   3957.57   6
'Riverway/Park NE2'   2295.17   3882.81   6
'Riverway/Park NE3'   2289.07   3808.06   6
'Riverway/Park NE4'   2364.05   3806.5   6
'Riverway/Park NE5'   2439.05   3805.99   6
'Riverway/Park SE1'   2427.53   3594.67   6
'Riverway/Park SE2'   2406.62   3667.75   6
'Riverway/Park SE3'   2309.4   3687.55   6
'Riverway/Park SE4'   2248.83   3576.74   6
'Riverway/Park SE5'   2296.57   3506.87   6
'Riverway/Park SW1'   2170.58   3544.51   6
'Riverway/Park SW2'   2179.24   3619   6
'Riverway/Park SW3'   2187.91   3693.5   6
'Riverway/Park SW4'   2132.7   3642.73   6
'Riverway/Park SW5'   2077.5   3591.97   6
'Riverway/Park NW1'   2059.15   3675.63   6
'Riverway/Park NW2'   2114.35   3726.4   6
'Riverway/Park NW3'   2169.56   3777.16   6
'Riverway/Park NW4'   2202.55   3844.52   6
'Riverway/Park NW5'   2235.34   3911.97   6
'Boyl/Kil NE1'   3320.78   3917.23   6
'Boyl/Kil NE2'   3339.33   3844.42   6
'Boyl/Kil NE3'   3363.97   3773.58   6
'Boyl/Kil NE4'   3433.78   3801   6
'Boyl/Kil NE5'   3503.59   3828.41   6
'Boyl/Kil SE1'   3537.24   3736.34   6
'Boyl/Kil SE2'   3467.1   3708.8   6
'Boyl/Kil SE3'   3397.29   3681.38   6
'Boyl/Kil SE4'   3423.79   3611.22   6
'Boyl/Kil SE5'   3450.29   3541.06   6
'Boyl/Kil SW1'   3379.89   3518   6
'Boyl/Kil SW2'   3353.07   3589.02   6
'Boyl/Kil SW3'   3326.9   3658.33   6
'Boyl/Kil SW4'   3256.67   3632.01   6
'Boyl/Kil SW5'   3186.44   3605.69   6
'Boyl/Kil NW1'   3153.18   3697.88   6
'Boyl/Kil NW2'   3223.41   3724.2   6
'Boyl/Kil NW3'   3293.64   3750.52   6
'Boyl/Kil NW4'   3269   3821.36   6
'Boyl/Kil NW5'   3244.48   3891.85   6
'2018NB'   56   1   0   'C'
 2
'Fen/Brook WB TT'   'AG'   2508.32   3314.76   2567.48   3392.01   1   20   2
100   54   3   863   47.9125   1600   1   3
 2
'Fen/Brook EB TTTR'   'AG'   2469.88   3221.1   2419.79   3152.05   1   30   3
100   54   3   959   47.9125   1600   1   3
 2
'Fen/Brook SB L'   'AG'   2487.62   3319   2439.29   3364.86   1   10   1
100   46   3   647   47.9125   1600   1   3
 2
'Fen/Brook SB LTT'   'AG'   2476.25   3307.23   2427.92   3351.87   1   20   2
100   46   3   874   47.9125   1600   1   3
 2
'Fen/Brook SB R'   'AG'   2463.25   3293.43   2416.55   3338.48   1   10   1
100   46   3   132   47.9125   1600   1   3
 2
'Park/Brook WB TTR'   'AG'   2701.33   3561.7   2759.96   3639.18   1   30   3
100   68   3   669   47.9125   1600   1   3
 2
'Park/Brook NWB LLRRR'   'AG'   2745.91   3510.38   2903.87   3571.39   1   30   3
100   75   3   1203   47.9125   1600   1   3
 2
'Park/Brook NB LTTTR'   'AG'   2715.39   3403.84   2792.43   3305.54   1   40   4
100   68   3   992   47.9125   1600   1   3
 2
'Park/Brook EB L'   'AG'   2628.58   3434.99   2544.27   3326.04   1   10   1
100   85   3   107   47.9125   1600   1   3
 2
'Park/Brook EB T'   'AG'   2637.53   3428.06   2552.21   3319.05   1   10   1
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100   57   3   419   47.9125   1600   1   3
 2
'Park/Brook EB RR'   'AG'   2648.52   3416.92   2569.06   3311.84   1   20   2
100   32   3   1029   47.9125   1600   1   3
 2
'River/Park SB'   'AG'   2213.27   3801.84   2235.59   3847.49   1   10   1
100   78   3   548   47.9125   1600   1   3
 2
'River/Park SB East'   'AG'   2256.21   3801.18   2265.6   3851.79   1   20   2
100   78   3   473   47.9125   1600   1   3
 2
'River/Park WB North'   'AG'   2272.82   3765.17   2338.24   3765.5   1   30   3
100   59   3   858   47.9125   1600   1   3
 2
'River/Park WB South'   'AG'   2270.48   3707.91   2328.96   3732.95   1   20   2
100   59   3   454   47.9125   1600   1   3
 2
'River/Park NEB'   'AG'   2169.88   3720.6   2100.81   3654.06   1   20   2
100   73   3   114   47.9125   1600   1   3
 2
'Beacon/Park SB LTT'   'AG'   1962.93   4712.56   1934.73   4800.99   1   20   2
110   61   3   632   47.9125   1600   1   3
 2
'Beacon/Park WB LTT'   'AG'   2055.3   4691.67   2155.45   4728.6   1   20   2
110   56   3   1012   47.9125   1600   1   3
 2
'Beacon/Park NB LTT'   'AG'   2041.69   4597.41   2076.21   4496.84   1   20   2
110   103   3   591   47.9125   1600   1   3
 2
'Beacon/Park EB LTTT'   'AG'   1966.34   4608.1   1839.93   4551.25   1   30   3
110   68   3   469   47.9125   1600   1   3
 2
'Beacon/Park EB R'   'AG'   1975.57   4560.48   1931.82   4567.29   1   20   2
110   61   3   134   47.9125   1600   1   3
 2
'Beacon/Park SB R '   'AG'   1917.23   4688.27   1941.05   4726.65   1   10   1
110   61   3   15   47.9125   1600   1   3
 2
'Beacon/Park WB R '   'AG'   2019.81   4741.23   2072.32   4722.77   1   10   1
110   68   3   36   47.9125   1600   1   3
 2
'Beacon/Park NB R'   'AG'   2095.17   4627.53   2077.67   4580.89   1   10   1
110   61   3   71   47.9125   1600   1   3
 2
'Boyl/Kil SB LTR'   'AG'   3321.98   3753.82   3294.42   3839.17   1   20   2
100   71   3   267   47.9125   1600   1   3
 2
'Boyl/Kil WB LTTR'   'AG'   3373.33   3738.7   3489.55   3785.69   1   20   2
100   29   3   1096   47.9125   1600   1   3
 2
'Boyl/Kil NB LTR'   'AG'   3365.22   3677.65   3399.29   3591.62   1   10   1
100   71   3   82   47.9125   1600   1   3
 2
'Boyl/Kil EB LTTR'   'AG'   3320.38   3695.34   3212.27   3655.91   1   20   2
100   29   3   1274   47.9125   1600   1   3
 1
'Fenway/Brook South'   'AG'   2496.93   3278.87   2636.65   3081.07   936   8.793   1   54
 1
'Fenway/Brook West'   'AG'   2481.8   3262.91   2347.32   3075.62   1965   8.793   1   78
 1
'Fenway/Brook North'   'AG'   2491.04   3288.56   2373.12   3398.66   1653   8.793   1   66
 1
'Fenway/Brook East'   'AG'   2497.77   3264.59   2608.73   3389.73   2407   8.793   1   90
 1
'Park/Brook South'   'AG'   2691.91   3447.33   2838.26   3241.18   992   8.793   1   66
 1
'Park/Brook West'   'AG'   2672.16   3490.72   2502.75   3273.82   2418   8.793   1   90
 1
'Park/Brook North'   'AG'   2656.67   3489.73   2496.11   3644.11   1821   8.793   1   66
 1
'Park/Brook East'   'AG'   2663.31   3490.84   2801.72   3675.09   1249   8.793   1   66
 1
'Park/Brook SE'   'AG'   2681.03   3470.37   2968.37   3574.94   2358   8.793   1   78
 1
'River/Park N'   'AG'   2254.71   3768.23   2266.44   3911.9   473   8.793   1   42
 1
'River/Park SE'   'AG'   2239.06   3675.39   2343.7   3750.15   454   8.793   1   42
 1
'River/Park NE'   'AG'   2237.1   3772.14   2377.44   3769.21   858   8.793   1   54
 1
'River/Park S'   'AG'   2231.15   3745.07   2210.13   3564.26   927   8.793   1   54
 1
'River/Park SW'   'AG'   2211.1   3765.1   2058.06   3624.36   1520   8.793   1   54
 1
'River/Park NW'   'AG'   2193.99   3770.21   2250.71   3886.02   548   8.793   1   30
 1
'Beacon/Park N'   'AG'   1996.01   4667.5   1894.21   4948.36   1143   8.793   1   78
 1
'Beacon/Park NR'   'AG'   1907.99   4673.8   1956.12   4744.74   15   8.793   1   30
 1
'Beacon/Park E'   'AG'   1997.77   4657.71   2274.41   4755.75   1622   8.793   1   78
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 1
'Beacon/Park ER'   'AG'   1991.42   4750.81   2112.09   4710.61   36   8.793   1   30
 1
'Beacon/Park S'   'AG'   2009.06   4646.43   2098.69   4400.99   1714   8.793   1   78
 1
'Beacon/Park SR'   'AG'   2102.46   4662.03   2076.21   4571.17   71   8.793   1   42
 1
'Beacon/Park W EB'   'AG'   1995.65   4607.64   1704.19   4488.44   603   8.793   1   66
 1
'Beacon/Park W EBR'   'AG'   2009.06   4551.22   1907.44   4575.2   134   8.793   1   38
 1
'Beacon/Park W WB'   'AG'   1989.3   4675.35   1658.32   4556.15   833   8.793   1   78
 1
'Boyl/Kil N'   'AG'   3344.49   3716.98   3289.05   3876.33   379   8.793   1   54
 1
'Boyl/Kil E'   'AG'   3348.9   3715.02   3516.2   3780.72   2426   8.793   1   78
 1
'Boyl/Kil S'   'AG'   3349.91   3702.12   3425.46   3502.07   241   8.793   1   54
 1
'Boyl/Kil W'   'AG'   3345.98   3717.81   3141.89   3641.32   2392   8.793   1   78
1   0   4   1000   0   'Y'   10   0   36
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```
'LANDMARKCENTER'   60   175   0   0   20   0.3048   1   0
'Brook/Full NE1'   2962.21   4181.21   6
'Brook/Full NE2'   3023.74   4138.31   6
'Brook/Full NE3'   3085.26   4095.42   6
'Brook/Full NE4'   3133.26   4153.04   6
'Brook/Full NE5'   3188.74   4204.01   6
'Brook/Full SE1'   3234.98   4159.54   6
'Brook/Full SE2'   3186.98   4101.91   6
'Brook/Full SE3'   3130.3   4049.49   6
'Brook/Full SE4'   3203.31   4005.73   6
'Brook/Full SE5'   3267.63   3967.16   6
'Brook/Full SW1'   3228.25   3918.49   6
'Brook/Full SW2'   3163.92   3957.05   6
'Brook/Full SW3'   3099.59   3995.61   6
'Brook/Full SW4'   3055.49   3934.94   6
'Brook/Full SW5'   3011.4   3874.28   6
'Brook/Full NW1'   2950.49   3916.35   6
'Brook/Full NW2'   2994.59   3977.01   6
'Brook/Full NW3'   3038.69   4037.68   6
'Brook/Full NW4'   2977.16   4080.57   6
'Brook/Full NW5'   2915.64   4123.47   6
'2018_BD_CO_3'   10   1   0   'C'
 2
'Brook/Full EB L'   'AG'   3074.73   4018.45   2990.41   3908.28   1   10   1
100   33   3   105   47.9125   1600   1   3
 2
'Brook/Full EB TR'   'AG'   3083.58   4011.97   3001.61   3902.98   1   10   1
100   33   3   439   47.9125   1600   1   3
 2
'Brook/Full NB LTR'   'AG'   3121.31   4022.57   3170.85   3996.06   1   10   1
100   33   3   240   47.9125   1600   1   3
 2
'Brook/Full WB LTR'   'AG'   3127.21   4100.92   3172.02   4159.83   1   20   2
100   43   3   528   47.9125   1600   1   3
 2
'Brook/Full SB LT'   'AG'   3068.25   4050.85   2998.08   4102.69   1   10   1
100   67   3   173   47.9125   1600   1   3
 2
'Brook/Full SB R'   'AG'   3061.17   4041.42   2989.82   4092.67   1   10   1
100   57   3   125   47.9125   1600   1   3
 1
'Brook/Full N'   'AG'   3091.95   4045.65   2925.79   4161.49   554   8.793   1   54
 1
'Brook/Full E'   'AG'   3091.95   4045.65   3246.16   4230.76   997   8.793   1   54
 1
'Brook/Full S'   'AG'   3100.32   4031.31   3189.98   3977.57   456   8.793   1   42
 1
'Brook/Full W'   'AG'   3091.95   4048.03   2946.11   3847.39   1213   8.793   1   54
1   0   4   1000   0   'Y'   10   0   36
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2013 Existing
Microscale Input Files
(Particulate Matter 10 (PM10))

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'Landmark Center'   60   175   0   0   45   0.3048   1   0
'Fen/Brook NE1'   2376.5   3444   6
'Fen/Brook NE2'   2429.68   3390.99   6
'Fen/Brook NE3'   2484.5   3339.81   6
'Fen/Brook NE4'   2530.67   3398.92   6
'Fen/Brook NE5'   2576.84   3458.03   6
'Fen/Brook SE1'   2660.24   3364.92   6
'Fen/Brook SE2'   2609.62   3308.81   6
'Fen/Brook SE3'   2560.72   3252.69   6
'Fen/Brook SE4'   2604   3191.43   6
'Fen/Brook SE5'   2647.27   3130.17   6
'Fen/Brook SW1'   2588.73   3084.78   6
'Fen/Brook SW2'   2545.46   3146.04   6
'Fen/Brook SW3'   2502.19   3207.29   6
'Fen/Brook SW4'   2458.45   3146.37   6
'Fen/Brook SW5'   2414.7   3085.45   6
'Fen/Brook NW1'   2353.53   3168.28   6
'Fen/Brook NW2'   2397.27   3229.2   6
'Fen/Brook NW3'   2441.01   3290.12   6
'Fen/Brook NW4'   2386.19   3341.3   6
'Fen/Brook NW5'   2331.38   3392.49   6
'Park/Brook NE1'   2546.71   3655.11   6
'Park/Brook NE2'   2600.77   3603.13   6
'Park/Brook NE3'   2654.83   3551.15   6
'Park/Brook NE4'   2699.88   3611.11   6
'Park/Brook NE5'   2744.93   3671.08   6
'Park/Brook SE1'   2888.96   3493.9   6
'Park/Brook SE2'   2818.15   3468.13   6
'Park/Brook SE3'   2747.67   3442.47   6
'Park/Brook SE4'   2791.37   3381.51   6
'Park/Brook SE5'   2834.83   3320.29   6
'Park/Brook SW1'   2758.81   3278.82   6
'Park/Brook SW2'   2715.39   3339.97   6
'Park/Brook SW3'   2671.97   3401.13   6
'Park/Brook SW4'   2625.81   3342.02   6
'Park/Brook SW5'   2579.64   3282.92   6
'Park/Brook NW1'   2506.28   3367.69   6
'Park/Brook NW2'   2552.44   3426.8   6
'Park/Brook NW3'   2598.61   3485.9   6
'Park/Brook NW4'   2544.55   3537.89   6
'Park/Brook NW5'   2490.48   3589.87   6
'Park/Brook E1'   2853.5   3672.42   6
'Park/Brook E2'   2811.94   3617.1   6
'Park/Brook E3'   2763.4   3552.49   6
'Park/Brook E4'   2838.4   3579.78   6
'Park/Brook E5'   2904.36   3603.79   6
'2013EX'   54   1   0   'P'
 2
'Fen/Brook WB TT'   'AG'   2508.32   3314.76   2567.48   3392.01   1   20   2
100   59   3   790   0.08375   1600   1   3
 2
'Fen/Brook EB TTTR'   'AG'   2469.88   3221.1   2419.79   3152.05   1   30   3
100   59   3   875   0.08375   1600   1   3
 2
'Fen/Brook SB L'   'AG'   2487.62   3319   2439.29   3364.86   1   10   1
100   57   3   545   0.08375   1600   1   3
 2
'Fen/Brook SB LTT'   'AG'   2476.25   3307.23   2427.92   3351.87   1   20   2
100   57   3   825   0.08375   1600   1   3
 2
'Fen/Brook SB R'   'AG'   2463.25   3293.43   2416.55   3338.48   1   10   1
100   57   3   115   0.08375   1600   1   3
 2
'Park/Brook WB TTR'   'AG'   2701.33   3561.7   2759.96   3639.18   1   30   3
100   68   3   550   0.08375   1600   1   3
 2
'Park/Brook NWB LLRRR'   'AG'   2745.91   3510.38   2903.87   3571.39   1   30   3
100   62   3   1085   0.08375   1600   1   3
 2
'Park/Brook NB LTTTR'   'AG'   2715.39   3403.84   2792.43   3305.54   1   40   4
100   70   3   1030   0.08375   1600   1   3
 2
'Park/Brook EB TT'   'AG'   2632.53   3431.93   2548.22   3322.98   1   20   2
100   68   3   355   0.08375   1600   1   3
 2
'Park/Brook EB RR'   'AG'   2648.52   3416.92   2569.06   3311.84   1   20   2
100   30   3   955   0.08375   1600   1   3
 2
'River/Park SB'   'AG'   2213.27   3801.84   2235.59   3847.49   1   10   1
100   50   3   500   0.08375   1600   1   3
 2
'River/Park SB East'   'AG'   2256.21   3801.18   2265.6   3851.79   1   20   2
100   50   3   440   0.08375   1600   1   3
 2
'River/Park WB North'   'AG'   2272.82   3765.17   2338.24   3765.5   1   30   3
100   50   3   875   0.08375   1600   1   3
 2
'River/Park WB South'   'AG'   2270.48   3707.91   2328.96   3732.95   1   20   2
100   50   3   385   0.08375   1600   1   3
 2
'Beacon/Park SB LTT'   'AG'   1962.93   4712.56   1934.73   4800.99   1   20   2
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110   79   3   595   0.08375   1600   1   3
 2
'Beacon/Park WB LTT'   'AG'   2055.3   4691.67   2155.45   4728.6   1   20   2
110   95   3   940   0.08375   1600   1   3
 2
'Beacon/Park NB LTT'   'AG'   2041.69   4597.41   2076.21   4496.84   1   20   2
110   101   3   580   0.08375   1600   1   3
 2
'Beacon/Park EB LTTT'   'AG'   1966.34   4608.1   1839.93   4551.25   1   30   3
110   70   3   495   0.08375   1600   1   3
 2
'Beacon/Park EB R'   'AG'   1975.57   4560.48   1931.82   4567.29   1   20   2
110   70   3   130   0.08375   1600   1   3
 2
'Beacon/Park SB R '   'AG'   1917.23   4688.27   1941.05   4726.65   1   10   1
110   79   3   15   0.08375   1600   1   3
 2
'Beacon/Park WB R '   'AG'   2019.81   4741.23   2072.32   4722.77   1   10   1
110   95   3   15   0.08375   1600   1   3
 2
'Beacon/Park NB R'   'AG'   2095.17   4627.53   2077.67   4580.89   1   10   1
110   101   3   60   0.08375   1600   1   3
 2
'Boyl/Kil SB LTR'   'AG'   3321.98   3753.82   3294.42   3839.17   1   20   2
100   71   3   260   0.08375   1600   1   3
 2
'Boyl/Kil WB LTTR'   'AG'   3373.33   3738.7   3489.55   3785.69   1   20   2
100   29   3   980   0.08375   1600   1   3
 2
'Boyl/Kil NB LTR'   'AG'   3365.22   3677.65   3399.29   3591.62   1   10   1
100   71   3   80   0.08375   1600   1   3
 2
'Boyl/Kil EB LTTR'   'AG'   3320.38   3695.34   3212.27   3655.91   1   20   2
100   29   3   1165   0.08375   1600   1   3
 1
'Fenway/Brook South'   'AG'   2496.93   3278.87   2636.65   3081.07   775   0.0335   1   54
 1
'Fenway/Brook West'   'AG'   2481.8   3262.91   2347.32   3075.62   1780   0.0335   1   78
 1
'Fenway/Brook North'   'AG'   2491.04   3288.56   2373.12   3398.66   1485   0.0335   1   66
 1
'Fenway/Brook East'   'AG'   2497.77   3264.59   2608.73   3389.73   2090   0.0335   1   90
 1
'Park/Brook South'   'AG'   2691.91   3447.33   2838.26   3241.18   1030   0.0335   1   66
 1
'Park/Brook West'   'AG'   2672.16   3490.72   2502.75   3273.82   2100   0.0335   1   90
 1
'Park/Brook North'   'AG'   2656.67   3489.73   2496.11   3644.11   1675   0.0335   1   66
 1
'Park/Brook East'   'AG'   2663.31   3490.84   2801.72   3675.09   1010   0.0335   1   66
 1
'Park/Brook SE'   'AG'   2681.03   3470.37   2968.37   3574.94   2135   0.0335   1   78
 1
'River/Park N'   'AG'   2254.71   3768.23   2266.44   3911.9   440   0.0335   1   42
 1
'River/Park SE'   'AG'   2239.06   3675.39   2343.7   3750.15   260   0.0335   1   42
 1
'River/Park NE'   'AG'   2237.1   3772.14   2377.44   3769.21   750   0.0335   1   54
 1
'River/Park S'   'AG'   2231.15   3745.07   2210.13   3564.26   700   0.0335   1   54
 1
'River/Park SW'   'AG'   2211.1   3765.1   2058.06   3624.36   1250   0.0335   1   54
 1
'River/Park NW'   'AG'   2193.99   3770.21   2250.71   3886.02   500   0.0335   1   30
 1
'Beacon/Park N'   'AG'   1996.01   4667.5   1894.21   4948.36   1105   0.0335   1   78
 1
'Beacon/Park NR'   'AG'   1907.99   4673.8   1956.12   4744.74   15   0.0335   1   30
 1
'Beacon/Park E'   'AG'   1997.77   4657.71   2274.41   4755.75   1470   0.0335   1   78
 1
'Beacon/Park ER'   'AG'   1991.42   4750.81   2112.09   4710.61   15   0.0335   1   30
 1
'Beacon/Park S'   'AG'   2009.06   4646.43   2098.69   4400.99   1610   0.0335   1   78
 1
'Beacon/Park SR'   'AG'   2102.46   4662.03   2076.21   4571.17   60   0.0335   1   42
 1
'Beacon/Park W EB'   'AG'   1995.65   4607.64   1704.19   4488.44   495   0.0335   1   66
 1
'Beacon/Park W EBR'   'AG'   2009.06   4551.22   1907.44   4575.2   130   0.0335   1   38
 1
'Beacon/Park W WB'   'AG'   1989.3   4675.35   1658.32   4556.15   825   0.0335   1   78
 1
'Boyl/Kil N'   'AG'   3344.49   3716.98   3289.05   3876.33   320   0.0335   1   54
 1
'Boyl/Kil E'   'AG'   3348.9   3715.02   3516.2   3780.72   2250   0.0335   1   78
 1
'Boyl/Kil S'   'AG'   3349.91   3702.12   3425.46   3502.07   205   0.0335   1   54
 1
'Boyl/Kil W'   'AG'   3345.98   3717.81   3141.89   3641.32   2195   0.0335   1   78
1   0   4   1000   0   'Y'   10   0   36
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'Landmark Center'   60   175   0   0   60   0.3048   1   0
'Beacon/Park NE1'   1956   4921.67   6
'Beacon/Park NE2'   1981.56   4851.16   6
'Beacon/Park NE3'   2059.66   4754.43   6
'Beacon/Park NE4'   2163.51   4768.43   6
'Beacon/Park NE5'   2234.2   4793.49   6
'Beacon/Park SE1'   2273.61   4703.48   6
'Beacon/Park SE2'   2202.92   4678.43   6
'Beacon/Park SE3'   2119.12   4608   6
'Beacon/Park SE4'   2120.16   4485.05   6
'Beacon/Park SE5'   2146.81   4412.06   6
'Beacon/Park SW1'   2053.38   4382.21   6
'Beacon/Park SW2'   2027.66   4452.66   6
'Beacon/Park SW3'   1951.59   4534.99   6
'Beacon/Park SW4'   1869.49   4509.59   6
'Beacon/Park SW5'   1800.07   4481.2   6
'Beacon/Park NW1'   1748.74   4640.8   6
'Beacon/Park NW2'   1819.31   4666.21   6
'Beacon/Park NW3'   1911.37   4723.31   6
'Beacon/Park NW4'   1893.82   4805.63   6
'Beacon/Park NW5'   1868.27   4876.14   6
'Riverway/Park NE1'   2301.27   3957.57   6
'Riverway/Park NE2'   2295.17   3882.81   6
'Riverway/Park NE3'   2289.07   3808.06   6
'Riverway/Park NE4'   2364.05   3806.5   6
'Riverway/Park NE5'   2439.05   3805.99   6
'Riverway/Park SE1'   2427.53   3594.67   6
'Riverway/Park SE2'   2406.62   3667.75   6
'Riverway/Park SE3'   2309.4   3687.55   6
'Riverway/Park SE4'   2248.83   3576.74   6
'Riverway/Park SE5'   2296.57   3506.87   6
'Riverway/Park SW1'   2170.58   3544.51   6
'Riverway/Park SW2'   2179.24   3619   6
'Riverway/Park SW3'   2187.91   3693.5   6
'Riverway/Park SW4'   2132.7   3642.73   6
'Riverway/Park SW5'   2077.5   3591.97   6
'Riverway/Park NW1'   2059.15   3675.63   6
'Riverway/Park NW2'   2114.35   3726.4   6
'Riverway/Park NW3'   2169.56   3777.16   6
'Riverway/Park NW4'   2202.55   3844.52   6
'Riverway/Park NW5'   2235.34   3911.97   6
'Boyl/Kil NE1'   3320.78   3917.23   6
'Boyl/Kil NE2'   3339.33   3844.42   6
'Boyl/Kil NE3'   3363.97   3773.58   6
'Boyl/Kil NE4'   3433.78   3801   6
'Boyl/Kil NE5'   3503.59   3828.41   6
'Boyl/Kil SE1'   3537.24   3736.34   6
'Boyl/Kil SE2'   3467.1   3708.8   6
'Boyl/Kil SE3'   3397.29   3681.38   6
'Boyl/Kil SE4'   3423.79   3611.22   6
'Boyl/Kil SE5'   3450.29   3541.06   6
'Boyl/Kil SW1'   3379.89   3518   6
'Boyl/Kil SW2'   3353.07   3589.02   6
'Boyl/Kil SW3'   3326.9   3658.33   6
'Boyl/Kil SW4'   3256.67   3632.01   6
'Boyl/Kil SW5'   3186.44   3605.69   6
'Boyl/Kil NW1'   3153.18   3697.88   6
'Boyl/Kil NW2'   3223.41   3724.2   6
'Boyl/Kil NW3'   3293.64   3750.52   6
'Boyl/Kil NW4'   3269   3821.36   6
'Boyl/Kil NW5'   3244.48   3891.85   6
'2013EX'   54   1   0   'P'
 2
'Fen/Brook WB TT'   'AG'   2508.32   3314.76   2567.48   3392.01   1   20   2
100   59   3   790   0.08375   1600   1   3
 2
'Fen/Brook EB TTTR'   'AG'   2469.88   3221.1   2419.79   3152.05   1   30   3
100   59   3   875   0.08375   1600   1   3
 2
'Fen/Brook SB L'   'AG'   2487.62   3319   2439.29   3364.86   1   10   1
100   57   3   545   0.08375   1600   1   3
 2
'Fen/Brook SB LTT'   'AG'   2476.25   3307.23   2427.92   3351.87   1   20   2
100   57   3   825   0.08375   1600   1   3
 2
'Fen/Brook SB R'   'AG'   2463.25   3293.43   2416.55   3338.48   1   10   1
100   57   3   115   0.08375   1600   1   3
 2
'Park/Brook WB TTR'   'AG'   2701.33   3561.7   2759.96   3639.18   1   30   3
100   68   3   550   0.08375   1600   1   3
 2
'Park/Brook NWB LLRRR'   'AG'   2745.91   3510.38   2903.87   3571.39   1   30   3
100   62   3   1085   0.08375   1600   1   3
 2
'Park/Brook NB LTTTR'   'AG'   2715.39   3403.84   2792.43   3305.54   1   40   4
100   70   3   1030   0.08375   1600   1   3
 2
'Park/Brook EB TT'   'AG'   2632.53   3431.93   2548.22   3322.98   1   20   2
100   68   3   355   0.08375   1600   1   3
 2
'Park/Brook EB RR'   'AG'   2648.52   3416.92   2569.06   3311.84   1   20   2
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100   30   3   955   0.08375   1600   1   3
 2
'River/Park SB'   'AG'   2213.27   3801.84   2235.59   3847.49   1   10   1
100   50   3   500   0.08375   1600   1   3
 2
'River/Park SB East'   'AG'   2256.21   3801.18   2265.6   3851.79   1   20   2
100   50   3   440   0.08375   1600   1   3
 2
'River/Park WB North'   'AG'   2272.82   3765.17   2338.24   3765.5   1   30   3
100   50   3   875   0.08375   1600   1   3
 2
'River/Park WB South'   'AG'   2270.48   3707.91   2328.96   3732.95   1   20   2
100   50   3   385   0.08375   1600   1   3
 2
'Beacon/Park SB LTT'   'AG'   1962.93   4712.56   1934.73   4800.99   1   20   2
110   79   3   595   0.08375   1600   1   3
 2
'Beacon/Park WB LTT'   'AG'   2055.3   4691.67   2155.45   4728.6   1   20   2
110   95   3   940   0.08375   1600   1   3
 2
'Beacon/Park NB LTT'   'AG'   2041.69   4597.41   2076.21   4496.84   1   20   2
110   101   3   580   0.08375   1600   1   3
 2
'Beacon/Park EB LTTT'   'AG'   1966.34   4608.1   1839.93   4551.25   1   30   3
110   70   3   495   0.08375   1600   1   3
 2
'Beacon/Park EB R'   'AG'   1975.57   4560.48   1931.82   4567.29   1   20   2
110   70   3   130   0.08375   1600   1   3
 2
'Beacon/Park SB R '   'AG'   1917.23   4688.27   1941.05   4726.65   1   10   1
110   79   3   15   0.08375   1600   1   3
 2
'Beacon/Park WB R '   'AG'   2019.81   4741.23   2072.32   4722.77   1   10   1
110   95   3   15   0.08375   1600   1   3
 2
'Beacon/Park NB R'   'AG'   2095.17   4627.53   2077.67   4580.89   1   10   1
110   101   3   60   0.08375   1600   1   3
 2
'Boyl/Kil SB LTR'   'AG'   3321.98   3753.82   3294.42   3839.17   1   20   2
100   71   3   260   0.08375   1600   1   3
 2
'Boyl/Kil WB LTTR'   'AG'   3373.33   3738.7   3489.55   3785.69   1   20   2
100   29   3   980   0.08375   1600   1   3
 2
'Boyl/Kil NB LTR'   'AG'   3365.22   3677.65   3399.29   3591.62   1   10   1
100   71   3   80   0.08375   1600   1   3
 2
'Boyl/Kil EB LTTR'   'AG'   3320.38   3695.34   3212.27   3655.91   1   20   2
100   29   3   1165   0.08375   1600   1   3
 1
'Fenway/Brook South'   'AG'   2496.93   3278.87   2636.65   3081.07   775   0.0335   1   54
 1
'Fenway/Brook West'   'AG'   2481.8   3262.91   2347.32   3075.62   1780   0.0335   1   78
 1
'Fenway/Brook North'   'AG'   2491.04   3288.56   2373.12   3398.66   1485   0.0335   1   66
 1
'Fenway/Brook East'   'AG'   2497.77   3264.59   2608.73   3389.73   2090   0.0335   1   90
 1
'Park/Brook South'   'AG'   2691.91   3447.33   2838.26   3241.18   1030   0.0335   1   66
 1
'Park/Brook West'   'AG'   2672.16   3490.72   2502.75   3273.82   2100   0.0335   1   90
 1
'Park/Brook North'   'AG'   2656.67   3489.73   2496.11   3644.11   1675   0.0335   1   66
 1
'Park/Brook East'   'AG'   2663.31   3490.84   2801.72   3675.09   1010   0.0335   1   66
 1
'Park/Brook SE'   'AG'   2681.03   3470.37   2968.37   3574.94   2135   0.0335   1   78
 1
'River/Park N'   'AG'   2254.71   3768.23   2266.44   3911.9   440   0.0335   1   42
 1
'River/Park SE'   'AG'   2239.06   3675.39   2343.7   3750.15   260   0.0335   1   42
 1
'River/Park NE'   'AG'   2237.1   3772.14   2377.44   3769.21   750   0.0335   1   54
 1
'River/Park S'   'AG'   2231.15   3745.07   2210.13   3564.26   700   0.0335   1   54
 1
'River/Park SW'   'AG'   2211.1   3765.1   2058.06   3624.36   1250   0.0335   1   54
 1
'River/Park NW'   'AG'   2193.99   3770.21   2250.71   3886.02   500   0.0335   1   30
 1
'Beacon/Park N'   'AG'   1996.01   4667.5   1894.21   4948.36   1105   0.0335   1   78
 1
'Beacon/Park NR'   'AG'   1907.99   4673.8   1956.12   4744.74   15   0.0335   1   30
 1
'Beacon/Park E'   'AG'   1997.77   4657.71   2274.41   4755.75   1470   0.0335   1   78
 1
'Beacon/Park ER'   'AG'   1991.42   4750.81   2112.09   4710.61   15   0.0335   1   30
 1
'Beacon/Park S'   'AG'   2009.06   4646.43   2098.69   4400.99   1610   0.0335   1   78
 1
'Beacon/Park SR'   'AG'   2102.46   4662.03   2076.21   4571.17   60   0.0335   1   42
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 1
'Beacon/Park W EB'   'AG'   1995.65   4607.64   1704.19   4488.44   495   0.0335   1   66
 1
'Beacon/Park W EBR'   'AG'   2009.06   4551.22   1907.44   4575.2   130   0.0335   1   38
 1
'Beacon/Park W WB'   'AG'   1989.3   4675.35   1658.32   4556.15   825   0.0335   1   78
 1
'Boyl/Kil N'   'AG'   3344.49   3716.98   3289.05   3876.33   320   0.0335   1   54
 1
'Boyl/Kil E'   'AG'   3348.9   3715.02   3516.2   3780.72   2250   0.0335   1   78
 1
'Boyl/Kil S'   'AG'   3349.91   3702.12   3425.46   3502.07   205   0.0335   1   54
 1
'Boyl/Kil W'   'AG'   3345.98   3717.81   3141.89   3641.32   2195   0.0335   1   78
1   0   4   1000   0   'Y'   10   0   36
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'LANDMARKCENTER'   60   175   0   0   20   0.3048   1   0
'Brook/Full NE1'   2962.21   4181.21   6
'Brook/Full NE2'   3023.74   4138.31   6
'Brook/Full NE3'   3085.26   4095.42   6
'Brook/Full NE4'   3133.26   4153.04   6
'Brook/Full NE5'   3188.74   4204.01   6
'Brook/Full SE1'   3234.98   4159.54   6
'Brook/Full SE2'   3186.98   4101.91   6
'Brook/Full SE3'   3130.3   4049.49   6
'Brook/Full SE4'   3203.31   4005.73   6
'Brook/Full SE5'   3267.63   3967.16   6
'Brook/Full SW1'   3228.25   3918.49   6
'Brook/Full SW2'   3163.92   3957.05   6
'Brook/Full SW3'   3099.59   3995.61   6
'Brook/Full SW4'   3055.49   3934.94   6
'Brook/Full SW5'   3011.4   3874.28   6
'Brook/Full NW1'   2950.49   3916.35   6
'Brook/Full NW2'   2994.59   3977.01   6
'Brook/Full NW3'   3038.69   4037.68   6
'Brook/Full NW4'   2977.16   4080.57   6
'Brook/Full NW5'   2915.64   4123.47   6
'2013_EX'   10   1   0   'P'
 2
'Brook/Full EB L'   'AG'   3074.73   4018.45   2990.41   3908.28   1   10   1
100   33   3   90   0.08375   1600   1   3
 2
'Brook/Full EB TR'   'AG'   3083.58   4011.97   3001.61   3902.98   1   10   1
100   33   3   350   0.08375   1600   1   3
 2
'Brook/Full NB LTR'   'AG'   3121.31   4022.57   3170.85   3996.06   1   10   1
100   33   3   170   0.08375   1600   1   3
 2
'Brook/Full WB LTR'   'AG'   3127.21   4100.92   3172.02   4159.83   1   20   2
100   43   3   390   0.08375   1600   1   3
 2
'Brook/Full SB LT'   'AG'   3068.25   4050.85   2998.08   4102.69   1   10   1
100   67   3   125   0.08375   1600   1   3
 2
'Brook/Full SB R'   'AG'   3061.17   4041.42   2989.82   4092.67   1   10   1
100   57   3   135   0.08375   1600   1   3
 1
'Brook/Full N'   'AG'   3091.95   4045.65   2925.79   4161.49   420   0.0335   1   54
 1
'Brook/Full E'   'AG'   3091.95   4045.65   3246.16   4230.76   815   0.0335   1   54
 1
'Brook/Full S'   'AG'   3100.32   4031.31   3189.98   3977.57   305   0.0335   1   42
 1
'Brook/Full W'   'AG'   3091.95   4048.03   2946.11   3847.39   980   0.0335   1   54
1   0   4   1000   0   'Y'   10   0   36
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2018 No-Build
Microscale Input Files
(Particulate Matter 10 (PM10))

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'Landmark Center'   60   175   0   0   45   0.3048   1   0
'Fen/Brook NE1'   2376.5   3444   6
'Fen/Brook NE2'   2429.68   3390.99   6
'Fen/Brook NE3'   2484.5   3339.81   6
'Fen/Brook NE4'   2530.67   3398.92   6
'Fen/Brook NE5'   2576.84   3458.03   6
'Fen/Brook SE1'   2660.24   3364.92   6
'Fen/Brook SE2'   2609.62   3308.81   6
'Fen/Brook SE3'   2560.72   3252.69   6
'Fen/Brook SE4'   2604   3191.43   6
'Fen/Brook SE5'   2647.27   3130.17   6
'Fen/Brook SW1'   2588.73   3084.78   6
'Fen/Brook SW2'   2545.46   3146.04   6
'Fen/Brook SW3'   2502.19   3207.29   6
'Fen/Brook SW4'   2458.45   3146.37   6
'Fen/Brook SW5'   2414.7   3085.45   6
'Fen/Brook NW1'   2353.53   3168.28   6
'Fen/Brook NW2'   2397.27   3229.2   6
'Fen/Brook NW3'   2441.01   3290.12   6
'Fen/Brook NW4'   2386.19   3341.3   6
'Fen/Brook NW5'   2331.38   3392.49   6
'Park/Brook NE1'   2546.71   3655.11   6
'Park/Brook NE2'   2600.77   3603.13   6
'Park/Brook NE3'   2654.83   3551.15   6
'Park/Brook NE4'   2699.88   3611.11   6
'Park/Brook NE5'   2744.93   3671.08   6
'Park/Brook SE1'   2888.96   3493.9   6
'Park/Brook SE2'   2818.15   3468.13   6
'Park/Brook SE3'   2747.67   3442.47   6
'Park/Brook SE4'   2791.37   3381.51   6
'Park/Brook SE5'   2834.83   3320.29   6
'Park/Brook SW1'   2758.81   3278.82   6
'Park/Brook SW2'   2715.39   3339.97   6
'Park/Brook SW3'   2671.97   3401.13   6
'Park/Brook SW4'   2625.81   3342.02   6
'Park/Brook SW5'   2579.64   3282.92   6
'Park/Brook NW1'   2506.28   3367.69   6
'Park/Brook NW2'   2552.44   3426.8   6
'Park/Brook NW3'   2598.61   3485.9   6
'Park/Brook NW4'   2544.55   3537.89   6
'Park/Brook NW5'   2490.48   3589.87   6
'Park/Brook E1'   2853.5   3672.42   6
'Park/Brook E2'   2811.94   3617.1   6
'Park/Brook E3'   2763.4   3552.49   6
'Park/Brook E4'   2838.4   3579.78   6
'Park/Brook E5'   2904.36   3603.79   6
'2018NB'   56   1   0   'P'
 2
'Fen/Brook WB TT'   'AG'   2508.32   3314.76   2567.48   3392.01   1   20   2
100   54   3   870   0.07225   1600   1   3
 2
'Fen/Brook EB TTTR'   'AG'   2469.88   3221.1   2419.79   3152.05   1   30   3
100   54   3   947   0.07225   1600   1   3
 2
'Fen/Brook SB L'   'AG'   2487.62   3319   2439.29   3364.86   1   10   1
100   46   3   648   0.07225   1600   1   3
 2
'Fen/Brook SB LTT'   'AG'   2476.25   3307.23   2427.92   3351.87   1   20   2
100   46   3   854   0.07225   1600   1   3
 2
'Fen/Brook SB R'   'AG'   2463.25   3293.43   2416.55   3338.48   1   10   1
100   46   3   126   0.07225   1600   1   3
 2
'Park/Brook WB TTR'   'AG'   2701.33   3561.7   2759.96   3639.18   1   30   3
100   68   3   550   0.07225   1600   1   3
 2
'Park/Brook NWB LLRRR'   'AG'   2745.91   3510.38   2903.87   3571.39   1   30   3
100   75   3   1203   0.07225   1600   1   3
 2
'Park/Brook NB LTTTR'   'AG'   2715.39   3403.84   2792.43   3305.54   1   40   4
100   68   3   958   0.07225   1600   1   3
 2
'Park/Brook EB L'   'AG'   2628.58   3434.99   2544.27   3326.04   1   10   1
100   85   3   98   0.07225   1600   1   3
 2
'Park/Brook EB T'   'AG'   2637.53   3428.06   2552.21   3319.05   1   10   1
100   57   3   416   0.07225   1600   1   3
 2
'Park/Brook EB RR'   'AG'   2648.52   3416.92   2569.06   3311.84   1   20   2
100   32   3   1029   0.07225   1600   1   3
 2
'River/Park SB'   'AG'   2213.27   3801.84   2235.59   3847.49   1   10   1
100   78   3   548   0.07225   1600   1   3
 2
'River/Park SB East'   'AG'   2256.21   3801.18   2265.6   3851.79   1   20   2
100   78   3   473   0.07225   1600   1   3
 2
'River/Park WB North'   'AG'   2272.82   3765.17   2338.24   3765.5   1   30   3
100   59   3   875   0.07225   1600   1   3
 2
'River/Park WB South'   'AG'   2270.48   3707.91   2328.96   3732.95   1   20   2
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100   59   3   385   0.07225   1600   1   3
 2
'River/Park NEB'   'AG'   2169.88   3720.6   2100.81   3654.06   1   20   2
100   73   3   84   0.07225   1600   1   3
 2
'Beacon/Park SB LTT'   'AG'   1962.93   4712.56   1934.73   4800.99   1   20   2
110   61   3   629   0.07225   1600   1   3
 2
'Beacon/Park WB LTT'   'AG'   2055.3   4691.67   2155.45   4728.6   1   20   2
110   56   3   1020   0.07225   1600   1   3
 2
'Beacon/Park NB LTT'   'AG'   2041.69   4597.41   2076.21   4496.84   1   20   2
110   103   3   609   0.07225   1600   1   3
 2
'Beacon/Park EB LTTT'   'AG'   1966.34   4608.1   1839.93   4551.25   1   30   3
110   68   3   466   0.07225   1600   1   3
 2
'Beacon/Park EB R'   'AG'   1975.57   4560.48   1931.82   4567.29   1   20   2
110   61   3   134   0.07225   1600   1   3
 2
'Beacon/Park SB R '   'AG'   1917.23   4688.27   1941.05   4726.65   1   10   1
110   61   3   15   0.07225   1600   1   3
 2
'Beacon/Park WB R '   'AG'   2019.81   4741.23   2072.32   4722.77   1   10   1
110   68   3   33   0.07225   1600   1   3
 2
'Beacon/Park NB R'   'AG'   2095.17   4627.53   2077.67   4580.89   1   10   1
110   61   3   71   0.07225   1600   1   3
 2
'Boyl/Kil SB LTR'   'AG'   3321.98   3753.82   3294.42   3839.17   1   20   2
100   71   3   244   0.07225   1600   1   3
 2
'Boyl/Kil WB LTTR'   'AG'   3373.33   3738.7   3489.55   3785.69   1   20   2
100   29   3   1060   0.07225   1600   1   3
 2
'Boyl/Kil NB LTR'   'AG'   3365.22   3677.65   3399.29   3591.62   1   10   1
100   71   3   82   0.07225   1600   1   3
 2
'Boyl/Kil EB LTTR'   'AG'   3320.38   3695.34   3212.27   3655.91   1   20   2
100   29   3   1274   0.07225   1600   1   3
 1
'Fenway/Brook South'   'AG'   2496.93   3278.87   2636.65   3081.07   916   0.0289   1   54
 1
'Fenway/Brook West'   'AG'   2481.8   3262.91   2347.32   3075.62   1881   0.0289   1   78
 1
'Fenway/Brook North'   'AG'   2491.04   3288.56   2373.12   3398.66   1628   0.0289   1   66
 1
'Fenway/Brook East'   'AG'   2497.77   3264.59   2608.73   3389.73   2403   0.0289   1   90
 1
'Park/Brook South'   'AG'   2691.91   3447.33   2838.26   3241.18   958   0.0289   1   66
 1
'Park/Brook West'   'AG'   2672.16   3490.72   2502.75   3273.82   2413   0.0289   1   90
 1
'Park/Brook North'   'AG'   2656.67   3489.73   2496.11   3644.11   1794   0.0289   1   66
 1
'Park/Brook East'   'AG'   2663.31   3490.84   2801.72   3675.09   1249   0.0289   1   66
 1
'Park/Brook SE'   'AG'   2681.03   3470.37   2968.37   3574.94   2358   0.0289   1   78
 1
'River/Park N'   'AG'   2254.71   3768.23   2266.44   3911.9   473   0.0289   1   42
 1
'River/Park SE'   'AG'   2239.06   3675.39   2343.7   3750.15   428   0.0289   1   42
 1
'River/Park NE'   'AG'   2237.1   3772.14   2377.44   3769.21   872   0.0289   1   54
 1
'River/Park S'   'AG'   2231.15   3745.07   2210.13   3564.26   901   0.0289   1   54
 1
'River/Park SW'   'AG'   2211.1   3765.1   2058.06   3624.36   1420   0.0289   1   54
 1
'River/Park NW'   'AG'   2193.99   3770.21   2250.71   3886.02   548   0.0289   1   30
 1
'Beacon/Park N'   'AG'   1996.01   4667.5   1894.21   4948.36   1153   0.0289   1   78
 1
'Beacon/Park NR'   'AG'   1907.99   4673.8   1956.12   4744.74   15   0.0289   1   30
 1
'Beacon/Park E'   'AG'   1997.77   4657.71   2274.41   4755.75   1621   0.0289   1   78
 1
'Beacon/Park ER'   'AG'   1991.42   4750.81   2112.09   4710.61   33   0.0289   1   30
 1
'Beacon/Park S'   'AG'   2009.06   4646.43   2098.69   4400.99   1732   0.0289   1   78
 1
'Beacon/Park SR'   'AG'   2102.46   4662.03   2076.21   4571.17   71   0.0289   1   42
 1
'Beacon/Park W EB'   'AG'   1995.65   4607.64   1704.19   4488.44   600   0.0289   1   66
 1
'Beacon/Park W EBR'   'AG'   2009.06   4551.22   1907.44   4575.2   134   0.0289   1   38
 1
'Beacon/Park W WB'   'AG'   1989.3   4675.35   1658.32   4556.15   843   0.0289   1   78
 1
'Boyl/Kil N'   'AG'   3344.49   3716.98   3289.05   3876.33   320   0.0289   1   54
 1
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'Boyl/Kil E'   'AG'   3348.9   3715.02   3516.2   3780.72   2366   0.0289   1   78
 1
'Boyl/Kil S'   'AG'   3349.91   3702.12   3425.46   3502.07   242   0.0289   1   54
 1
'Boyl/Kil W'   'AG'   3345.98   3717.81   3141.89   3641.32   2392   0.0289   1   78
1   0   4   1000   0   'Y'   10   0   36
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'Landmark Center'   60   175   0   0   60   0.3048   1   0
'Beacon/Park NE1'   1956   4921.67   6
'Beacon/Park NE2'   1981.56   4851.16   6
'Beacon/Park NE3'   2059.66   4754.43   6
'Beacon/Park NE4'   2163.51   4768.43   6
'Beacon/Park NE5'   2234.2   4793.49   6
'Beacon/Park SE1'   2273.61   4703.48   6
'Beacon/Park SE2'   2202.92   4678.43   6
'Beacon/Park SE3'   2119.12   4608   6
'Beacon/Park SE4'   2120.16   4485.05   6
'Beacon/Park SE5'   2146.81   4412.06   6
'Beacon/Park SW1'   2053.38   4382.21   6
'Beacon/Park SW2'   2027.66   4452.66   6
'Beacon/Park SW3'   1951.59   4534.99   6
'Beacon/Park SW4'   1869.49   4509.59   6
'Beacon/Park SW5'   1800.07   4481.2   6
'Beacon/Park NW1'   1748.74   4640.8   6
'Beacon/Park NW2'   1819.31   4666.21   6
'Beacon/Park NW3'   1911.37   4723.31   6
'Beacon/Park NW4'   1893.82   4805.63   6
'Beacon/Park NW5'   1868.27   4876.14   6
'Riverway/Park NE1'   2301.27   3957.57   6
'Riverway/Park NE2'   2295.17   3882.81   6
'Riverway/Park NE3'   2289.07   3808.06   6
'Riverway/Park NE4'   2364.05   3806.5   6
'Riverway/Park NE5'   2439.05   3805.99   6
'Riverway/Park SE1'   2427.53   3594.67   6
'Riverway/Park SE2'   2406.62   3667.75   6
'Riverway/Park SE3'   2309.4   3687.55   6
'Riverway/Park SE4'   2248.83   3576.74   6
'Riverway/Park SE5'   2296.57   3506.87   6
'Riverway/Park SW1'   2170.58   3544.51   6
'Riverway/Park SW2'   2179.24   3619   6
'Riverway/Park SW3'   2187.91   3693.5   6
'Riverway/Park SW4'   2132.7   3642.73   6
'Riverway/Park SW5'   2077.5   3591.97   6
'Riverway/Park NW1'   2059.15   3675.63   6
'Riverway/Park NW2'   2114.35   3726.4   6
'Riverway/Park NW3'   2169.56   3777.16   6
'Riverway/Park NW4'   2202.55   3844.52   6
'Riverway/Park NW5'   2235.34   3911.97   6
'Boyl/Kil NE1'   3320.78   3917.23   6
'Boyl/Kil NE2'   3339.33   3844.42   6
'Boyl/Kil NE3'   3363.97   3773.58   6
'Boyl/Kil NE4'   3433.78   3801   6
'Boyl/Kil NE5'   3503.59   3828.41   6
'Boyl/Kil SE1'   3537.24   3736.34   6
'Boyl/Kil SE2'   3467.1   3708.8   6
'Boyl/Kil SE3'   3397.29   3681.38   6
'Boyl/Kil SE4'   3423.79   3611.22   6
'Boyl/Kil SE5'   3450.29   3541.06   6
'Boyl/Kil SW1'   3379.89   3518   6
'Boyl/Kil SW2'   3353.07   3589.02   6
'Boyl/Kil SW3'   3326.9   3658.33   6
'Boyl/Kil SW4'   3256.67   3632.01   6
'Boyl/Kil SW5'   3186.44   3605.69   6
'Boyl/Kil NW1'   3153.18   3697.88   6
'Boyl/Kil NW2'   3223.41   3724.2   6
'Boyl/Kil NW3'   3293.64   3750.52   6
'Boyl/Kil NW4'   3269   3821.36   6
'Boyl/Kil NW5'   3244.48   3891.85   6
'2018NB'   56   1   0   'P'
 2
'Fen/Brook WB TT'   'AG'   2508.32   3314.76   2567.48   3392.01   1   20   2
100   54   3   870   0.07225   1600   1   3
 2
'Fen/Brook EB TTTR'   'AG'   2469.88   3221.1   2419.79   3152.05   1   30   3
100   54   3   947   0.07225   1600   1   3
 2
'Fen/Brook SB L'   'AG'   2487.62   3319   2439.29   3364.86   1   10   1
100   46   3   648   0.07225   1600   1   3
 2
'Fen/Brook SB LTT'   'AG'   2476.25   3307.23   2427.92   3351.87   1   20   2
100   46   3   854   0.07225   1600   1   3
 2
'Fen/Brook SB R'   'AG'   2463.25   3293.43   2416.55   3338.48   1   10   1
100   46   3   126   0.07225   1600   1   3
 2
'Park/Brook WB TTR'   'AG'   2701.33   3561.7   2759.96   3639.18   1   30   3
100   68   3   550   0.07225   1600   1   3
 2
'Park/Brook NWB LLRRR'   'AG'   2745.91   3510.38   2903.87   3571.39   1   30   3
100   75   3   1203   0.07225   1600   1   3
 2
'Park/Brook NB LTTTR'   'AG'   2715.39   3403.84   2792.43   3305.54   1   40   4
100   68   3   958   0.07225   1600   1   3
 2
'Park/Brook EB L'   'AG'   2628.58   3434.99   2544.27   3326.04   1   10   1
100   85   3   98   0.07225   1600   1   3
 2
'Park/Brook EB T'   'AG'   2637.53   3428.06   2552.21   3319.05   1   10   1
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100   57   3   416   0.07225   1600   1   3
 2
'Park/Brook EB RR'   'AG'   2648.52   3416.92   2569.06   3311.84   1   20   2
100   32   3   1029   0.07225   1600   1   3
 2
'River/Park SB'   'AG'   2213.27   3801.84   2235.59   3847.49   1   10   1
100   78   3   548   0.07225   1600   1   3
 2
'River/Park SB East'   'AG'   2256.21   3801.18   2265.6   3851.79   1   20   2
100   78   3   473   0.07225   1600   1   3
 2
'River/Park WB North'   'AG'   2272.82   3765.17   2338.24   3765.5   1   30   3
100   59   3   875   0.07225   1600   1   3
 2
'River/Park WB South'   'AG'   2270.48   3707.91   2328.96   3732.95   1   20   2
100   59   3   385   0.07225   1600   1   3
 2
'River/Park NEB'   'AG'   2169.88   3720.6   2100.81   3654.06   1   20   2
100   73   3   84   0.07225   1600   1   3
 2
'Beacon/Park SB LTT'   'AG'   1962.93   4712.56   1934.73   4800.99   1   20   2
110   61   3   629   0.07225   1600   1   3
 2
'Beacon/Park WB LTT'   'AG'   2055.3   4691.67   2155.45   4728.6   1   20   2
110   56   3   1020   0.07225   1600   1   3
 2
'Beacon/Park NB LTT'   'AG'   2041.69   4597.41   2076.21   4496.84   1   20   2
110   103   3   609   0.07225   1600   1   3
 2
'Beacon/Park EB LTTT'   'AG'   1966.34   4608.1   1839.93   4551.25   1   30   3
110   68   3   466   0.07225   1600   1   3
 2
'Beacon/Park EB R'   'AG'   1975.57   4560.48   1931.82   4567.29   1   20   2
110   61   3   134   0.07225   1600   1   3
 2
'Beacon/Park SB R '   'AG'   1917.23   4688.27   1941.05   4726.65   1   10   1
110   61   3   15   0.07225   1600   1   3
 2
'Beacon/Park WB R '   'AG'   2019.81   4741.23   2072.32   4722.77   1   10   1
110   68   3   33   0.07225   1600   1   3
 2
'Beacon/Park NB R'   'AG'   2095.17   4627.53   2077.67   4580.89   1   10   1
110   61   3   71   0.07225   1600   1   3
 2
'Boyl/Kil SB LTR'   'AG'   3321.98   3753.82   3294.42   3839.17   1   20   2
100   71   3   244   0.07225   1600   1   3
 2
'Boyl/Kil WB LTTR'   'AG'   3373.33   3738.7   3489.55   3785.69   1   20   2
100   29   3   1060   0.07225   1600   1   3
 2
'Boyl/Kil NB LTR'   'AG'   3365.22   3677.65   3399.29   3591.62   1   10   1
100   71   3   82   0.07225   1600   1   3
 2
'Boyl/Kil EB LTTR'   'AG'   3320.38   3695.34   3212.27   3655.91   1   20   2
100   29   3   1274   0.07225   1600   1   3
 1
'Fenway/Brook South'   'AG'   2496.93   3278.87   2636.65   3081.07   916   0.0289   1   54
 1
'Fenway/Brook West'   'AG'   2481.8   3262.91   2347.32   3075.62   1881   0.0289   1   78
 1
'Fenway/Brook North'   'AG'   2491.04   3288.56   2373.12   3398.66   1628   0.0289   1   66
 1
'Fenway/Brook East'   'AG'   2497.77   3264.59   2608.73   3389.73   2403   0.0289   1   90
 1
'Park/Brook South'   'AG'   2691.91   3447.33   2838.26   3241.18   958   0.0289   1   66
 1
'Park/Brook West'   'AG'   2672.16   3490.72   2502.75   3273.82   2413   0.0289   1   90
 1
'Park/Brook North'   'AG'   2656.67   3489.73   2496.11   3644.11   1794   0.0289   1   66
 1
'Park/Brook East'   'AG'   2663.31   3490.84   2801.72   3675.09   1249   0.0289   1   66
 1
'Park/Brook SE'   'AG'   2681.03   3470.37   2968.37   3574.94   2358   0.0289   1   78
 1
'River/Park N'   'AG'   2254.71   3768.23   2266.44   3911.9   473   0.0289   1   42
 1
'River/Park SE'   'AG'   2239.06   3675.39   2343.7   3750.15   428   0.0289   1   42
 1
'River/Park NE'   'AG'   2237.1   3772.14   2377.44   3769.21   872   0.0289   1   54
 1
'River/Park S'   'AG'   2231.15   3745.07   2210.13   3564.26   901   0.0289   1   54
 1
'River/Park SW'   'AG'   2211.1   3765.1   2058.06   3624.36   1420   0.0289   1   54
 1
'River/Park NW'   'AG'   2193.99   3770.21   2250.71   3886.02   548   0.0289   1   30
 1
'Beacon/Park N'   'AG'   1996.01   4667.5   1894.21   4948.36   1153   0.0289   1   78
 1
'Beacon/Park NR'   'AG'   1907.99   4673.8   1956.12   4744.74   15   0.0289   1   30
 1
'Beacon/Park E'   'AG'   1997.77   4657.71   2274.41   4755.75   1621   0.0289   1   78
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 1
'Beacon/Park ER'   'AG'   1991.42   4750.81   2112.09   4710.61   33   0.0289   1   30
 1
'Beacon/Park S'   'AG'   2009.06   4646.43   2098.69   4400.99   1732   0.0289   1   78
 1
'Beacon/Park SR'   'AG'   2102.46   4662.03   2076.21   4571.17   71   0.0289   1   42
 1
'Beacon/Park W EB'   'AG'   1995.65   4607.64   1704.19   4488.44   600   0.0289   1   66
 1
'Beacon/Park W EBR'   'AG'   2009.06   4551.22   1907.44   4575.2   134   0.0289   1   38
 1
'Beacon/Park W WB'   'AG'   1989.3   4675.35   1658.32   4556.15   843   0.0289   1   78
 1
'Boyl/Kil N'   'AG'   3344.49   3716.98   3289.05   3876.33   320   0.0289   1   54
 1
'Boyl/Kil E'   'AG'   3348.9   3715.02   3516.2   3780.72   2366   0.0289   1   78
 1
'Boyl/Kil S'   'AG'   3349.91   3702.12   3425.46   3502.07   242   0.0289   1   54
 1
'Boyl/Kil W'   'AG'   3345.98   3717.81   3141.89   3641.32   2392   0.0289   1   78
1   0   4   1000   0   'Y'   10   0   36
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'LANDMARKCENTER'   60   175   0   0   20   0.3048   1   0
'Brook/Full NE1'   2962.21   4181.21   6
'Brook/Full NE2'   3023.74   4138.31   6
'Brook/Full NE3'   3085.26   4095.42   6
'Brook/Full NE4'   3133.26   4153.04   6
'Brook/Full NE5'   3188.74   4204.01   6
'Brook/Full SE1'   3234.98   4159.54   6
'Brook/Full SE2'   3186.98   4101.91   6
'Brook/Full SE3'   3130.3   4049.49   6
'Brook/Full SE4'   3203.31   4005.73   6
'Brook/Full SE5'   3267.63   3967.16   6
'Brook/Full SW1'   3228.25   3918.49   6
'Brook/Full SW2'   3163.92   3957.05   6
'Brook/Full SW3'   3099.59   3995.61   6
'Brook/Full SW4'   3055.49   3934.94   6
'Brook/Full SW5'   3011.4   3874.28   6
'Brook/Full NW1'   2950.49   3916.35   6
'Brook/Full NW2'   2994.59   3977.01   6
'Brook/Full NW3'   3038.69   4037.68   6
'Brook/Full NW4'   2977.16   4080.57   6
'Brook/Full NW5'   2915.64   4123.47   6
'2018_NB_CO_3'   10   1   0   'P'
 2
'Brook/Full EB L'   'AG'   3074.73   4018.45   2990.41   3908.28   1   10   1
100   33   3   92   0.07225   1600   1   3
 2
'Brook/Full EB TR'   'AG'   3083.58   4011.97   3001.61   3902.98   1   10   1
100   33   3   439   0.07225   1600   1   3
 2
'Brook/Full NB LTR'   'AG'   3121.31   4022.57   3170.85   3996.06   1   10   1
100   33   3   172   0.07225   1600   1   3
 2
'Brook/Full WB LTR'   'AG'   3127.21   4100.92   3172.02   4159.83   1   20   2
100   43   3   517   0.07225   1600   1   3
 2
'Brook/Full SB LT'   'AG'   3068.25   4050.85   2998.08   4102.69   1   10   1
100   67   3   129   0.07225   1600   1   3
 2
'Brook/Full SB R'   'AG'   3061.17   4041.42   2989.82   4092.67   1   10   1
100   57   3   138   0.07225   1600   1   3
 1
'Brook/Full N'   'AG'   3091.95   4045.65   2925.79   4161.49   431   0.0289   1   54
 1
'Brook/Full E'   'AG'   3091.95   4045.65   3246.16   4230.76   989   0.0289   1   54
 1
'Brook/Full S'   'AG'   3100.32   4031.31   3189.98   3977.57   341   0.0289   1   42
 1
'Brook/Full W'   'AG'   3091.95   4048.03   2946.11   3847.39   1213   0.0289   1   54
1   0   4   1000   0   'Y'   10   0   36
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2018 Build
Microscale Input Files
(Particulate Matter 10 (PM10))

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'Landmark Center'   60   175   0   0   45   0.3048   1   0
'Fen/Brook NE1'   2376.5   3444   6
'Fen/Brook NE2'   2429.68   3390.99   6
'Fen/Brook NE3'   2484.5   3339.81   6
'Fen/Brook NE4'   2530.67   3398.92   6
'Fen/Brook NE5'   2576.84   3458.03   6
'Fen/Brook SE1'   2660.24   3364.92   6
'Fen/Brook SE2'   2609.62   3308.81   6
'Fen/Brook SE3'   2560.72   3252.69   6
'Fen/Brook SE4'   2604   3191.43   6
'Fen/Brook SE5'   2647.27   3130.17   6
'Fen/Brook SW1'   2588.73   3084.78   6
'Fen/Brook SW2'   2545.46   3146.04   6
'Fen/Brook SW3'   2502.19   3207.29   6
'Fen/Brook SW4'   2458.45   3146.37   6
'Fen/Brook SW5'   2414.7   3085.45   6
'Fen/Brook NW1'   2353.53   3168.28   6
'Fen/Brook NW2'   2397.27   3229.2   6
'Fen/Brook NW3'   2441.01   3290.12   6
'Fen/Brook NW4'   2386.19   3341.3   6
'Fen/Brook NW5'   2331.38   3392.49   6
'Park/Brook NE1'   2546.71   3655.11   6
'Park/Brook NE2'   2600.77   3603.13   6
'Park/Brook NE3'   2654.83   3551.15   6
'Park/Brook NE4'   2699.88   3611.11   6
'Park/Brook NE5'   2744.93   3671.08   6
'Park/Brook SE1'   2888.96   3493.9   6
'Park/Brook SE2'   2818.15   3468.13   6
'Park/Brook SE3'   2747.67   3442.47   6
'Park/Brook SE4'   2791.37   3381.51   6
'Park/Brook SE5'   2834.83   3320.29   6
'Park/Brook SW1'   2758.81   3278.82   6
'Park/Brook SW2'   2715.39   3339.97   6
'Park/Brook SW3'   2671.97   3401.13   6
'Park/Brook SW4'   2625.81   3342.02   6
'Park/Brook SW5'   2579.64   3282.92   6
'Park/Brook NW1'   2506.28   3367.69   6
'Park/Brook NW2'   2552.44   3426.8   6
'Park/Brook NW3'   2598.61   3485.9   6
'Park/Brook NW4'   2544.55   3537.89   6
'Park/Brook NW5'   2490.48   3589.87   6
'Park/Brook E1'   2853.5   3672.42   6
'Park/Brook E2'   2811.94   3617.1   6
'Park/Brook E3'   2763.4   3552.49   6
'Park/Brook E4'   2838.4   3579.78   6
'Park/Brook E5'   2904.36   3603.79   6
'2018NB'   56   1   0   'P'
 2
'Fen/Brook WB TT'   'AG'   2508.32   3314.76   2567.48   3392.01   1   20   2
100   54   3   863   0.07225   1600   1   3
 2
'Fen/Brook EB TTTR'   'AG'   2469.88   3221.1   2419.79   3152.05   1   30   3
100   54   3   959   0.07225   1600   1   3
 2
'Fen/Brook SB L'   'AG'   2487.62   3319   2439.29   3364.86   1   10   1
100   46   3   647   0.07225   1600   1   3
 2
'Fen/Brook SB LTT'   'AG'   2476.25   3307.23   2427.92   3351.87   1   20   2
100   46   3   874   0.07225   1600   1   3
 2
'Fen/Brook SB R'   'AG'   2463.25   3293.43   2416.55   3338.48   1   10   1
100   46   3   132   0.07225   1600   1   3
 2
'Park/Brook WB TTR'   'AG'   2701.33   3561.7   2759.96   3639.18   1   30   3
100   68   3   669   0.07225   1600   1   3
 2
'Park/Brook NWB LLRRR'   'AG'   2745.91   3510.38   2903.87   3571.39   1   30   3
100   75   3   1203   0.07225   1600   1   3
 2
'Park/Brook NB LTTTR'   'AG'   2715.39   3403.84   2792.43   3305.54   1   40   4
100   68   3   992   0.07225   1600   1   3
 2
'Park/Brook EB L'   'AG'   2628.58   3434.99   2544.27   3326.04   1   10   1
100   85   3   107   0.07225   1600   1   3
 2
'Park/Brook EB T'   'AG'   2637.53   3428.06   2552.21   3319.05   1   10   1
100   57   3   419   0.07225   1600   1   3
 2
'Park/Brook EB RR'   'AG'   2648.52   3416.92   2569.06   3311.84   1   20   2
100   32   3   1029   0.07225   1600   1   3
 2
'River/Park SB'   'AG'   2213.27   3801.84   2235.59   3847.49   1   10   1
100   78   3   548   0.07225   1600   1   3
 2
'River/Park SB East'   'AG'   2256.21   3801.18   2265.6   3851.79   1   20   2
100   78   3   473   0.07225   1600   1   3
 2
'River/Park WB North'   'AG'   2272.82   3765.17   2338.24   3765.5   1   30   3
100   59   3   858   0.07225   1600   1   3
 2
'River/Park WB South'   'AG'   2270.48   3707.91   2328.96   3732.95   1   20   2
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100   59   3   454   0.07225   1600   1   3
 2
'River/Park NEB'   'AG'   2169.88   3720.6   2100.81   3654.06   1   20   2
100   73   3   114   0.07225   1600   1   3
 2
'Beacon/Park SB LTT'   'AG'   1962.93   4712.56   1934.73   4800.99   1   20   2
110   61   3   632   0.07225   1600   1   3
 2
'Beacon/Park WB LTT'   'AG'   2055.3   4691.67   2155.45   4728.6   1   20   2
110   56   3   1012   0.07225   1600   1   3
 2
'Beacon/Park NB LTT'   'AG'   2041.69   4597.41   2076.21   4496.84   1   20   2
110   103   3   591   0.07225   1600   1   3
 2
'Beacon/Park EB LTTT'   'AG'   1966.34   4608.1   1839.93   4551.25   1   30   3
110   68   3   469   0.07225   1600   1   3
 2
'Beacon/Park EB R'   'AG'   1975.57   4560.48   1931.82   4567.29   1   20   2
110   61   3   134   0.07225   1600   1   3
 2
'Beacon/Park SB R '   'AG'   1917.23   4688.27   1941.05   4726.65   1   10   1
110   61   3   15   0.07225   1600   1   3
 2
'Beacon/Park WB R '   'AG'   2019.81   4741.23   2072.32   4722.77   1   10   1
110   68   3   36   0.07225   1600   1   3
 2
'Beacon/Park NB R'   'AG'   2095.17   4627.53   2077.67   4580.89   1   10   1
110   61   3   71   0.07225   1600   1   3
 2
'Boyl/Kil SB LTR'   'AG'   3321.98   3753.82   3294.42   3839.17   1   20   2
100   71   3   267   0.07225   1600   1   3
 2
'Boyl/Kil WB LTTR'   'AG'   3373.33   3738.7   3489.55   3785.69   1   20   2
100   29   3   1096   0.07225   1600   1   3
 2
'Boyl/Kil NB LTR'   'AG'   3365.22   3677.65   3399.29   3591.62   1   10   1
100   71   3   82   0.07225   1600   1   3
 2
'Boyl/Kil EB LTTR'   'AG'   3320.38   3695.34   3212.27   3655.91   1   20   2
100   29   3   1274   0.07225   1600   1   3
 1
'Fenway/Brook South'   'AG'   2496.93   3278.87   2636.65   3081.07   936   0.0289   1   54
 1
'Fenway/Brook West'   'AG'   2481.8   3262.91   2347.32   3075.62   1965   0.0289   1   78
 1
'Fenway/Brook North'   'AG'   2491.04   3288.56   2373.12   3398.66   1653   0.0289   1   66
 1
'Fenway/Brook East'   'AG'   2497.77   3264.59   2608.73   3389.73   2407   0.0289   1   90
 1
'Park/Brook South'   'AG'   2691.91   3447.33   2838.26   3241.18   992   0.0289   1   66
 1
'Park/Brook West'   'AG'   2672.16   3490.72   2502.75   3273.82   2418   0.0289   1   90
 1
'Park/Brook North'   'AG'   2656.67   3489.73   2496.11   3644.11   1821   0.0289   1   66
 1
'Park/Brook East'   'AG'   2663.31   3490.84   2801.72   3675.09   1249   0.0289   1   66
 1
'Park/Brook SE'   'AG'   2681.03   3470.37   2968.37   3574.94   2358   0.0289   1   78
 1
'River/Park N'   'AG'   2254.71   3768.23   2266.44   3911.9   473   0.0289   1   42
 1
'River/Park SE'   'AG'   2239.06   3675.39   2343.7   3750.15   454   0.0289   1   42
 1
'River/Park NE'   'AG'   2237.1   3772.14   2377.44   3769.21   858   0.0289   1   54
 1
'River/Park S'   'AG'   2231.15   3745.07   2210.13   3564.26   927   0.0289   1   54
 1
'River/Park SW'   'AG'   2211.1   3765.1   2058.06   3624.36   1520   0.0289   1   54
 1
'River/Park NW'   'AG'   2193.99   3770.21   2250.71   3886.02   548   0.0289   1   30
 1
'Beacon/Park N'   'AG'   1996.01   4667.5   1894.21   4948.36   1143   0.0289   1   78
 1
'Beacon/Park NR'   'AG'   1907.99   4673.8   1956.12   4744.74   15   0.0289   1   30
 1
'Beacon/Park E'   'AG'   1997.77   4657.71   2274.41   4755.75   1622   0.0289   1   78
 1
'Beacon/Park ER'   'AG'   1991.42   4750.81   2112.09   4710.61   36   0.0289   1   30
 1
'Beacon/Park S'   'AG'   2009.06   4646.43   2098.69   4400.99   1714   0.0289   1   78
 1
'Beacon/Park SR'   'AG'   2102.46   4662.03   2076.21   4571.17   71   0.0289   1   42
 1
'Beacon/Park W EB'   'AG'   1995.65   4607.64   1704.19   4488.44   603   0.0289   1   66
 1
'Beacon/Park W EBR'   'AG'   2009.06   4551.22   1907.44   4575.2   134   0.0289   1   38
 1
'Beacon/Park W WB'   'AG'   1989.3   4675.35   1658.32   4556.15   833   0.0289   1   78
 1
'Boyl/Kil N'   'AG'   3344.49   3716.98   3289.05   3876.33   379   0.0289   1   54
 1
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'Boyl/Kil E'   'AG'   3348.9   3715.02   3516.2   3780.72   2426   0.0289   1   78
 1
'Boyl/Kil S'   'AG'   3349.91   3702.12   3425.46   3502.07   241   0.0289   1   54
 1
'Boyl/Kil W'   'AG'   3345.98   3717.81   3141.89   3641.32   2392   0.0289   1   78
1   0   4   1000   0   'Y'   10   0   36
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'Landmark Center'   60   175   0   0   60   0.3048   1   0
'Beacon/Park NE1'   1956   4921.67   6
'Beacon/Park NE2'   1981.56   4851.16   6
'Beacon/Park NE3'   2059.66   4754.43   6
'Beacon/Park NE4'   2163.51   4768.43   6
'Beacon/Park NE5'   2234.2   4793.49   6
'Beacon/Park SE1'   2273.61   4703.48   6
'Beacon/Park SE2'   2202.92   4678.43   6
'Beacon/Park SE3'   2119.12   4608   6
'Beacon/Park SE4'   2120.16   4485.05   6
'Beacon/Park SE5'   2146.81   4412.06   6
'Beacon/Park SW1'   2053.38   4382.21   6
'Beacon/Park SW2'   2027.66   4452.66   6
'Beacon/Park SW3'   1951.59   4534.99   6
'Beacon/Park SW4'   1869.49   4509.59   6
'Beacon/Park SW5'   1800.07   4481.2   6
'Beacon/Park NW1'   1748.74   4640.8   6
'Beacon/Park NW2'   1819.31   4666.21   6
'Beacon/Park NW3'   1911.37   4723.31   6
'Beacon/Park NW4'   1893.82   4805.63   6
'Beacon/Park NW5'   1868.27   4876.14   6
'Riverway/Park NE1'   2301.27   3957.57   6
'Riverway/Park NE2'   2295.17   3882.81   6
'Riverway/Park NE3'   2289.07   3808.06   6
'Riverway/Park NE4'   2364.05   3806.5   6
'Riverway/Park NE5'   2439.05   3805.99   6
'Riverway/Park SE1'   2427.53   3594.67   6
'Riverway/Park SE2'   2406.62   3667.75   6
'Riverway/Park SE3'   2309.4   3687.55   6
'Riverway/Park SE4'   2248.83   3576.74   6
'Riverway/Park SE5'   2296.57   3506.87   6
'Riverway/Park SW1'   2170.58   3544.51   6
'Riverway/Park SW2'   2179.24   3619   6
'Riverway/Park SW3'   2187.91   3693.5   6
'Riverway/Park SW4'   2132.7   3642.73   6
'Riverway/Park SW5'   2077.5   3591.97   6
'Riverway/Park NW1'   2059.15   3675.63   6
'Riverway/Park NW2'   2114.35   3726.4   6
'Riverway/Park NW3'   2169.56   3777.16   6
'Riverway/Park NW4'   2202.55   3844.52   6
'Riverway/Park NW5'   2235.34   3911.97   6
'Boyl/Kil NE1'   3320.78   3917.23   6
'Boyl/Kil NE2'   3339.33   3844.42   6
'Boyl/Kil NE3'   3363.97   3773.58   6
'Boyl/Kil NE4'   3433.78   3801   6
'Boyl/Kil NE5'   3503.59   3828.41   6
'Boyl/Kil SE1'   3537.24   3736.34   6
'Boyl/Kil SE2'   3467.1   3708.8   6
'Boyl/Kil SE3'   3397.29   3681.38   6
'Boyl/Kil SE4'   3423.79   3611.22   6
'Boyl/Kil SE5'   3450.29   3541.06   6
'Boyl/Kil SW1'   3379.89   3518   6
'Boyl/Kil SW2'   3353.07   3589.02   6
'Boyl/Kil SW3'   3326.9   3658.33   6
'Boyl/Kil SW4'   3256.67   3632.01   6
'Boyl/Kil SW5'   3186.44   3605.69   6
'Boyl/Kil NW1'   3153.18   3697.88   6
'Boyl/Kil NW2'   3223.41   3724.2   6
'Boyl/Kil NW3'   3293.64   3750.52   6
'Boyl/Kil NW4'   3269   3821.36   6
'Boyl/Kil NW5'   3244.48   3891.85   6
'2018NB'   56   1   0   'P'
 2
'Fen/Brook WB TT'   'AG'   2508.32   3314.76   2567.48   3392.01   1   20   2
100   54   3   863   0.07225   1600   1   3
 2
'Fen/Brook EB TTTR'   'AG'   2469.88   3221.1   2419.79   3152.05   1   30   3
100   54   3   959   0.07225   1600   1   3
 2
'Fen/Brook SB L'   'AG'   2487.62   3319   2439.29   3364.86   1   10   1
100   46   3   647   0.07225   1600   1   3
 2
'Fen/Brook SB LTT'   'AG'   2476.25   3307.23   2427.92   3351.87   1   20   2
100   46   3   874   0.07225   1600   1   3
 2
'Fen/Brook SB R'   'AG'   2463.25   3293.43   2416.55   3338.48   1   10   1
100   46   3   132   0.07225   1600   1   3
 2
'Park/Brook WB TTR'   'AG'   2701.33   3561.7   2759.96   3639.18   1   30   3
100   68   3   669   0.07225   1600   1   3
 2
'Park/Brook NWB LLRRR'   'AG'   2745.91   3510.38   2903.87   3571.39   1   30   3
100   75   3   1203   0.07225   1600   1   3
 2
'Park/Brook NB LTTTR'   'AG'   2715.39   3403.84   2792.43   3305.54   1   40   4
100   68   3   992   0.07225   1600   1   3
 2
'Park/Brook EB L'   'AG'   2628.58   3434.99   2544.27   3326.04   1   10   1
100   85   3   107   0.07225   1600   1   3
 2
'Park/Brook EB T'   'AG'   2637.53   3428.06   2552.21   3319.05   1   10   1
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100   57   3   419   0.07225   1600   1   3
 2
'Park/Brook EB RR'   'AG'   2648.52   3416.92   2569.06   3311.84   1   20   2
100   32   3   1029   0.07225   1600   1   3
 2
'River/Park SB'   'AG'   2213.27   3801.84   2235.59   3847.49   1   10   1
100   78   3   548   0.07225   1600   1   3
 2
'River/Park SB East'   'AG'   2256.21   3801.18   2265.6   3851.79   1   20   2
100   78   3   473   0.07225   1600   1   3
 2
'River/Park WB North'   'AG'   2272.82   3765.17   2338.24   3765.5   1   30   3
100   59   3   858   0.07225   1600   1   3
 2
'River/Park WB South'   'AG'   2270.48   3707.91   2328.96   3732.95   1   20   2
100   59   3   454   0.07225   1600   1   3
 2
'River/Park NEB'   'AG'   2169.88   3720.6   2100.81   3654.06   1   20   2
100   73   3   114   0.07225   1600   1   3
 2
'Beacon/Park SB LTT'   'AG'   1962.93   4712.56   1934.73   4800.99   1   20   2
110   61   3   632   0.07225   1600   1   3
 2
'Beacon/Park WB LTT'   'AG'   2055.3   4691.67   2155.45   4728.6   1   20   2
110   56   3   1012   0.07225   1600   1   3
 2
'Beacon/Park NB LTT'   'AG'   2041.69   4597.41   2076.21   4496.84   1   20   2
110   103   3   591   0.07225   1600   1   3
 2
'Beacon/Park EB LTTT'   'AG'   1966.34   4608.1   1839.93   4551.25   1   30   3
110   68   3   469   0.07225   1600   1   3
 2
'Beacon/Park EB R'   'AG'   1975.57   4560.48   1931.82   4567.29   1   20   2
110   61   3   134   0.07225   1600   1   3
 2
'Beacon/Park SB R '   'AG'   1917.23   4688.27   1941.05   4726.65   1   10   1
110   61   3   15   0.07225   1600   1   3
 2
'Beacon/Park WB R '   'AG'   2019.81   4741.23   2072.32   4722.77   1   10   1
110   68   3   36   0.07225   1600   1   3
 2
'Beacon/Park NB R'   'AG'   2095.17   4627.53   2077.67   4580.89   1   10   1
110   61   3   71   0.07225   1600   1   3
 2
'Boyl/Kil SB LTR'   'AG'   3321.98   3753.82   3294.42   3839.17   1   20   2
100   71   3   267   0.07225   1600   1   3
 2
'Boyl/Kil WB LTTR'   'AG'   3373.33   3738.7   3489.55   3785.69   1   20   2
100   29   3   1096   0.07225   1600   1   3
 2
'Boyl/Kil NB LTR'   'AG'   3365.22   3677.65   3399.29   3591.62   1   10   1
100   71   3   82   0.07225   1600   1   3
 2
'Boyl/Kil EB LTTR'   'AG'   3320.38   3695.34   3212.27   3655.91   1   20   2
100   29   3   1274   0.07225   1600   1   3
 1
'Fenway/Brook South'   'AG'   2496.93   3278.87   2636.65   3081.07   936   0.0289   1   54
 1
'Fenway/Brook West'   'AG'   2481.8   3262.91   2347.32   3075.62   1965   0.0289   1   78
 1
'Fenway/Brook North'   'AG'   2491.04   3288.56   2373.12   3398.66   1653   0.0289   1   66
 1
'Fenway/Brook East'   'AG'   2497.77   3264.59   2608.73   3389.73   2407   0.0289   1   90
 1
'Park/Brook South'   'AG'   2691.91   3447.33   2838.26   3241.18   992   0.0289   1   66
 1
'Park/Brook West'   'AG'   2672.16   3490.72   2502.75   3273.82   2418   0.0289   1   90
 1
'Park/Brook North'   'AG'   2656.67   3489.73   2496.11   3644.11   1821   0.0289   1   66
 1
'Park/Brook East'   'AG'   2663.31   3490.84   2801.72   3675.09   1249   0.0289   1   66
 1
'Park/Brook SE'   'AG'   2681.03   3470.37   2968.37   3574.94   2358   0.0289   1   78
 1
'River/Park N'   'AG'   2254.71   3768.23   2266.44   3911.9   473   0.0289   1   42
 1
'River/Park SE'   'AG'   2239.06   3675.39   2343.7   3750.15   454   0.0289   1   42
 1
'River/Park NE'   'AG'   2237.1   3772.14   2377.44   3769.21   858   0.0289   1   54
 1
'River/Park S'   'AG'   2231.15   3745.07   2210.13   3564.26   927   0.0289   1   54
 1
'River/Park SW'   'AG'   2211.1   3765.1   2058.06   3624.36   1520   0.0289   1   54
 1
'River/Park NW'   'AG'   2193.99   3770.21   2250.71   3886.02   548   0.0289   1   30
 1
'Beacon/Park N'   'AG'   1996.01   4667.5   1894.21   4948.36   1143   0.0289   1   78
 1
'Beacon/Park NR'   'AG'   1907.99   4673.8   1956.12   4744.74   15   0.0289   1   30
 1
'Beacon/Park E'   'AG'   1997.77   4657.71   2274.41   4755.75   1622   0.0289   1   78
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 1
'Beacon/Park ER'   'AG'   1991.42   4750.81   2112.09   4710.61   36   0.0289   1   30
 1
'Beacon/Park S'   'AG'   2009.06   4646.43   2098.69   4400.99   1714   0.0289   1   78
 1
'Beacon/Park SR'   'AG'   2102.46   4662.03   2076.21   4571.17   71   0.0289   1   42
 1
'Beacon/Park W EB'   'AG'   1995.65   4607.64   1704.19   4488.44   603   0.0289   1   66
 1
'Beacon/Park W EBR'   'AG'   2009.06   4551.22   1907.44   4575.2   134   0.0289   1   38
 1
'Beacon/Park W WB'   'AG'   1989.3   4675.35   1658.32   4556.15   833   0.0289   1   78
 1
'Boyl/Kil N'   'AG'   3344.49   3716.98   3289.05   3876.33   379   0.0289   1   54
 1
'Boyl/Kil E'   'AG'   3348.9   3715.02   3516.2   3780.72   2426   0.0289   1   78
 1
'Boyl/Kil S'   'AG'   3349.91   3702.12   3425.46   3502.07   241   0.0289   1   54
 1
'Boyl/Kil W'   'AG'   3345.98   3717.81   3141.89   3641.32   2392   0.0289   1   78
1   0   4   1000   0   'Y'   10   0   36
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'LANDMARKCENTER'   60   175   0   0   20   0.3048   1   0
'Brook/Full NE1'   2962.21   4181.21   6
'Brook/Full NE2'   3023.74   4138.31   6
'Brook/Full NE3'   3085.26   4095.42   6
'Brook/Full NE4'   3133.26   4153.04   6
'Brook/Full NE5'   3188.74   4204.01   6
'Brook/Full SE1'   3234.98   4159.54   6
'Brook/Full SE2'   3186.98   4101.91   6
'Brook/Full SE3'   3130.3   4049.49   6
'Brook/Full SE4'   3203.31   4005.73   6
'Brook/Full SE5'   3267.63   3967.16   6
'Brook/Full SW1'   3228.25   3918.49   6
'Brook/Full SW2'   3163.92   3957.05   6
'Brook/Full SW3'   3099.59   3995.61   6
'Brook/Full SW4'   3055.49   3934.94   6
'Brook/Full SW5'   3011.4   3874.28   6
'Brook/Full NW1'   2950.49   3916.35   6
'Brook/Full NW2'   2994.59   3977.01   6
'Brook/Full NW3'   3038.69   4037.68   6
'Brook/Full NW4'   2977.16   4080.57   6
'Brook/Full NW5'   2915.64   4123.47   6
'2018_BD_CO_3'   10   1   0   'P'
 2
'Brook/Full EB L'   'AG'   3074.73   4018.45   2990.41   3908.28   1   10   1
100   33   3   105   0.07225   1600   1   3
 2
'Brook/Full EB TR'   'AG'   3083.58   4011.97   3001.61   3902.98   1   10   1
100   33   3   439   0.07225   1600   1   3
 2
'Brook/Full NB LTR'   'AG'   3121.31   4022.57   3170.85   3996.06   1   10   1
100   33   3   240   0.07225   1600   1   3
 2
'Brook/Full WB LTR'   'AG'   3127.21   4100.92   3172.02   4159.83   1   20   2
100   43   3   528   0.07225   1600   1   3
 2
'Brook/Full SB LT'   'AG'   3068.25   4050.85   2998.08   4102.69   1   10   1
100   67   3   173   0.07225   1600   1   3
 2
'Brook/Full SB R'   'AG'   3061.17   4041.42   2989.82   4092.67   1   10   1
100   57   3   125   0.07225   1600   1   3
 1
'Brook/Full N'   'AG'   3091.95   4045.65   2925.79   4161.49   554   0.0289   1   54
 1
'Brook/Full E'   'AG'   3091.95   4045.65   3246.16   4230.76   997   0.0289   1   54
 1
'Brook/Full S'   'AG'   3100.32   4031.31   3189.98   3977.57   456   0.0289   1   42
 1
'Brook/Full W'   'AG'   3091.95   4048.03   2946.11   3847.39   1213   0.0289   1   54
1   0   4   1000   0   'Y'   10   0   36
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2013 Existing
Microscale Input Files
(Particulate Matter 2.5 (PM2.5))

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'Landmark Center'   60   175   0   0   45   0.3048   1   0
'Fen/Brook NE1'   2376.5   3444   6
'Fen/Brook NE2'   2429.68   3390.99   6
'Fen/Brook NE3'   2484.5   3339.81   6
'Fen/Brook NE4'   2530.67   3398.92   6
'Fen/Brook NE5'   2576.84   3458.03   6
'Fen/Brook SE1'   2660.24   3364.92   6
'Fen/Brook SE2'   2609.62   3308.81   6
'Fen/Brook SE3'   2560.72   3252.69   6
'Fen/Brook SE4'   2604   3191.43   6
'Fen/Brook SE5'   2647.27   3130.17   6
'Fen/Brook SW1'   2588.73   3084.78   6
'Fen/Brook SW2'   2545.46   3146.04   6
'Fen/Brook SW3'   2502.19   3207.29   6
'Fen/Brook SW4'   2458.45   3146.37   6
'Fen/Brook SW5'   2414.7   3085.45   6
'Fen/Brook NW1'   2353.53   3168.28   6
'Fen/Brook NW2'   2397.27   3229.2   6
'Fen/Brook NW3'   2441.01   3290.12   6
'Fen/Brook NW4'   2386.19   3341.3   6
'Fen/Brook NW5'   2331.38   3392.49   6
'Park/Brook NE1'   2546.71   3655.11   6
'Park/Brook NE2'   2600.77   3603.13   6
'Park/Brook NE3'   2654.83   3551.15   6
'Park/Brook NE4'   2699.88   3611.11   6
'Park/Brook NE5'   2744.93   3671.08   6
'Park/Brook SE1'   2888.96   3493.9   6
'Park/Brook SE2'   2818.15   3468.13   6
'Park/Brook SE3'   2747.67   3442.47   6
'Park/Brook SE4'   2791.37   3381.51   6
'Park/Brook SE5'   2834.83   3320.29   6
'Park/Brook SW1'   2758.81   3278.82   6
'Park/Brook SW2'   2715.39   3339.97   6
'Park/Brook SW3'   2671.97   3401.13   6
'Park/Brook SW4'   2625.81   3342.02   6
'Park/Brook SW5'   2579.64   3282.92   6
'Park/Brook NW1'   2506.28   3367.69   6
'Park/Brook NW2'   2552.44   3426.8   6
'Park/Brook NW3'   2598.61   3485.9   6
'Park/Brook NW4'   2544.55   3537.89   6
'Park/Brook NW5'   2490.48   3589.87   6
'Park/Brook E1'   2853.5   3672.42   6
'Park/Brook E2'   2811.94   3617.1   6
'Park/Brook E3'   2763.4   3552.49   6
'Park/Brook E4'   2838.4   3579.78   6
'Park/Brook E5'   2904.36   3603.79   6
'2013EX'   54   1   0   'P'
 2
'Fen/Brook WB TT'   'AG'   2508.32   3314.76   2567.48   3392.01   1   20   2
100   59   3   790   0.04575   1600   1   3
 2
'Fen/Brook EB TTTR'   'AG'   2469.88   3221.1   2419.79   3152.05   1   30   3
100   59   3   875   0.04575   1600   1   3
 2
'Fen/Brook SB L'   'AG'   2487.62   3319   2439.29   3364.86   1   10   1
100   57   3   545   0.04575   1600   1   3
 2
'Fen/Brook SB LTT'   'AG'   2476.25   3307.23   2427.92   3351.87   1   20   2
100   57   3   825   0.04575   1600   1   3
 2
'Fen/Brook SB R'   'AG'   2463.25   3293.43   2416.55   3338.48   1   10   1
100   57   3   115   0.04575   1600   1   3
 2
'Park/Brook WB TTR'   'AG'   2701.33   3561.7   2759.96   3639.18   1   30   3
100   68   3   550   0.04575   1600   1   3
 2
'Park/Brook NWB LLRRR'   'AG'   2745.91   3510.38   2903.87   3571.39   1   30   3
100   62   3   1085   0.04575   1600   1   3
 2
'Park/Brook NB LTTTR'   'AG'   2715.39   3403.84   2792.43   3305.54   1   40   4
100   70   3   1030   0.04575   1600   1   3
 2
'Park/Brook EB TT'   'AG'   2632.53   3431.93   2548.22   3322.98   1   20   2
100   68   3   355   0.04575   1600   1   3
 2
'Park/Brook EB RR'   'AG'   2648.52   3416.92   2569.06   3311.84   1   20   2
100   30   3   955   0.04575   1600   1   3
 2
'River/Park SB'   'AG'   2213.27   3801.84   2235.59   3847.49   1   10   1
100   50   3   500   0.04575   1600   1   3
 2
'River/Park SB East'   'AG'   2256.21   3801.18   2265.6   3851.79   1   20   2
100   50   3   440   0.04575   1600   1   3
 2
'River/Park WB North'   'AG'   2272.82   3765.17   2338.24   3765.5   1   30   3
100   50   3   875   0.04575   1600   1   3
 2
'River/Park WB South'   'AG'   2270.48   3707.91   2328.96   3732.95   1   20   2
100   50   3   385   0.04575   1600   1   3
 2
'Beacon/Park SB LTT'   'AG'   1962.93   4712.56   1934.73   4800.99   1   20   2
```



```
110   79   3   595   0.04575   1600   1   3
 2
'Beacon/Park WB LTT'   'AG'   2055.3   4691.67   2155.45   4728.6   1   20   2
110   95   3   940   0.04575   1600   1   3
 2
'Beacon/Park NB LTT'   'AG'   2041.69   4597.41   2076.21   4496.84   1   20   2
110   101   3   580   0.04575   1600   1   3
 2
'Beacon/Park EB LTTT'   'AG'   1966.34   4608.1   1839.93   4551.25   1   30   3
110   70   3   495   0.04575   1600   1   3
 2
'Beacon/Park EB R'   'AG'   1975.57   4560.48   1931.82   4567.29   1   20   2
110   70   3   130   0.04575   1600   1   3
 2
'Beacon/Park SB R '   'AG'   1917.23   4688.27   1941.05   4726.65   1   10   1
110   79   3   15   0.04575   1600   1   3
 2
'Beacon/Park WB R '   'AG'   2019.81   4741.23   2072.32   4722.77   1   10   1
110   95   3   15   0.04575   1600   1   3
 2
'Beacon/Park NB R'   'AG'   2095.17   4627.53   2077.67   4580.89   1   10   1
110   101   3   60   0.04575   1600   1   3
 2
'Boyl/Kil SB LTR'   'AG'   3321.98   3753.82   3294.42   3839.17   1   20   2
100   71   3   260   0.04575   1600   1   3
 2
'Boyl/Kil WB LTTR'   'AG'   3373.33   3738.7   3489.55   3785.69   1   20   2
100   29   3   980   0.04575   1600   1   3
 2
'Boyl/Kil NB LTR'   'AG'   3365.22   3677.65   3399.29   3591.62   1   10   1
100   71   3   80   0.04575   1600   1   3
 2
'Boyl/Kil EB LTTR'   'AG'   3320.38   3695.34   3212.27   3655.91   1   20   2
100   29   3   1165   0.04575   1600   1   3
 1
'Fenway/Brook South'   'AG'   2496.93   3278.87   2636.65   3081.07   775   0.0183   1   54
 1
'Fenway/Brook West'   'AG'   2481.8   3262.91   2347.32   3075.62   1780   0.0183   1   78
 1
'Fenway/Brook North'   'AG'   2491.04   3288.56   2373.12   3398.66   1485   0.0183   1   66
 1
'Fenway/Brook East'   'AG'   2497.77   3264.59   2608.73   3389.73   2090   0.0183   1   90
 1
'Park/Brook South'   'AG'   2691.91   3447.33   2838.26   3241.18   1030   0.0183   1   66
 1
'Park/Brook West'   'AG'   2672.16   3490.72   2502.75   3273.82   2100   0.0183   1   90
 1
'Park/Brook North'   'AG'   2656.67   3489.73   2496.11   3644.11   1675   0.0183   1   66
 1
'Park/Brook East'   'AG'   2663.31   3490.84   2801.72   3675.09   1010   0.0183   1   66
 1
'Park/Brook SE'   'AG'   2681.03   3470.37   2968.37   3574.94   2135   0.0183   1   78
 1
'River/Park N'   'AG'   2254.71   3768.23   2266.44   3911.9   440   0.0183   1   42
 1
'River/Park SE'   'AG'   2239.06   3675.39   2343.7   3750.15   260   0.0183   1   42
 1
'River/Park NE'   'AG'   2237.1   3772.14   2377.44   3769.21   750   0.0183   1   54
 1
'River/Park S'   'AG'   2231.15   3745.07   2210.13   3564.26   700   0.0183   1   54
 1
'River/Park SW'   'AG'   2211.1   3765.1   2058.06   3624.36   1250   0.0183   1   54
 1
'River/Park NW'   'AG'   2193.99   3770.21   2250.71   3886.02   500   0.0183   1   30
 1
'Beacon/Park N'   'AG'   1996.01   4667.5   1894.21   4948.36   1105   0.0183   1   78
 1
'Beacon/Park NR'   'AG'   1907.99   4673.8   1956.12   4744.74   15   0.0183   1   30
 1
'Beacon/Park E'   'AG'   1997.77   4657.71   2274.41   4755.75   1470   0.0183   1   78
 1
'Beacon/Park ER'   'AG'   1991.42   4750.81   2112.09   4710.61   15   0.0183   1   30
 1
'Beacon/Park S'   'AG'   2009.06   4646.43   2098.69   4400.99   1610   0.0183   1   78
 1
'Beacon/Park SR'   'AG'   2102.46   4662.03   2076.21   4571.17   60   0.0183   1   42
 1
'Beacon/Park W EB'   'AG'   1995.65   4607.64   1704.19   4488.44   495   0.0183   1   66
 1
'Beacon/Park W EBR'   'AG'   2009.06   4551.22   1907.44   4575.2   130   0.0183   1   38
 1
'Beacon/Park W WB'   'AG'   1989.3   4675.35   1658.32   4556.15   825   0.0183   1   78
 1
'Boyl/Kil N'   'AG'   3344.49   3716.98   3289.05   3876.33   320   0.0183   1   54
 1
'Boyl/Kil E'   'AG'   3348.9   3715.02   3516.2   3780.72   2250   0.0183   1   78
 1
'Boyl/Kil S'   'AG'   3349.91   3702.12   3425.46   3502.07   205   0.0183   1   54
 1
'Boyl/Kil W'   'AG'   3345.98   3717.81   3141.89   3641.32   2195   0.0183   1   78
1   0   4   1000   0   'Y'   10   0   36
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'Landmark Center'   60   175   0   0   60   0.3048   1   0
'Beacon/Park NE1'   1956   4921.67   6
'Beacon/Park NE2'   1981.56   4851.16   6
'Beacon/Park NE3'   2059.66   4754.43   6
'Beacon/Park NE4'   2163.51   4768.43   6
'Beacon/Park NE5'   2234.2   4793.49   6
'Beacon/Park SE1'   2273.61   4703.48   6
'Beacon/Park SE2'   2202.92   4678.43   6
'Beacon/Park SE3'   2119.12   4608   6
'Beacon/Park SE4'   2120.16   4485.05   6
'Beacon/Park SE5'   2146.81   4412.06   6
'Beacon/Park SW1'   2053.38   4382.21   6
'Beacon/Park SW2'   2027.66   4452.66   6
'Beacon/Park SW3'   1951.59   4534.99   6
'Beacon/Park SW4'   1869.49   4509.59   6
'Beacon/Park SW5'   1800.07   4481.2   6
'Beacon/Park NW1'   1748.74   4640.8   6
'Beacon/Park NW2'   1819.31   4666.21   6
'Beacon/Park NW3'   1911.37   4723.31   6
'Beacon/Park NW4'   1893.82   4805.63   6
'Beacon/Park NW5'   1868.27   4876.14   6
'Riverway/Park NE1'   2301.27   3957.57   6
'Riverway/Park NE2'   2295.17   3882.81   6
'Riverway/Park NE3'   2289.07   3808.06   6
'Riverway/Park NE4'   2364.05   3806.5   6
'Riverway/Park NE5'   2439.05   3805.99   6
'Riverway/Park SE1'   2427.53   3594.67   6
'Riverway/Park SE2'   2406.62   3667.75   6
'Riverway/Park SE3'   2309.4   3687.55   6
'Riverway/Park SE4'   2248.83   3576.74   6
'Riverway/Park SE5'   2296.57   3506.87   6
'Riverway/Park SW1'   2170.58   3544.51   6
'Riverway/Park SW2'   2179.24   3619   6
'Riverway/Park SW3'   2187.91   3693.5   6
'Riverway/Park SW4'   2132.7   3642.73   6
'Riverway/Park SW5'   2077.5   3591.97   6
'Riverway/Park NW1'   2059.15   3675.63   6
'Riverway/Park NW2'   2114.35   3726.4   6
'Riverway/Park NW3'   2169.56   3777.16   6
'Riverway/Park NW4'   2202.55   3844.52   6
'Riverway/Park NW5'   2235.34   3911.97   6
'Boyl/Kil NE1'   3320.78   3917.23   6
'Boyl/Kil NE2'   3339.33   3844.42   6
'Boyl/Kil NE3'   3363.97   3773.58   6
'Boyl/Kil NE4'   3433.78   3801   6
'Boyl/Kil NE5'   3503.59   3828.41   6
'Boyl/Kil SE1'   3537.24   3736.34   6
'Boyl/Kil SE2'   3467.1   3708.8   6
'Boyl/Kil SE3'   3397.29   3681.38   6
'Boyl/Kil SE4'   3423.79   3611.22   6
'Boyl/Kil SE5'   3450.29   3541.06   6
'Boyl/Kil SW1'   3379.89   3518   6
'Boyl/Kil SW2'   3353.07   3589.02   6
'Boyl/Kil SW3'   3326.9   3658.33   6
'Boyl/Kil SW4'   3256.67   3632.01   6
'Boyl/Kil SW5'   3186.44   3605.69   6
'Boyl/Kil NW1'   3153.18   3697.88   6
'Boyl/Kil NW2'   3223.41   3724.2   6
'Boyl/Kil NW3'   3293.64   3750.52   6
'Boyl/Kil NW4'   3269   3821.36   6
'Boyl/Kil NW5'   3244.48   3891.85   6
'2013EX'   54   1   0   'P'
 2
'Fen/Brook WB TT'   'AG'   2508.32   3314.76   2567.48   3392.01   1   20   2
100   59   3   790   0.04575   1600   1   3
 2
'Fen/Brook EB TTTR'   'AG'   2469.88   3221.1   2419.79   3152.05   1   30   3
100   59   3   875   0.04575   1600   1   3
 2
'Fen/Brook SB L'   'AG'   2487.62   3319   2439.29   3364.86   1   10   1
100   57   3   545   0.04575   1600   1   3
 2
'Fen/Brook SB LTT'   'AG'   2476.25   3307.23   2427.92   3351.87   1   20   2
100   57   3   825   0.04575   1600   1   3
 2
'Fen/Brook SB R'   'AG'   2463.25   3293.43   2416.55   3338.48   1   10   1
100   57   3   115   0.04575   1600   1   3
 2
'Park/Brook WB TTR'   'AG'   2701.33   3561.7   2759.96   3639.18   1   30   3
100   68   3   550   0.04575   1600   1   3
 2
'Park/Brook NWB LLRRR'   'AG'   2745.91   3510.38   2903.87   3571.39   1   30   3
100   62   3   1085   0.04575   1600   1   3
 2
'Park/Brook NB LTTTR'   'AG'   2715.39   3403.84   2792.43   3305.54   1   40   4
100   70   3   1030   0.04575   1600   1   3
 2
'Park/Brook EB TT'   'AG'   2632.53   3431.93   2548.22   3322.98   1   20   2
100   68   3   355   0.04575   1600   1   3
 2
'Park/Brook EB RR'   'AG'   2648.52   3416.92   2569.06   3311.84   1   20   2
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100   30   3   955   0.04575   1600   1   3
 2
'River/Park SB'   'AG'   2213.27   3801.84   2235.59   3847.49   1   10   1
100   50   3   500   0.04575   1600   1   3
 2
'River/Park SB East'   'AG'   2256.21   3801.18   2265.6   3851.79   1   20   2
100   50   3   440   0.04575   1600   1   3
 2
'River/Park WB North'   'AG'   2272.82   3765.17   2338.24   3765.5   1   30   3
100   50   3   875   0.04575   1600   1   3
 2
'River/Park WB South'   'AG'   2270.48   3707.91   2328.96   3732.95   1   20   2
100   50   3   385   0.04575   1600   1   3
 2
'Beacon/Park SB LTT'   'AG'   1962.93   4712.56   1934.73   4800.99   1   20   2
110   79   3   595   0.04575   1600   1   3
 2
'Beacon/Park WB LTT'   'AG'   2055.3   4691.67   2155.45   4728.6   1   20   2
110   95   3   940   0.04575   1600   1   3
 2
'Beacon/Park NB LTT'   'AG'   2041.69   4597.41   2076.21   4496.84   1   20   2
110   101   3   580   0.04575   1600   1   3
 2
'Beacon/Park EB LTTT'   'AG'   1966.34   4608.1   1839.93   4551.25   1   30   3
110   70   3   495   0.04575   1600   1   3
 2
'Beacon/Park EB R'   'AG'   1975.57   4560.48   1931.82   4567.29   1   20   2
110   70   3   130   0.04575   1600   1   3
 2
'Beacon/Park SB R '   'AG'   1917.23   4688.27   1941.05   4726.65   1   10   1
110   79   3   15   0.04575   1600   1   3
 2
'Beacon/Park WB R '   'AG'   2019.81   4741.23   2072.32   4722.77   1   10   1
110   95   3   15   0.04575   1600   1   3
 2
'Beacon/Park NB R'   'AG'   2095.17   4627.53   2077.67   4580.89   1   10   1
110   101   3   60   0.04575   1600   1   3
 2
'Boyl/Kil SB LTR'   'AG'   3321.98   3753.82   3294.42   3839.17   1   20   2
100   71   3   260   0.04575   1600   1   3
 2
'Boyl/Kil WB LTTR'   'AG'   3373.33   3738.7   3489.55   3785.69   1   20   2
100   29   3   980   0.04575   1600   1   3
 2
'Boyl/Kil NB LTR'   'AG'   3365.22   3677.65   3399.29   3591.62   1   10   1
100   71   3   80   0.04575   1600   1   3
 2
'Boyl/Kil EB LTTR'   'AG'   3320.38   3695.34   3212.27   3655.91   1   20   2
100   29   3   1165   0.04575   1600   1   3
 1
'Fenway/Brook South'   'AG'   2496.93   3278.87   2636.65   3081.07   775   0.0183   1   54
 1
'Fenway/Brook West'   'AG'   2481.8   3262.91   2347.32   3075.62   1780   0.0183   1   78
 1
'Fenway/Brook North'   'AG'   2491.04   3288.56   2373.12   3398.66   1485   0.0183   1   66
 1
'Fenway/Brook East'   'AG'   2497.77   3264.59   2608.73   3389.73   2090   0.0183   1   90
 1
'Park/Brook South'   'AG'   2691.91   3447.33   2838.26   3241.18   1030   0.0183   1   66
 1
'Park/Brook West'   'AG'   2672.16   3490.72   2502.75   3273.82   2100   0.0183   1   90
 1
'Park/Brook North'   'AG'   2656.67   3489.73   2496.11   3644.11   1675   0.0183   1   66
 1
'Park/Brook East'   'AG'   2663.31   3490.84   2801.72   3675.09   1010   0.0183   1   66
 1
'Park/Brook SE'   'AG'   2681.03   3470.37   2968.37   3574.94   2135   0.0183   1   78
 1
'River/Park N'   'AG'   2254.71   3768.23   2266.44   3911.9   440   0.0183   1   42
 1
'River/Park SE'   'AG'   2239.06   3675.39   2343.7   3750.15   260   0.0183   1   42
 1
'River/Park NE'   'AG'   2237.1   3772.14   2377.44   3769.21   750   0.0183   1   54
 1
'River/Park S'   'AG'   2231.15   3745.07   2210.13   3564.26   700   0.0183   1   54
 1
'River/Park SW'   'AG'   2211.1   3765.1   2058.06   3624.36   1250   0.0183   1   54
 1
'River/Park NW'   'AG'   2193.99   3770.21   2250.71   3886.02   500   0.0183   1   30
 1
'Beacon/Park N'   'AG'   1996.01   4667.5   1894.21   4948.36   1105   0.0183   1   78
 1
'Beacon/Park NR'   'AG'   1907.99   4673.8   1956.12   4744.74   15   0.0183   1   30
 1
'Beacon/Park E'   'AG'   1997.77   4657.71   2274.41   4755.75   1470   0.0183   1   78
 1
'Beacon/Park ER'   'AG'   1991.42   4750.81   2112.09   4710.61   15   0.0183   1   30
 1
'Beacon/Park S'   'AG'   2009.06   4646.43   2098.69   4400.99   1610   0.0183   1   78
 1
'Beacon/Park SR'   'AG'   2102.46   4662.03   2076.21   4571.17   60   0.0183   1   42
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 1
'Beacon/Park W EB'   'AG'   1995.65   4607.64   1704.19   4488.44   495   0.0183   1   66
 1
'Beacon/Park W EBR'   'AG'   2009.06   4551.22   1907.44   4575.2   130   0.0183   1   38
 1
'Beacon/Park W WB'   'AG'   1989.3   4675.35   1658.32   4556.15   825   0.0183   1   78
 1
'Boyl/Kil N'   'AG'   3344.49   3716.98   3289.05   3876.33   320   0.0183   1   54
 1
'Boyl/Kil E'   'AG'   3348.9   3715.02   3516.2   3780.72   2250   0.0183   1   78
 1
'Boyl/Kil S'   'AG'   3349.91   3702.12   3425.46   3502.07   205   0.0183   1   54
 1
'Boyl/Kil W'   'AG'   3345.98   3717.81   3141.89   3641.32   2195   0.0183   1   78
1   0   4   1000   0   'Y'   10   0   36
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'LANDMARKCENTER'   60   175   0   0   20   0.3048   1   0
'Brook/Full NE1'   2962.21   4181.21   6
'Brook/Full NE2'   3023.74   4138.31   6
'Brook/Full NE3'   3085.26   4095.42   6
'Brook/Full NE4'   3133.26   4153.04   6
'Brook/Full NE5'   3188.74   4204.01   6
'Brook/Full SE1'   3234.98   4159.54   6
'Brook/Full SE2'   3186.98   4101.91   6
'Brook/Full SE3'   3130.3   4049.49   6
'Brook/Full SE4'   3203.31   4005.73   6
'Brook/Full SE5'   3267.63   3967.16   6
'Brook/Full SW1'   3228.25   3918.49   6
'Brook/Full SW2'   3163.92   3957.05   6
'Brook/Full SW3'   3099.59   3995.61   6
'Brook/Full SW4'   3055.49   3934.94   6
'Brook/Full SW5'   3011.4   3874.28   6
'Brook/Full NW1'   2950.49   3916.35   6
'Brook/Full NW2'   2994.59   3977.01   6
'Brook/Full NW3'   3038.69   4037.68   6
'Brook/Full NW4'   2977.16   4080.57   6
'Brook/Full NW5'   2915.64   4123.47   6
'2013_EX'   10   1   0   'P'
 2
'Brook/Full EB L'   'AG'   3074.73   4018.45   2990.41   3908.28   1   10   1
100   33   3   90   0.04575   1600   1   3
 2
'Brook/Full EB TR'   'AG'   3083.58   4011.97   3001.61   3902.98   1   10   1
100   33   3   350   0.04575   1600   1   3
 2
'Brook/Full NB LTR'   'AG'   3121.31   4022.57   3170.85   3996.06   1   10   1
100   33   3   170   0.04575   1600   1   3
 2
'Brook/Full WB LTR'   'AG'   3127.21   4100.92   3172.02   4159.83   1   20   2
100   43   3   390   0.04575   1600   1   3
 2
'Brook/Full SB LT'   'AG'   3068.25   4050.85   2998.08   4102.69   1   10   1
100   67   3   125   0.04575   1600   1   3
 2
'Brook/Full SB R'   'AG'   3061.17   4041.42   2989.82   4092.67   1   10   1
100   57   3   135   0.04575   1600   1   3
 1
'Brook/Full N'   'AG'   3091.95   4045.65   2925.79   4161.49   420   0.0183   1   54
 1
'Brook/Full E'   'AG'   3091.95   4045.65   3246.16   4230.76   815   0.0183   1   54
 1
'Brook/Full S'   'AG'   3100.32   4031.31   3189.98   3977.57   305   0.0183   1   42
 1
'Brook/Full W'   'AG'   3091.95   4048.03   2946.11   3847.39   980   0.0183   1   54
1   0   4   1000   0   'Y'   10   0   36
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2018 No-Build
Microscale Input Files
(Particulate Matter 2.5 (PM2.5))

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'Landmark Center'   60   175   0   0   45   0.3048   1   0
'Fen/Brook NE1'   2376.5   3444   6
'Fen/Brook NE2'   2429.68   3390.99   6
'Fen/Brook NE3'   2484.5   3339.81   6
'Fen/Brook NE4'   2530.67   3398.92   6
'Fen/Brook NE5'   2576.84   3458.03   6
'Fen/Brook SE1'   2660.24   3364.92   6
'Fen/Brook SE2'   2609.62   3308.81   6
'Fen/Brook SE3'   2560.72   3252.69   6
'Fen/Brook SE4'   2604   3191.43   6
'Fen/Brook SE5'   2647.27   3130.17   6
'Fen/Brook SW1'   2588.73   3084.78   6
'Fen/Brook SW2'   2545.46   3146.04   6
'Fen/Brook SW3'   2502.19   3207.29   6
'Fen/Brook SW4'   2458.45   3146.37   6
'Fen/Brook SW5'   2414.7   3085.45   6
'Fen/Brook NW1'   2353.53   3168.28   6
'Fen/Brook NW2'   2397.27   3229.2   6
'Fen/Brook NW3'   2441.01   3290.12   6
'Fen/Brook NW4'   2386.19   3341.3   6
'Fen/Brook NW5'   2331.38   3392.49   6
'Park/Brook NE1'   2546.71   3655.11   6
'Park/Brook NE2'   2600.77   3603.13   6
'Park/Brook NE3'   2654.83   3551.15   6
'Park/Brook NE4'   2699.88   3611.11   6
'Park/Brook NE5'   2744.93   3671.08   6
'Park/Brook SE1'   2888.96   3493.9   6
'Park/Brook SE2'   2818.15   3468.13   6
'Park/Brook SE3'   2747.67   3442.47   6
'Park/Brook SE4'   2791.37   3381.51   6
'Park/Brook SE5'   2834.83   3320.29   6
'Park/Brook SW1'   2758.81   3278.82   6
'Park/Brook SW2'   2715.39   3339.97   6
'Park/Brook SW3'   2671.97   3401.13   6
'Park/Brook SW4'   2625.81   3342.02   6
'Park/Brook SW5'   2579.64   3282.92   6
'Park/Brook NW1'   2506.28   3367.69   6
'Park/Brook NW2'   2552.44   3426.8   6
'Park/Brook NW3'   2598.61   3485.9   6
'Park/Brook NW4'   2544.55   3537.89   6
'Park/Brook NW5'   2490.48   3589.87   6
'Park/Brook E1'   2853.5   3672.42   6
'Park/Brook E2'   2811.94   3617.1   6
'Park/Brook E3'   2763.4   3552.49   6
'Park/Brook E4'   2838.4   3579.78   6
'Park/Brook E5'   2904.36   3603.79   6
'2018NB'   56   1   0   'P'
 2
'Fen/Brook WB TT'   'AG'   2508.32   3314.76   2567.48   3392.01   1   20   2
100   54   3   870   0.03525   1600   1   3
 2
'Fen/Brook EB TTTR'   'AG'   2469.88   3221.1   2419.79   3152.05   1   30   3
100   54   3   947   0.03525   1600   1   3
 2
'Fen/Brook SB L'   'AG'   2487.62   3319   2439.29   3364.86   1   10   1
100   46   3   648   0.03525   1600   1   3
 2
'Fen/Brook SB LTT'   'AG'   2476.25   3307.23   2427.92   3351.87   1   20   2
100   46   3   854   0.03525   1600   1   3
 2
'Fen/Brook SB R'   'AG'   2463.25   3293.43   2416.55   3338.48   1   10   1
100   46   3   126   0.03525   1600   1   3
 2
'Park/Brook WB TTR'   'AG'   2701.33   3561.7   2759.96   3639.18   1   30   3
100   68   3   550   0.03525   1600   1   3
 2
'Park/Brook NWB LLRRR'   'AG'   2745.91   3510.38   2903.87   3571.39   1   30   3
100   75   3   1203   0.03525   1600   1   3
 2
'Park/Brook NB LTTTR'   'AG'   2715.39   3403.84   2792.43   3305.54   1   40   4
100   68   3   958   0.03525   1600   1   3
 2
'Park/Brook EB L'   'AG'   2628.58   3434.99   2544.27   3326.04   1   10   1
100   85   3   98   0.03525   1600   1   3
 2
'Park/Brook EB T'   'AG'   2637.53   3428.06   2552.21   3319.05   1   10   1
100   57   3   416   0.03525   1600   1   3
 2
'Park/Brook EB RR'   'AG'   2648.52   3416.92   2569.06   3311.84   1   20   2
100   32   3   1029   0.03525   1600   1   3
 2
'River/Park SB'   'AG'   2213.27   3801.84   2235.59   3847.49   1   10   1
100   78   3   548   0.03525   1600   1   3
 2
'River/Park SB East'   'AG'   2256.21   3801.18   2265.6   3851.79   1   20   2
100   78   3   473   0.03525   1600   1   3
 2
'River/Park WB North'   'AG'   2272.82   3765.17   2338.24   3765.5   1   30   3
100   59   3   875   0.03525   1600   1   3
 2
'River/Park WB South'   'AG'   2270.48   3707.91   2328.96   3732.95   1   20   2
```



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100   59   3   385   0.03525   1600   1   3
 2
'River/Park NEB'   'AG'   2169.88   3720.6   2100.81   3654.06   1   20   2
100   73   3   84   0.03525   1600   1   3
 2
'Beacon/Park SB LTT'   'AG'   1962.93   4712.56   1934.73   4800.99   1   20   2
110   61   3   629   0.03525   1600   1   3
 2
'Beacon/Park WB LTT'   'AG'   2055.3   4691.67   2155.45   4728.6   1   20   2
110   56   3   1020   0.03525   1600   1   3
 2
'Beacon/Park NB LTT'   'AG'   2041.69   4597.41   2076.21   4496.84   1   20   2
110   103   3   609   0.03525   1600   1   3
 2
'Beacon/Park EB LTTT'   'AG'   1966.34   4608.1   1839.93   4551.25   1   30   3
110   68   3   466   0.03525   1600   1   3
 2
'Beacon/Park EB R'   'AG'   1975.57   4560.48   1931.82   4567.29   1   20   2
110   61   3   134   0.03525   1600   1   3
 2
'Beacon/Park SB R '   'AG'   1917.23   4688.27   1941.05   4726.65   1   10   1
110   61   3   15   0.03525   1600   1   3
 2
'Beacon/Park WB R '   'AG'   2019.81   4741.23   2072.32   4722.77   1   10   1
110   68   3   33   0.03525   1600   1   3
 2
'Beacon/Park NB R'   'AG'   2095.17   4627.53   2077.67   4580.89   1   10   1
110   61   3   71   0.03525   1600   1   3
 2
'Boyl/Kil SB LTR'   'AG'   3321.98   3753.82   3294.42   3839.17   1   20   2
100   71   3   244   0.03525   1600   1   3
 2
'Boyl/Kil WB LTTR'   'AG'   3373.33   3738.7   3489.55   3785.69   1   20   2
100   29   3   1060   0.03525   1600   1   3
 2
'Boyl/Kil NB LTR'   'AG'   3365.22   3677.65   3399.29   3591.62   1   10   1
100   71   3   82   0.03525   1600   1   3
 2
'Boyl/Kil EB LTTR'   'AG'   3320.38   3695.34   3212.27   3655.91   1   20   2
100   29   3   1274   0.03525   1600   1   3
 1
'Fenway/Brook South'   'AG'   2496.93   3278.87   2636.65   3081.07   916   0.0141   1   54
 1
'Fenway/Brook West'   'AG'   2481.8   3262.91   2347.32   3075.62   1881   0.0141   1   78
 1
'Fenway/Brook North'   'AG'   2491.04   3288.56   2373.12   3398.66   1628   0.0141   1   66
 1
'Fenway/Brook East'   'AG'   2497.77   3264.59   2608.73   3389.73   2403   0.0141   1   90
 1
'Park/Brook South'   'AG'   2691.91   3447.33   2838.26   3241.18   958   0.0141   1   66
 1
'Park/Brook West'   'AG'   2672.16   3490.72   2502.75   3273.82   2413   0.0141   1   90
 1
'Park/Brook North'   'AG'   2656.67   3489.73   2496.11   3644.11   1794   0.0141   1   66
 1
'Park/Brook East'   'AG'   2663.31   3490.84   2801.72   3675.09   1249   0.0141   1   66
 1
'Park/Brook SE'   'AG'   2681.03   3470.37   2968.37   3574.94   2358   0.0141   1   78
 1
'River/Park N'   'AG'   2254.71   3768.23   2266.44   3911.9   473   0.0141   1   42
 1
'River/Park SE'   'AG'   2239.06   3675.39   2343.7   3750.15   428   0.0141   1   42
 1
'River/Park NE'   'AG'   2237.1   3772.14   2377.44   3769.21   872   0.0141   1   54
 1
'River/Park S'   'AG'   2231.15   3745.07   2210.13   3564.26   901   0.0141   1   54
 1
'River/Park SW'   'AG'   2211.1   3765.1   2058.06   3624.36   1420   0.0141   1   54
 1
'River/Park NW'   'AG'   2193.99   3770.21   2250.71   3886.02   548   0.0141   1   30
 1
'Beacon/Park N'   'AG'   1996.01   4667.5   1894.21   4948.36   1153   0.0141   1   78
 1
'Beacon/Park NR'   'AG'   1907.99   4673.8   1956.12   4744.74   15   0.0141   1   30
 1
'Beacon/Park E'   'AG'   1997.77   4657.71   2274.41   4755.75   1621   0.0141   1   78
 1
'Beacon/Park ER'   'AG'   1991.42   4750.81   2112.09   4710.61   33   0.0141   1   30
 1
'Beacon/Park S'   'AG'   2009.06   4646.43   2098.69   4400.99   1732   0.0141   1   78
 1
'Beacon/Park SR'   'AG'   2102.46   4662.03   2076.21   4571.17   71   0.0141   1   42
 1
'Beacon/Park W EB'   'AG'   1995.65   4607.64   1704.19   4488.44   600   0.0141   1   66
 1
'Beacon/Park W EBR'   'AG'   2009.06   4551.22   1907.44   4575.2   134   0.0141   1   38
 1
'Beacon/Park W WB'   'AG'   1989.3   4675.35   1658.32   4556.15   843   0.0141   1   78
 1
'Boyl/Kil N'   'AG'   3344.49   3716.98   3289.05   3876.33   320   0.0141   1   54
 1
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'Boyl/Kil E'   'AG'   3348.9   3715.02   3516.2   3780.72   2366   0.0141   1   78
 1
'Boyl/Kil S'   'AG'   3349.91   3702.12   3425.46   3502.07   242   0.0141   1   54
 1
'Boyl/Kil W'   'AG'   3345.98   3717.81   3141.89   3641.32   2392   0.0141   1   78
1   0   4   1000   0   'Y'   10   0   36
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'Landmark Center'   60   175   0   0   60   0.3048   1   0
'Beacon/Park NE1'   1956   4921.67   6
'Beacon/Park NE2'   1981.56   4851.16   6
'Beacon/Park NE3'   2059.66   4754.43   6
'Beacon/Park NE4'   2163.51   4768.43   6
'Beacon/Park NE5'   2234.2   4793.49   6
'Beacon/Park SE1'   2273.61   4703.48   6
'Beacon/Park SE2'   2202.92   4678.43   6
'Beacon/Park SE3'   2119.12   4608   6
'Beacon/Park SE4'   2120.16   4485.05   6
'Beacon/Park SE5'   2146.81   4412.06   6
'Beacon/Park SW1'   2053.38   4382.21   6
'Beacon/Park SW2'   2027.66   4452.66   6
'Beacon/Park SW3'   1951.59   4534.99   6
'Beacon/Park SW4'   1869.49   4509.59   6
'Beacon/Park SW5'   1800.07   4481.2   6
'Beacon/Park NW1'   1748.74   4640.8   6
'Beacon/Park NW2'   1819.31   4666.21   6
'Beacon/Park NW3'   1911.37   4723.31   6
'Beacon/Park NW4'   1893.82   4805.63   6
'Beacon/Park NW5'   1868.27   4876.14   6
'Riverway/Park NE1'   2301.27   3957.57   6
'Riverway/Park NE2'   2295.17   3882.81   6
'Riverway/Park NE3'   2289.07   3808.06   6
'Riverway/Park NE4'   2364.05   3806.5   6
'Riverway/Park NE5'   2439.05   3805.99   6
'Riverway/Park SE1'   2427.53   3594.67   6
'Riverway/Park SE2'   2406.62   3667.75   6
'Riverway/Park SE3'   2309.4   3687.55   6
'Riverway/Park SE4'   2248.83   3576.74   6
'Riverway/Park SE5'   2296.57   3506.87   6
'Riverway/Park SW1'   2170.58   3544.51   6
'Riverway/Park SW2'   2179.24   3619   6
'Riverway/Park SW3'   2187.91   3693.5   6
'Riverway/Park SW4'   2132.7   3642.73   6
'Riverway/Park SW5'   2077.5   3591.97   6
'Riverway/Park NW1'   2059.15   3675.63   6
'Riverway/Park NW2'   2114.35   3726.4   6
'Riverway/Park NW3'   2169.56   3777.16   6
'Riverway/Park NW4'   2202.55   3844.52   6
'Riverway/Park NW5'   2235.34   3911.97   6
'Boyl/Kil NE1'   3320.78   3917.23   6
'Boyl/Kil NE2'   3339.33   3844.42   6
'Boyl/Kil NE3'   3363.97   3773.58   6
'Boyl/Kil NE4'   3433.78   3801   6
'Boyl/Kil NE5'   3503.59   3828.41   6
'Boyl/Kil SE1'   3537.24   3736.34   6
'Boyl/Kil SE2'   3467.1   3708.8   6
'Boyl/Kil SE3'   3397.29   3681.38   6
'Boyl/Kil SE4'   3423.79   3611.22   6
'Boyl/Kil SE5'   3450.29   3541.06   6
'Boyl/Kil SW1'   3379.89   3518   6
'Boyl/Kil SW2'   3353.07   3589.02   6
'Boyl/Kil SW3'   3326.9   3658.33   6
'Boyl/Kil SW4'   3256.67   3632.01   6
'Boyl/Kil SW5'   3186.44   3605.69   6
'Boyl/Kil NW1'   3153.18   3697.88   6
'Boyl/Kil NW2'   3223.41   3724.2   6
'Boyl/Kil NW3'   3293.64   3750.52   6
'Boyl/Kil NW4'   3269   3821.36   6
'Boyl/Kil NW5'   3244.48   3891.85   6
'2018NB'   56   1   0   'P'
 2
'Fen/Brook WB TT'   'AG'   2508.32   3314.76   2567.48   3392.01   1   20   2
100   54   3   870   0.03525   1600   1   3
 2
'Fen/Brook EB TTTR'   'AG'   2469.88   3221.1   2419.79   3152.05   1   30   3
100   54   3   947   0.03525   1600   1   3
 2
'Fen/Brook SB L'   'AG'   2487.62   3319   2439.29   3364.86   1   10   1
100   46   3   648   0.03525   1600   1   3
 2
'Fen/Brook SB LTT'   'AG'   2476.25   3307.23   2427.92   3351.87   1   20   2
100   46   3   854   0.03525   1600   1   3
 2
'Fen/Brook SB R'   'AG'   2463.25   3293.43   2416.55   3338.48   1   10   1
100   46   3   126   0.03525   1600   1   3
 2
'Park/Brook WB TTR'   'AG'   2701.33   3561.7   2759.96   3639.18   1   30   3
100   68   3   550   0.03525   1600   1   3
 2
'Park/Brook NWB LLRRR'   'AG'   2745.91   3510.38   2903.87   3571.39   1   30   3
100   75   3   1203   0.03525   1600   1   3
 2
'Park/Brook NB LTTTR'   'AG'   2715.39   3403.84   2792.43   3305.54   1   40   4
100   68   3   958   0.03525   1600   1   3
 2
'Park/Brook EB L'   'AG'   2628.58   3434.99   2544.27   3326.04   1   10   1
100   85   3   98   0.03525   1600   1   3
 2
'Park/Brook EB T'   'AG'   2637.53   3428.06   2552.21   3319.05   1   10   1
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100   57   3   416   0.03525   1600   1   3
 2
'Park/Brook EB RR'   'AG'   2648.52   3416.92   2569.06   3311.84   1   20   2
100   32   3   1029   0.03525   1600   1   3
 2
'River/Park SB'   'AG'   2213.27   3801.84   2235.59   3847.49   1   10   1
100   78   3   548   0.03525   1600   1   3
 2
'River/Park SB East'   'AG'   2256.21   3801.18   2265.6   3851.79   1   20   2
100   78   3   473   0.03525   1600   1   3
 2
'River/Park WB North'   'AG'   2272.82   3765.17   2338.24   3765.5   1   30   3
100   59   3   875   0.03525   1600   1   3
 2
'River/Park WB South'   'AG'   2270.48   3707.91   2328.96   3732.95   1   20   2
100   59   3   385   0.03525   1600   1   3
 2
'River/Park NEB'   'AG'   2169.88   3720.6   2100.81   3654.06   1   20   2
100   73   3   84   0.03525   1600   1   3
 2
'Beacon/Park SB LTT'   'AG'   1962.93   4712.56   1934.73   4800.99   1   20   2
110   61   3   629   0.03525   1600   1   3
 2
'Beacon/Park WB LTT'   'AG'   2055.3   4691.67   2155.45   4728.6   1   20   2
110   56   3   1020   0.03525   1600   1   3
 2
'Beacon/Park NB LTT'   'AG'   2041.69   4597.41   2076.21   4496.84   1   20   2
110   103   3   609   0.03525   1600   1   3
 2
'Beacon/Park EB LTTT'   'AG'   1966.34   4608.1   1839.93   4551.25   1   30   3
110   68   3   466   0.03525   1600   1   3
 2
'Beacon/Park EB R'   'AG'   1975.57   4560.48   1931.82   4567.29   1   20   2
110   61   3   134   0.03525   1600   1   3
 2
'Beacon/Park SB R '   'AG'   1917.23   4688.27   1941.05   4726.65   1   10   1
110   61   3   15   0.03525   1600   1   3
 2
'Beacon/Park WB R '   'AG'   2019.81   4741.23   2072.32   4722.77   1   10   1
110   68   3   33   0.03525   1600   1   3
 2
'Beacon/Park NB R'   'AG'   2095.17   4627.53   2077.67   4580.89   1   10   1
110   61   3   71   0.03525   1600   1   3
 2
'Boyl/Kil SB LTR'   'AG'   3321.98   3753.82   3294.42   3839.17   1   20   2
100   71   3   244   0.03525   1600   1   3
 2
'Boyl/Kil WB LTTR'   'AG'   3373.33   3738.7   3489.55   3785.69   1   20   2
100   29   3   1060   0.03525   1600   1   3
 2
'Boyl/Kil NB LTR'   'AG'   3365.22   3677.65   3399.29   3591.62   1   10   1
100   71   3   82   0.03525   1600   1   3
 2
'Boyl/Kil EB LTTR'   'AG'   3320.38   3695.34   3212.27   3655.91   1   20   2
100   29   3   1274   0.03525   1600   1   3
 1
'Fenway/Brook South'   'AG'   2496.93   3278.87   2636.65   3081.07   916   0.0141   1   54
 1
'Fenway/Brook West'   'AG'   2481.8   3262.91   2347.32   3075.62   1881   0.0141   1   78
 1
'Fenway/Brook North'   'AG'   2491.04   3288.56   2373.12   3398.66   1628   0.0141   1   66
 1
'Fenway/Brook East'   'AG'   2497.77   3264.59   2608.73   3389.73   2403   0.0141   1   90
 1
'Park/Brook South'   'AG'   2691.91   3447.33   2838.26   3241.18   958   0.0141   1   66
 1
'Park/Brook West'   'AG'   2672.16   3490.72   2502.75   3273.82   2413   0.0141   1   90
 1
'Park/Brook North'   'AG'   2656.67   3489.73   2496.11   3644.11   1794   0.0141   1   66
 1
'Park/Brook East'   'AG'   2663.31   3490.84   2801.72   3675.09   1249   0.0141   1   66
 1
'Park/Brook SE'   'AG'   2681.03   3470.37   2968.37   3574.94   2358   0.0141   1   78
 1
'River/Park N'   'AG'   2254.71   3768.23   2266.44   3911.9   473   0.0141   1   42
 1
'River/Park SE'   'AG'   2239.06   3675.39   2343.7   3750.15   428   0.0141   1   42
 1
'River/Park NE'   'AG'   2237.1   3772.14   2377.44   3769.21   872   0.0141   1   54
 1
'River/Park S'   'AG'   2231.15   3745.07   2210.13   3564.26   901   0.0141   1   54
 1
'River/Park SW'   'AG'   2211.1   3765.1   2058.06   3624.36   1420   0.0141   1   54
 1
'River/Park NW'   'AG'   2193.99   3770.21   2250.71   3886.02   548   0.0141   1   30
 1
'Beacon/Park N'   'AG'   1996.01   4667.5   1894.21   4948.36   1153   0.0141   1   78
 1
'Beacon/Park NR'   'AG'   1907.99   4673.8   1956.12   4744.74   15   0.0141   1   30
 1
'Beacon/Park E'   'AG'   1997.77   4657.71   2274.41   4755.75   1621   0.0141   1   78
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 1
'Beacon/Park ER'   'AG'   1991.42   4750.81   2112.09   4710.61   33   0.0141   1   30
 1
'Beacon/Park S'   'AG'   2009.06   4646.43   2098.69   4400.99   1732   0.0141   1   78
 1
'Beacon/Park SR'   'AG'   2102.46   4662.03   2076.21   4571.17   71   0.0141   1   42
 1
'Beacon/Park W EB'   'AG'   1995.65   4607.64   1704.19   4488.44   600   0.0141   1   66
 1
'Beacon/Park W EBR'   'AG'   2009.06   4551.22   1907.44   4575.2   134   0.0141   1   38
 1
'Beacon/Park W WB'   'AG'   1989.3   4675.35   1658.32   4556.15   843   0.0141   1   78
 1
'Boyl/Kil N'   'AG'   3344.49   3716.98   3289.05   3876.33   320   0.0141   1   54
 1
'Boyl/Kil E'   'AG'   3348.9   3715.02   3516.2   3780.72   2366   0.0141   1   78
 1
'Boyl/Kil S'   'AG'   3349.91   3702.12   3425.46   3502.07   242   0.0141   1   54
 1
'Boyl/Kil W'   'AG'   3345.98   3717.81   3141.89   3641.32   2392   0.0141   1   78
1   0   4   1000   0   'Y'   10   0   36
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'LANDMARKCENTER'   60   175   0   0   20   0.3048   1   0
'Brook/Full NE1'   2962.21   4181.21   6
'Brook/Full NE2'   3023.74   4138.31   6
'Brook/Full NE3'   3085.26   4095.42   6
'Brook/Full NE4'   3133.26   4153.04   6
'Brook/Full NE5'   3188.74   4204.01   6
'Brook/Full SE1'   3234.98   4159.54   6
'Brook/Full SE2'   3186.98   4101.91   6
'Brook/Full SE3'   3130.3   4049.49   6
'Brook/Full SE4'   3203.31   4005.73   6
'Brook/Full SE5'   3267.63   3967.16   6
'Brook/Full SW1'   3228.25   3918.49   6
'Brook/Full SW2'   3163.92   3957.05   6
'Brook/Full SW3'   3099.59   3995.61   6
'Brook/Full SW4'   3055.49   3934.94   6
'Brook/Full SW5'   3011.4   3874.28   6
'Brook/Full NW1'   2950.49   3916.35   6
'Brook/Full NW2'   2994.59   3977.01   6
'Brook/Full NW3'   3038.69   4037.68   6
'Brook/Full NW4'   2977.16   4080.57   6
'Brook/Full NW5'   2915.64   4123.47   6
'2018_NB_CO_3'   10   1   0   'P'
 2
'Brook/Full EB L'   'AG'   3074.73   4018.45   2990.41   3908.28   1   10   1
100   33   3   92   0.03525   1600   1   3
 2
'Brook/Full EB TR'   'AG'   3083.58   4011.97   3001.61   3902.98   1   10   1
100   33   3   439   0.03525   1600   1   3
 2
'Brook/Full NB LTR'   'AG'   3121.31   4022.57   3170.85   3996.06   1   10   1
100   33   3   172   0.03525   1600   1   3
 2
'Brook/Full WB LTR'   'AG'   3127.21   4100.92   3172.02   4159.83   1   20   2
100   43   3   517   0.03525   1600   1   3
 2
'Brook/Full SB LT'   'AG'   3068.25   4050.85   2998.08   4102.69   1   10   1
100   67   3   129   0.03525   1600   1   3
 2
'Brook/Full SB R'   'AG'   3061.17   4041.42   2989.82   4092.67   1   10   1
100   57   3   138   0.03525   1600   1   3
 1
'Brook/Full N'   'AG'   3091.95   4045.65   2925.79   4161.49   431   0.0141   1   54
 1
'Brook/Full E'   'AG'   3091.95   4045.65   3246.16   4230.76   989   0.0141   1   54
 1
'Brook/Full S'   'AG'   3100.32   4031.31   3189.98   3977.57   341   0.0141   1   42
 1
'Brook/Full W'   'AG'   3091.95   4048.03   2946.11   3847.39   1213   0.0141   1   54
1   0   4   1000   0   'Y'   10   0   36
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2018 Build
Microscale Input Files
(Particulate Matter 2.5 (PM2.5))

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'Landmark Center'   60   175   0   0   45   0.3048   1   0
'Fen/Brook NE1'   2376.5   3444   6
'Fen/Brook NE2'   2429.68   3390.99   6
'Fen/Brook NE3'   2484.5   3339.81   6
'Fen/Brook NE4'   2530.67   3398.92   6
'Fen/Brook NE5'   2576.84   3458.03   6
'Fen/Brook SE1'   2660.24   3364.92   6
'Fen/Brook SE2'   2609.62   3308.81   6
'Fen/Brook SE3'   2560.72   3252.69   6
'Fen/Brook SE4'   2604   3191.43   6
'Fen/Brook SE5'   2647.27   3130.17   6
'Fen/Brook SW1'   2588.73   3084.78   6
'Fen/Brook SW2'   2545.46   3146.04   6
'Fen/Brook SW3'   2502.19   3207.29   6
'Fen/Brook SW4'   2458.45   3146.37   6
'Fen/Brook SW5'   2414.7   3085.45   6
'Fen/Brook NW1'   2353.53   3168.28   6
'Fen/Brook NW2'   2397.27   3229.2   6
'Fen/Brook NW3'   2441.01   3290.12   6
'Fen/Brook NW4'   2386.19   3341.3   6
'Fen/Brook NW5'   2331.38   3392.49   6
'Park/Brook NE1'   2546.71   3655.11   6
'Park/Brook NE2'   2600.77   3603.13   6
'Park/Brook NE3'   2654.83   3551.15   6
'Park/Brook NE4'   2699.88   3611.11   6
'Park/Brook NE5'   2744.93   3671.08   6
'Park/Brook SE1'   2888.96   3493.9   6
'Park/Brook SE2'   2818.15   3468.13   6
'Park/Brook SE3'   2747.67   3442.47   6
'Park/Brook SE4'   2791.37   3381.51   6
'Park/Brook SE5'   2834.83   3320.29   6
'Park/Brook SW1'   2758.81   3278.82   6
'Park/Brook SW2'   2715.39   3339.97   6
'Park/Brook SW3'   2671.97   3401.13   6
'Park/Brook SW4'   2625.81   3342.02   6
'Park/Brook SW5'   2579.64   3282.92   6
'Park/Brook NW1'   2506.28   3367.69   6
'Park/Brook NW2'   2552.44   3426.8   6
'Park/Brook NW3'   2598.61   3485.9   6
'Park/Brook NW4'   2544.55   3537.89   6
'Park/Brook NW5'   2490.48   3589.87   6
'Park/Brook E1'   2853.5   3672.42   6
'Park/Brook E2'   2811.94   3617.1   6
'Park/Brook E3'   2763.4   3552.49   6
'Park/Brook E4'   2838.4   3579.78   6
'Park/Brook E5'   2904.36   3603.79   6
'2018NB'   56   1   0   'P'
 2
'Fen/Brook WB TT'   'AG'   2508.32   3314.76   2567.48   3392.01   1   20   2
100   54   3   863   0.03525   1600   1   3
 2
'Fen/Brook EB TTTR'   'AG'   2469.88   3221.1   2419.79   3152.05   1   30   3
100   54   3   959   0.03525   1600   1   3
 2
'Fen/Brook SB L'   'AG'   2487.62   3319   2439.29   3364.86   1   10   1
100   46   3   647   0.03525   1600   1   3
 2
'Fen/Brook SB LTT'   'AG'   2476.25   3307.23   2427.92   3351.87   1   20   2
100   46   3   874   0.03525   1600   1   3
 2
'Fen/Brook SB R'   'AG'   2463.25   3293.43   2416.55   3338.48   1   10   1
100   46   3   132   0.03525   1600   1   3
 2
'Park/Brook WB TTR'   'AG'   2701.33   3561.7   2759.96   3639.18   1   30   3
100   68   3   669   0.03525   1600   1   3
 2
'Park/Brook NWB LLRRR'   'AG'   2745.91   3510.38   2903.87   3571.39   1   30   3
100   75   3   1203   0.03525   1600   1   3
 2
'Park/Brook NB LTTTR'   'AG'   2715.39   3403.84   2792.43   3305.54   1   40   4
100   68   3   992   0.03525   1600   1   3
 2
'Park/Brook EB L'   'AG'   2628.58   3434.99   2544.27   3326.04   1   10   1
100   85   3   107   0.03525   1600   1   3
 2
'Park/Brook EB T'   'AG'   2637.53   3428.06   2552.21   3319.05   1   10   1
100   57   3   419   0.03525   1600   1   3
 2
'Park/Brook EB RR'   'AG'   2648.52   3416.92   2569.06   3311.84   1   20   2
100   32   3   1029   0.03525   1600   1   3
 2
'River/Park SB'   'AG'   2213.27   3801.84   2235.59   3847.49   1   10   1
100   78   3   548   0.03525   1600   1   3
 2
'River/Park SB East'   'AG'   2256.21   3801.18   2265.6   3851.79   1   20   2
100   78   3   473   0.03525   1600   1   3
 2
'River/Park WB North'   'AG'   2272.82   3765.17   2338.24   3765.5   1   30   3
100   59   3   858   0.03525   1600   1   3
 2
'River/Park WB South'   'AG'   2270.48   3707.91   2328.96   3732.95   1   20   2
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100   59   3   454   0.03525   1600   1   3
 2
'River/Park NEB'   'AG'   2169.88   3720.6   2100.81   3654.06   1   20   2
100   73   3   114   0.03525   1600   1   3
 2
'Beacon/Park SB LTT'   'AG'   1962.93   4712.56   1934.73   4800.99   1   20   2
110   61   3   632   0.03525   1600   1   3
 2
'Beacon/Park WB LTT'   'AG'   2055.3   4691.67   2155.45   4728.6   1   20   2
110   56   3   1012   0.03525   1600   1   3
 2
'Beacon/Park NB LTT'   'AG'   2041.69   4597.41   2076.21   4496.84   1   20   2
110   103   3   591   0.03525   1600   1   3
 2
'Beacon/Park EB LTTT'   'AG'   1966.34   4608.1   1839.93   4551.25   1   30   3
110   68   3   469   0.03525   1600   1   3
 2
'Beacon/Park EB R'   'AG'   1975.57   4560.48   1931.82   4567.29   1   20   2
110   61   3   134   0.03525   1600   1   3
 2
'Beacon/Park SB R '   'AG'   1917.23   4688.27   1941.05   4726.65   1   10   1
110   61   3   15   0.03525   1600   1   3
 2
'Beacon/Park WB R '   'AG'   2019.81   4741.23   2072.32   4722.77   1   10   1
110   68   3   36   0.03525   1600   1   3
 2
'Beacon/Park NB R'   'AG'   2095.17   4627.53   2077.67   4580.89   1   10   1
110   61   3   71   0.03525   1600   1   3
 2
'Boyl/Kil SB LTR'   'AG'   3321.98   3753.82   3294.42   3839.17   1   20   2
100   71   3   267   0.03525   1600   1   3
 2
'Boyl/Kil WB LTTR'   'AG'   3373.33   3738.7   3489.55   3785.69   1   20   2
100   29   3   1096   0.03525   1600   1   3
 2
'Boyl/Kil NB LTR'   'AG'   3365.22   3677.65   3399.29   3591.62   1   10   1
100   71   3   82   0.03525   1600   1   3
 2
'Boyl/Kil EB LTTR'   'AG'   3320.38   3695.34   3212.27   3655.91   1   20   2
100   29   3   1274   0.03525   1600   1   3
 1
'Fenway/Brook South'   'AG'   2496.93   3278.87   2636.65   3081.07   936   0.0141   1   54
 1
'Fenway/Brook West'   'AG'   2481.8   3262.91   2347.32   3075.62   1965   0.0141   1   78
 1
'Fenway/Brook North'   'AG'   2491.04   3288.56   2373.12   3398.66   1653   0.0141   1   66
 1
'Fenway/Brook East'   'AG'   2497.77   3264.59   2608.73   3389.73   2407   0.0141   1   90
 1
'Park/Brook South'   'AG'   2691.91   3447.33   2838.26   3241.18   992   0.0141   1   66
 1
'Park/Brook West'   'AG'   2672.16   3490.72   2502.75   3273.82   2418   0.0141   1   90
 1
'Park/Brook North'   'AG'   2656.67   3489.73   2496.11   3644.11   1821   0.0141   1   66
 1
'Park/Brook East'   'AG'   2663.31   3490.84   2801.72   3675.09   1249   0.0141   1   66
 1
'Park/Brook SE'   'AG'   2681.03   3470.37   2968.37   3574.94   2358   0.0141   1   78
 1
'River/Park N'   'AG'   2254.71   3768.23   2266.44   3911.9   473   0.0141   1   42
 1
'River/Park SE'   'AG'   2239.06   3675.39   2343.7   3750.15   454   0.0141   1   42
 1
'River/Park NE'   'AG'   2237.1   3772.14   2377.44   3769.21   858   0.0141   1   54
 1
'River/Park S'   'AG'   2231.15   3745.07   2210.13   3564.26   927   0.0141   1   54
 1
'River/Park SW'   'AG'   2211.1   3765.1   2058.06   3624.36   1520   0.0141   1   54
 1
'River/Park NW'   'AG'   2193.99   3770.21   2250.71   3886.02   548   0.0141   1   30
 1
'Beacon/Park N'   'AG'   1996.01   4667.5   1894.21   4948.36   1143   0.0141   1   78
 1
'Beacon/Park NR'   'AG'   1907.99   4673.8   1956.12   4744.74   15   0.0141   1   30
 1
'Beacon/Park E'   'AG'   1997.77   4657.71   2274.41   4755.75   1622   0.0141   1   78
 1
'Beacon/Park ER'   'AG'   1991.42   4750.81   2112.09   4710.61   36   0.0141   1   30
 1
'Beacon/Park S'   'AG'   2009.06   4646.43   2098.69   4400.99   1714   0.0141   1   78
 1
'Beacon/Park SR'   'AG'   2102.46   4662.03   2076.21   4571.17   71   0.0141   1   42
 1
'Beacon/Park W EB'   'AG'   1995.65   4607.64   1704.19   4488.44   603   0.0141   1   66
 1
'Beacon/Park W EBR'   'AG'   2009.06   4551.22   1907.44   4575.2   134   0.0141   1   38
 1
'Beacon/Park W WB'   'AG'   1989.3   4675.35   1658.32   4556.15   833   0.0141   1   78
 1
'Boyl/Kil N'   'AG'   3344.49   3716.98   3289.05   3876.33   379   0.0141   1   54
 1
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'Boyl/Kil E'   'AG'   3348.9   3715.02   3516.2   3780.72   2426   0.0141   1   78
 1
'Boyl/Kil S'   'AG'   3349.91   3702.12   3425.46   3502.07   241   0.0141   1   54
 1
'Boyl/Kil W'   'AG'   3345.98   3717.81   3141.89   3641.32   2392   0.0141   1   78
1   0   4   1000   0   'Y'   10   0   36
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'Landmark Center'   60   175   0   0   60   0.3048   1   0
'Beacon/Park NE1'   1956   4921.67   6
'Beacon/Park NE2'   1981.56   4851.16   6
'Beacon/Park NE3'   2059.66   4754.43   6
'Beacon/Park NE4'   2163.51   4768.43   6
'Beacon/Park NE5'   2234.2   4793.49   6
'Beacon/Park SE1'   2273.61   4703.48   6
'Beacon/Park SE2'   2202.92   4678.43   6
'Beacon/Park SE3'   2119.12   4608   6
'Beacon/Park SE4'   2120.16   4485.05   6
'Beacon/Park SE5'   2146.81   4412.06   6
'Beacon/Park SW1'   2053.38   4382.21   6
'Beacon/Park SW2'   2027.66   4452.66   6
'Beacon/Park SW3'   1951.59   4534.99   6
'Beacon/Park SW4'   1869.49   4509.59   6
'Beacon/Park SW5'   1800.07   4481.2   6
'Beacon/Park NW1'   1748.74   4640.8   6
'Beacon/Park NW2'   1819.31   4666.21   6
'Beacon/Park NW3'   1911.37   4723.31   6
'Beacon/Park NW4'   1893.82   4805.63   6
'Beacon/Park NW5'   1868.27   4876.14   6
'Riverway/Park NE1'   2301.27   3957.57   6
'Riverway/Park NE2'   2295.17   3882.81   6
'Riverway/Park NE3'   2289.07   3808.06   6
'Riverway/Park NE4'   2364.05   3806.5   6
'Riverway/Park NE5'   2439.05   3805.99   6
'Riverway/Park SE1'   2427.53   3594.67   6
'Riverway/Park SE2'   2406.62   3667.75   6
'Riverway/Park SE3'   2309.4   3687.55   6
'Riverway/Park SE4'   2248.83   3576.74   6
'Riverway/Park SE5'   2296.57   3506.87   6
'Riverway/Park SW1'   2170.58   3544.51   6
'Riverway/Park SW2'   2179.24   3619   6
'Riverway/Park SW3'   2187.91   3693.5   6
'Riverway/Park SW4'   2132.7   3642.73   6
'Riverway/Park SW5'   2077.5   3591.97   6
'Riverway/Park NW1'   2059.15   3675.63   6
'Riverway/Park NW2'   2114.35   3726.4   6
'Riverway/Park NW3'   2169.56   3777.16   6
'Riverway/Park NW4'   2202.55   3844.52   6
'Riverway/Park NW5'   2235.34   3911.97   6
'Boyl/Kil NE1'   3320.78   3917.23   6
'Boyl/Kil NE2'   3339.33   3844.42   6
'Boyl/Kil NE3'   3363.97   3773.58   6
'Boyl/Kil NE4'   3433.78   3801   6
'Boyl/Kil NE5'   3503.59   3828.41   6
'Boyl/Kil SE1'   3537.24   3736.34   6
'Boyl/Kil SE2'   3467.1   3708.8   6
'Boyl/Kil SE3'   3397.29   3681.38   6
'Boyl/Kil SE4'   3423.79   3611.22   6
'Boyl/Kil SE5'   3450.29   3541.06   6
'Boyl/Kil SW1'   3379.89   3518   6
'Boyl/Kil SW2'   3353.07   3589.02   6
'Boyl/Kil SW3'   3326.9   3658.33   6
'Boyl/Kil SW4'   3256.67   3632.01   6
'Boyl/Kil SW5'   3186.44   3605.69   6
'Boyl/Kil NW1'   3153.18   3697.88   6
'Boyl/Kil NW2'   3223.41   3724.2   6
'Boyl/Kil NW3'   3293.64   3750.52   6
'Boyl/Kil NW4'   3269   3821.36   6
'Boyl/Kil NW5'   3244.48   3891.85   6
'2018NB'   56   1   0   'P'
 2
'Fen/Brook WB TT'   'AG'   2508.32   3314.76   2567.48   3392.01   1   20   2
100   54   3   863   0.03525   1600   1   3
 2
'Fen/Brook EB TTTR'   'AG'   2469.88   3221.1   2419.79   3152.05   1   30   3
100   54   3   959   0.03525   1600   1   3
 2
'Fen/Brook SB L'   'AG'   2487.62   3319   2439.29   3364.86   1   10   1
100   46   3   647   0.03525   1600   1   3
 2
'Fen/Brook SB LTT'   'AG'   2476.25   3307.23   2427.92   3351.87   1   20   2
100   46   3   874   0.03525   1600   1   3
 2
'Fen/Brook SB R'   'AG'   2463.25   3293.43   2416.55   3338.48   1   10   1
100   46   3   132   0.03525   1600   1   3
 2
'Park/Brook WB TTR'   'AG'   2701.33   3561.7   2759.96   3639.18   1   30   3
100   68   3   669   0.03525   1600   1   3
 2
'Park/Brook NWB LLRRR'   'AG'   2745.91   3510.38   2903.87   3571.39   1   30   3
100   75   3   1203   0.03525   1600   1   3
 2
'Park/Brook NB LTTTR'   'AG'   2715.39   3403.84   2792.43   3305.54   1   40   4
100   68   3   992   0.03525   1600   1   3
 2
'Park/Brook EB L'   'AG'   2628.58   3434.99   2544.27   3326.04   1   10   1
100   85   3   107   0.03525   1600   1   3
 2
'Park/Brook EB T'   'AG'   2637.53   3428.06   2552.21   3319.05   1   10   1
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100   57   3   419   0.03525   1600   1   3
 2
'Park/Brook EB RR'   'AG'   2648.52   3416.92   2569.06   3311.84   1   20   2
100   32   3   1029   0.03525   1600   1   3
 2
'River/Park SB'   'AG'   2213.27   3801.84   2235.59   3847.49   1   10   1
100   78   3   548   0.03525   1600   1   3
 2
'River/Park SB East'   'AG'   2256.21   3801.18   2265.6   3851.79   1   20   2
100   78   3   473   0.03525   1600   1   3
 2
'River/Park WB North'   'AG'   2272.82   3765.17   2338.24   3765.5   1   30   3
100   59   3   858   0.03525   1600   1   3
 2
'River/Park WB South'   'AG'   2270.48   3707.91   2328.96   3732.95   1   20   2
100   59   3   454   0.03525   1600   1   3
 2
'River/Park NEB'   'AG'   2169.88   3720.6   2100.81   3654.06   1   20   2
100   73   3   114   0.03525   1600   1   3
 2
'Beacon/Park SB LTT'   'AG'   1962.93   4712.56   1934.73   4800.99   1   20   2
110   61   3   632   0.03525   1600   1   3
 2
'Beacon/Park WB LTT'   'AG'   2055.3   4691.67   2155.45   4728.6   1   20   2
110   56   3   1012   0.03525   1600   1   3
 2
'Beacon/Park NB LTT'   'AG'   2041.69   4597.41   2076.21   4496.84   1   20   2
110   103   3   591   0.03525   1600   1   3
 2
'Beacon/Park EB LTTT'   'AG'   1966.34   4608.1   1839.93   4551.25   1   30   3
110   68   3   469   0.03525   1600   1   3
 2
'Beacon/Park EB R'   'AG'   1975.57   4560.48   1931.82   4567.29   1   20   2
110   61   3   134   0.03525   1600   1   3
 2
'Beacon/Park SB R '   'AG'   1917.23   4688.27   1941.05   4726.65   1   10   1
110   61   3   15   0.03525   1600   1   3
 2
'Beacon/Park WB R '   'AG'   2019.81   4741.23   2072.32   4722.77   1   10   1
110   68   3   36   0.03525   1600   1   3
 2
'Beacon/Park NB R'   'AG'   2095.17   4627.53   2077.67   4580.89   1   10   1
110   61   3   71   0.03525   1600   1   3
 2
'Boyl/Kil SB LTR'   'AG'   3321.98   3753.82   3294.42   3839.17   1   20   2
100   71   3   267   0.03525   1600   1   3
 2
'Boyl/Kil WB LTTR'   'AG'   3373.33   3738.7   3489.55   3785.69   1   20   2
100   29   3   1096   0.03525   1600   1   3
 2
'Boyl/Kil NB LTR'   'AG'   3365.22   3677.65   3399.29   3591.62   1   10   1
100   71   3   82   0.03525   1600   1   3
 2
'Boyl/Kil EB LTTR'   'AG'   3320.38   3695.34   3212.27   3655.91   1   20   2
100   29   3   1274   0.03525   1600   1   3
 1
'Fenway/Brook South'   'AG'   2496.93   3278.87   2636.65   3081.07   936   0.0141   1   54
 1
'Fenway/Brook West'   'AG'   2481.8   3262.91   2347.32   3075.62   1965   0.0141   1   78
 1
'Fenway/Brook North'   'AG'   2491.04   3288.56   2373.12   3398.66   1653   0.0141   1   66
 1
'Fenway/Brook East'   'AG'   2497.77   3264.59   2608.73   3389.73   2407   0.0141   1   90
 1
'Park/Brook South'   'AG'   2691.91   3447.33   2838.26   3241.18   992   0.0141   1   66
 1
'Park/Brook West'   'AG'   2672.16   3490.72   2502.75   3273.82   2418   0.0141   1   90
 1
'Park/Brook North'   'AG'   2656.67   3489.73   2496.11   3644.11   1821   0.0141   1   66
 1
'Park/Brook East'   'AG'   2663.31   3490.84   2801.72   3675.09   1249   0.0141   1   66
 1
'Park/Brook SE'   'AG'   2681.03   3470.37   2968.37   3574.94   2358   0.0141   1   78
 1
'River/Park N'   'AG'   2254.71   3768.23   2266.44   3911.9   473   0.0141   1   42
 1
'River/Park SE'   'AG'   2239.06   3675.39   2343.7   3750.15   454   0.0141   1   42
 1
'River/Park NE'   'AG'   2237.1   3772.14   2377.44   3769.21   858   0.0141   1   54
 1
'River/Park S'   'AG'   2231.15   3745.07   2210.13   3564.26   927   0.0141   1   54
 1
'River/Park SW'   'AG'   2211.1   3765.1   2058.06   3624.36   1520   0.0141   1   54
 1
'River/Park NW'   'AG'   2193.99   3770.21   2250.71   3886.02   548   0.0141   1   30
 1
'Beacon/Park N'   'AG'   1996.01   4667.5   1894.21   4948.36   1143   0.0141   1   78
 1
'Beacon/Park NR'   'AG'   1907.99   4673.8   1956.12   4744.74   15   0.0141   1   30
 1
'Beacon/Park E'   'AG'   1997.77   4657.71   2274.41   4755.75   1622   0.0141   1   78
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 1
'Beacon/Park ER'   'AG'   1991.42   4750.81   2112.09   4710.61   36   0.0141   1   30
 1
'Beacon/Park S'   'AG'   2009.06   4646.43   2098.69   4400.99   1714   0.0141   1   78
 1
'Beacon/Park SR'   'AG'   2102.46   4662.03   2076.21   4571.17   71   0.0141   1   42
 1
'Beacon/Park W EB'   'AG'   1995.65   4607.64   1704.19   4488.44   603   0.0141   1   66
 1
'Beacon/Park W EBR'   'AG'   2009.06   4551.22   1907.44   4575.2   134   0.0141   1   38
 1
'Beacon/Park W WB'   'AG'   1989.3   4675.35   1658.32   4556.15   833   0.0141   1   78
 1
'Boyl/Kil N'   'AG'   3344.49   3716.98   3289.05   3876.33   379   0.0141   1   54
 1
'Boyl/Kil E'   'AG'   3348.9   3715.02   3516.2   3780.72   2426   0.0141   1   78
 1
'Boyl/Kil S'   'AG'   3349.91   3702.12   3425.46   3502.07   241   0.0141   1   54
 1
'Boyl/Kil W'   'AG'   3345.98   3717.81   3141.89   3641.32   2392   0.0141   1   78
1   0   4   1000   0   'Y'   10   0   36
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'LANDMARKCENTER'   60   175   0   0   20   0.3048   1   0
'Brook/Full NE1'   2962.21   4181.21   6
'Brook/Full NE2'   3023.74   4138.31   6
'Brook/Full NE3'   3085.26   4095.42   6
'Brook/Full NE4'   3133.26   4153.04   6
'Brook/Full NE5'   3188.74   4204.01   6
'Brook/Full SE1'   3234.98   4159.54   6
'Brook/Full SE2'   3186.98   4101.91   6
'Brook/Full SE3'   3130.3   4049.49   6
'Brook/Full SE4'   3203.31   4005.73   6
'Brook/Full SE5'   3267.63   3967.16   6
'Brook/Full SW1'   3228.25   3918.49   6
'Brook/Full SW2'   3163.92   3957.05   6
'Brook/Full SW3'   3099.59   3995.61   6
'Brook/Full SW4'   3055.49   3934.94   6
'Brook/Full SW5'   3011.4   3874.28   6
'Brook/Full NW1'   2950.49   3916.35   6
'Brook/Full NW2'   2994.59   3977.01   6
'Brook/Full NW3'   3038.69   4037.68   6
'Brook/Full NW4'   2977.16   4080.57   6
'Brook/Full NW5'   2915.64   4123.47   6
'2018_BD_CO_3'   10   1   0   'P'
 2
'Brook/Full EB L'   'AG'   3074.73   4018.45   2990.41   3908.28   1   10   1
100   33   3   105   0.03525   1600   1   3
 2
'Brook/Full EB TR'   'AG'   3083.58   4011.97   3001.61   3902.98   1   10   1
100   33   3   439   0.03525   1600   1   3
 2
'Brook/Full NB LTR'   'AG'   3121.31   4022.57   3170.85   3996.06   1   10   1
100   33   3   240   0.03525   1600   1   3
 2
'Brook/Full WB LTR'   'AG'   3127.21   4100.92   3172.02   4159.83   1   20   2
100   43   3   528   0.03525   1600   1   3
 2
'Brook/Full SB LT'   'AG'   3068.25   4050.85   2998.08   4102.69   1   10   1
100   67   3   173   0.03525   1600   1   3
 2
'Brook/Full SB R'   'AG'   3061.17   4041.42   2989.82   4092.67   1   10   1
100   57   3   125   0.03525   1600   1   3
 1
'Brook/Full N'   'AG'   3091.95   4045.65   2925.79   4161.49   554   0.0141   1   54
 1
'Brook/Full E'   'AG'   3091.95   4045.65   3246.16   4230.76   997   0.0141   1   54
 1
'Brook/Full S'   'AG'   3100.32   4031.31   3189.98   3977.57   456   0.0141   1   42
 1
'Brook/Full W'   'AG'   3091.95   4048.03   2946.11   3847.39   1213   0.0141   1   54
1   0   4   1000   0   'Y'   10   0   36
```

Microscale (CAL3QHC) Output Files

Carbon Monoxide:
- **2013 Existing**
- **2018 No-Build Condition**
- **2018 Build Condition**

Particulate Matter 10:
- **2013 Existing**
- **2018 No-Build Condition**
- **2018 Build Condition**

Particulate Matter 2.5:
- **2013 Existing**
- **2018 No-Build Condition**
- **2018 Build Condition**

2013 Existing
Microscale Output Files
(Carbon Monoxide (CO))

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 95221 PAGE 1

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The MODE flag has been set to C for calculating CO averages.

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 175. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	X1	Y1	X2	Y2	LENGTH (FT)	BRG (DEG)	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)	V/C	QUEUE (VEH)
1. Fen/Brook WB TT	2508.3	3314.8	2585.8	3415.9	127.	37.	AG	172.	100.0	1.0	20.0	0.69	6.5
2. Fen/Brook EB TTTR	2469.9	3221.1	2414.8	3145.1	94.	216.	AG	258.	100.0	1.0	30.0	0.51	4.8
3. Fen/Brook SB L	2487.6	3319.0	2337.7	3461.3	207.	313.	AG	83.	100.0	1.0	10.0	0.90	10.5
4. Fen/Brook SB LTT	2476.2	3307.2	2381.9	3394.4	128.	313.	AG	166.	100.0	1.0	20.0	0.68	6.5
5. Fen/Brook SB R	2463.2	3293.4	2437.5	3318.3	36.	314.	AG	83.	100.0	1.0	10.0	0.19	1.8
6. Park/Brook WB TTR	2701.3	3561.7	2742.4	3616.0	68.	37.	AG	298.	100.0	1.0	30.0	0.42	3.5
7. Park/Brook NWB LLRRR	2745.9	3510.4	2860.1	3554.5	122.	69.	AG	271.	100.0	1.0	30.0	0.68	6.2
8. Park/Brook NB LTTTR	2715.4	3403.8	2776.1	3326.4	98.	142.	AG	408.	100.0	1.0	40.0	0.64	5.0
9. Park/Brook EB TT	2632.5	3431.9	2592.3	3379.9	66.	218.	AG	198.	100.0	1.0	20.0	0.41	3.3
10. Park/Brook EB RR	2648.5	3416.9	2601.3	3354.5	78.	217.	AG	88.	100.0	1.0	20.0	0.46	4.0
11. River/Park SB	2213.3	3801.8	2273.3	3924.6	137.	26.	AG	73.	100.0	1.0	10.0	0.69	6.9
12. River/Park SB East	2256.2	3801.2	2267.2	3860.3	60.	11.	AG	146.	100.0	1.0	20.0	0.31	3.1
13. River/Park WB North	2272.8	3765.2	2352.4	3765.6	80.	90.	AG	219.	100.0	1.0	30.0	0.40	4.0
14. River/Park WB South	2270.5	3707.9	2318.7	3728.6	52.	67.	AG	146.	100.0	1.0	20.0	0.27	2.7
15. Beacon/Park SB LTT	1962.9	4712.6	1921.1	4843.8	138.	342.	AG	210.	100.0	1.0	20.0	0.79	7.0
16. Beacon/Park WB LTT	2055.3	4691.7	5464.4	5948.8	3634.	70.	AG	252.	100.0	1.0	20.0	3.24	184.6
17. Beacon/Park NB LTT	2041.7	4597.4	2895.5	2109.9	2630.	161.	AG	268.	100.0	1.0	20.0	5.00	133.6
18. Beacon/Park EB LTTT	1966.3	4608.1	1908.7	4582.2	63.	246.	AG	279.	100.0	1.0	30.0	0.32	3.2
19. Beacon/Park EB R	1975.6	4560.5	1951.0	4564.3	25.	279.	AG	186.	100.0	1.0	20.0	0.13	1.3
20. Beacon/Park SB R	1917.2	4688.3	1920.6	4693.8	6.	32.	AG	105.	100.0	1.0	10.0	0.04	0.3
21. Beacon/Park WB R	2019.8	4741.2	2027.2	4738.6	8.	109.	AG	126.	100.0	1.0	10.0	0.10	0.4
22. Beacon/Park NB R	2095.2	4627.5	2063.1	4542.0	91.	201.	AG	134.	100.0	1.0	10.0	1.03	4.6
23. Boyl/Kil SB LTR	3322.0	3753.8	3306.5	3801.8	50.	342.	AG	207.	100.0	1.0	20.0	0.34	2.6
24. Boyl/Kil WB LTTR	3373.3	3738.7	3445.4	3767.8	78.	68.	AG	85.	100.0	1.0	20.0	0.46	3.9
25. Boyl/Kil NB LTR	3365.2	3677.7	3376.7	3648.8	31.	158.	AG	104.	100.0	1.0	10.0	0.21	1.6
26. Boyl/Kil EB LTTR	3320.4	3695.3	3233.7	3663.7	92.	250.	AG	85.	100.0	1.0	20.0	0.55	4.7
27. Fenway/Brook South	2496.9	3278.9	2636.6	3081.1	242.	145.	AG	775.	9.8	1.0	54.0		
28. Fenway/Brook West	2481.8	3262.9	2347.3	3075.6	231.	216.	AG	1780.	9.8	1.0	78.0		
29. Fenway/Brook North	2491.0	3288.6	2373.1	3398.7	161.	313.	AG	1485.	9.8	1.0	66.0		
30. Fenway/Brook East	2497.8	3264.6	2608.7	3389.7	167.	42.	AG	2090.	9.8	1.0	90.0		
31. Park/Brook South	2691.9	3447.3	2838.3	3241.2	253.	145.	AG	1030.	9.8	1.0	66.0		
32. Park/Brook West	2672.2	3490.7	2502.8	3273.8	275.	218.	AG	2100.	9.8	1.0	90.0		
33. Park/Brook North	2656.7	3489.7	2496.1	3644.1	223.	314.	AG	1675.	9.9	1.0	66.0		
34. Park/Brook East	2663.3	3490.8	2801.7	3675.1	230.	37.	AG	1010.	9.8	1.0	66.0		
35. Park/Brook SE	2681.0	3470.4	2968.4	3574.9	306.	70.	AG	2135.	9.8	1.0	78.0		
36. River/Park N	2254.7	3768.2	2266.4	3911.9	144.	5.	AG	440.	9.8	1.0	42.0		
37. River/Park SE	2239.1	3675.4	2343.7	3750.1	129.	54.	AG	260.	9.8	1.0	42.0		
38. River/Park NE	2237.1	3772.1	2377.4	3769.2	140.	91.	AG	750.	9.8	1.0	54.0		
39. River/Park S	2231.1	3745.1	2210.1	3564.3	182.	187.	AG	700.	9.8	1.0	54.0		
40. River/Park SW	2211.1	3765.1	2058.1	3624.4	208.	227.	AG	1250.	9.8	1.0	54.0		
41. River/Park NW	2194.0	3770.2	2250.7	3886.0	129.	26.	AG	500.	9.8	1.0	30.0		
42. Beacon/Park N	1996.0	4667.5	1894.2	4948.4	299.	340.	AG	1105.	9.8	1.0	78.0		

2013EX_CO.out

LINK DESCRIPTION	X1	Y1	X2	Y2	LENGTH (FT)	BRG (DEG)	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)
43. Beacon/Park NR	1908.0	4673.8	1956.1	4744.7	86.	34.	AG	15.	9.8	1.0	30.0
44. Beacon/Park E	1997.8	4657.7	2274.4	4755.8	293.	70.	AG	1470.	9.8	1.0	78.0

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LINK VARIABLES

LINK DESCRIPTION	X1	Y1	X2	Y2	LENGTH (FT)	BRG (DEG)	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)	V/C	QUEUE (VEH)
45. Beacon/Park ER	1991.4	4750.8	2112.1	4710.6	127.	108.	AG	15.	9.8	1.0	30.0		
46. Beacon/Park S	2009.1	4646.4	2098.7	4401.0	261.	160.	AG	1610.	9.8	1.0	78.0		
47. Beacon/Park SR	2102.5	4662.0	2076.2	4571.2	95.	196.	AG	60.	9.8	1.0	42.0		
48. Beacon/Park W EB	1995.6	4607.6	1704.2	4488.4	315.	248.	AG	495.	9.8	1.0	66.0		
49. Beacon/Park W EBR	2009.1	4551.2	1907.4	4575.2	104.	283.	AG	130.	9.8	1.0	38.0		
50. Beacon/Park W WB	1989.3	4675.4	1658.3	4556.1	352.	250.	AG	825.	9.8	1.0	78.0		
51. Boyl/Kil N	3344.5	3717.0	3289.1	3876.3	169.	341.	AG	320.	9.8	1.0	54.0		
52. Boyl/Kil E	3348.9	3715.0	3516.2	3780.7	180.	69.	AG	2250.	9.8	1.0	78.0		
53. Boyl/Kil S	3349.9	3702.1	3425.5	3502.1	214.	159.	AG	205.	9.8	1.0	54.0		
54. Boyl/Kil W	3346.0	3717.8	3141.9	3641.3	218.	249.	AG	2195.	9.8	1.0	78.0		

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ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE
1. Fen/Brook WB TT	100	59	3.0	790	1600	54.39	1	3
2. Fen/Brook EB TTTR	100	59	3.0	875	1600	54.39	1	3
3. Fen/Brook SB L	100	57	3.0	545	1600	54.39	1	3
4. Fen/Brook SB LTT	100	57	3.0	825	1600	54.39	1	3
5. Fen/Brook SB R	100	57	3.0	115	1600	54.39	1	3
6. Park/Brook WB TTR	100	68	3.0	550	1600	54.39	1	3
7. Park/Brook NWB LLRRR	100	62	3.0	1085	1600	54.39	1	3
8. Park/Brook NB LTTTR	100	70	3.0	1030	1600	54.39	1	3
9. Park/Brook EB TT	100	68	3.0	355	1600	54.39	1	3
10. Park/Brook EB RR	100	30	3.0	955	1600	54.39	1	3
11. River/Park SB	100	50	3.0	500	1600	54.39	1	3
12. River/Park SB East	100	50	3.0	440	1600	54.39	1	3
13. River/Park WB North	100	50	3.0	875	1600	54.39	1	3
14. River/Park WB South	100	50	3.0	385	1600	54.39	1	3
15. Beacon/Park SB LTT	110	79	3.0	595	1600	54.39	1	3
16. Beacon/Park WB LTT	110	95	3.0	940	1600	54.39	1	3
17. Beacon/Park NB LTT	110	101	3.0	580	1600	54.39	1	3
18. Beacon/Park EB LTTT	110	70	3.0	495	1600	54.39	1	3
19. Beacon/Park EB R	110	70	3.0	130	1600	54.39	1	3
20. Beacon/Park SB R	110	79	3.0	15	1600	54.39	1	3
21. Beacon/Park WB R	110	95	3.0	15	1600	54.39	1	3
22. Beacon/Park NB R	110	101	3.0	60	1600	54.39	1	3
23. Boyl/Kil SB LTR	100	71	3.0	260	1600	54.39	1	3
24. Boyl/Kil WB LTTR	100	29	3.0	980	1600	54.39	1	3
25. Boyl/Kil NB LTR	100	71	3.0	80	1600	54.39	1	3
26. Boyl/Kil EB LTTR	100	29	3.0	1165	1600	54.39	1	3

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. Fen/Brook NE1	2376.5	3444.0	6.0
2. Fen/Brook NE2	2429.7	3391.0	6.0
3. Fen/Brook NE3	2484.5	3339.8	6.0
4. Fen/Brook NE4	2530.7	3398.9	6.0
5. Fen/Brook NE5	2576.8	3458.0	6.0
6. Fen/Brook SE1	2660.2	3364.9	6.0
7. Fen/Brook SE2	2609.6	3308.8	6.0
8. Fen/Brook SE3	2560.7	3252.7	6.0
9. Fen/Brook SE4	2604.0	3191.4	6.0
10. Fen/Brook SE5	2647.3	3130.2	6.0
11. Fen/Brook SW1	2588.7	3084.8	6.0
12. Fen/Brook SW2	2545.5	3146.0	6.0
13. Fen/Brook SW3	2502.2	3207.3	6.0
14. Fen/Brook SW4	2458.5	3146.4	6.0
15. Fen/Brook SW5	2414.7	3085.4	6.0
16. Fen/Brook NW1	2353.5	3168.3	6.0
17. Fen/Brook NW2	2397.3	3229.2	6.0
18. Fen/Brook NW3	2441.0	3290.1	6.0
19. Fen/Brook NW4	2386.2	3341.3	6.0

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RECEPTOR LOCATIONS

RECEPTOR	X	Y	Z
	COORDINATES (FT)		
20. Fen/Brook NW5	2331.4	3392.5	6.0
21. Park/Brook NE1	2546.7	3655.1	6.0
22. Park/Brook NE2	2600.8	3603.1	6.0
23. Park/Brook NE3	2654.8	3551.1	6.0
24. Park/Brook NE4	2699.9	3611.1	6.0
25. Park/Brook NE5	2744.9	3671.1	6.0
26. Park/Brook SE1	2889.0	3493.9	6.0
27. Park/Brook SE2	2818.1	3468.1	6.0
28. Park/Brook SE3	2747.7	3442.5	6.0
29. Park/Brook SE4	2791.4	3381.5	6.0
30. Park/Brook SE5	2834.8	3320.3	6.0
31. Park/Brook SW1	2758.8	3278.8	6.0
32. Park/Brook SW2	2715.4	3340.0	6.0
33. Park/Brook SW3	2672.0	3401.1	6.0
34. Park/Brook SW4	2625.8	3342.0	6.0
35. Park/Brook SW5	2579.6	3282.9	6.0
36. Park/Brook NW1	2506.3	3367.7	6.0
37. Park/Brook NW2	2552.4	3426.8	6.0
38. Park/Brook NW3	2598.6	3485.9	6.0
39. Park/Brook NW4	2544.6	3537.9	6.0
40. Park/Brook NW5	2490.5	3589.9	6.0
41. Park/Brook E1	2853.5	3672.4	6.0
42. Park/Brook E2	2811.9	3617.1	6.0
43. Park/Brook E3	2763.4	3552.5	6.0
44. Park/Brook E4	2838.4	3579.8	6.0
45. Park/Brook E5	2904.4	3603.8	6.0

JOB: Landmark Center RUN: 2013EX

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-360.

WIND ANGLE (DEGR) * CONCENTRATION (PPM)

WIND ANGLE (DEGR)	REC1	REC2	REC3	REC4	REC5	REC6	REC7	REC8	REC9	REC10	REC11	REC12	REC13	REC14	REC15	REC16	REC17	REC18	REC19	REC20
0.	0.6	1.0	0.6	0.2	0.4	0.8	1.3	1.4	0.8	0.4	1.0	2.1	2.7	2.0	1.3	0.4	0.8	1.8	1.2	0.3
10.	0.6	1.1	0.4	0.3	0.4	0.9	1.3	1.4	0.6	0.4	0.6	1.5	2.7	2.0	1.6	0.5	0.8	1.7	1.3	0.5
20.	0.6	1.0	0.4	0.3	0.4	0.9	1.3	1.7	0.6	0.5	0.6	1.1	2.9	1.8	1.8	0.6	1.0	1.7	1.4	0.5
30.	0.6	1.0	0.4	0.4	0.7	0.9	1.3	1.4	0.7	0.5	0.6	1.0	2.7	1.7	1.6	0.9	1.3	1.9	1.4	0.5
40.	0.6	0.9	1.0	0.9	0.7	0.9	0.7	0.9	0.5	0.3	0.5	0.8	2.2	1.3	1.1	1.3	1.5	2.5	1.3	0.6
50.	0.5	1.0	1.5	0.9	0.9	0.9	0.6	0.8	0.4	0.1	0.3	0.6	1.8	0.9	0.8	1.4	1.8	3.0	1.5	0.5
60.	0.5	1.3	1.6	1.4	1.1	1.0	0.6	0.4	0.2	0.0	0.2	0.5	1.5	0.6	0.4	1.6	1.6	2.9	1.8	0.7
70.	0.9	1.4	2.1	1.5	1.3	0.9	0.4	0.3	0.1	0.0	0.2	0.3	1.2	0.4	0.3	1.4	1.4	2.6	2.0	1.0
80.	0.9	1.6	2.1	1.9	1.1	0.9	0.4	0.2	0.0	0.0	0.2	0.3	1.0	0.4	0.3	1.2	1.2	2.3	2.2	1.2
90.	0.8	1.7	1.7	1.7	1.0	0.9	0.3	0.1	0.0	0.0	0.1	0.3	1.0	0.4	0.2	1.2	1.1	2.0	2.1	1.5
100.	1.2	1.8	1.6	1.8	1.0	0.8	0.2	0.0	0.0	0.0	0.1	0.4	1.1	0.5	0.2	1.0	1.1	1.7	2.0	1.8
110.	1.0	1.8	1.4	1.8	1.1	0.6	0.1	0.0	0.0	0.0	0.1	0.4	1.2	0.5	0.3	0.8	1.1	1.4	1.8	1.6
120.	1.2	1.6	1.5	1.7	1.3	0.4	0.0	0.0	0.0	0.0	0.1	0.5	1.3	0.4	0.3	0.7	1.2	1.4	1.5	1.4
130.	1.4	2.2	1.6	1.4	1.1	0.2	0.0	0.0	0.0	0.0	0.0	0.7	1.4	0.4	0.3	0.7	1.1	1.4	1.2	1.1
140.	1.6	2.3	1.9	1.3	1.2	0.0	0.0	0.1	0.0	0.0	0.1	1.1	1.5	0.5	0.3	0.7	1.2	1.3	1.0	0.9
150.	2.1	2.6	2.3	1.4	1.2	0.0	0.0	0.3	0.2	0.0	0.3	1.7	1.5	0.4	0.2	0.6	1.1	1.3	0.9	0.7
160.	1.6	2.5	3.1	1.8	1.3	0.1	0.1	0.6	0.4	0.2	0.7	2.3	1.2	0.3	0.1	0.5	1.0	1.1	0.8	0.5

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WIND ANGLE (DEGR)	REC1	REC2	REC3	REC4	REC5	REC6	REC7	REC8	REC9	REC10	REC11	REC12	REC13	REC14	REC15	REC16	REC17	REC18	REC19	REC20
170.	1.3	1.9	3.2	1.9	1.6	0.2	0.4	0.9	0.6	0.4	0.9	2.3	0.7	0.1	0.0	0.4	0.8	1.0	0.4	0.3
180.	0.8	1.6	3.2	2.1	1.8	0.2	0.4	0.9	0.7	0.5	1.0	1.9	0.2	0.0	0.0	0.4	0.6	0.8	0.3	0.1
190.	0.6	1.3	3.2	2.0	1.9	0.3	0.4	0.7	0.6	0.5	0.9	1.6	0.0	0.0	0.0	0.3	0.5	0.8	0.2	0.0
200.	0.3	1.1	2.9	1.7	1.7	0.3	0.4	0.7	0.6	0.5	0.8	1.2	0.1	0.0	0.0	0.2	0.4	0.6	0.1	0.0
210.	0.2	1.0	2.7	1.6	1.6	0.4	0.6	0.8	0.6	0.5	0.7	1.0	0.2	0.1	0.0	0.2	0.3	0.5	0.0	0.0
220.	0.2	1.0	2.3	1.3	0.9	0.8	0.8	0.9	0.6	0.5	0.7	0.9	0.5	0.2	0.1	0.1	0.1	0.2	0.0	0.0
230.	0.2	1.0	2.1	1.1	0.5	1.3	1.2	1.2	0.6	0.5	0.7	0.8	0.9	0.3	0.1	0.0	0.1	0.1	0.0	0.0
240.	0.2	1.0	2.0	0.8	0.5	1.5	1.4	1.4	0.6	0.5	0.7	0.9	1.1	0.5	0.2	0.0	0.0	0.0	0.0	0.0
250.	0.2	1.0	2.0	0.9	0.5	1.7	1.5	1.3	0.8	0.5	0.6	1.0	1.1	0.7	0.2	0.0	0.0	0.0	0.0	0.0
260.	0.2	0.9	2.0	0.7	0.3	1.7	1.5	1.3	0.9	0.6	0.8	1.1	1.1	0.8	0.3	0.0	0.0	0.0	0.0	0.0
270.	0.2	1.0	2.1	0.6	0.2	1.7	1.6	1.2	0.9	0.7	0.8	1.2	1.1	0.9	0.3	0.0	0.0	0.0	0.0	0.0
280.	0.2	0.8	2.2	0.6	0.2	1.7	1.7	1.4	1.0	0.8	1.0	1.4	0.9	0.9	0.4	0.0	0.0	0.1	0.0	0.0
290.	0.2	0.7	2.3	0.4	0.3	1.5	1.8	1.8	1.0	0.9	1.0	1.6	0.8	1.0	0.4	0.0	0.0	0.1	0.0	0.0
300.	0.1	0.5	2.2	0.4	0.3	1.3	1.8	2.0	1.1	0.9	1.2	1.7	0.6	1.0	0.4	0.0	0.0	0.1	0.1	0.0
310.	0.2	0.4	2.1	0.4	0.3	1.3	1.5	2.2	1.4	1.1	1.2	2.0	0.6	1.0	0.4	0.0	0.0	0.3	0.2	0.0
320.	0.2	0.3	2.0	0.5	0.4	1.1	1.4	2.1	1.4	1.1	1.4	2.4	0.9	1.0	0.4	0.0	0.0	0.5	0.2	0.1
330.	0.1	0.4	2.1	0.5	0.4	1.1	1.4	1.9	1.4	1.1	1.7	2.9	1.7	1.2	0.4	0.0	0.0	1.0	0.4	0.1
340.	0.3	0.7	1.9	0.3	0.3	0.9	1.6	1.6	1.0	0.9	1.5	3.2	2.2	1.6	0.7	0.1	0.3	1.4	0.7	0.2
350.	0.6	1.0	1.1	0.2	0.3	0.8	1.6	1.5	0.9	0.6	1.3	2.7	2.6	1.9	1.1	0.2	0.5	1.7	1.0	0.3
360.	0.6	1.0	0.6	0.2	0.4	0.8	1.3	1.4	0.8	0.4	1.0	2.1	2.7	2.0	1.3	0.4	0.8	1.8	1.2	0.3
MAX	2.1	2.6	3.2	2.1	1.9	1.7	1.8	2.2	1.4	1.1	1.7	3.2	2.9	2.0	1.8	1.6	1.8	3.0	2.2	1.8
DEGR.	150	150	180	180	190	250	290	310	310	310	330	340	20	0	20	60	50	50	80	100

JOB: Landmark Center RUN: 2013EX

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-360.

WIND ANGLE (DEGR) * CONCENTRATION (PPM)

WIND ANGLE (DEGR)	REC21	REC22	REC23	REC24	REC25	REC26	REC27	REC28	REC29	REC30	REC31	REC32	REC33	REC34	REC35	REC36	REC37	REC38	REC39	REC40
0.	0.1	0.1	0.1	0.1	0.1	0.5	1.0	1.1	0.6	0.3	1.6	1.6	1.0	1.4	1.4	0.2	0.2	0.6	0.6	0.3
10.	0.1	0.1	0.1	0.1	0.1	0.6	1.0	1.1	0.5	0.3	1.3	1.8	1.2	1.5	1.5	0.2	0.3	0.6	0.6	0.4
20.	0.1	0.1	0.1	0.1	0.1	0.6	1.0	1.2	0.6	0.2	1.1	1.9	1.1	1.3	1.7	0.4	0.3	0.5	0.5	0.4
30.	0.1	0.1	0.3	0.1	0.1	0.6	0.9	1.1	0.5	0.2	0.9	1.9	1.3	1.3	1.5	0.4	0.6	0.7	0.5	0.5
40.	0.1	0.1	0.5	0.2	0.1	0.5	0.7	1.1	0.2	0.1	0.5	1.6	1.1	1.0	1.2	0.9	0.7	0.9	0.5	0.5
50.	0.0	0.0	0.7	0.2	0.1	0.5	0.7	0.9	0.2	0.1	0.4	1.6	1.0	0.8	0.8	1.4	0.9	1.0	0.4	0.4
60.	0.0	0.0	0.8	0.4	0.1	0.5	0.6	0.8	0.1	0.1	0.3	1.5	1.0	0.8	0.6	1.6	1.1	1.2	0.6	0.4
70.	0.0	0.2	1.1	0.6	0.1	0.4	0.4	0.4	0.0	0.0	0.3	1.3	0.8	0.6	0.3	2.0	1.3	1.5	0.7	0.4
80.	0.0	0.3	1.1	0.8	0.2	0.2	0.1	0.1	0.0	0.0	0.3	1.2	0.8	0.5	0.3	2.0	1.2	1.6	1.1	0.8
90.	0.3	0.6	1.1	1.0	0.3	0.0	0.0	0.0	0.0	0.0	0.3	1.2	0.9	0.5	0.2	1.8	1.1	1.2	1.1	0.9
100.	0.4	0.6	1.1	1.2	0.4	0.0	0.0	0.0	0.0	0.0	0.3	1.0	1.1	0.3	0.1	1.6	1.3	1.2	1.1	1.0
110.	0.5	0.8	0.9	1.4	0.3	0.0	0.0	0.0	0.0	0.0	0.2	0.8	1.2	0.2	0.0	1.5	1.6	1.0		

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120.	0.6	0.6	0.9	1.6	0.5	0.0	0.0	0.0	0.0	0.0	0.2	0.6	1.2	0.1	0.0	1.4	1.7	1.2	0.8	0.9
130.	0.8	0.6	1.0	1.7	0.6	0.0	0.0	0.0	0.0	0.0	0.1	0.4	1.0	0.0	0.0	1.4	1.6	1.0	0.9	0.8
140.	0.9	0.8	1.1	1.5	0.7	0.0	0.0	0.2	0.1	0.0	0.1	0.2	0.6	0.0	0.0	1.4	1.5	0.9	0.7	0.6
150.	0.9	1.1	1.2	1.6	0.7	0.0	0.0	0.4	0.2	0.1	0.0	0.1	0.2	0.0	0.1	1.6	1.4	1.0	0.6	0.6
160.	1.0	1.0	1.3	1.7	0.8	0.0	0.0	0.7	0.2	0.1	0.0	0.0	0.1	0.1	0.3	1.8	1.5	1.0	0.7	0.6
170.	1.1	1.2	1.2	1.6	1.2	0.0	0.1	1.1	0.5	0.2	0.1	0.1	0.1	0.3	0.5	2.0	1.8	1.3	1.0	0.8
180.	1.2	1.3	1.3	1.6	1.2	0.1	0.3	1.3	0.7	0.3	0.2	0.2	0.2	0.5	0.6	2.1	2.0	1.7	1.0	0.9
190.	1.3	1.4	1.4	1.5	1.4	0.2	0.4	1.3	0.9	0.4	0.2	0.2	0.2	0.5	0.6	2.0	2.1	1.6	1.1	0.8
200.	0.9	1.2	1.7	1.4	1.3	0.3	0.5	1.3	1.1	0.5	0.2	0.2	0.5	0.5	0.5	2.0	2.0	1.7	0.9	0.6
210.	0.7	1.1	1.7	1.3	1.3	0.3	0.6	1.1	1.2	0.3	0.2	0.3	0.7	0.7	0.7	1.9	1.5	1.3	0.6	0.5
220.	0.6	0.8	1.4	1.0	0.9	0.4	0.6	1.2	1.2	0.4	0.2	0.3	1.2	1.1	1.0	1.6	1.2	0.9	0.5	0.3
230.	0.6	0.6	0.9	0.5	0.4	0.8	0.8	1.2	1.4	0.4	0.3	0.5	1.5	1.4	1.2	1.2	0.9	0.5	0.3	0.3
240.	0.6	0.6	0.7	0.3	0.3	0.9	1.0	1.5	1.7	0.5	0.4	0.7	1.8	1.7	1.4	1.1	0.7	0.4	0.2	0.3
250.	0.5	0.6	0.6	0.3	0.2	1.0	1.2	1.5	1.8	0.8	0.5	0.8	2.0	1.6	1.3	1.1	0.6	0.3	0.2	0.3
260.	0.4	0.7	0.7	0.3	0.2	1.0	1.2	1.2	1.9	0.9	0.7	1.0	1.9	1.6	1.4	1.1	0.6	0.2	0.2	0.3
270.	0.5	0.7	0.7	0.3	0.2	1.2	0.9	1.0	1.9	1.2	0.6	1.1	1.8	1.9	1.6	1.1	0.5	0.2	0.2	0.3
280.	0.4	0.7	0.7	0.2	0.1	1.4	1.1	0.9	1.6	1.5	0.9	1.3	1.4	1.7	1.5	1.0	0.3	0.2	0.3	0.4
290.	0.4	0.6	0.7	0.3	0.1	1.4	1.2	1.1	1.3	1.5	0.8	1.0	1.3	1.8	1.9	0.8	0.3	0.2	0.3	0.4
300.	0.4	0.6	0.7	0.2	0.1	1.4	1.3	1.3	1.2	1.5	0.8	0.9	1.0	1.6	1.9	0.8	0.3	0.3	0.3	0.3
310.	0.2	0.4	0.5	0.2	0.1	1.2	1.2	1.3	1.1	1.3	0.7	0.8	1.0	1.9	1.9	0.6	0.4	0.5	0.5	0.5
320.	0.2	0.3	0.3	0.1	0.1	1.1	1.3	1.0	0.8	1.0	0.9	0.9	1.0	1.9	1.7	0.7	0.4	0.6	0.5	0.5
330.	0.2	0.2	0.1	0.1	0.0	0.9	1.3	1.0	0.9	0.9	1.1	0.9	1.0	1.8	1.6	0.7	0.3	0.7	0.6	0.5
340.	0.1	0.1	0.0	0.0	0.0	0.7	1.1	1.0	0.6	0.5	1.5	1.0	0.9	1.7	1.6	0.6	0.3	0.6	0.5	0.3
350.	0.1	0.1	0.1	0.1	0.1	0.6	1.0	1.0	0.7	0.5	1.6	1.3	0.9	1.5	1.5	0.3	0.3	0.5	0.5	0.3
360.	0.1	0.1	0.1	0.1	0.1	0.5	1.0	1.1	0.6	0.3	1.6	1.6	1.0	1.4	1.4	0.2	0.2	0.6	0.6	0.3
MAX	1.3	1.4	1.7	1.7	1.4	1.4	1.3	1.5	1.9	1.5	1.6	1.9	2.0	1.9	1.9	2.1	2.1	1.7	1.1	1.0
DEGR.	190	190	200	130	190	280	300	240	260	280	0	20	250	270	290	180	190	180	80	100

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JOB: Landmark Center RUN: 2013EX

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-360.

WIND ANGLE (DEGR)	CONCENTRATION (PPM) REC41	REC42	REC43	REC44	REC45
0.	0.1	0.2	0.5	0.1	0.1
10.	0.1	0.2	0.4	0.1	0.1
20.	0.1	0.2	0.3	0.1	0.1
30.	0.1	0.1	0.3	0.1	0.1
40.	0.1	0.1	0.2	0.1	0.1
50.	0.0	0.0	0.0	0.0	0.0
60.	0.0	0.0	0.1	0.2	0.1
70.	0.0	0.1	0.5	0.4	0.3
80.	0.2	0.2	0.9	0.5	0.4
90.	0.2	0.2	1.1	0.6	0.3
100.	0.1	0.2	1.3	0.5	0.3
110.	0.0	0.3	1.3	0.7	0.3
120.	0.1	0.3	1.3	0.7	0.4
130.	0.2	0.5	1.2	0.7	0.4
140.	0.2	0.6	1.2	0.9	0.5

150.	0.3	0.7	1.2	1.0	0.5
160.	0.3	0.8	1.4	1.1	0.5
170.	0.4	0.8	1.5	1.2	0.5
180.	0.6	1.1	1.6	1.5	0.6
190.	0.9	1.2	1.6	1.5	0.6
200.	0.9	1.3	1.6	1.8	1.0
210.	1.1	1.2	1.5	1.9	1.1
220.	1.1	1.1	1.7	2.1	1.5
230.	1.1	1.3	1.8	1.8	1.8
240.	0.8	1.0	1.3	1.5	1.5
250.	0.5	0.9	1.0	1.0	1.1
260.	0.5	1.0	0.9	0.9	0.6
270.	0.4	0.7	0.8	0.7	0.4
280.	0.2	0.6	0.9	0.6	0.4
290.	0.1	0.4	0.8	0.5	0.2
300.	0.1	0.4	1.0	0.4	0.2
310.	0.1	0.4	1.0	0.3	0.1
320.	0.1	0.4	0.8	0.3	0.1
330.	0.0	0.2	0.7	0.1	0.0
340.	0.1	0.2	0.6	0.1	0.0
350.	0.1	0.3	0.6	0.2	0.1
360.	0.1	0.2	0.5	0.1	0.1
MAX	1.1	1.3	1.8	2.1	1.8
DEGR.	210	200	230	220	230

THE HIGHEST CONCENTRATION OF 3.20 PPM OCCURRED AT RECEPTOR REC3 .

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 95221 PAGE 1

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The MODE flag has been set to C for calculating CO averages.

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 175. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	X1 (FT)	Y1 (FT)	X2 (FT)	Y2 (FT)	LENGTH (FT)	BRG (DEG)	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)	V/C	QUEUE (VEH)
1. Fen/Brook WB TT	2508.3	3314.8	2585.8	3415.9	127.	37.	AG	172.	100.0	1.0	20.0	0.69	6.5
2. Fen/Brook EB TTTR	2469.9	3221.1	2414.8	3145.1	94.	216.	AG	258.	100.0	1.0	30.0	0.51	4.8
3. Fen/Brook SB L	2487.6	3319.0	2337.7	3461.3	207.	313.	AG	83.	100.0	1.0	10.0	0.90	10.5
4. Fen/Brook SB LTT	2476.2	3307.2	2381.9	3394.4	128.	313.	AG	166.	100.0	1.0	20.0	0.68	6.5
5. Fen/Brook SB R	2463.2	3293.4	2437.5	3318.3	36.	314.	AG	83.	100.0	1.0	10.0	0.19	1.8
6. Park/Brook WB TTR	2701.3	3561.7	2742.4	3616.0	68.	37.	AG	298.	100.0	1.0	30.0	0.42	3.5
7. Park/Brook NWB LLRRR	2745.9	3510.4	2860.1	3554.5	122.	69.	AG	271.	100.0	1.0	30.0	0.68	6.2
8. Park/Brook NB LTTTR	2715.4	3403.8	2776.1	3326.4	98.	142.	AG	408.	100.0	1.0	40.0	0.64	5.0
9. Park/Brook EB TT	2632.5	3431.9	2592.3	3379.9	66.	218.	AG	198.	100.0	1.0	20.0	0.41	3.3
10. Park/Brook EB RR	2648.5	3416.9	2601.3	3354.5	78.	217.	AG	88.	100.0	1.0	20.0	0.46	4.0
11. River/Park SB	2213.3	3801.8	2273.3	3924.6	137.	26.	AG	73.	100.0	1.0	10.0	0.69	6.9
12. River/Park SB East	2256.2	3801.2	2267.2	3860.3	60.	11.	AG	146.	100.0	1.0	20.0	0.31	3.1
13. River/Park WB North	2272.8	3765.2	2352.4	3765.6	80.	90.	AG	219.	100.0	1.0	30.0	0.40	4.0
14. River/Park WB South	2270.5	3707.9	2318.7	3728.6	52.	67.	AG	146.	100.0	1.0	20.0	0.27	2.7
15. Beacon/Park SB LTT	1962.9	4712.6	1921.1	4843.8	138.	342.	AG	210.	100.0	1.0	20.0	0.79	7.0
16. Beacon/Park WB LTT	2055.3	4691.7	5464.4	5948.8	3634.	70.	AG	252.	100.0	1.0	20.0	3.24	184.6
17. Beacon/Park NB LTT	2041.7	4597.4	2895.5	2109.9	2630.	161.	AG	268.	100.0	1.0	20.0	5.00	133.6
18. Beacon/Park EB LTTT	1966.3	4608.1	1908.7	4582.2	63.	246.	AG	279.	100.0	1.0	30.0	0.32	3.2
19. Beacon/Park EB R	1975.6	4560.5	1951.0	4564.3	25.	279.	AG	186.	100.0	1.0	20.0	0.13	1.3
20. Beacon/Park SB R	1917.2	4688.3	1920.6	4693.8	6.	32.	AG	105.	100.0	1.0	10.0	0.04	0.3
21. Beacon/Park WB R	2019.8	4741.2	2027.2	4738.6	8.	109.	AG	126.	100.0	1.0	10.0	0.10	0.4
22. Beacon/Park NB R	2095.2	4627.5	2063.1	4542.0	91.	201.	AG	134.	100.0	1.0	10.0	1.03	4.6
23. Boyl/Kil SB LTR	3322.0	3753.8	3306.5	3801.8	50.	342.	AG	207.	100.0	1.0	20.0	0.34	2.6
24. Boyl/Kil WB LTTR	3373.3	3738.7	3445.4	3767.8	78.	68.	AG	85.	100.0	1.0	20.0	0.46	3.9
25. Boyl/Kil NB LTR	3365.2	3677.7	3376.7	3648.8	31.	158.	AG	104.	100.0	1.0	10.0	0.21	1.6
26. Boyl/Kil EB LTTR	3320.4	3695.3	3233.7	3663.7	92.	250.	AG	85.	100.0	1.0	20.0	0.55	4.7
27. Fenway/Brook South	2496.9	3278.9	2636.6	3081.1	242.	145.	AG	775.	9.8	1.0	54.0		
28. Fenway/Brook West	2481.8	3262.9	2347.3	3075.6	231.	216.	AG	1780.	9.8	1.0	78.0		
29. Fenway/Brook North	2491.0	3288.6	2373.1	3398.7	161.	313.	AG	1485.	9.8	1.0	66.0		
30. Fenway/Brook East	2497.8	3264.6	2608.7	3389.7	167.	42.	AG	2090.	9.8	1.0	90.0		
31. Park/Brook South	2691.9	3447.3	2838.3	3241.2	253.	145.	AG	1030.	9.8	1.0	66.0		
32. Park/Brook West	2672.2	3490.7	2502.8	3273.8	275.	218.	AG	2100.	9.8	1.0	90.0		
33. Park/Brook North	2656.7	3489.7	2496.1	3644.1	223.	314.	AG	1675.	9.8	1.0	66.0		
34. Park/Brook East	2663.3	3490.8	2801.7	3675.1	230.	37.	AG	1010.	9.8	1.0	66.0		
35. Park/Brook SE	2681.0	3470.4	2968.4	3574.9	306.	70.	AG	2135.	9.8	1.0	78.0		
36. River/Park N	2254.7	3768.2	2266.4	3911.9	144.	5.	AG	440.	9.8	1.0	42.0		
37. River/Park SE	2239.1	3675.4	2343.7	3750.1	129.	54.	AG	260.	9.8	1.0	42.0		
38. River/Park NE	2237.1	3772.1	2377.4	3769.2	140.	91.	AG	750.	9.8	1.0	54.0		
39. River/Park S	2231.1	3745.1	2210.1	3564.3	182.	187.	AG	700.	9.8	1.0	54.0		
40. River/Park SW	2211.1	3765.1	2058.1	3624.4	208.	227.	AG	1250.	9.8	1.0	54.0		
41. River/Park NW	2194.0	3770.2	2250.7	3886.0	129.	26.	AG	500.	9.8	1.0	30.0		
42. Beacon/Park N	1996.0	4667.5	1894.2	4948.4	299.	340.	AG	1105.	9.8	1.0	78.0		

2013EX_CO_2.out

LINK DESCRIPTION	X1 (FT)	Y1 (FT)	X2 (FT)	Y2 (FT)	LENGTH (FT)	BRG (DEG)	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)
43. Beacon/Park NR	1908.0	4673.8	1956.1	4744.7	86.	34.	AG	15.	9.8	1.0	30.0
44. Beacon/Park E	1997.8	4657.7	2274.4	4755.8	293.	70.	AG	1470.	9.8	1.0	78.0

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LINK VARIABLES

LINK DESCRIPTION	X1 (FT)	Y1 (FT)	X2 (FT)	Y2 (FT)	LENGTH (FT)	BRG (DEG)	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)	V/C	QUEUE (VEH)
45. Beacon/Park ER	1991.4	4750.8	2112.1	4710.6	127.	108.	AG	60.	9.8	1.0	30.0		
46. Beacon/Park S	2009.1	4646.4	2098.7	4401.0	261.	160.	AG	1610.	9.8	1.0	78.0		
47. Beacon/Park SR	2102.5	4662.0	2076.2	4571.2	95.	196.	AG	15.	9.8	1.0	42.0		
48. Beacon/Park W EB	1995.6	4607.6	1704.2	4488.4	315.	248.	AG	495.	9.8	1.0	66.0		
49. Beacon/Park W EBR	2009.1	4551.2	1907.4	4575.2	104.	283.	AG	130.	9.8	1.0	38.0		
50. Beacon/Park W WB	1989.3	4675.4	1658.3	4556.1	352.	250.	AG	825.	9.8	1.0	78.0		
51. Boyl/Kil N	3344.5	3717.0	3289.1	3876.3	169.	341.	AG	320.	9.8	1.0	54.0		
52. Boyl/Kil E	3348.9	3715.0	3516.2	3780.7	180.	69.	AG	2250.	9.8	1.0	78.0		
53. Boyl/Kil S	3349.9	3702.1	3425.5	3502.1	214.	159.	AG	205.	9.8	1.0	54.0		
54. Boyl/Kil W	3346.0	3717.8	3141.9	3641.3	218.	249.	AG	2195.	9.8	1.0	78.0		

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ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE
1. Fen/Brook WB TT	100	59	3.0	790	1600	54.39	1	3
2. Fen/Brook EB TTTR	100	59	3.0	875	1600	54.39	1	3
3. Fen/Brook SB L	100	57	3.0	545	1600	54.39	1	3
4. Fen/Brook SB LTT	100	57	3.0	825	1600	54.39	1	3
5. Fen/Brook SB R	100	57	3.0	115	1600	54.39	1	3
6. Park/Brook WB TTR	100	68	3.0	550	1600	54.39	1	3
7. Park/Brook NWB LLRRR	100	62	3.0	1085	1600	54.39	1	3
8. Park/Brook NB LTTTR	100	70	3.0	1030	1600	54.39	1	3
9. Park/Brook EB TT	100	68	3.0	355	1600	54.39	1	3
10. Park/Brook EB RR	100	30	3.0	955	1600	54.39	1	3
11. River/Park SB	100	50	3.0	500	1600	54.39	1	3
12. River/Park SB East	100	50	3.0	440	1600	54.39	1	3
13. River/Park WB North	100	50	3.0	875	1600	54.39	1	3
14. River/Park WB South	100	50	3.0	385	1600	54.39	1	3
15. Beacon/Park SB LTT	110	79	3.0	595	1600	54.39	1	3
16. Beacon/Park WB LTT	110	95	3.0	940	1600	54.39	1	3
17. Beacon/Park NB LTT	110	101	3.0	580	1600	54.39	1	3
18. Beacon/Park EB LTTT	110	70	3.0	495	1600	54.39	1	3
19. Beacon/Park EB R	110	70	3.0	130	1600	54.39	1	3
20. Beacon/Park SB R	110	79	3.0	15	1600	54.39	1	3
21. Beacon/Park WB R	110	95	3.0	15	1600	54.39	1	3
22. Beacon/Park NB R	110	101	3.0	60	1600	54.39	1	3
23. Boyl/Kil SB LTR	100	71	3.0	260	1600	54.39	1	3
24. Boyl/Kil WB LTTR	100	29	3.0	980	1600	54.39	1	3
25. Boyl/Kil NB LTR	100	71	3.0	80	1600	54.39	1	3
26. Boyl/Kil EB LTTR	100	29	3.0	1165	1600	54.39	1	3

RECEPTOR LOCATIONS

RECEPTOR	X (FT)	Y (FT)	Z (FT)
1. Beacon/Park NE1	1956.0	4921.7	6.0
2. Beacon/Park NE2	1981.6	4851.2	6.0
3. Beacon/Park NE3	2059.7	4754.4	6.0
4. Beacon/Park NE4	2163.5	4768.4	6.0
5. Beacon/Park NE5	2234.2	4793.5	6.0
6. Beacon/Park SE1	2273.6	4703.5	6.0
7. Beacon/Park SE2	2202.9	4678.4	6.0
8. Beacon/Park SE3	2119.1	4608.0	6.0
9. Beacon/Park SE4	2120.2	4485.0	6.0
10. Beacon/Park SE5	2146.8	4412.1	6.0
11. Beacon/Park SW1	2053.4	4382.2	6.0
12. Beacon/Park SW2	2027.7	4452.7	6.0
13. Beacon/Park SW3	1951.6	4535.0	6.0
14. Beacon/Park SW4	1869.5	4509.6	6.0
15. Beacon/Park SW5	1800.1	4481.2	6.0
16. Beacon/Park NW1	1748.7	4640.8	6.0
17. Beacon/Park NW2	1819.3	4666.2	6.0
18. Beacon/Park NW3	1911.4	4723.3	6.0
19. Beacon/Park NW4	1893.8	4805.6	6.0

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RECEPTOR LOCATIONS

RECEPTOR	X	Y	Z
20. Beacon/Park NW5	1868.3	4876.1	6.0
21. Riverway/Park NE1	2301.3	3957.6	6.0
22. Riverway/Park NE2	2295.2	3882.8	6.0
23. Riverway/Park NE3	2289.1	3808.1	6.0
24. Riverway/Park NE4	2364.1	3806.5	6.0
25. Riverway/Park NE5	2439.1	3806.0	6.0
26. Riverway/Park SE1	2427.5	3594.7	6.0
27. Riverway/Park SE2	2406.6	3667.7	6.0
28. Riverway/Park SE3	2309.4	3687.5	6.0
29. Riverway/Park SE4	2248.8	3576.7	6.0
30. Riverway/Park SE5	2296.6	3506.9	6.0
31. Riverway/Park SW1	2170.6	3544.5	6.0
32. Riverway/Park SW2	2179.2	3619.0	6.0
33. Riverway/Park SW3	2187.9	3693.5	6.0
34. Riverway/Park SW4	2132.7	3642.7	6.0
35. Riverway/Park SW5	2077.5	3592.0	6.0
36. Riverway/Park NW1	2059.1	3675.6	6.0
37. Riverway/Park NW2	2114.4	3726.4	6.0
38. Riverway/Park NW3	2169.6	3777.2	6.0
39. Riverway/Park NW4	2202.6	3844.5	6.0
40. Riverway/Park NW5	2235.3	3912.0	6.0
41. Boyl/Kil NE1	3320.8	3917.2	6.0
42. Boyl/Kil NE2	3339.3	3844.4	6.0
43. Boyl/Kil NE3	3364.0	3773.6	6.0
44. Boyl/Kil NE4	3433.8	3801.0	6.0
45. Boyl/Kil NE5	3503.6	3828.4	6.0
46. Boyl/Kil SE1	3537.2	3736.3	6.0
47. Boyl/Kil SE2	3467.1	3708.8	6.0
48. Boyl/Kil SE3	3397.3	3681.4	6.0
49. Boyl/Kil SE4	3423.8	3611.2	6.0
50. Boyl/Kil SE5	3450.3	3541.1	6.0
51. Boyl/Kil SW1	3379.9	3518.0	6.0
52. Boyl/Kil SW2	3353.1	3589.0	6.0
53. Boyl/Kil SW3	3326.9	3658.3	6.0
54. Boyl/Kil SW4	3256.7	3632.0	6.0
55. Boyl/Kil SW5	3186.4	3605.7	6.0
56. Boyl/Kil NW1	3153.2	3697.9	6.0
57. Boyl/Kil NW2	3223.4	3724.2	6.0
58. Boyl/Kil NW3	3293.6	3750.5	6.0
59. Boyl/Kil NW4	3269.0	3821.4	6.0
60. Boyl/Kil NW5	3244.5	3891.9	6.0

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JOB: Landmark Center RUN: 2013EX

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-360.

WIND ANGLE (DEGR) * CONCENTRATION (PPM)

(DEGR)	REC1	REC2	REC3	REC4	REC5	REC6	REC7	REC8	REC9	REC10	REC11	REC12	REC13	REC14	REC15	REC16	REC17	REC18	REC19	REC20
0.	0.0	0.0	0.0	0.0	0.0	0.6	0.7	0.6	0.3	0.2	1.0	0.9	1.1	0.3	0.2	0.0	0.0	0.5	0.3	0.1
10.	0.0	0.0	0.0	0.0	0.0	0.5	0.8	0.6	0.3	0.2	1.2	1.1	1.2	0.5	0.3	0.0	0.1	0.6	0.3	0.2
20.	0.0	0.0	0.0	0.0	0.0	0.5	0.8	0.6	0.3	0.2	1.1	1.3	1.0	0.6	0.4	0.0	0.1	0.7	0.4	0.2
30.	0.0	0.0	0.0	0.0	0.0	0.5	0.8	0.6	0.3	0.2	1.1	1.2	1.0	0.7	0.6	0.1	0.2	0.7	0.5	0.2
40.	0.0	0.0	0.0	0.0	0.0	0.6	0.8	0.5	0.2	0.2	1.0	1.1	1.0	0.9	0.7	0.2	0.2	0.7	0.6	0.2
50.	0.0	0.0	0.0	0.1	0.1	0.5	0.8	0.6	0.2	0.2	0.9	1.0	1.1	0.9	0.8	0.2	0.3	0.6	0.6	0.3
60.	0.0	0.0	0.2	0.3	0.3	0.5	0.7	0.5	0.2	0.2	0.9	1.0	1.2	0.9	0.8	0.4	0.4	0.7	0.8	0.3
70.	0.1	0.2	0.5	0.8	0.7	0.4	0.5	0.3	0.1	0.1	0.7	0.9	1.0	0.8	0.7	0.7	0.8	1.0	0.9	0.4
80.	0.2	0.3	0.7	1.0	0.8	0.1	0.2	0.1	0.0	0.0	0.5	0.8	0.8	0.5	0.3	0.7	0.9	1.0	1.0	0.5
90.	0.2	0.3	0.7	1.1	0.9	0.0	0.0	0.0	0.0	0.0	0.4	0.8	0.6	0.4	0.2	0.7	0.8	1.1		

1.1 0.5

(DEGR)	REC1	REC2	REC3	REC4	REC5	REC6	REC7	REC8	REC9	REC10	REC11	REC12	REC13	REC14	REC15	REC16	REC17	REC18	REC19	REC20
100.	0.2	0.3	0.8	1.0	0.8	0.0	0.0	0.0	0.0	0.0	0.4	0.8	0.6	0.4	0.3	0.6	0.7	0.8	1.0	0.5
110.	0.2	0.3	0.7	1.0	0.7	0.0	0.0	0.0	0.0	0.0	0.4	0.8	0.6	0.3	0.3	0.6	0.6	0.7	1.1	0.7
120.	0.3	0.3	0.7	1.0	0.7	0.0	0.0	0.0	0.0	0.0	0.5	0.8	0.6	0.3	0.2	0.7	0.9	0.8	1.0	0.7
130.	0.3	0.3	0.7	0.9	0.7	0.0	0.0	0.0	0.0	0.0	0.5	0.8	0.5	0.2	0.2	0.6	0.8	0.7	1.1	0.8
140.	0.2	0.4	0.7	0.8	0.7	0.0	0.0	0.0	0.0	0.0	0.6	0.8	0.5	0.3	0.2	0.5	0.8	0.9	1.0	1.0
150.	0.6	0.6	0.8	0.9	0.8	0.0	0.0	0.1	0.2	0.2	0.6	0.8	0.5	0.2	0.2	0.5	0.6	1.0	1.1	1.1
160.	0.8	0.8	1.2	1.0	1.0	0.1	0.1	0.3	0.7	0.6	0.5	0.6	0.3	0.1	0.1	0.4	0.5	0.9	0.8	1.0
170.	0.9	0.8	1.4	1.2	1.1	0.2	0.3	0.6	1.0	0.8	0.2	0.2	0.1	0.0	0.0	0.3	0.3	0.6	0.5	0.5
180.	0.8	0.8	1.2	1.1	1.1	0.2	0.3	0.6	1.0	0.8	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.4	0.2	0.1
190.	0.7	0.7	0.8	1.3	1.1	0.2	0.3	0.6	1.0	0.7	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.4	0.1	0.1
200.	0.6	0.8	0.8	1.4	1.3	0.2	0.3	0.7	0.9	0.6	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.3	0.1	0.1
210.	0.5	0.7	0.6	1.4	1.3	0.3	0.3	0.8	1.0	0.6	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.3	0.1	0.1
220.	0.4	0.7	0.6	1.2	1.3	0.3	0.5	0.9	0.9	0.5	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.1	0.0
230.	0.3	0.7	0.6	1.2	1.3	0.2	0.5	0.8	0.9	0.5	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.0	0.0
240.	0.3	0.6	0.5	0.9	1.1	0.3	0.5	0.8	0.9	0.6	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.0	0.0
250.	0.3	0.5	0.4	0.6	0.6	0.6	0.7	1.1	0.9	0.6	0.0	0.0	0.1	0.1	0.0	0.1	0.1	0.1	0.0	0.0
260.	0.3	0.5	0.5	0.4	0.4	0.8	0.7	1.0	0.9	0.7	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0
270.	0.3	0.4	0.4	0.2	0.2	1.0	0.8	0.8	0.9	0.8	0.0	0.0	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0
280.	0.2	0.3	0.4	0.2	0.2	1.1	0.9	0.7	1.1	0.8	0.0	0.0	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.0
290.	0.2	0.3	0.4	0.2	0.1	1.0	1.0	0.8	1.3	0.9	0.0	0.2	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.0
300.	0.2	0.3	0.3	0.1	0.0	0.9	1.0	0.8	1.3	1.1	0.0	0.2	0.3	0.2	0.2	0.0	0.0	0.0	0.0	0.0
310.	0.1	0.3	0.3	0.0	0.0	0.8	0.9	0.8	1.4	1.3	0.1	0.3	0.4	0.2	0.2	0.0	0.0	0.0	0.0	0.0
320.	0.1	0.2	0.1	0.0	0.0	0.6	0.6	0.7	1.4	1.3	0.2	0.3	0.5	0.2	0.2	0.0	0.0	0.0	0.0	0.0
330.	0.1	0.2	0.1	0.0	0.0	0.7	0.8	0.7	1.1	1.2	0.3	0.5	0.6	0.2	0.2	0.0	0.0	0.0	0.0	0.0
340.	0.0	0.1	0.0	0.0	0.0	0.7	0.8	0.5	0.8	0.9	0.7	0.6	0.9	0.2	0.2	0.0	0.0	0.1	0.1	0.0
350.	0.0	0.0	0.0	0.0	0.0	0.7	0.8	0.6	0.4	0.4	0.9	0.8	0.9	0.2	0.2	0.0	0.0	0.3	0.2	0.1
360.	0.0	0.0	0.0	0.0	0.0	0.6	0.7	0.6	0.3	0.2	1.0	0.9	1.1	0.3	0.2	0.0	0.0	0.5	0.3	0.1
MAX	0.9	0.8	1.4	1.4	1.3	1.1	1.0	1.1	1.4	1.3	1.2	1.3	1.2	0.9	0.8	0.7	0.9	1.1	1.1	1.1
DEGR.	170	160	170	200	200	280	290	250	310	310	10	20	10	40	60	70	120	90	90	150

PAGE 6

JOB: Landmark Center RUN: 2013EX

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-360.

WIND ANGLE (DEGR) * CONCENTRATION (PPM)

(DEGR)	REC21	REC22	REC23	REC24	REC25	REC26	REC27	REC28	REC29	REC30	REC31	REC32	REC33	REC34	REC35	REC36	REC37	REC38	REC39	REC40
0.	0.1	0.9	1.3	0.1	0.1	0.2	0.1	1.5	0.5	0.5	0.4	0.4	0.7	0.6	0.4	0.1	0.2	0.3	0.5	0.8
10.	0.1	0.5	1.1	0.1	0.1	0.1	0.1	1.4	0.8	0.5	0.5	0.5	0.9	0.7	0.7	0.3	0.3	0.4	0.5	0.8
20.	0.1	0.3	1.0	0.1	0.1	0.1	0.1	1.2	0.7	0.4	0.5	0.6	1.2	0.7	0.7	0.3	0.3	0.4	0.5	0.7
30.	0.1	0.2	0.9	0.1	0.1	0.1	0.1	1.1	0.5	0.4	0.6	0.7	0.9	0.7	0.7	0.3	0.3	0.5	0.4	0.7

```
  40.  *   0.1   0.2   0.8   0.1   0.1   0.2   0.1   0.8   0.3   0.4   0.6   0.8   0.8   0.7   0.6   0.4   0.5   0.6
0.6   0.6
  50.  *   0.1   0.2   0.8   0.1   0.1   0.1   0.1   0.6   0.3   0.3   0.4   0.8   0.7   0.7   0.6   0.4   0.6   0.8
0.7   0.6
  60.  *   0.0   0.0   0.7   0.0   0.0   0.2   0.0   0.5   0.2   0.4   0.3   0.6   0.8   0.5   0.4   0.5   0.5   0.7
0.6   0.5
  70.  *   0.0   0.0   0.7   0.0   0.0   0.2   0.0   0.5   0.3   0.4   0.3   0.4   0.7   0.4   0.2   0.6   0.7   0.7
0.8   0.6
  80.  *   0.0   0.0   0.7   0.0   0.0   0.5   0.0   0.5   0.3   0.5   0.3   0.4   0.7   0.3   0.2   0.7   0.8   0.8
0.7   0.6
  90.  *   0.0   0.1   0.8   0.0   0.0   0.7   0.1   0.5   0.4   0.7   0.4   0.6   0.6   0.4   0.4   0.6   1.0   0.7
0.8   0.7
 100.  *   0.0   0.1   0.9   0.0   0.0   0.8   0.6   0.7   0.5   0.6   0.5   0.6   0.6   0.5   0.4   0.9   0.9   0.8
0.8   0.7
 110.  *   0.0   0.1   1.2   0.1   0.1   0.6   0.7   0.8   0.6   0.7   0.5   0.7   0.6   0.6   0.3   0.8   0.8   1.0
1.1   0.8
 120.  *   0.1   0.3   1.5   0.2   0.2   0.6   0.6   1.0   0.6   0.8   0.7   0.6   0.7   0.5   0.5   0.7   0.7   1.1
1.4   0.9
 130.  *   0.1   0.5   1.8   0.2   0.5   0.5   0.6   0.9   0.7   0.9   0.6   0.7   0.7   0.6   0.3   0.6   0.7   0.8
1.3   1.1
 140.  *   0.2   0.9   1.8   0.3   0.4   0.5   0.4   0.9   0.8   1.1   0.4   0.6   0.8   0.4   0.3   0.5   0.6   0.9
1.2   1.4
 150.  *   0.4   1.8   2.0   0.6   0.4   0.6   0.5   1.0   0.6   0.8   0.3   0.4   0.7   0.3   0.2   0.4   0.7   0.7
1.0   1.5
 160.  *   0.8   2.5   1.8   0.7   0.5   0.8   0.8   0.9   0.3   0.5   0.2   0.3   0.5   0.1   0.0   0.4   0.4   0.6
0.9   1.3
 170.  *   1.0   2.5   1.2   0.7   0.6   1.2   1.2   0.5   0.1   0.2   0.0   0.1   0.2   0.0   0.0   0.3   0.3   0.5
0.6   0.9
 180.  *   1.0   2.3   0.8   1.0   0.5   1.1   1.0   0.1   0.0   0.0   0.0   0.0   0.1   0.0   0.0   0.2   0.4   0.5
0.4   0.7
 190.  *   1.1   2.1   0.7   1.0   0.3   1.1   0.8   0.0   0.0   0.0   0.0   0.0   0.1   0.0   0.0   0.2   0.4   0.4
0.4   0.4
 200.  *   1.1   2.0   0.6   1.1   0.3   0.7   0.6   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.1   0.4   0.4
0.3   0.3
 210.  *   1.1   1.7   0.6   1.2   0.3   0.6   0.5   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.1   0.3   0.4
0.2   0.2
 220.  *   0.9   1.8   0.6   1.4   0.3   0.5   0.5   0.1   0.0   0.0   0.0   0.0   0.1   0.0   0.0   0.0   0.2   0.3
0.1   0.1
 230.  *   0.6   1.5   0.6   1.4   0.5   0.5   0.5   0.1   0.0   0.0   0.0   0.0   0.2   0.1   0.0   0.0   0.1   0.2
0.0   0.0
 240.  *   0.5   1.4   0.5   1.3   0.9   0.5   0.5   0.1   0.1   0.0   0.0   0.0   0.3   0.2   0.0   0.0   0.0   0.1
0.0   0.0
 250.  *   0.5   1.3   0.4   1.1   0.7   0.5   0.5   0.2   0.1   0.0   0.0   0.0   0.4   0.2   0.0   0.0   0.0   0.0
0.0   0.0
 260.  *   0.5   1.2   0.6   0.9   0.7   0.5   0.7   0.3   0.1   0.0   0.0   0.1   0.4   0.3   0.0   0.0   0.0   0.0
0.0   0.0
 270.  *   0.5   1.2   0.5   0.7   0.5   0.5   0.7   0.4   0.2   0.0   0.0   0.1   0.4   0.3   0.0   0.0   0.0   0.0
0.0   0.0
 280.  *   0.5   1.2   0.6   0.7   0.4   0.7   0.8   0.5   0.3   0.0   0.0   0.2   0.4   0.3   0.0   0.0   0.0   0.0
0.0   0.0
 290.  *   0.6   1.3   0.6   0.7   0.3   0.8   0.7   0.4   0.3   0.0   0.0   0.2   0.3   0.3   0.0   0.0   0.0   0.0
0.0   0.0
 300.  *   0.6   1.5   0.6   0.7   0.3   0.7   0.9   0.5   0.3   0.1   0.1   0.2   0.3   0.3   0.0   0.0   0.0   0.0
0.0   0.0
 310.  *   0.7   1.7   0.6   0.6   0.3   0.8   1.0   0.5   0.3   0.2   0.1   0.2   0.3   0.3   0.0   0.0   0.0   0.0
0.0   0.0
 320.  *   0.7   2.0   0.7   0.6   0.3   0.9   1.0   0.6   0.3   0.2   0.1   0.2   0.3   0.3   0.1   0.0   0.0   0.0
0.0   0.0
 330.  *   0.8   2.2   0.8   0.6   0.3   0.9   0.9   0.9   0.3   0.2   0.1   0.2   0.3   0.3   0.2   0.0   0.0   0.0
0.0   0.2
 340.  *   0.6   2.2   1.2   0.4   0.1   0.6   0.7   1.3   0.4   0.3   0.1   0.2   0.4   0.3   0.2   0.0   0.0   0.1
0.1   0.5
 350.  *   0.3   1.6   1.3   0.3   0.1   0.2   0.2   1.7   0.5   0.4   0.2   0.3   0.5   0.4   0.3   0.0   0.1   0.2
0.3   0.6
 360.  *   0.1   0.9   1.3   0.1   0.1   0.2   0.1   1.5   0.5   0.5   0.4   0.4   0.7   0.6   0.4   0.1   0.2   0.3
0.5   0.8

------*--------------------------------------------------------------------------------------------------------
-------
 MAX   *   1.1   2.5   2.0   1.4   0.9   1.2   1.2   1.7   0.8   1.1   0.7   0.8   1.2   0.7   0.7   0.9   1.0   1.1
1.4   1.5
 DEGR. *  190   170   150   220   240   170   170   350    10   140   120    40    20    10    10   100    90   120
120   150

♀                                                                                                        PAGE  7
     JOB: Landmark Center                                             RUN: 2013EX

      MODEL RESULTS
      -------------

      REMARKS : In search of the angle corresponding to
                the maximum concentration, only the first
                angle, of the angles with same maximum
                concentrations, is indicated as maximum.

 WIND ANGLE RANGE:   0.-360.

 WIND  * CONCENTRATION
 ANGLE *      (PPM)
 (DEGR)* REC41 REC42 REC43 REC44 REC45 REC46 REC47 REC48 REC49 REC50 REC51 REC52 REC53 REC54 REC55 REC56 REC57 REC58
REC59 REC60
```



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------*--------------------------------------------------------------------------------------------------------
-------
   0.  *   0.1   0.1   0.1   0.1   0.1   0.1   0.5   0.6   0.3   0.2   0.4   0.4   0.8   0.7   0.5   0.1   0.1   0.3
0.1   0.1
  10.  *   0.1   0.1   0.1   0.1   0.1   0.1   0.6   0.8   0.3   0.2   0.3   0.5   0.9   0.9   0.7   0.1   0.1   0.5
0.1   0.1
  20.  *   0.1   0.1   0.1   0.1   0.1   0.1   0.6   0.8   0.4   0.1   0.3   0.6   0.7   1.0   0.7   0.1   0.1   0.6
0.2   0.1
  30.  *   0.1   0.1   0.1   0.1   0.1   0.1   0.6   0.8   0.2   0.0   0.2   0.4   0.8   1.1   0.8   0.1   0.1   0.7
0.2   0.1
  40.  *   0.1   0.0   0.0   0.0   0.0   0.0   0.4   0.6   0.1   0.0   0.1   0.3   0.8   0.8   0.9   0.0   0.1   0.6
0.2   0.1
  50.  *   0.0   0.0   0.0   0.0   0.0   0.0   0.3   0.5   0.0   0.0   0.1   0.2   0.7   0.8   0.9   0.0   0.1   0.6
0.1   0.0
  60.  *   0.0   0.0   0.1   0.0   0.0   0.0   0.2   0.4   0.0   0.0   0.1   0.1   0.7   0.6   0.8   0.3   0.3   0.6
0.1   0.0
  70.  *   0.0   0.0   0.3   0.1   0.0   0.0   0.1   0.2   0.0   0.0   0.1   0.1   0.5   0.4   0.4   0.5   0.5   0.7
0.1   0.0
  80.  *   0.0   0.0   0.4   0.2   0.0   0.0   0.0   0.1   0.0   0.0   0.1   0.1   0.3   0.2   0.2   0.7   0.7   1.0
0.1   0.0
  90.  *   0.0   0.0   0.7   0.3   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.1   0.2   0.0   0.0   0.8   0.8   1.0
0.2   0.0
 100.  *   0.0   0.1   0.7   0.4   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.1   0.2   0.0   0.0   0.8   0.8   1.0
0.4   0.0
 110.  *   0.0   0.2   0.8   0.5   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.1   0.1   0.0   0.0   0.7   0.8   0.7
0.6   0.1
 120.  *   0.1   0.3   0.8   0.5   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.1   0.1   0.0   0.0   0.6   0.7   0.7
0.7   0.3
 130.  *   0.2   0.4   0.8   0.5   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.1   0.1   0.0   0.0   0.6   0.6   0.7
0.7   0.4
 140.  *   0.2   0.4   0.7   0.5   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.1   0.1   0.0   0.0   0.5   0.6   0.6
0.7   0.5
 150.  *   0.2   0.4   0.6   0.6   0.1   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.1   0.0   0.0   0.5   0.6   0.5
0.6   0.4
 160.  *   0.2   0.3   0.7   0.7   0.2   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.5   0.7   0.7
0.4   0.3
 170.  *   0.4   0.4   0.6   0.6   0.3   0.0   0.0   0.1   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.5   0.6   0.6
0.4   0.2
 180.  *   0.4   0.5   0.5   0.7   0.4   0.0   0.0   0.1   0.1   0.0   0.0   0.0   0.0   0.0   0.0   0.4   0.5   0.6
0.4   0.2
 190.  *   0.4   0.6   0.6   0.8   0.5   0.0   0.0   0.1   0.1   0.0   0.0   0.0   0.0   0.0   0.0   0.4   0.5   0.7
0.3   0.2
 200.  *   0.5   0.7   0.8   0.8   0.5   0.0   0.0   0.1   0.1   0.0   0.0   0.0   0.1   0.1   0.1   0.3   0.7   0.8
0.4   0.2
 210.  *   0.4   0.7   0.9   1.0   0.7   0.1   0.1   0.3   0.2   0.1   0.1   0.1   0.1   0.1   0.1   0.3   0.7   0.8
0.3   0.2
 220.  *   0.3   0.6   1.0   0.9   0.9   0.1   0.1   0.3   0.2   0.1   0.1   0.1   0.1   0.1   0.1   0.3   0.6   0.8
0.3   0.2
 230.  *   0.2   0.5   1.1   0.9   1.0   0.1   0.1   0.3   0.2   0.1   0.1   0.1   0.1   0.1   0.1   0.4   0.7   0.8
0.3   0.3
 240.  *   0.2   0.4   1.0   0.9   1.0   0.3   0.3   0.5   0.2   0.2   0.1   0.1   0.3   0.4   0.4   0.6   0.8   0.8
0.3   0.2
 250.  *   0.1   0.3   0.8   0.7   0.8   0.7   0.6   0.7   0.3   0.2   0.1   0.2   0.6   0.6   0.6   0.5   0.6   0.5
0.2   0.1
 260.  *   0.1   0.2   0.6   0.4   0.4   0.9   0.9   1.0   0.4   0.3   0.3   0.2   0.7   0.7   0.6   0.2   0.3   0.3
0.1   0.1
 270.  *   0.1   0.2   0.5   0.2   0.1   1.0   0.9   0.9   0.4   0.3   0.2   0.3   0.9   0.6   0.4   0.1   0.1   0.1
0.1   0.1
 280.  *   0.1   0.2   0.5   0.1   0.1   0.9   0.8   0.9   0.4   0.4   0.2   0.3   0.8   0.6   0.3   0.1   0.1   0.1
0.1   0.1
 290.  *   0.1   0.2   0.5   0.1   0.1   0.8   1.0   0.7   0.6   0.3   0.2   0.3   0.9   0.7   0.3   0.1   0.1   0.1
0.1   0.1
 300.  *   0.0   0.1   0.3   0.0   0.0   0.5   0.8   0.7   0.6   0.4   0.2   0.4   0.9   0.7   0.3   0.1   0.1   0.1
0.0   0.0
 310.  *   0.0   0.1   0.2   0.0   0.0   0.5   0.6   0.8   0.5   0.3   0.2   0.4   0.8   0.5   0.4   0.0   0.0   0.0
0.0   0.0
 320.  *   0.1   0.1   0.1   0.0   0.1   0.4   0.6   0.8   0.6   0.4   0.2   0.4   0.7   0.6   0.4   0.0   0.0   0.0
0.1   0.1
 330.  *   0.1   0.1   0.2   0.1   0.1   0.3   0.7   0.7   0.4   0.3   0.2   0.4   0.6   0.6   0.5   0.0   0.1   0.1
0.1   0.1
 340.  *   0.1   0.1   0.1   0.1   0.1   0.2   0.7   0.7   0.3   0.2   0.2   0.4   0.8   0.7   0.5   0.1   0.1   0.1
0.1   0.1
 350.  *   0.1   0.1   0.1   0.1   0.1   0.1   0.5   0.6   0.4   0.2   0.3   0.4   0.8   0.7   0.5   0.1   0.1   0.3
0.1   0.1
 360.  *   0.1   0.1   0.1   0.1   0.1   0.1   0.5   0.6   0.3   0.2   0.4   0.4   0.8   0.7   0.5   0.1   0.1   0.3
0.1   0.1

------*--------------------------------------------------------------------------------------------------------
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 MAX   *   0.5   0.7   1.1   1.0   1.0   1.0   1.0   1.0   0.6   0.4   0.4   0.6   0.9   1.1   0.9   0.8   0.8   1.0
0.7   0.5
 DEGR. *  200   200   230   210   230   270   290   260   290   280     0    20   270    30    40    90    90    80
120   140

 THE HIGHEST CONCENTRATION OF    2.50 PPM OCCURRED AT RECEPTOR REC22.
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CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 95221 PAGE 1

JOB: LANDMARKCENTER RUN: 2013_EX_CO_3

DATE : 7/11/13
TIME : 7:41:19

The MODE flag has been set to C for calculating CO averages.

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 175. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	X1 (FT)	Y1 (FT)	X2 (FT)	Y2 (FT)	LENGTH (FT)	BRG (DEG)	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)	V/C	QUEUE (VEH)
1. Brook/Full EB L	3074.7	4018.5	3064.9	4005.6	16.	217.	AG	48.	100.0	1.0	10.0	0.09	0.8
2. Brook/Full EB TR	3083.6	4012.0	3045.6	3961.5	63.	217.	AG	48.	100.0	1.0	10.0	0.35	3.2
3. Brook/Full NB LTR	3121.3	4022.6	3148.4	4008.1	31.	118.	AG	48.	100.0	1.0	10.0	0.17	1.6
4. Brook/Full WB LTR	3127.2	4100.9	3155.0	4137.4	46.	37.	AG	125.	100.0	1.0	20.0	0.23	2.3
5. Brook/Full SB LT	3068.3	4050.9	3031.4	4078.1	46.	306.	AG	98.	100.0	1.0	10.0	0.28	2.3
6. Brook/Full SB R	3061.2	4041.4	3027.0	4066.0	42.	306.	AG	83.	100.0	1.0	10.0	0.22	2.1
7. Brook/Full N	3091.9	4045.7	2925.8	4161.5	203.	305.	AG	420.	9.8	1.0	54.0		
8. Brook/Full E	3091.9	4045.7	3246.2	4230.8	241.	40.	AG	815.	9.8	1.0	54.0		
9. Brook/Full S	3100.3	4031.3	3190.0	3977.6	105.	121.	AG	305.	9.8	1.0	42.0		
10. Brook/Full W	3091.9	4048.0	2946.1	3847.4	248.	216.	AG	980.	9.8	1.0	54.0		

PAGE 2

JOB: LANDMARKCENTER RUN: 2013_EX_CO_3

DATE : 7/11/13
TIME : 7:41:19

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE
1. Brook/Full EB L	100	33	3.0	90	1600	54.39	1	3
2. Brook/Full EB TR	100	33	3.0	350	1600	54.39	1	3
3. Brook/Full NB LTR	100	33	3.0	170	1600	54.39	1	3
4. Brook/Full WB LTR	100	43	3.0	390	1600	54.39	1	3
5. Brook/Full SB LT	100	67	3.0	125	1600	54.39	1	3
6. Brook/Full SB R	100	57	3.0	135	1600	54.39	1	3

RECEPTOR LOCATIONS

RECEPTOR	X (FT)	Y (FT)	Z (FT)
1. Brook/Full NE1	2962.2	4181.2	6.0
2. Brook/Full NE2	3023.7	4138.3	6.0
3. Brook/Full NE3	3085.3	4095.4	6.0
4. Brook/Full NE4	3133.3	4153.0	6.0
5. Brook/Full NE5	3188.7	4204.0	6.0
6. Brook/Full SE1	3235.0	4159.5	6.0
7. Brook/Full SE2	3187.0	4101.9	6.0
8. Brook/Full SE3	3130.3	4049.5	6.0
9. Brook/Full SE4	3203.3	4005.7	6.0
10. Brook/Full SE5	3267.6	3967.2	6.0
11. Brook/Full SW1	3228.3	3918.5	6.0
12. Brook/Full SW2	3163.9	3957.1	6.0
13. Brook/Full SW3	3099.6	3995.6	6.0
14. Brook/Full SW4	3055.5	3934.9	6.0
15. Brook/Full SW5	3011.4	3874.3	6.0
16. Brook/Full NW1	2950.5	3916.4	6.0
17. Brook/Full NW2	2994.6	3977.0	6.0
18. Brook/Full NW3	3038.7	4037.7	6.0
19. Brook/Full NW4	2977.2	4080.6	6.0
20. Brook/Full NW5	2915.6	4123.5	6.0

PAGE 3

JOB: LANDMARKCENTER RUN: 2013_EX_CO_3

MODEL RESULTS

REMARKS : In search of the angle corresponding to
the maximum concentration, only the first

angle, of the angles with same maximum
concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-360.

WIND ANGLE (DEGR) * CONCENTRATION (PPM)

WIND ANGLE (DEGR)	REC1	REC2	REC3	REC4	REC5	REC6	REC7	REC8	REC9	REC10	REC11	REC12	REC13	REC14	REC15	REC16	REC17	REC18	REC19	REC20
0.	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.4	0.1	0.0	0.1	0.2	0.3	0.4	0.3	0.0	0.1	0.4	0.1	0.0
10.	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.4	0.1	0.0	0.0	0.2	0.5	0.5	0.3	0.0	0.1	0.5	0.1	0.0
20.	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.5	0.0	0.0	0.0	0.2	0.5	0.4	0.4	0.0	0.1	0.5	0.1	0.1
30.	0.0	0.0	0.1	0.0	0.1	0.1	0.2	0.4	0.0	0.0	0.0	0.1	0.3	0.3	0.3	0.1	0.3	0.6	0.1	0.1
40.	0.0	0.0	0.2	0.1	0.1	0.0	0.1	0.3	0.0	0.0	0.0	0.1	0.2	0.2	0.2	0.3	0.2	0.6	0.1	0.1
50.	0.0	0.0	0.3	0.2	0.2	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.4	0.3	0.8	0.1	0.1
60.	0.0	0.0	0.5	0.2	0.2	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.3	0.4	0.8	0.2	0.1
70.	0.0	0.1	0.5	0.3	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.3	0.3	0.7	0.2	0.1
80.	0.0	0.1	0.5	0.3	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.3	0.4	0.5	0.2	0.2
90.	0.1	0.2	0.3	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.3	0.4	0.5	0.3	0.2
100.	0.1	0.2	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.3	0.3	0.3	0.4	0.2
110.	0.1	0.2	0.2	0.3	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.3	0.2	0.3	0.4	0.1
120.	0.1	0.1	0.2	0.3	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.2
130.	0.2	0.2	0.2	0.4	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.1	0.1
140.	0.2	0.3	0.2	0.4	0.2	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.4	0.1	0.1
150.	0.2	0.3	0.3	0.5	0.2	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.4	0.1	0.1
160.	0.2	0.3	0.4	0.5	0.2	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.4	0.1	0.1
170.	0.2	0.4	0.3	0.5	0.3	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.3	0.1	0.1
180.	0.2	0.2	0.4	0.4	0.3	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.3	0.1	0.0
190.	0.1	0.2	0.5	0.5	0.3	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.3	0.1	0.0
200.	0.1	0.2	0.6	0.4	0.5	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.3	0.0	0.0
210.	0.1	0.1	0.6	0.3	0.5	0.0	0.1	0.3	0.1	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.2	0.2	0.0	0.0
220.	0.1	0.1	0.5	0.3	0.5	0.2	0.2	0.5	0.1	0.0	0.0	0.0	0.2	0.2	0.1	0.0	0.1	0.1	0.0	0.0
230.	0.1	0.1	0.4	0.2	0.1	0.3	0.3	0.5	0.1	0.0	0.0	0.0	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0
240.	0.1	0.1	0.3	0.1	0.1	0.5	0.3	0.4	0.2	0.0	0.0	0.1	0.4	0.3	0.2	0.0	0.0	0.0	0.0	0.0
250.	0.0	0.1	0.2	0.1	0.0	0.4	0.3	0.4	0.2	0.1	0.0	0.1	0.4	0.3	0.2	0.0	0.0	0.0	0.0	0.0
260.	0.0	0.1	0.1	0.1	0.0	0.4	0.4	0.5	0.2	0.1	0.1	0.1	0.4	0.3	0.2	0.0	0.0	0.0	0.0	0.0
270.	0.0	0.1	0.1	0.0	0.0	0.2	0.4	0.6	0.2	0.1	0.1	0.1	0.4	0.3	0.3	0.0	0.0	0.0	0.0	0.0
280.	0.0	0.1	0.1	0.0	0.0	0.2	0.4	0.5	0.2	0.1	0.1	0.1	0.4	0.3	0.2	0.0	0.0	0.0	0.0	0.0
290.	0.0	0.1	0.1	0.0	0.0	0.2	0.4	0.4	0.4	0.1	0.1	0.1	0.4	0.2	0.2	0.0	0.0	0.0	0.0	0.0
300.	0.0	0.1	0.1	0.0	0.0	0.2	0.4	0.3	0.2	0.1	0.1	0.1	0.4	0.3	0.3	0.0	0.0	0.0	0.0	0.0
310.	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.4	0.1	0.1	0.1	0.3	0.6	0.3	0.3	0.0	0.0	0.1	0.0	0.0
320.	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.2	0.1	0.1	0.1	0.4	0.6	0.3	0.3	0.0	0.0	0.1	0.1	0.0
330.	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.2	0.2	0.1	0.1	0.2	0.4	0.3	0.3	0.0	0.0	0.2	0.1	0.0
340.	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.3	0.2	0.1	0.1	0.2	0.4	0.5	0.3	0.0	0.0	0.3	0.1	0.0
350.	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.4	0.1	0.1	0.1	0.2	0.4	0.5	0.3	0.0	0.0	0.4	0.1	0.0
360.	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.4	0.1	0.0	0.1	0.2	0.3	0.4	0.3	0.0	0.1	0.4	0.1	0.0
MAX	0.2	0.4	0.6	0.5	0.5	0.5	0.4	0.6	0.4	0.1	0.1	0.4	0.6	0.5	0.4	0.4	0.4	0.8	0.4	0.2

```
 DEGR. *  130   170   200   150   200   240   260   270   290   250     0   320   310    10    20    50    60    50
100    80

 THE HIGHEST CONCENTRATION OF    0.80 PPM OCCURRED AT RECEPTOR REC18.
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2018 No-Build
Microscale Output Files
(Carbon Monoxide (CO))

♀ CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 95221 PAGE 1

JOB: Landmark Center RUN: 2018NB

DATE : 7/ 9/13
TIME : 11:31:27

The MODE flag has been set to C for calculating CO averages.

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S   VD = 0.0 CM/S   Z0 = 175. CM
U = 1.0 M/S   CLAS = 4 (D)   ATIM = 60. MINUTES   MIXH = 1000. M   AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	X1	Y1	X2	Y2	LENGTH (FT)	BRG (DEG)	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)	V/C	QUEUE (VEH)
1. Fen/Brook WB TT	2508.3	3314.8	2586.4	3416.7	128.	37.	AG	139.	100.0	1.0	20.0	0.66	6.5
2. Fen/Brook EB TTTR	2469.9	3221.1	2415.3	3145.8	93.	216.	AG	208.	100.0	1.0	30.0	0.48	4.7
3. Fen/Brook SB L	2487.6	3319.0	2362.9	3437.3	172.	313.	AG	59.	100.0	1.0	10.0	0.83	8.7
4. Fen/Brook SB LTT	2476.2	3307.2	2397.4	3380.1	107.	313.	AG	118.	100.0	1.0	20.0	0.54	5.5
5. Fen/Brook SB R	2463.2	3293.4	2440.4	3315.4	32.	314.	AG	59.	100.0	1.0	10.0	0.16	1.6
6. Park/Brook WB TTR	2701.3	3561.7	2742.4	3616.0	68.	37.	AG	262.	100.0	1.0	30.0	0.42	3.5
7. Park/Brook NWB LLRRR	2745.9	3510.4	3745.0	3896.3	1071.	69.	AG	289.	100.0	1.0	30.0	1.25	54.4
8. Park/Brook NB LTTTR	2715.4	3403.8	2770.2	3333.9	89.	142.	AG	350.	100.0	1.0	40.0	0.55	4.5
9. Park/Brook EB L	2628.6	3435.0	2599.8	3397.7	47.	218.	AG	109.	100.0	1.0	10.0	0.61	2.4
10. Park/Brook EB T	2637.5	3428.1	2557.6	3326.0	130.	218.	AG	73.	100.0	1.0	10.0	0.68	6.6
11. Park/Brook EB RR	2648.5	3416.9	2594.3	3345.2	90.	217.	AG	82.	100.0	1.0	20.0	0.51	4.6
12. River/Park SB	2213.3	3801.8	3580.3	6597.8	3112.	26.	AG	100.	100.0	1.0	10.0	2.01	158.1
13. River/Park SB East	2256.2	3801.2	2279.3	3925.6	127.	11.	AG	200.	100.0	1.0	20.0	0.87	6.4
14. River/Park WB North	2272.8	3765.2	2366.7	3765.6	94.	90.	AG	227.	100.0	1.0	30.0	0.51	4.8
15. River/Park WB South	2270.5	3707.9	2327.4	3732.3	62.	67.	AG	152.	100.0	1.0	20.0	0.33	3.1
16. River/Park NEB	2169.9	3720.6	2157.8	3709.0	17.	226.	AG	188.	100.0	1.0	20.0	0.12	0.9
17. Beacon/Park SB LTT	1962.9	4712.6	1931.1	4812.3	105.	342.	AG	143.	100.0	1.0	20.0	0.49	5.3
18. Beacon/Park WB LTT	2055.3	4691.7	2201.8	4745.7	156.	70.	AG	131.	100.0	1.0	20.0	0.72	7.9
19. Beacon/Park NB LTT	2041.7	4597.4	3065.8	1613.7	3155.	161.	AG	241.	100.0	1.0	20.0	****	160.3
20. Beacon/Park EB LTTT	1966.3	4608.1	1913.8	4584.5	58.	246.	AG	238.	100.0	1.0	30.0	0.29	2.9
21. Beacon/Park EB R	1975.6	4560.5	1953.5	4563.9	22.	279.	AG	143.	100.0	1.0	20.0	0.10	1.1
22. Beacon/Park SB R	1917.2	4688.3	1919.9	4692.5	5.	32.	AG	71.	100.0	1.0	10.0	0.02	0.3
23. Beacon/Park WB R	2019.8	4741.2	2031.4	4737.2	12.	109.	AG	79.	100.0	1.0	10.0	0.06	0.6
24. Beacon/Park NB R	2095.2	4627.5	2086.9	4605.4	24.	201.	AG	71.	100.0	1.0	10.0	0.11	1.2
25. Boyl/Kil SB LTR	3322.0	3753.8	3307.4	3798.9	47.	342.	AG	182.	100.0	1.0	20.0	0.32	2.4
26. Boyl/Kil WB LTTR	3373.3	3738.7	3451.2	3770.2	84.	68.	AG	75.	100.0	1.0	20.0	0.50	4.3
27. Boyl/Kil NB LTR	3365.2	3677.7	3376.9	3648.1	32.	158.	AG	91.	100.0	1.0	10.0	0.21	1.6
28. Boyl/Kil EB LTTR	3320.4	3695.3	3225.5	3660.7	101.	250.	AG	75.	100.0	1.0	20.0	0.60	5.1
29. Fenway/Brook South	2496.9	3278.9	2636.6	3081.1	242.	145.	AG	916.	8.8	1.0	54.0		
30. Fenway/Brook West	2481.8	3262.9	2347.3	3075.6	231.	216.	AG	1881.	8.8	1.0	78.0		
31. Fenway/Brook North	2491.0	3288.6	2373.1	3398.7	161.	313.	AG	1628.	8.8	1.0	66.0		
32. Fenway/Brook East	2497.8	3264.6	2608.7	3389.7	167.	42.	AG	2403.	8.8	1.0	90.0		
33. Park/Brook South	2691.9	3447.3	2838.3	3241.2	253.	145.	AG	958.	8.8	1.0	66.0		
34. Park/Brook West	2672.2	3490.7	2502.8	3273.8	275.	218.	AG	2413.	8.8	1.0	90.0		
35. Park/Brook North	2656.7	3489.7	2496.1	3644.1	223.	314.	AG	1794.	8.8	1.0	66.0		
36. Park/Brook East	2663.3	3490.8	2801.7	3675.1	230.	37.	AG	1249.	8.8	1.0	66.0		
37. Park/Brook SE	2681.0	3470.4	2968.4	3574.9	306.	70.	AG	2358.	8.8	1.0	78.0		
38. River/Park N	2254.7	3768.2	2266.4	3911.9	144.	5.	AG	473.	8.8	1.0	42.0		
39. River/Park SE	2239.1	3675.4	2343.7	3750.1	129.	54.	AG	428.	8.8	1.0	42.0		
40. River/Park NE	2237.1	3772.1	2377.4	3769.2	140.	91.	AG	872.	8.8	1.0	54.0		

LINK DESCRIPTION	X1	Y1	X2	Y2	LENGTH (FT)	BRG (DEG)	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)
41. River/Park S	2231.1	3745.1	2210.1	3564.3	182.	187.	AG	901.	8.8	1.0	54.0
42. River/Park SW	2211.1	3765.1	2058.1	3624.4	208.	227.	AG	1420.	8.8	1.0	54.0
43. River/Park NW	2194.0	3770.2	2250.7	3886.0	129.	26.	AG	548.	8.8	1.0	30.0
44. Beacon/Park N	1996.0	4667.5	1894.2	4948.4	299.	340.	AG	1153.	8.8	1.0	78.0

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JOB: Landmark Center RUN: 2018NB

DATE : 7/ 9/13
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LINK VARIABLES

LINK DESCRIPTION	X1	Y1	X2	Y2	LENGTH (FT)	BRG (DEG)	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)	V/C	QUEUE (VEH)
45. Beacon/Park NR	1908.0	4673.8	1956.1	4744.7	86.	34.	AG	15.	8.8	1.0	30.0		
46. Beacon/Park E	1997.8	4657.7	2274.4	4755.8	293.	70.	AG	1621.	8.8	1.0	78.0		
47. Beacon/Park ER	1991.4	4750.8	2112.1	4710.6	127.	108.	AG	33.	8.8	1.0	30.0		
48. Beacon/Park S	2009.1	4646.4	2098.7	4401.0	261.	160.	AG	1732.	8.8	1.0	78.0		
49. Beacon/Park SR	2102.5	4662.0	2076.2	4571.2	95.	196.	AG	71.	8.8	1.0	42.0		
50. Beacon/Park W EB	1995.6	4607.6	1704.2	4488.4	315.	248.	AG	600.	8.8	1.0	66.0		
51. Beacon/Park W EBR	2009.1	4551.2	1907.4	4575.2	104.	283.	AG	134.	8.8	1.0	38.0		
52. Beacon/Park W WB	1989.3	4675.4	1658.3	4556.1	352.	250.	AG	843.	8.8	1.0	78.0		
53. Boyl/Kil N	3344.5	3717.0	3289.1	3876.3	169.	341.	AG	320.	8.8	1.0	54.0		
54. Boyl/Kil E	3348.9	3715.0	3516.2	3780.7	180.	69.	AG	2366.	8.8	1.0	78.0		
55. Boyl/Kil S	3349.9	3702.1	3425.5	3502.1	214.	159.	AG	242.	8.8	1.0	54.0		
56. Boyl/Kil W	3346.0	3717.8	3141.9	3641.3	218.	249.	AG	2392.	8.8	1.0	78.0		

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JOB: Landmark Center RUN: 2018NB

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ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE
1. Fen/Brook WB TT	100	54	3.0	870	1600	47.91	1	3
2. Fen/Brook EB TTTR	100	54	3.0	947	1600	47.91	1	3
3. Fen/Brook SB L	100	46	3.0	648	1600	47.91	1	3
4. Fen/Brook SB LTT	100	46	3.0	854	1600	47.91	1	3
5. Fen/Brook SB R	100	46	3.0	126	1600	47.91	1	3
6. Park/Brook WB TTR	100	68	3.0	550	1600	47.91	1	3
7. Park/Brook NWB LLRRR	100	75	3.0	1203	1600	47.91	1	3
8. Park/Brook NB LTTTR	100	68	3.0	958	1600	47.91	1	3
9. Park/Brook EB L	100	85	3.0	98	1600	47.91	1	3
10. Park/Brook EB T	100	57	3.0	416	1600	47.91	1	3
11. Park/Brook EB RR	100	32	3.0	1029	1600	47.91	1	3
12. River/Park SB	100	78	3.0	548	1600	47.91	1	3
13. River/Park SB East	100	78	3.0	473	1600	47.91	1	3
14. River/Park WB North	100	59	3.0	875	1600	47.91	1	3
15. River/Park WB South	100	59	3.0	385	1600	47.91	1	3
16. River/Park NEB	100	73	3.0	84	1600	47.91	1	3
17. Beacon/Park SB LTT	110	61	3.0	629	1600	47.91	1	3
18. Beacon/Park WB LTT	110	56	3.0	1020	1600	47.91	1	3
19. Beacon/Park NB LTT	110	103	3.0	609	1600	47.91	1	3
20. Beacon/Park EB LTTT	110	68	3.0	466	1600	47.91	1	3
21. Beacon/Park EB R	110	61	3.0	134	1600	47.91	1	3
22. Beacon/Park SB R	110	61	3.0	15	1600	47.91	1	3
23. Beacon/Park WB R	110	68	3.0	33	1600	47.91	1	3
24. Beacon/Park NB R	110	61	3.0	71	1600	47.91	1	3
25. Boyl/Kil SB LTR	100	71	3.0	244	1600	47.91	1	3
26. Boyl/Kil WB LTTR	100	29	3.0	1060	1600	47.91	1	3
27. Boyl/Kil NB LTR	100	71	3.0	82	1600	47.91	1	3
28. Boyl/Kil EB LTTR	100	29	3.0	1274	1600	47.91	1	3

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. Fen/Brook NE1	2376.5	3444.0	6.0
2. Fen/Brook NE2	2429.7	3391.0	6.0
3. Fen/Brook NE3	2484.5	3339.8	6.0
4. Fen/Brook NE4	2530.7	3398.9	6.0
5. Fen/Brook NE5	2576.8	3458.0	6.0
6. Fen/Brook SE1	2660.2	3364.9	6.0
7. Fen/Brook SE2	2609.6	3308.8	6.0
8. Fen/Brook SE3	2560.7	3252.7	6.0
9. Fen/Brook SE4	2604.0	3191.4	6.0
10. Fen/Brook SE5	2647.3	3130.2	6.0
11. Fen/Brook SW1	2588.7	3084.8	6.0
12. Fen/Brook SW2	2545.5	3146.0	6.0
13. Fen/Brook SW3	2502.2	3207.3	6.0
14. Fen/Brook SW4	2458.5	3146.4	6.0

RECEPTOR	*	X	Y	Z	*
15. Fen/Brook SW5	*	2414.7	3085.4	6.0	*
16. Fen/Brook NW1	*	2353.5	3168.3	6.0	*
17. Fen/Brook NW2	*	2397.3	3229.2	6.0	*

JOB: Landmark Center   RUN: 2018NB

DATE : 7/ 9/13
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RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (FT) X	Y	Z	*
18. Fen/Brook NW3	*	2441.0	3290.1	6.0	*
19. Fen/Brook NW4	*	2386.2	3341.3	6.0	*
20. Fen/Brook NW5	*	2331.4	3392.5	6.0	*
21. Park/Brook NE1	*	2546.7	3655.1	6.0	*
22. Park/Brook NE2	*	2600.8	3603.1	6.0	*
23. Park/Brook NE3	*	2654.8	3551.1	6.0	*
24. Park/Brook NE4	*	2699.9	3611.1	6.0	*
25. Park/Brook NE5	*	2744.9	3671.1	6.0	*
26. Park/Brook SE1	*	2889.0	3493.9	6.0	*
27. Park/Brook SE2	*	2818.1	3468.1	6.0	*
28. Park/Brook SE3	*	2747.7	3442.5	6.0	*
29. Park/Brook SE4	*	2791.4	3381.5	6.0	*
30. Park/Brook SE5	*	2834.8	3320.3	6.0	*
31. Park/Brook SW1	*	2758.8	3278.8	6.0	*
32. Park/Brook SW2	*	2715.4	3340.0	6.0	*
33. Park/Brook SW3	*	2672.0	3401.1	6.0	*
34. Park/Brook SW4	*	2625.8	3342.0	6.0	*
35. Park/Brook SW5	*	2579.6	3282.9	6.0	*
36. Park/Brook NW1	*	2506.3	3367.7	6.0	*
37. Park/Brook NW2	*	2552.4	3426.8	6.0	*
38. Park/Brook NW3	*	2598.6	3485.9	6.0	*
39. Park/Brook NW4	*	2544.6	3537.9	6.0	*
40. Park/Brook NW5	*	2490.5	3589.9	6.0	*
41. Park/Brook E1	*	2853.5	3672.4	6.0	*
42. Park/Brook E2	*	2811.9	3617.1	6.0	*
43. Park/Brook E3	*	2763.4	3552.5	6.0	*
44. Park/Brook E4	*	2838.4	3579.8	6.0	*
45. Park/Brook E5	*	2904.4	3603.8	6.0	*

JOB: Landmark Center   RUN: 2018NB

MODEL RESULTS

REMARKS : In search of the angle corresponding to
the maximum concentration, only the first
angle, of the angles with same maximum
concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-360.

WIND * CONCENTRATION
ANGLE * (PPM)

(DEGR)	*	REC1	REC2	REC3	REC4	REC5	REC6	REC7	REC8	REC9	REC10	REC11	REC12	REC13	REC14	REC15	REC16	REC17	REC18	REC19	REC20
0.	*	0.6	1.0	0.6	0.2	0.3	0.8	1.4	1.6	0.6	0.4	0.9	2.1	2.6	1.6	1.2	0.3	0.6	1.6	1.1	0.5
10.	*	0.6	1.0	0.3	0.2	0.3	0.9	1.4	1.4	0.6	0.5	0.7	1.4	2.5	1.8	1.4	0.4	0.6	1.4	1.1	0.4
20.	*	0.4	0.8	0.3	0.2	0.3	0.9	1.1	1.6	0.5	0.4	0.6	1.1	2.5	1.8	1.5	0.5	0.7	1.4	1.0	0.4
30.	*	0.5	0.8	0.3	0.4	0.6	0.9	1.2	1.2	0.6	0.5	0.6	0.9	2.5	1.6	1.5	0.8	1.0	1.5	1.1	0.3
40.	*	0.5	0.7	0.9	0.7	0.6	0.9	0.9	1.0	0.6	0.5	0.7	0.9	2.2	1.2	1.1	1.2	1.7	2.2	1.1	0.3
50.	*	0.5	0.9	1.4	1.0	1.0	1.1	0.8	1.0	0.5	0.3	0.4	0.8	1.8	1.0	1.0	1.7	1.8	2.6	1.5	0.4
60.	*	0.7	1.2	1.9	1.5	1.3	1.3	0.9	0.6	0.3	0.1	0.3	0.5	1.6	0.7	0.4	1.8	1.7	2.8	1.7	0.8
70.	*	1.0	1.5	2.2	1.7	1.6	1.0	0.5	0.3	0.1	0.0	0.2	0.3	1.3	0.5	0.3	1.5	1.3	2.6	1.8	1.0
80.	*	1.1	1.5	2.0	1.9	1.5	0.9	0.3	0.2	0.0	0.0	0.2	0.3	0.9	0.4	0.3	1.1	1.2	2.2	1.9	1.1
90.	*	0.9	1.6	1.7	1.8	0.9	0.8	0.2	0.0	0.0	0.0	0.1	0.3	1.0	0.4	0.2	1.0	1.0	1.8	2.1	1.4
100.	*	1.1	1.5	1.5	1.6	0.8	0.7	0.1	0.0	0.0	0.0	0.1	0.4	1.1	0.4	0.2	0.9	1.0	1.6	1.7	1.4
110.	*	1.0	1.6	1.4	1.6	1.0	0.5	0.1	0.0	0.0	0.0	0.1	0.4	1.1	0.4	0.2	0.8	1.1	1.4	1.5	1.5
120.	*	1.0	1.5	1.4	1.6	1.0	0.3	0.0	0.0	0.0	0.0	0.1	0.5	1.2	0.4	0.2	0.7	1.1	1.4	1.3	1.3
130.	*	1.4	2.0	1.6	1.5	1.1	0.1	0.0	0.0	0.0	0.0	0.0	0.7	1.2	0.4	0.3	0.6	1.0	1.3	1.1	1.1

(DEGR)	*	REC1	REC2	REC3	REC4	REC5	REC6	REC7	REC8	REC9	REC10	REC11	REC12	REC13	REC14	REC15	REC16	REC17	REC18	REC19	REC20
140.	*	1.4	2.0	1.8	1.4	1.1	0.0	0.0	0.1	0.1	0.0	0.1	1.0	1.4	0.4	0.3	0.6	1.0	1.2	1.0	0.8
150.	*	1.7	2.3	2.2	1.5	1.1	0.0	0.0	0.3	0.2	0.1	0.3	1.6	1.4	0.4	0.3	0.6	1.0	1.2	0.8	0.7
160.	*	1.3	2.3	2.9	1.7	1.3	0.1	0.2	0.7	0.5	0.2	0.7	2.1	1.1	0.3	0.2	0.5	0.9	1.1	0.7	0.5
170.	*	1.1	1.7	3.0	1.8	1.8	0.2	0.4	0.8	0.6	0.4	0.9	2.1	0.6	0.1	0.0	0.4	0.8	1.0	0.4	0.2
180.	*	0.6	1.4	2.9	1.9	1.8	0.2	0.4	0.8	0.6	0.5	0.9	1.8	0.2	0.0	0.0	0.3	0.6	0.8	0.3	0.1
190.	*	0.5	1.2	2.8	1.9	1.8	0.3	0.4	0.8	0.6	0.4	0.8	1.4	0.0	0.0	0.0	0.3	0.5	0.7	0.1	0.0
200.	*	0.3	1.0	2.7	1.7	1.7	0.3	0.4	0.6	0.6	0.5	0.7	1.1	0.1	0.0	0.0	0.2	0.4	0.6	0.1	0.0
210.	*	0.2	0.9	2.4	1.5	1.4	0.4	0.5	0.7	0.5	0.5	0.7	0.9	0.2	0.1	0.0	0.2	0.3	0.4	0.0	0.0
220.	*	0.1	0.9	2.0	0.9	0.9	0.8	0.7	0.8	0.5	0.5	0.6	0.8	0.5	0.2	0.1	0.1	0.1	0.2	0.0	0.0
230.	*	0.1	0.8	1.9	0.9	0.5	1.3	1.1	1.2	0.5	0.5	0.6	0.8	0.7	0.3	0.1	0.0	0.0	0.1	0.0	0.0
240.	*	0.1	0.8	1.7	0.7	0.4	1.4	1.3	1.2	0.6	0.5	0.6	0.8	0.9	0.4	0.2	0.0	0.0	0.0	0.0	0.0
250.	*	0.1	0.7	1.8	0.7	0.3	1.7	1.4	1.3	0.8	0.5	0.6	0.8	1.0	0.5	0.2	0.0	0.0	0.0	0.0	0.0
260.	*	0.0	0.7	1.7	0.7	0.3	1.7	1.3	1.3	0.8	0.6	0.7	1.0	1.0	0.7	0.3	0.0	0.0	0.0	0.0	0.0
270.	*	0.0	0.7	1.8	0.5	0.2	1.8	1.6	1.1	0.9	0.7	0.7	1.1	0.8	0.7	0.3	0.0	0.0	0.0	0.0	0.0
280.	*	0.0	0.5	1.9	0.4	0.2	1.6	1.6	1.4	0.8	0.9	0.7	1.2	0.8	0.8	0.4	0.0	0.0	0.1	0.0	0.0
290.	*	0.0	0.5	1.9	0.3	0.2	1.3	1.6	1.7	1.0	0.8	0.9	1.3	0.7	0.8	0.4	0.0	0.0	0.1	0.0	0.0
300.	*	0.0	0.4	1.9	0.4	0.2	1.4	1.7	1.8	1.0	0.9	1.0	1.4	0.6	0.9	0.4	0.0	0.0	0.1	0.1	0.0
310.	*	0.1	0.3	2.0	0.4	0.3	1.3	1.6	2.1	1.4	1.0	1.1	1.8	0.6	0.9	0.4	0.0	0.0	0.3	0.2	0.0
320.	*	0.2	0.3	1.8	0.4	0.4	1.0	1.6	2.1	1.3	1.0	1.2	2.1	0.9	0.9	0.4	0.0	0.0	0.5	0.2	0.1
330.	*	0.2	0.4	1.8	0.4	0.3	1.1	1.7	1.7	1.3	1.1	1.5	2.6	1.4	1.1	0.4	0.0	0.0	0.7	0.4	0.2
340.	*	0.3	0.7	1.7	0.3	0.3	0.9	1.6	1.6	1.0	0.8	1.3	2.8	1.9	1.2	0.6	0.1	0.3	1.2	0.5	0.2
350.	*	0.6	0.9	1.0	0.2	0.3	0.8	1.3	1.5	0.9	0.5	1.3	2.5	2.5	1.6	1.0	0.2	0.4	1.5	0.8	0.3
360.	*	0.6	1.0	0.6	0.2	0.3	0.8	1.4	1.6	0.6	0.4	0.9	2.1	2.6	1.6	1.2	0.3	0.6	1.6	1.1	0.5
MAX	*	1.7	2.3	3.0	1.9	1.8	1.8	1.7	2.1	1.4	1.1	1.5	2.8	2.6	1.8	1.5	1.8	1.8	2.8	2.1	1.5
DEGR.	*	150	150	170	80	170	270	300	310	310	330	330	340	0	20	20	60	50	60	90	110

JOB: Landmark Center   RUN: 2018NB

MODEL RESULTS

REMARKS : In search of the angle corresponding to
the maximum concentration, only the first
angle, of the angles with same maximum
concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-360.

WIND * CONCENTRATION
ANGLE * (PPM)

(DEGR)	*	REC21	REC22	REC23	REC24	REC25	REC26	REC27	REC28	REC29	REC30	REC31	REC32	REC33	REC34	REC35	REC36	REC37	REC38	REC39	REC40
0.	*	0.1	0.0	0.0	0.0	0.0	1.0	1.1	1.1	0.7	0.4	1.4	1.4	1.0	1.4	1.4	0.1	0.2	0.5	0.5	0.3
10.	*	0.1	0.0	0.0	0.0	0.0	1.0	1.0	1.1	0.6	0.4	1.2	1.5	1.0	1.4	1.5	0.1	0.2	0.4	0.4	0.4
20.	*	0.0	0.0	0.0	0.0	0.0	1.0	1.1	1.2	0.6	0.4	0.9	1.6	1.0	1.2	1.5	0.2	0.2	0.4	0.4	0.3
30.	*	0.0	0.0	0.2	0.1	0.0	1.0	1.1	1.1	0.6	0.4	0.7	1.6	1.1	1.2	1.3	0.2	0.4	0.6	0.4	0.4
40.	*	0.0	0.0	0.4	0.1	0.0	1.1	1.2	1.3	0.6	0.4	0.6	1.5	1.3	1.2	1.3	0.9	0.6	0.8	0.4	0.4
50.	*	0.0	0.0	0.7	0.2	0.1	1.1	1.3	1.4	0.6	0.3	0.5	1.7	1.2	1.1	1.0	1.3	1.0	1.1	0.4	0.4
60.	*	0.0	0.1	0.9	0.5	0.1	1.0	1.2	1.3	0.4	0.2	0.3	1.5	1.3	1.0	0.8	1.6	1.4	1.5	0.7	0.4
70.	*	0.1	0.4	1.3	0.8	0.2	0.7	0.7	0.8	0.1	0.0	0.2	1.1	1.0	0.8	0.4	2.0	1.5	1.7	1.0	0.5
80.	*	0.2	0.6	1.5	1.2	0.6	0.3	0.2	0.2	0.0	0.0	0.2	0.9	0.8	0.5	0.2	1.9	1.3	1.8		

```
1.4   1.0
  90.  *   0.5   0.9   1.4   1.4   0.6   0.0   0.0   0.0   0.0   0.0   0.2   0.8   0.7   0.4   0.1   1.8   1.1   1.4
1.3   1.1
 100.  *   0.6   0.9   1.2   1.5   0.7   0.0   0.0   0.0   0.0   0.0   0.2   0.8   1.0   0.3   0.0   1.7   1.3   1.1
1.2   1.1
 110.  *   0.6   1.0   1.0   1.6   0.7   0.0   0.0   0.0   0.0   0.0   0.2   0.6   1.1   0.2   0.0   1.6   1.4   1.0
1.0   1.0
 120.  *   0.7   0.8   0.9   1.7   0.8   0.0   0.0   0.0   0.0   0.0   0.2   0.4   1.0   0.1   0.0   1.4   1.4   1.0
0.8   0.8
 130.  *   0.7   0.6   0.8   1.6   0.8   0.0   0.0   0.0   0.0   0.0   0.1   0.3   0.8   0.0   0.0   1.3   1.4   0.9
0.8   0.8
 140.  *   0.8   0.8   0.9   1.6   0.8   0.0   0.0   0.1   0.1   0.0   0.1   0.1   0.5   0.0   0.0   1.3   1.4   0.8
0.6   0.5
 150.  *   1.0   1.0   1.1   1.5   0.8   0.0   0.0   0.4   0.1   0.1   0.0   0.1   0.2   0.0   0.1   1.6   1.5   0.9
0.5   0.4
 160.  *   1.0   1.0   1.2   1.5   0.9   0.0   0.0   0.6   0.2   0.1   0.0   0.1   0.1   0.1   0.3   1.9   1.6   1.0
0.7   0.6
 170.  *   1.0   1.1   1.1   1.7   1.2   0.0   0.2   0.9   0.3   0.2   0.1   0.1   0.2   0.3   0.5   2.0   1.9   1.3
0.9   0.9
 180.  *   1.2   1.2   1.2   1.4   1.2   0.1   0.2   1.2   0.5   0.3   0.2   0.2   0.2   0.5   0.6   2.1   1.9   1.7
1.0   0.8
 190.  *   1.0   1.2   1.3   1.4   1.5   0.1   0.3   1.2   0.7   0.3   0.2   0.2   0.2   0.5   0.6   1.9   1.8   1.5
1.0   0.7
 200.  *   0.8   1.2   1.7   1.1   1.3   0.2   0.4   1.1   0.6   0.3   0.2   0.2   0.5   0.4   0.5   1.7   1.9   1.4
0.7   0.5
 210.  *   0.7   1.0   1.6   1.1   1.2   0.3   0.5   0.8   0.8   0.3   0.2   0.3   0.7   0.7   0.7   1.8   1.3   1.4
0.5   0.4
 220.  *   0.6   0.7   1.3   1.0   0.7   0.4   0.5   1.0   1.0   0.3   0.2   0.3   1.2   1.1   1.1   1.4   1.1   0.9
0.3   0.3
 230.  *   0.6   0.6   0.7   0.5   0.4   0.7   0.8   1.0   1.2   0.3   0.2   0.4   1.4   1.5   1.4   1.2   0.8   0.5
0.3   0.3
 240.  *   0.6   0.6   0.6   0.3   0.3   0.9   1.0   1.4   1.4   0.5   0.3   0.7   1.8   1.8   1.4   1.1   0.6   0.3
0.2   0.3
 250.  *   0.5   0.6   0.5   0.3   0.2   0.9   1.1   1.4   1.6   0.5   0.4   0.7   1.7   1.7   1.4   1.1   0.5   0.3
0.2   0.3
 260.  *   0.4   0.6   0.5   0.3   0.2   1.0   1.0   1.1   1.7   0.7   0.6   1.0   1.7   2.0   1.4   1.1   0.4   0.2
0.2   0.3
 270.  *   0.5   0.7   0.6   0.3   0.2   1.2   0.9   0.9   1.6   1.0   0.6   1.0   1.6   2.0   1.5   1.0   0.4   0.2
0.2   0.3
 280.  *   0.4   0.6   0.7   0.2   0.1   1.3   1.1   1.0   1.3   1.3   0.7   1.2   1.3   1.9   1.5   0.9   0.3   0.2
0.2   0.4
 290.  *   0.4   0.6   0.7   0.2   0.1   1.4   1.2   1.0   1.0   1.2   0.8   1.0   1.1   1.8   1.7   0.7   0.3   0.2
0.3   0.4
 300.  *   0.5   0.6   0.6   0.1   0.1   1.5   1.3   1.2   0.9   1.2   0.7   0.9   1.0   1.7   1.8   0.6   0.3   0.3
0.3   0.4
 310.  *   0.4   0.5   0.5   0.1   0.1   1.3   1.3   1.2   1.0   1.0   0.5   0.7   1.0   1.9   1.9   0.6   0.3   0.4
0.5   0.4
 320.  *   0.2   0.3   0.3   0.1   0.1   1.2   1.3   1.0   0.7   0.9   0.7   0.6   0.9   1.7   1.6   0.6   0.3   0.5
0.6   0.5
 330.  *   0.2   0.1   0.1   0.1   0.0   1.1   1.3   1.0   0.8   0.9   1.0   0.8   1.0   1.6   1.6   0.7   0.3   0.7
0.5   0.5
 340.  *   0.1   0.1   0.0   0.0   0.0   1.0   1.2   0.9   0.6   0.5   1.2   1.0   0.9   1.6   1.7   0.5   0.3   0.6
0.5   0.3
 350.  *   0.0   0.0   0.0   0.0   0.0   1.0   1.1   1.0   0.7   0.5   1.4   1.2   0.8   1.5   1.6   0.3   0.3   0.5
0.5   0.3
 360.  *   0.1   0.0   0.0   0.0   0.0   1.0   1.1   1.1   0.7   0.4   1.4   1.4   1.0   1.4   1.4   0.1   0.2   0.5
0.5   0.3

------*------------------------------------------------------------------------------------------------------------
-------
 MAX   *   1.2   1.2   1.7   1.7   1.5   1.5   1.3   1.4   1.7   1.3   1.4   1.7   1.8   2.0   1.9   2.1   1.9   1.8
1.4   1.1
 DEGR. *  180   180   200   120   190   300    50    50   260   280     0    50   240   260   310   180   170    80
80    90

♀                                                                                                            PAGE  7
      JOB: Landmark Center                                               RUN: 2018NB

       MODEL RESULTS
       -------------

       REMARKS : In search of the angle corresponding to
                 the maximum concentration, only the first
                 angle, of the angles with same maximum
                 concentrations, is indicated as maximum.

 WIND ANGLE RANGE:   0.-360.

 WIND  * CONCENTRATION
 ANGLE *      (PPM)
 (DEGR)* REC41 REC42 REC43 REC44 REC45
 ------*------------------------------
   0.  *   0.0   0.1   0.4   0.0   0.0
  10.  *   0.0   0.1   0.3   0.0   0.0
  20.  *   0.0   0.1   0.3   0.0   0.0
  30.  *   0.0   0.0   0.2   0.0   0.0
  40.  *   0.0   0.0   0.1   0.0   0.0
  50.  *   0.0   0.0   0.1   0.1   0.1
  60.  *   0.0   0.1   0.5   0.6   0.5
  70.  *   0.2   0.4   1.2   1.2   1.1
  80.  *   0.5   0.7   1.6   1.5   1.5
```



```
  90.  *   0.5   0.8   1.6   1.6   1.4
 100.  *   0.5   0.7   1.5   1.5   1.3
 110.  *   0.4   0.8   1.4   1.5   1.2
 120.  *   0.5   0.8   1.4   1.4   1.2
 130.  *   0.5   0.8   1.2   1.3   1.2
 140.  *   0.5   0.8   1.2   1.2   1.3
 150.  *   0.6   0.8   1.2   1.2   1.2
 160.  *   0.6   0.8   1.3   1.2   1.2
 170.  *   0.7   0.9   1.5   1.3   1.2
 180.  *   0.7   1.1   1.5   1.3   1.4
 190.  *   0.9   1.1   1.5   1.6   1.4
 200.  *   0.9   1.2   1.5   1.8   1.7
 210.  *   1.0   1.2   1.5   1.9   1.8
 220.  *   1.0   1.2   1.5   2.1   2.1
 230.  *   1.0   1.2   1.7   1.9   2.2
 240.  *   0.8   0.9   1.3   1.5   1.7
 250.  *   0.6   0.9   1.0   1.1   1.2
 260.  *   0.5   0.8   0.9   0.9   0.6
 270.  *   0.3   0.7   0.8   0.6   0.4
 280.  *   0.2   0.6   0.9   0.6   0.4
 290.  *   0.2   0.4   0.9   0.5   0.2
 300.  *   0.1   0.4   0.9   0.4   0.2
 310.  *   0.1   0.4   0.9   0.3   0.2
 320.  *   0.1   0.4   0.8   0.3   0.1
 330.  *   0.0   0.3   0.8   0.1   0.0
 340.  *   0.0   0.2   0.6   0.1   0.0
 350.  *   0.0   0.2   0.5   0.1   0.0
 360.  *   0.0   0.1   0.4   0.0   0.0
 ------*------------------------------
 MAX   *   1.0   1.2   1.7   2.1   2.2
 DEGR. *  210   200   230   220   230

 THE HIGHEST CONCENTRATION OF    3.00 PPM OCCURRED AT RECEPTOR REC3 .
```

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 95221

JOB: Landmark Center RUN: 2018NB

DATE : 7/ 9/13
TIME : 11:31:21

The MODE flag has been set to C for calculating CO averages.

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 175. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	LINK COORDINATES (FT) X1	Y1	X2	Y2	LENGTH (FT)	BRG (DEG)	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)	V/C	QUEUE (VEH)
1. Fen/Brook WB TT	2508.3	3314.8	2586.4	3416.7	128.	37.	AG	139.	100.0	1.0	20.0	0.66	6.5
2. Fen/Brook EB TTTR	2469.9	3221.1	2415.3	3145.8	93.	216.	AG	208.	100.0	1.0	30.0	0.48	4.7
3. Fen/Brook SB L	2487.6	3319.0	2362.9	3437.3	172.	313.	AG	59.	100.0	1.0	10.0	0.83	8.7
4. Fen/Brook SB LTT	2476.2	3307.2	2397.4	3380.1	107.	313.	AG	118.	100.0	1.0	20.0	0.54	5.5
5. Fen/Brook SB R	2463.2	3293.4	2440.4	3315.4	32.	314.	AG	59.	100.0	1.0	10.0	0.16	1.6
6. Park/Brook WB TTR	2701.3	3561.7	2742.4	3616.0	68.	37.	AG	262.	100.0	1.0	30.0	0.42	3.5
7. Park/Brook NWB LLRRR	2745.9	3510.4	3745.0	3896.3	1071.	69.	AG	289.	100.0	1.0	30.0	1.25	54.4
8. Park/Brook NB LTTTR	2715.4	3403.8	2770.2	3333.9	89.	142.	AG	350.	100.0	1.0	40.0	0.55	4.5
9. Park/Brook EB L	2628.6	3435.0	2599.8	3397.7	47.	218.	AG	109.	100.0	1.0	10.0	0.61	2.4
10. Park/Brook EB T	2637.5	3428.1	2557.6	3326.0	130.	218.	AG	73.	100.0	1.0	10.0	0.68	6.6
11. Park/Brook EB RR	2648.5	3416.9	2594.3	3345.2	90.	217.	AG	82.	100.0	1.0	20.0	0.51	4.6
12. River/Park SB	2213.3	3801.8	3580.3	6597.8	3112.	26.	AG	100.	100.0	1.0	10.0	2.01	158.1
13. River/Park SB East	2256.2	3801.2	2279.3	3925.6	127.	11.	AG	200.	100.0	1.0	20.0	0.87	6.4
14. River/Park WB North	2272.8	3765.2	2366.7	3765.6	94.	90.	AG	227.	100.0	1.0	30.0	0.51	4.8
15. River/Park WB South	2270.5	3707.9	2327.4	3732.3	62.	67.	AG	152.	100.0	1.0	20.0	0.33	3.1
16. River/Park NEB	2169.9	3720.6	2157.8	3709.0	17.	226.	AG	188.	100.0	1.0	20.0	0.12	0.9
17. Beacon/Park SB LTT	1962.9	4712.6	1931.1	4812.3	105.	342.	AG	143.	100.0	1.0	20.0	0.49	5.3
18. Beacon/Park WB LTT	2055.3	4691.7	2201.8	4745.7	156.	70.	AG	131.	100.0	1.0	20.0	0.72	7.9
19. Beacon/Park NB LTT	2041.7	4597.4	3065.8	1613.7	3155.	161.	AG	241.	100.0	1.0	20.0	****	160.3
20. Beacon/Park EB LTTT	1966.3	4608.1	1913.8	4584.5	58.	246.	AG	238.	100.0	1.0	30.0	0.29	2.9
21. Beacon/Park EB R	1975.6	4560.5	1953.5	4563.9	22.	279.	AG	143.	100.0	1.0	20.0	0.10	1.1
22. Beacon/Park SB R	1917.2	4688.3	1919.9	4692.5	5.	32.	AG	71.	100.0	1.0	10.0	0.02	0.3
23. Beacon/Park WB R	2019.8	4741.2	2031.4	4737.2	12.	109.	AG	79.	100.0	1.0	10.0	0.06	0.6
24. Beacon/Park NB R	2095.2	4627.5	2086.9	4605.4	24.	201.	AG	71.	100.0	1.0	10.0	0.11	1.2
25. Boyl/Kil SB LTR	3322.0	3753.8	3307.4	3798.9	47.	342.	AG	182.	100.0	1.0	20.0	0.32	2.4
26. Boyl/Kil WB LTTR	3373.3	3738.7	3451.2	3770.2	84.	68.	AG	75.	100.0	1.0	20.0	0.50	4.3
27. Boyl/Kil NB LTR	3365.2	3677.7	3376.9	3648.1	32.	158.	AG	91.	100.0	1.0	10.0	0.21	1.6
28. Boyl/Kil EB LTTR	3320.4	3695.3	3225.5	3660.7	101.	250.	AG	75.	100.0	1.0	20.0	0.60	5.1
29. Fenway/Brook South	2496.9	3278.9	2636.6	3081.1	242.	145.	AG	916.	8.8	1.0	54.0		
30. Fenway/Brook West	2481.8	3262.9	2347.3	3075.6	231.	216.	AG	1881.	8.8	1.0	78.0		
31. Fenway/Brook North	2491.0	3288.6	2373.1	3398.7	161.	313.	AG	1628.	8.8	1.0	66.0		
32. Fenway/Brook East	2497.8	3264.6	2608.7	3389.7	167.	42.	AG	2403.	8.8	1.0	90.0		
33. Park/Brook South	2691.9	3447.3	2838.3	3241.2	253.	145.	AG	958.	8.8	1.0	66.0		
34. Park/Brook West	2672.2	3490.7	2502.8	3273.8	275.	218.	AG	2413.	8.8	1.0	90.0		
35. Park/Brook North	2656.7	3489.7	2496.1	3644.1	223.	314.	AG	1794.	8.8	1.0	66.0		
36. Park/Brook East	2663.3	3490.8	2801.7	3675.1	230.	37.	AG	1249.	8.8	1.0	66.0		
37. Park/Brook SE	2681.0	3470.4	2968.4	3574.9	306.	70.	AG	2358.	8.8	1.0	78.0		
38. River/Park N	2254.7	3768.2	2266.4	3911.9	144.	5.	AG	473.	8.8	1.0	42.0		
39. River/Park SE	2239.1	3675.4	2343.7	3750.1	129.	54.	AG	428.	8.8	1.0	42.0		
40. River/Park NE	2237.1	3772.1	2377.4	3769.2	140.	91.	AG	872.	8.8	1.0	54.0		

2018NB_CO_2.out

41. River/Park S	2231.1	3745.1	2210.1	3564.3	182.	187.	AG	901.	8.8	1.0	54.0
42. River/Park SW	2211.1	3765.1	2058.1	3624.4	208.	227.	AG	1420.	8.8	1.0	54.0
43. River/Park NW	2194.0	3770.2	2250.7	3886.0	129.	26.	AG	548.	8.8	1.0	30.0
44. Beacon/Park N	1996.0	4667.5	1894.2	4948.4	299.	340.	AG	1153.	8.8	1.0	78.0

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JOB: Landmark Center RUN: 2018NB

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LINK VARIABLES

LINK DESCRIPTION	LINK COORDINATES (FT) X1	Y1	X2	Y2	LENGTH (FT)	BRG (DEG)	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)	V/C	QUEUE (VEH)
45. Beacon/Park NR	1908.0	4673.8	1956.1	4744.7	86.	34.	AG	15.	8.8	1.0	30.0		
46. Beacon/Park E	1997.8	4657.7	2274.4	4755.8	293.	70.	AG	1621.	8.8	1.0	78.0		
47. Beacon/Park ER	1991.4	4750.8	2112.1	4710.6	127.	108.	AG	33.	8.8	1.0	30.0		
48. Beacon/Park S	2009.1	4646.4	2098.7	4401.0	261.	160.	AG	1732.	8.8	1.0	78.0		
49. Beacon/Park SR	2102.5	4662.0	2076.2	4571.2	95.	196.	AG	71.	8.8	1.0	42.0		
50. Beacon/Park W EB	1995.6	4607.6	1704.2	4488.4	315.	248.	AG	600.	8.8	1.0	66.0		
51. Beacon/Park W EBR	2009.1	4551.2	1907.4	4575.2	104.	283.	AG	134.	8.8	1.0	38.0		
52. Beacon/Park W WB	1989.3	4675.4	1658.3	4556.1	352.	250.	AG	843.	8.8	1.0	78.0		
53. Boyl/Kil N	3344.5	3717.0	3289.1	3876.3	169.	341.	AG	320.	8.8	1.0	54.0		
54. Boyl/Kil E	3348.9	3715.0	3516.2	3780.7	180.	69.	AG	2366.	8.8	1.0	78.0		
55. Boyl/Kil S	3349.9	3702.1	3425.5	3502.1	214.	159.	AG	242.	8.8	1.0	54.0		
56. Boyl/Kil W	3346.0	3717.8	3141.9	3641.3	218.	249.	AG	2392.	8.8	1.0	78.0		

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JOB: Landmark Center RUN: 2018NB

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ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE
1. Fen/Brook WB TT	100	54	3.0	870	1600	47.91	1	3
2. Fen/Brook EB TTTR	100	54	3.0	947	1600	47.91	1	3
3. Fen/Brook SB L	100	46	3.0	648	1600	47.91	1	3
4. Fen/Brook SB LTT	100	46	3.0	854	1600	47.91	1	3
5. Fen/Brook SB R	100	46	3.0	126	1600	47.91	1	3
6. Park/Brook WB TTR	100	68	3.0	550	1600	47.91	1	3
7. Park/Brook NWB LLRRR	100	75	3.0	1203	1600	47.91	1	3
8. Park/Brook NB LTTTR	100	68	3.0	958	1600	47.91	1	3
9. Park/Brook EB L	100	85	3.0	98	1600	47.91	1	3
10. Park/Brook EB T	100	57	3.0	416	1600	47.91	1	3
11. Park/Brook EB RR	100	32	3.0	1029	1600	47.91	1	3
12. River/Park SB	100	78	3.0	548	1600	47.91	1	3
13. River/Park SB East	100	78	3.0	473	1600	47.91	1	3
14. River/Park WB North	100	59	3.0	875	1600	47.91	1	3
15. River/Park WB South	100	59	3.0	385	1600	47.91	1	3
16. River/Park NEB	100	73	3.0	84	1600	47.91	1	3
17. Beacon/Park SB LTT	110	61	3.0	629	1600	47.91	1	3
18. Beacon/Park WB LTT	110	56	3.0	1020	1600	47.91	1	3
19. Beacon/Park NB LTT	110	103	3.0	609	1600	47.91	1	3
20. Beacon/Park EB LTTT	110	68	3.0	466	1600	47.91	1	3
21. Beacon/Park EB R	110	61	3.0	134	1600	47.91	1	3
22. Beacon/Park SB R	110	61	3.0	15	1600	47.91	1	3
23. Beacon/Park WB R	110	68	3.0	33	1600	47.91	1	3
24. Beacon/Park NB R	110	61	3.0	71	1600	47.91	1	3
25. Boyl/Kil SB LTR	100	71	3.0	244	1600	47.91	1	3
26. Boyl/Kil WB LTTR	100	29	3.0	1060	1600	47.91	1	3
27. Boyl/Kil NB LTR	100	71	3.0	82	1600	47.91	1	3
28. Boyl/Kil EB LTTR	100	29	3.0	1274	1600	47.91	1	3

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. Beacon/Park NE1	1956.0	4921.7	6.0
2. Beacon/Park NE2	1981.6	4851.2	6.0
3. Beacon/Park NE3	2059.7	4754.4	6.0
4. Beacon/Park NE4	2163.5	4768.4	6.0
5. Beacon/Park NE5	2234.2	4793.5	6.0
6. Beacon/Park SE1	2273.6	4703.5	6.0
7. Beacon/Park SE2	2202.9	4678.4	6.0
8. Beacon/Park SE3	2119.1	4608.0	6.0
9. Beacon/Park SE4	2120.2	4485.0	6.0
10. Beacon/Park SE5	2146.8	4412.1	6.0
11. Beacon/Park SW1	2053.4	4382.2	6.0
12. Beacon/Park SW2	2027.7	4452.7	6.0
13. Beacon/Park SW3	1951.6	4535.0	6.0
14. Beacon/Park SW4	1869.5	4509.6	6.0

15. Beacon/Park SW5	*	1800.1	4481.2	6.0	*
16. Beacon/Park NW1	*	1748.7	4640.8	6.0	*
17. Beacon/Park NW2	*	1819.3	4666.2	6.0	*

JOB: Landmark Center RUN: 2018NB

DATE : 7/ 9/13
TIME : 11:31:21

RECEPTOR LOCATIONS

RECEPTOR	*	X (COORDINATES (FT))	Y	Z	*
18. Beacon/Park NW3	*	1911.4	4723.3	6.0	*
19. Beacon/Park NW4	*	1893.8	4805.6	6.0	*
20. Beacon/Park NW5	*	1868.3	4876.1	6.0	*
21. Riverway/Park NE1	*	2301.3	3957.6	6.0	*
22. Riverway/Park NE2	*	2295.2	3882.8	6.0	*
23. Riverway/Park NE3	*	2289.1	3808.1	6.0	*
24. Riverway/Park NE4	*	2364.1	3806.5	6.0	*
25. Riverway/Park NE5	*	2439.1	3806.0	6.0	*
26. Riverway/Park SE1	*	2427.5	3594.7	6.0	*
27. Riverway/Park SE2	*	2406.6	3667.7	6.0	*
28. Riverway/Park SE3	*	2309.4	3687.5	6.0	*
29. Riverway/Park SE4	*	2248.8	3576.7	6.0	*
30. Riverway/Park SE5	*	2296.6	3506.9	6.0	*
31. Riverway/Park SW1	*	2170.6	3544.5	6.0	*
32. Riverway/Park SW2	*	2179.2	3619.0	6.0	*
33. Riverway/Park SW3	*	2187.9	3693.5	6.0	*
34. Riverway/Park SW4	*	2132.7	3642.7	6.0	*
35. Riverway/Park SW5	*	2077.5	3592.0	6.0	*
36. Riverway/Park NW1	*	2059.1	3675.6	6.0	*
37. Riverway/Park NW2	*	2114.4	3726.4	6.0	*
38. Riverway/Park NW3	*	2169.6	3777.2	6.0	*
39. Riverway/Park NW4	*	2202.6	3844.5	6.0	*
40. Riverway/Park NW5	*	2235.3	3912.0	6.0	*
41. Boyl/Kil NE1	*	3320.8	3917.2	6.0	*
42. Boyl/Kil NE2	*	3339.3	3844.4	6.0	*
43. Boyl/Kil NE3	*	3364.0	3773.6	6.0	*
44. Boyl/Kil NE4	*	3433.8	3801.0	6.0	*
45. Boyl/Kil NE5	*	3503.6	3828.4	6.0	*
46. Boyl/Kil SE1	*	3537.2	3736.3	6.0	*
47. Boyl/Kil SE2	*	3467.1	3708.8	6.0	*
48. Boyl/Kil SE3	*	3397.3	3681.4	6.0	*
49. Boyl/Kil SE4	*	3423.8	3611.2	6.0	*
50. Boyl/Kil SE5	*	3450.3	3541.1	6.0	*
51. Boyl/Kil SW1	*	3379.9	3518.0	6.0	*
52. Boyl/Kil SW2	*	3353.1	3589.0	6.0	*
53. Boyl/Kil SW3	*	3326.9	3658.3	6.0	*
54. Boyl/Kil SW4	*	3256.7	3632.0	6.0	*
55. Boyl/Kil SW5	*	3186.4	3605.7	6.0	*
56. Boyl/Kil NW1	*	3153.2	3697.9	6.0	*
57. Boyl/Kil NW2	*	3223.4	3724.2	6.0	*
58. Boyl/Kil NW3	*	3293.6	3750.5	6.0	*
59. Boyl/Kil NW4	*	3269.0	3821.4	6.0	*
60. Boyl/Kil NW5	*	3244.5	3891.9	6.0	*

JOB: Landmark Center RUN: 2018NB

MODEL RESULTS

REMARKS : In search of the angle corresponding to
the maximum concentration, only the first
angle, of the angles with same maximum
concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-360.

WIND * CONCENTRATION
ANGLE * (PPM)

(DEGR)*	REC1	REC2	REC3	REC4	REC5	REC6	REC7	REC8	REC9	REC10	REC11	REC12	REC13	REC14	REC15	REC16	REC17	REC18	REC19	REC20
0. *	0.0	0.0	0.0	0.0	0.0	0.2	0.4	0.4	0.2	0.2	0.9	0.8	0.9	0.3	0.2	0.0	0.0	0.3	0.2	0.1
10. *	0.0	0.0	0.0	0.0	0.0	0.1	0.4	0.4	0.2	0.1	1.0	0.9	1.0	0.3	0.2	0.0	0.1	0.4	0.3	0.1
20. *	0.0	0.0	0.0	0.0	0.0	0.1	0.4	0.4	0.1	0.1	0.9	1.0	0.7	0.6	0.4	0.0	0.1	0.5	0.3	0.2
30. *	0.0	0.0	0.0	0.0	0.0	0.1	0.4	0.4	0.1	0.0	0.9	0.9	0.9	0.7	0.4	0.1	0.1	0.5	0.3	0.2
40. *	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.2	0.0	0.1	0.7	0.9	0.8	0.8	0.6	0.1	0.2	0.4	0.3	0.2
50. *	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.2	0.1	0.1	0.7	0.8	0.7	0.7	0.6	0.2	0.2	0.4	0.2	0.2
60. *	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.0	0.1	0.6	0.7	0.7	0.5	0.5	0.2	0.2	0.4	0.3	0.3

(DEGR)*	REC1	REC2	REC3	REC4	REC5	REC6	REC7	REC8	REC9	REC10	REC11	REC12	REC13	REC14	REC15	REC16	REC17	REC18	REC19	REC20
70. *	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.6	0.8	0.6	0.5	0.4	0.3	0.4	0.5	0.4	0.3
80. *	0.0	0.0	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.8	0.5	0.4	0.2	0.4	0.6	0.6	0.4	0.3
90. *	0.0	0.0	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.7	0.6	0.4	0.2	0.5	0.6	0.7	0.5	0.2
100. *	0.0	0.1	0.5	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.4	0.8	0.6	0.4	0.2	0.6	0.6	0.6	0.7	0.3
110. *	0.0	0.1	0.5	0.5	0.1	0.0	0.0	0.0	0.0	0.0	0.5	0.8	0.6	0.3	0.2	0.6	0.5	0.7	0.9	0.4
120. *	0.1	0.2	0.5	0.5	0.1	0.0	0.0	0.1	0.1	0.1	0.5	0.8	0.7	0.4	0.3	0.7	0.9	0.7	0.9	0.5
130. *	0.2	0.3	0.6	0.7	0.3	0.1	0.1	0.1	0.1	0.1	0.6	0.8	0.6	0.3	0.2	0.6	0.8	0.7	1.0	0.6
140. *	0.2	0.2	0.6	0.6	0.3	0.1	0.1	0.1	0.1	0.1	0.5	0.7	0.4	0.2	0.2	0.5	0.7	0.8	0.9	0.7
150. *	0.4	0.6	0.6	0.7	0.3	0.1	0.0	0.1	0.2	0.2	0.5	0.7	0.4	0.2	0.2	0.5	0.5	0.8	1.0	0.9
160. *	0.7	0.6	0.9	0.8	0.5	0.1	0.1	0.3	0.6	0.5	0.4	0.5	0.3	0.1	0.1	0.4	0.5	0.8	0.8	0.8
170. *	0.8	0.8	1.1	0.9	0.5	0.2	0.2	0.5	0.9	0.7	0.2	0.2	0.1	0.0	0.0	0.3	0.3	0.5	0.4	0.3
180. *	0.6	0.7	0.9	0.9	0.5	0.2	0.3	0.5	0.9	0.7	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.4	0.2	0.1
190. *	0.5	0.7	0.8	1.0	0.6	0.2	0.2	0.6	0.9	0.6	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.4	0.1	0.1
200. *	0.5	0.6	0.6	1.0	0.8	0.2	0.3	0.7	0.9	0.5	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.3	0.1	0.1
210. *	0.4	0.6	0.7	1.0	0.7	0.3	0.3	0.6	0.9	0.5	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.3	0.1	0.0
220. *	0.3	0.6	0.6	0.9	0.9	0.2	0.3	0.6	0.9	0.5	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.1	0.0
230. *	0.2	0.3	0.5	0.8	0.8	0.2	0.4	0.6	0.9	0.5	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.0	0.0
240. *	0.3	0.4	0.3	0.7	0.8	0.3	0.3	0.6	0.9	0.6	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.0	0.0
250. *	0.3	0.3	0.4	0.5	0.5	0.4	0.7	0.7	0.9	0.6	0.0	0.0	0.1	0.1	0.0	0.1	0.1	0.0	0.0	0.0
260. *	0.3	0.3	0.3	0.4	0.2	0.7	0.5	0.8	0.9	0.7	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0
270. *	0.2	0.2	0.3	0.2	0.1	0.7	0.7	0.7	0.9	0.8	0.0	0.0	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0
280. *	0.2	0.3	0.3	0.1	0.1	0.8	0.6	0.6	1.0	0.8	0.0	0.0	0.3	0.3	0.1	0.0	0.0	0.0	0.0	0.0
290. *	0.2	0.3	0.3	0.1	0.1	0.7	0.8	0.7	1.2	0.9	0.0	0.2	0.2	0.3	0.1	0.0	0.0	0.0	0.0	0.0
300. *	0.1	0.3	0.3	0.1	0.0	0.6	0.7	0.6	1.2	1.0	0.0	0.2	0.2	0.3	0.2	0.0	0.0	0.0	0.0	0.0
310. *	0.1	0.3	0.2	0.0	0.0	0.5	0.7	0.5	1.2	1.3	0.1	0.3	0.3	0.2	0.2	0.0	0.0	0.0	0.0	0.0
320. *	0.1	0.2	0.1	0.0	0.0	0.3	0.5	0.5	1.0	1.0	0.1	0.3	0.4	0.2	0.2	0.0	0.0	0.0	0.0	0.0
330. *	0.1	0.2	0.1	0.0	0.0	0.3	0.6	0.5	0.8	1.0	0.3	0.4	0.5	0.2	0.2	0.0	0.0	0.0	0.0	0.0
340. *	0.0	0.1	0.0	0.0	0.0	0.3	0.6	0.4	0.5	0.6	0.6	0.5	0.6	0.2	0.2	0.0	0.0	0.1	0.1	0.0
350. *	0.0	0.0	0.0	0.0	0.0	0.3	0.5	0.4	0.3	0.3	0.8	0.6	0.9	0.2	0.2	0.0	0.0	0.2	0.2	0.1
360. *	0.0	0.0	0.0	0.0	0.0	0.2	0.4	0.4	0.2	0.2	0.9	0.8	0.9	0.3	0.2	0.0	0.0	0.3	0.2	0.1
MAX *	0.8	0.8	1.1	1.0	0.9	0.8	0.8	0.8	1.2	1.3	1.0	1.0	1.0	0.8	0.6	0.7	0.9	0.8	1.0	0.9
DEGR. *	170	170	170	190	220	280	290	260	290	310	10	20	10	40	40	120	120	140	130	150

JOB: Landmark Center RUN: 2018NB

MODEL RESULTS

REMARKS : In search of the angle corresponding to
the maximum concentration, only the first
angle, of the angles with same maximum
concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-360.

WIND * CONCENTRATION
ANGLE * (PPM)

(DEGR)*	REC21	REC22	REC23	REC24	REC25	REC26	REC27	REC28	REC29	REC30	REC31	REC32	REC33	REC34	REC35	REC36	REC37	REC38	REC39	REC40
0. *	0.4	1.0	1.6	0.1	0.1	0.1	0.1	1.6	0.8	0.6	0.4	0.5	0.7	0.6	0.4	0.1	0.2	0.2	0.3	0.6

10. *	0.5	0.5	1.2	0.1	0.1	0.1	0.1	1.5	0.9	0.5	0.6	0.6	0.8	0.8	0.5	0.1	0.2	0.2	0.3	0.6
20. *	0.5	0.4	1.0	0.1	0.1	0.0	0.1	1.3	0.6	0.5	0.7	0.7	1.1	0.9	0.6	0.3	0.3	0.4	0.5	0.7
30. *	0.4	0.3	0.8	0.0	0.0	0.0	0.0	1.0	0.5	0.3	0.6	0.8	1.1	1.0	0.7	0.2	0.5	0.7	0.7	0.8
40. *	0.2	0.1	0.7	0.0	0.0	0.0	0.0	0.9	0.3	0.2	0.5	0.8	0.9	0.9	0.6	0.4	0.7	0.8	0.9	0.8
50. *	0.0	0.1	0.6	0.0	0.0	0.1	0.0	0.5	0.2	0.2	0.4	0.8	0.8	0.6	0.5	0.5	0.6	0.9	1.0	0.8
60. *	0.0	0.0	0.6	0.0	0.0	0.2	0.0	0.4	0.2	0.3	0.3	0.6	0.8	0.6	0.4	0.7	0.7	0.8	1.0	0.8
70. *	0.0	0.0	0.6	0.0	0.0	0.3	0.0	0.4	0.4	0.4	0.4	0.4	0.9	0.5	0.2	0.7	0.8	1.0	1.0	0.9
80. *	0.0	0.0	0.6	0.1	0.1	0.6	0.1	0.5	0.5	0.7	0.5	0.5	0.8	0.4	0.3	0.8	1.1	0.9	1.0	1.0
90. *	0.1	0.1	0.9	0.1	0.1	0.8	0.3	0.6	0.6	0.7	0.5	0.8	0.7	0.5	0.5	0.7	1.2	0.8	1.1	1.2
100. *	0.1	0.2	1.0	0.2	0.2	0.9	0.7	0.9	0.6	0.6	0.6	0.7	0.8	0.6	0.6	0.9	1.2	1.0	1.2	1.3
110. *	0.1	0.2	1.3	0.2	0.3	0.6	0.6	0.8	0.4	0.7	0.4	0.7	0.7	0.6	0.2	0.6	1.0	1.2	1.4	1.3
120. *	0.2	0.4	1.6	0.3	0.3	0.4	0.6	0.8	0.4	0.8	0.5	0.6	0.6	0.5	0.4	0.7	0.8	1.1	1.5	1.4
130. *	0.2	0.6	1.7	0.3	0.4	0.5	0.5	0.8	0.6	0.8	0.5	0.7	0.6	0.6	0.3	0.6	0.8	0.9	1.4	1.7
140. *	0.2	0.9	1.8	0.3	0.3	0.3	0.4	0.8	0.6	0.9	0.4	0.5	0.8	0.4	0.3	0.5	0.6	0.9	1.3	1.8
150. *	0.4	1.7	2.0	0.6	0.3	0.6	0.4	1.0	0.5	0.6	0.3	0.5	0.7	0.3	0.1	0.4	0.6	0.8	1.1	1.9
160. *	0.7	2.3	1.9	0.8	0.5	0.8	0.7	0.7	0.3	0.4	0.2	0.3	0.5	0.1	0.1	0.4	0.4	0.7	0.9	1.6
170. *	1.0	2.4	1.4	1.0	0.6	1.1	1.0	0.4	0.2	0.2	0.0	0.1	0.2	0.0	0.0	0.3	0.4	0.7	0.5	1.3
180. *	1.1	2.2	0.9	1.1	0.3	0.9	0.8	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.2	0.4	0.6	0.4	0.8
190. *	1.5	2.1	0.9	1.1	0.3	0.8	0.7	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.2	0.4	0.5	0.4	0.4
200. *	1.6	2.0	0.7	1.4	0.3	0.6	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	0.5	0.3	0.3
210. *	1.6	1.8	0.7	1.5	0.3	0.5	0.5	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.4	0.2	0.2
220. *	1.5	2.0	0.7	1.4	0.3	0.5	0.5	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.2	0.3	0.1	0.1
230. *	1.1	1.8	0.6	1.5	0.6	0.5	0.4	0.1	0.1	0.0	0.0	0.0	0.2	0.1	0.0	0.0	0.1	0.2	0.0	0.0
240. *	1.0	1.9	0.5	1.2	0.8	0.5	0.4	0.1	0.1	0.0	0.0	0.0	0.3	0.2	0.0	0.0	0.0	0.1	0.0	0.0
250. *	0.9	1.7	0.6	1.0	0.8	0.5	0.5	0.3	0.1	0.0	0.0	0.0	0.4	0.2	0.0	0.0	0.0	0.0	0.0	0.0
260. *	0.8	1.7	0.6	0.9	0.6	0.5	0.6	0.3	0.1	0.0	0.0	0.1	0.4	0.3	0.0	0.0	0.0	0.0	0.0	0.0
270. *	0.8	1.8	0.6	0.7	0.5	0.6	0.6	0.4	0.2	0.0	0.0	0.1	0.4	0.3	0.0	0.0	0.0	0.0	0.0	0.0
280. *	0.8	1.6	0.7	0.8	0.3	0.7	0.7	0.5	0.3	0.0	0.0	0.2	0.5	0.3	0.0	0.0	0.0	0.0	0.0	0.0
290. *	0.8	1.7	0.7	0.8	0.4	0.7	0.7	0.4	0.3	0.0	0.0	0.2	0.4	0.3	0.0	0.0	0.0	0.0	0.0	0.0
300. *	0.9	1.8	0.7	0.9	0.5	0.7	0.8	0.5	0.3	0.1	0.1	0.2	0.5	0.3	0.0	0.0	0.0	0.0	0.0	0.0
310. *	0.9	2.0	0.8	0.8	0.5	0.8	1.1	0.6	0.3	0.2	0.1	0.2	0.5	0.3	0.0	0.0	0.0	0.0	0.0	0.0
320. *	0.9	2.4	0.9	0.8	0.4	1.0	1.0	0.6	0.3	0.2	0.1	0.2	0.5	0.3	0.1	0.0	0.0	0.0	0.0	0.0
330. *	1.0	2.5	1.0	0.7	0.3	0.9	1.1	0.9	0.4	0.2	0.1	0.2	0.5	0.3	0.2	0.0	0.0	0.0	0.0	0.1
340. *	0.9	2.3	1.4	0.5	0.2	0.8	0.8	1.5	0.5	0.3	0.1	0.2	0.5	0.3	0.2	0.0	0.0	0.1	0.1	0.5
350. *	0.6	1.7	1.5	0.3	0.1	0.3	0.4	1.7	0.6	0.6	0.2	0.4	0.5	0.5	0.3	0.0	0.1	0.2	0.3	0.6
360. *	0.4	1.0	1.6	0.1	0.1	0.1	0.1	1.6	0.8	0.6	0.4	0.5	0.7	0.6	0.4	0.1	0.2	0.2	0.3	0.6
MAX *	1.6	2.5	2.0	1.5	0.8	1.1	1.1	1.7	0.9	0.9	0.7	0.8	1.1	1.0	0.7	0.9	1.2	1.2	1.5	1.9
DEGR. *	200	330	150	210	240	170	310	350	10	140	20	30	30	30	30	100	90	110	120	150

♀ PAGE 7

JOB: Landmark Center RUN: 2018NB

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-360.

WIND ANGLE (DEGR) *	CONCENTRATION (PPM) REC41	REC42	REC43	REC44	REC45	REC46	REC47	REC48	REC49	REC50	REC51	REC52	REC53	REC54	REC55	REC56	REC57	REC58	REC59	REC60
0. *	0.0	0.0	0.0	0.0	0.0	0.4	0.9	1.0	0.6	0.4	0.6	0.7	1.2	1.0	1.0	0.0	0.0	0.2	0.0	0.0
10. *	0.0	0.0	0.0	0.0	0.0	0.4	0.9	1.0	0.6	0.3	0.5	0.8	1.3	1.2	1.0	0.0	0.0	0.3	0.0	0.0
20. *	0.0	0.0	0.0	0.0	0.0	0.5	1.0	1.2	0.5	0.3	0.5	0.7	1.1	1.4	1.1	0.0	0.0	0.4	0.1	0.0
30. *	0.0	0.0	0.0	0.0	0.0	0.5	0.9	1.2	0.5	0.2	0.4	0.7	1.2	1.4	1.2	0.0	0.0	0.5	0.1	0.0
40. *	0.0	0.0	0.0	0.0	0.0	0.5	0.9	1.1	0.4	0.1	0.3	0.6	1.2	1.4	1.4	0.0	0.1	0.5	0.1	0.0
50. *	0.0	0.0	0.1	0.1	0.1	0.3	0.7	1.0	0.2	0.1	0.2	0.4	1.3	1.3	1.4	0.1	0.2	0.6	0.1	0.0
60. *	0.0	0.0	0.6	0.4	0.4	0.2	0.5	0.7	0.1	0.0	0.1	0.2	1.1	1.0	1.2	0.7	0.7	1.0	0.1	0.0
70. *	0.0	0.1	1.1	0.9	0.7	0.1	0.2	0.3	0.0	0.0	0.1	0.1	0.7	0.6	0.6	1.3	1.3	1.4	0.2	0.0
80. *	0.0	0.2	1.7	1.4	1.1	0.0	0.0	0.1	0.0	0.0	0.1	0.1	0.3	0.3	0.3	1.8	1.8	2.0	0.4	0.1
90. *	0.1	0.4	1.9	1.5	1.2	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.0	0.0	1.9	1.8	2.0	0.6	0.2
100. *	0.2	0.5	1.9	1.5	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.0	0.0	1.8	1.7	2.0	0.8	0.2
110. *	0.3	0.6	1.9	1.4	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	1.6	1.7	1.7	0.8	0.4
120. *	0.4	0.6	1.8	1.4	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	1.5	1.6	1.6	1.0	0.6
130. *	0.4	0.8	1.6	1.4	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	1.3	1.4	1.4	1.0	0.6
140. *	0.4	0.7	1.5	1.3	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	1.3	1.4	1.4	0.9	0.7
150. *	0.4	0.8	1.4	1.4	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	1.3	1.4	1.3	0.9	0.6
160. *	0.4	0.7	1.5	1.5	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	1.4	1.4	0.8	0.5
170. *	0.6	0.8	1.4	1.4	1.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	1.4	1.4	0.7	0.4
180. *	0.7	0.9	1.3	1.4	1.2	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	1.2	1.4	1.4	0.8	0.4
190. *	0.7	1.0	1.4	1.6	1.4	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.1	1.2	1.4	1.5	0.8	0.6
200. *	0.7	1.1	1.8	1.9	1.6	0.0	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	1.2	1.6	1.7	0.8	0.5
210. *	0.5	1.1	2.0	2.1	1.8	0.1	0.1	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	1.3	1.7	1.8	0.7	0.5
220. *	0.6	0.9	2.2	2.1	2.1	0.1	0.1	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	1.3	1.7	1.9	0.7	0.5
230. *	0.4	0.9	2.4	2.3	2.3	0.1	0.1	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	1.5	1.8	2.0	0.7	0.5
240. *	0.3	0.7	2.3	2.2	2.2	0.4	0.4	0.5	0.2	0.2	0.1	0.1	0.4	0.4	0.5	1.5	1.7	1.9	0.6	0.3
250. *	0.1	0.4	1.7	1.6	1.5	1.0	0.9	1.0	0.4	0.2	0.1	0.4	0.9	0.7	0.6	1.1	1.2	1.3	0.3	0.1
260. *	0.1	0.2	1.0	0.8	0.7	1.4	1.3	1.5	0.5	0.4	0.4	0.5	1.3	1.0	0.9	0.6	0.6	0.6	0.1	0.1
270. *	0.1	0.2	0.6	0.3	0.2	1.6	1.3	1.5	0.7	0.5	0.3	0.6	1.5	1.1	0.8	0.2	0.2	0.2	0.1	0.1
280. *	0.1	0.2	0.5	0.1	0.1	1.4	1.3	1.4	0.7	0.6	0.4	0.6	1.3	1.1	0.8	0.1	0.1	0.1	0.1	0.1
290. *	0.1	0.2	0.4	0.1	0.0	1.2	1.5	1.2	0.8	0.5	0.4	0.6	1.4	1.2	0.8	0.1	0.1	0.1	0.1	0.1
300. *	0.0	0.1	0.2	0.0	0.0	1.0	1.3	1.1	0.7	0.6	0.4	0.7	1.4	1.2	0.8	0.1	0.1	0.0	0.0	0.0
310. *	0.0	0.0	0.2	0.0	0.0	0.9	1.0	1.0	0.8	0.5	0.4	0.7	1.2	1.1	0.8	0.0	0.0	0.0	0.0	0.0
320. *	0.0	0.0	0.1	0.0	0.0	0.8	1.0	1.1	0.8	0.6	0.4	0.7	1.0	1.0	0.8	0.0	0.0	0.0	0.0	0.0
330. *	0.0	0.0	0.1	0.0	0.0	0.7	1.0	1.1	0.6	0.5	0.4	0.7	1.0	1.0	1.0	0.0	0.0	0.0	0.0	0.0
340. *	0.0	0.0	0.0	0.0	0.0	0.6	1.0	1.0	0.6	0.4	0.4	0.6	1.1	1.0	1.0	0.0	0.0	0.0	0.0	0.0
350. *	0.0	0.0	0.0	0.0	0.0	0.5	0.9	1.0	0.6	0.4	0.5	0.7	1.2	1.0	1.0	0.0	0.0	0.1	0.0	0.0
360. *	0.0	0.0	0.0	0.0	0.0	0.4	0.9	1.0	0.6	0.4	0.6	0.7	1.2	1.0	1.0	0.0	0.0	0.2	0.0	0.0
MAX *	0.7	1.1	2.4	2.3	2.3	1.6	1.5	1.5	0.8	0.6	0.6	0.8	1.5	1.4	1.4	1.9	1.8	2.0	1.0	0.7
DEGR. *	180	200	230	230	230	270	290	260	290	280	0	10	270	20	40	90	90	80	120	140

THE HIGHEST CONCENTRATION OF   2.50 PPM OCCURRED AT RECEPTOR REC22.

♀ CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 95221 PAGE 1

JOB: LANDMARKCENTER RUN: 2018_NB_CO_3

DATE : 7/11/13
TIME : 7:41: 2

The MODE flag has been set to C for calculating CO averages.

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 175. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	X1	Y1	X2	Y2	*	LENGTH (FT)	BRG (DEG)	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)	V/C	QUEUE (VEH)
		LINK COORDINATES (FT)													
1. Brook/Full EB L	*	3074.7	4018.5	3064.6	4005.3	*	17.	217.	AG	42.	100.0	1.0	10.0	0.09	0.8
2. Brook/Full EB TR	*	3083.6	4012.0	3036.0	3948.7	*	79.	217.	AG	42.	100.0	1.0	10.0	0.44	4.0
3. Brook/Full NB LTR	*	3121.3	4022.6	3148.7	4007.9	*	31.	118.	AG	42.	100.0	1.0	10.0	0.17	1.6
4. Brook/Full WB LTR	*	3127.2	4100.9	3163.9	4149.2	*	61.	37.	AG	111.	100.0	1.0	20.0	0.31	3.1
5. Brook/Full SB LT	*	3068.3	4050.9	3030.2	4078.9	*	47.	306.	AG	86.	100.0	1.0	10.0	0.29	2.4
6. Brook/Full SB R	*	3061.2	4041.4	3026.2	4066.5	*	43.	306.	AG	73.	100.0	1.0	10.0	0.23	2.2
7. Brook/Full N	*	3091.9	4045.7	2925.8	4161.5	*	203.	305.	AG	431.	8.8	1.0	54.0		
8. Brook/Full E	*	3091.9	4045.7	3246.2	4230.8	*	241.	40.	AG	989.	8.8	1.0	54.0		
9. Brook/Full S	*	3100.3	4031.3	3190.0	3977.6	*	105.	121.	AG	341.	8.8	1.0	42.0		
10. Brook/Full W	*	3091.9	4048.0	2946.1	3847.4	*	248.	216.	AG	1213.	8.8	1.0	54.0		

♀ PAGE 2

JOB: LANDMARKCENTER RUN: 2018_NB_CO_3

DATE : 7/11/13
TIME : 7:41: 2

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	*	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE
1. Brook/Full EB L	*	100	33	3.0	92	1600	47.91	1	3
2. Brook/Full EB TR	*	100	33	3.0	439	1600	47.91	1	3
3. Brook/Full NB LTR	*	100	33	3.0	172	1600	47.91	1	3
4. Brook/Full WB LTR	*	100	43	3.0	517	1600	47.91	1	3
5. Brook/Full SB LT	*	100	67	3.0	129	1600	47.91	1	3
6. Brook/Full SB R	*	100	57	3.0	138	1600	47.91	1	3

RECEPTOR LOCATIONS

RECEPTOR	*	X	Y	Z	*
	*	COORDINATES (FT)			*
1. Brook/Full NE1	*	2962.2	4181.2	6.0	*
2. Brook/Full NE2	*	3023.7	4138.3	6.0	*
3. Brook/Full NE3	*	3085.3	4095.4	6.0	*
4. Brook/Full NE4	*	3133.3	4153.0	6.0	*
5. Brook/Full NE5	*	3188.7	4204.0	6.0	*
6. Brook/Full SE1	*	3235.0	4159.5	6.0	*
7. Brook/Full SE2	*	3187.0	4101.9	6.0	*
8. Brook/Full SE3	*	3130.3	4049.5	6.0	*
9. Brook/Full SE4	*	3203.3	4005.7	6.0	*
10. Brook/Full SE5	*	3267.6	3967.2	6.0	*
11. Brook/Full SW1	*	3228.3	3918.5	6.0	*
12. Brook/Full SW2	*	3163.9	3957.1	6.0	*
13. Brook/Full SW3	*	3099.6	3995.6	6.0	*
14. Brook/Full SW4	*	3055.5	3934.9	6.0	*
15. Brook/Full SW5	*	3011.4	3874.3	6.0	*
16. Brook/Full NW1	*	2950.5	3916.4	6.0	*
17. Brook/Full NW2	*	2994.6	3977.0	6.0	*
18. Brook/Full NW3	*	3038.7	4037.7	6.0	*
19. Brook/Full NW4	*	2977.2	4080.6	6.0	*
20. Brook/Full NW5	*	2915.6	4123.5	6.0	*

♀ PAGE 3

JOB: LANDMARKCENTER RUN: 2018_NB_CO_3

MODEL RESULTS

REMARKS : In search of the angle corresponding to
the maximum concentration, only the first

angle, of the angles with same maximum
concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-360.

WIND ANGLE (DEGR)	*	REC1	REC2	REC3	REC4	REC5	REC6	REC7	REC8	REC9	REC10	REC11	REC12	REC13	REC14	REC15	REC16	REC17	REC18	REC19	REC20
	*	CONCENTRATION (PPM)																			
0.	*	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.4	0.1	0.0	0.1	0.2	0.4	0.4	0.4	0.0	0.0	0.4	0.1	0.0
10.	*	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.5	0.1	0.0	0.0	0.2	0.5	0.5	0.4	0.0	0.1	0.4	0.1	0.0
20.	*	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.5	0.0	0.0	0.0	0.2	0.6	0.5	0.4	0.0	0.1	0.4	0.1	0.1
30.	*	0.0	0.0	0.1	0.0	0.1	0.1	0.2	0.5	0.0	0.0	0.0	0.1	0.4	0.3	0.3	0.1	0.3	0.6	0.1	0.1
40.	*	0.0	0.0	0.2	0.1	0.1	0.0	0.1	0.3	0.0	0.0	0.0	0.1	0.2	0.2	0.2	0.3	0.2	0.7	0.1	0.1
50.	*	0.0	0.0	0.4	0.2	0.2	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.4	0.3	0.8	0.1	0.1
60.	*	0.0	0.0	0.5	0.3	0.2	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.4	0.4	0.8	0.2	0.1
70.	*	0.0	0.1	0.5	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.4	0.4	0.7	0.2	0.1
80.	*	0.0	0.1	0.4	0.4	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.3	0.3	0.5	0.2	0.2
90.	*	0.1	0.2	0.4	0.4	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.3	0.4	0.5	0.3	0.2
100.	*	0.1	0.2	0.2	0.4	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.3	0.4	0.4	0.5	0.2
110.	*	0.1	0.2	0.2	0.4	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.3	0.3	0.4	0.4	0.1
120.	*	0.1	0.1	0.2	0.4	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.2
130.	*	0.2	0.2	0.2	0.5	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.1	0.1
140.	*	0.2	0.3	0.2	0.5	0.3	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.1	0.1
150.	*	0.2	0.3	0.3	0.5	0.3	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.4	0.1	0.1
160.	*	0.2	0.3	0.3	0.5	0.3	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.4	0.1	0.1
170.	*	0.2	0.4	0.5	0.6	0.3	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.1	0.1
180.	*	0.2	0.3	0.4	0.5	0.3	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.4	0.1	0.0
190.	*	0.1	0.2	0.5	0.6	0.5	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.4	0.1	0.0
200.	*	0.1	0.2	0.6	0.5	0.6	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.4	0.0	0.0
210.	*	0.1	0.1	0.6	0.4	0.6	0.2	0.1	0.3	0.1	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.2	0.3	0.0	0.0
220.	*	0.1	0.1	0.5	0.2	0.5	0.2	0.2	0.5	0.1	0.0	0.0	0.0	0.2	0.2	0.1	0.0	0.1	0.1	0.0	0.0
230.	*	0.1	0.1	0.4	0.2	0.4	0.4	0.4	0.6	0.2	0.0	0.0	0.0	0.4	0.3	0.1	0.0	0.0	0.0	0.0	0.0
240.	*	0.1	0.1	0.3	0.1	0.1	0.5	0.3	0.4	0.2	0.0	0.0	0.1	0.5	0.3	0.2	0.0	0.0	0.0	0.0	0.0
250.	*	0.0	0.1	0.2	0.1	0.0	0.4	0.4	0.4	0.2	0.1	0.0	0.1	0.5	0.3	0.2	0.0	0.0	0.0	0.0	0.0
260.	*	0.0	0.1	0.1	0.0	0.0	0.4	0.5	0.5	0.2	0.1	0.1	0.1	0.4	0.3	0.3	0.0	0.0	0.0	0.0	0.0
270.	*	0.0	0.1	0.1	0.0	0.0	0.4	0.5	0.6	0.2	0.1	0.1	0.1	0.4	0.3	0.3	0.0	0.0	0.0	0.0	0.0
280.	*	0.0	0.1	0.1	0.0	0.0	0.2	0.3	0.5	0.2	0.1	0.1	0.1	0.4	0.3	0.3	0.0	0.0	0.0	0.0	0.0
290.	*	0.0	0.1	0.1	0.0	0.0	0.2	0.4	0.4	0.4	0.1	0.1	0.1	0.4	0.3	0.3	0.0	0.0	0.0	0.0	0.0
300.	*	0.0	0.0	0.1	0.0	0.0	0.2	0.4	0.4	0.2	0.1	0.1	0.1	0.4	0.3	0.3	0.0	0.0	0.0	0.0	0.0
310.	*	0.0	0.0	0.0	0.0	0.0	0.2	0.4	0.4	0.1	0.1	0.1	0.3	0.6	0.4	0.3	0.0	0.0	0.1	0.0	0.0
320.	*	0.0	0.0	0.0	0.0	0.0	0.2	0.4	0.3	0.1	0.1	0.1	0.4	0.6	0.4	0.3	0.0	0.0	0.1	0.1	0.0
330.	*	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.3	0.2	0.1	0.1	0.2	0.5	0.4	0.3	0.0	0.0	0.2	0.1	0.0
340.	*	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.3	0.2	0.1	0.1	0.2	0.4	0.4	0.3	0.0	0.0	0.3	0.1	0.0
350.	*	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.4	0.1	0.1	0.1	0.2	0.4	0.5	0.3	0.0	0.0	0.4	0.1	0.0
360.	*	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.4	0.1	0.0	0.1	0.2	0.4	0.4	0.4	0.0	0.0	0.4	0.1	0.0
MAX	*	0.2	0.4	0.6	0.6	0.6	0.5	0.5	0.6	0.4	0.1	0.1	0.4	0.6	0.5	0.4	0.4	0.4	0.8	0.5	0.2

```
 DEGR. *  130   170   200   170   200   240   260   230   290   250     0   320    20    10     0    50    60    50
100    80

 THE HIGHEST CONCENTRATION OF    0.80 PPM OCCURRED AT RECEPTOR REC18.
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2018 Build
Microscale Output Files
(Carbon Monoxide (CO))

♀ CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 95221 PAGE 1

JOB: Landmark Center RUN: 2018NB

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The MODE flag has been set to C for calculating CO averages.

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 175. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	X1	Y1	X2	Y2	LENGTH (FT)	BRG (DEG)	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)	V/C	QUEUE (VEH)
1. Fen/Brook WB TT	2508.3	3314.8	2585.7	3415.8	127.	37.	AG	139.	100.0	1.0	20.0	0.66	6.5
2. Fen/Brook EB TTTR	2469.9	3221.1	2414.6	3144.9	94.	216.	AG	208.	100.0	1.0	30.0	0.49	4.8
3. Fen/Brook SB L	2487.6	3319.0	2363.3	3436.9	171.	313.	AG	59.	100.0	1.0	10.0	0.83	8.7
4. Fen/Brook SB LTT	2476.2	3307.2	2395.5	3381.8	110.	313.	AG	118.	100.0	1.0	20.0	0.56	5.6
5. Fen/Brook SB R	2463.2	3293.4	2439.4	3316.5	33.	314.	AG	59.	100.0	1.0	10.0	0.17	1.7
6. Park/Brook WB TTR	2701.3	3561.7	2751.4	3627.8	83.	37.	AG	262.	100.0	1.0	30.0	0.52	4.2
7. Park/Brook NWB LLRRR	2745.9	3510.4	3745.0	3896.3	1071.	69.	AG	289.	100.0	1.0	30.0	1.25	54.4
8. Park/Brook NB LTTTR	2715.4	3403.8	2772.3	3331.3	92.	142.	AG	350.	100.0	1.0	40.0	0.57	4.7
9. Park/Brook EB L	2628.6	3435.0	2596.0	3392.8	53.	218.	AG	109.	100.0	1.0	10.0	0.67	2.7
10. Park/Brook EB T	2637.5	3428.1	2557.0	3325.2	131.	218.	AG	73.	100.0	1.0	10.0	0.69	6.6
11. Park/Brook EB RR	2648.5	3416.9	2594.3	3345.2	90.	217.	AG	82.	100.0	1.0	20.0	0.51	4.6
12. River/Park SB	2213.3	3801.8	3580.3	6597.8	3112.	26.	AG	100.	100.0	1.0	10.0	2.01	158.1
13. River/Park SB East	2256.2	3801.2	2279.3	3925.6	127.	11.	AG	200.	100.0	1.0	20.0	0.87	6.4
14. River/Park WB North	2272.8	3765.2	2365.1	3765.6	92.	90.	AG	227.	100.0	1.0	30.0	0.50	4.7
15. River/Park WB South	2270.5	3707.9	2337.8	3736.7	73.	67.	AG	152.	100.0	1.0	20.0	0.39	3.7
16. River/Park NEB	2169.9	3720.6	2153.5	3704.8	23.	226.	AG	188.	100.0	1.0	20.0	0.16	1.2
17. Beacon/Park SB LTT	1962.9	4712.6	1930.9	4813.0	105.	342.	AG	143.	100.0	1.0	20.0	0.49	5.4
18. Beacon/Park WB LTT	2055.3	4691.7	2200.7	4745.3	155.	70.	AG	131.	100.0	1.0	20.0	0.71	7.9
19. Beacon/Park NB LTT	2041.7	4597.4	3032.8	1710.0	3053.	161.	AG	241.	100.0	1.0	20.0	****	155.1
20. Beacon/Park EB LTTT	1966.3	4608.1	1913.4	4584.3	58.	246.	AG	238.	100.0	1.0	30.0	0.29	2.9
21. Beacon/Park EB R	1975.6	4560.5	1953.5	4563.9	22.	279.	AG	143.	100.0	1.0	20.0	0.10	1.1
22. Beacon/Park SB R	1917.2	4688.3	1919.9	4692.5	5.	32.	AG	71.	100.0	1.0	10.0	0.02	0.3
23. Beacon/Park WB R	2019.8	4741.2	2032.4	4736.8	13.	109.	AG	79.	100.0	1.0	10.0	0.07	0.7
24. Beacon/Park NB R	2095.2	4627.5	2086.9	4605.4	24.	201.	AG	71.	100.0	1.0	10.0	0.11	1.2
25. Boyl/Kil SB LTR	3322.0	3753.8	3306.1	3803.0	52.	342.	AG	182.	100.0	1.0	20.0	0.35	2.6
26. Boyl/Kil WB LTTR	3373.3	3738.7	3453.9	3771.3	87.	68.	AG	75.	100.0	1.0	20.0	0.52	4.4
27. Boyl/Kil NB LTR	3365.2	3677.7	3376.9	3648.1	32.	158.	AG	91.	100.0	1.0	10.0	0.21	1.6
28. Boyl/Kil EB LTTR	3320.4	3695.3	3225.5	3660.7	101.	250.	AG	75.	100.0	1.0	20.0	0.60	5.1
29. Fenway/Brook South	2496.9	3278.9	2636.6	3081.1	242.	145.	AG	936.	8.8	1.0	54.0		
30. Fenway/Brook West	2481.8	3262.9	2347.3	3075.6	231.	216.	AG	1965.	8.8	1.0	78.0		
31. Fenway/Brook North	2491.0	3288.6	2373.1	3398.7	161.	313.	AG	1653.	8.8	1.0	66.0		
32. Fenway/Brook East	2497.8	3264.6	2608.7	3389.7	167.	42.	AG	2407.	8.8	1.0	90.0		
33. Park/Brook South	2691.9	3447.3	2838.3	3241.2	253.	145.	AG	992.	8.8	1.0	66.0		
34. Park/Brook West	2672.2	3490.7	2502.8	3273.8	275.	218.	AG	2418.	8.8	1.0	90.0		
35. Park/Brook North	2656.7	3489.7	2496.1	3644.1	223.	314.	AG	1821.	8.8	1.0	66.0		
36. Park/Brook East	2663.3	3490.8	2801.7	3675.1	230.	37.	AG	1249.	8.8	1.0	66.0		
37. Park/Brook SE	2681.0	3470.4	2968.4	3574.9	306.	70.	AG	2358.	8.8	1.0	78.0		
38. River/Park N	2254.7	3768.2	2266.4	3911.9	144.	5.	AG	473.	8.8	1.0	42.0		
39. River/Park SE	2239.1	3675.4	2343.7	3750.1	129.	54.	AG	454.	8.8	1.0	42.0		
40. River/Park NE	2237.1	3772.1	2377.4	3769.2	140.	91.	AG	858.	8.8	1.0	54.0		

LINK DESCRIPTION	X1	Y1	X2	Y2	LENGTH (FT)	BRG (DEG)	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)
41. River/Park S	2231.1	3745.1	2210.1	3564.3	182.	187.	AG	927.	8.8	1.0	54.0
42. River/Park SW	2211.1	3765.1	2058.1	3624.4	208.	227.	AG	1520.	8.8	1.0	54.0
43. River/Park NW	2194.0	3770.2	2250.7	3886.0	129.	26.	AG	548.	8.8	1.0	30.0
44. Beacon/Park N	1996.0	4667.5	1894.2	4948.4	299.	340.	AG	1143.	8.8	1.0	78.0

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LINK VARIABLES

LINK DESCRIPTION	X1	Y1	X2	Y2	LENGTH (FT)	BRG (DEG)	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)	V/C	QUEUE (VEH)
45. Beacon/Park NR	1908.0	4673.8	1956.1	4744.7	86.	34.	AG	15.	8.8	1.0	30.0		
46. Beacon/Park E	1997.8	4657.7	2274.4	4755.8	293.	70.	AG	1622.	8.8	1.0	78.0		
47. Beacon/Park ER	1991.4	4750.8	2112.1	4710.6	127.	108.	AG	36.	8.8	1.0	30.0		
48. Beacon/Park S	2009.1	4646.4	2098.7	4401.0	261.	160.	AG	1714.	8.8	1.0	78.0		
49. Beacon/Park SR	2102.5	4662.0	2076.2	4571.2	95.	196.	AG	71.	8.8	1.0	42.0		
50. Beacon/Park W EB	1995.6	4607.6	1704.2	4488.4	315.	248.	AG	603.	8.8	1.0	66.0		
51. Beacon/Park W EBR	2009.1	4551.2	1907.4	4575.2	104.	283.	AG	134.	8.8	1.0	38.0		
52. Beacon/Park W WB	1989.3	4675.4	1658.3	4556.1	352.	250.	AG	833.	8.8	1.0	78.0		
53. Boyl/Kil N	3344.5	3717.0	3289.1	3876.3	169.	341.	AG	379.	8.8	1.0	54.0		
54. Boyl/Kil E	3348.9	3715.0	3516.2	3780.7	180.	69.	AG	2426.	8.8	1.0	78.0		
55. Boyl/Kil S	3349.9	3702.1	3425.5	3502.1	214.	159.	AG	241.	8.8	1.0	54.0		
56. Boyl/Kil W	3346.0	3717.8	3141.9	3641.3	218.	249.	AG	2392.	8.8	1.0	78.0		

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ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE
1. Fen/Brook WB TT	100	54	3.0	863	1600	47.91	1	3
2. Fen/Brook EB TTTR	100	54	3.0	959	1600	47.91	1	3
3. Fen/Brook SB L	100	46	3.0	647	1600	47.91	1	3
4. Fen/Brook SB LTT	100	46	3.0	874	1600	47.91	1	3
5. Fen/Brook SB R	100	46	3.0	132	1600	47.91	1	3
6. Park/Brook WB TTR	100	68	3.0	669	1600	47.91	1	3
7. Park/Brook NWB LLRRR	100	75	3.0	1203	1600	47.91	1	3
8. Park/Brook NB LTTTR	100	68	3.0	992	1600	47.91	1	3
9. Park/Brook EB L	100	85	3.0	107	1600	47.91	1	3
10. Park/Brook EB T	100	57	3.0	419	1600	47.91	1	3
11. Park/Brook EB RR	100	32	3.0	1029	1600	47.91	1	3
12. River/Park SB	100	78	3.0	548	1600	47.91	1	3
13. River/Park SB East	100	78	3.0	473	1600	47.91	1	3
14. River/Park WB North	100	59	3.0	858	1600	47.91	1	3
15. River/Park WB South	100	59	3.0	454	1600	47.91	1	3
16. River/Park NEB	100	73	3.0	114	1600	47.91	1	3
17. Beacon/Park SB LTT	110	61	3.0	632	1600	47.91	1	3
18. Beacon/Park WB LTT	110	56	3.0	1012	1600	47.91	1	3
19. Beacon/Park NB LTT	110	103	3.0	591	1600	47.91	1	3
20. Beacon/Park EB LTTT	110	68	3.0	469	1600	47.91	1	3
21. Beacon/Park EB R	110	61	3.0	134	1600	47.91	1	3
22. Beacon/Park SB R	110	61	3.0	15	1600	47.91	1	3
23. Beacon/Park WB R	110	68	3.0	36	1600	47.91	1	3
24. Beacon/Park NB R	110	61	3.0	71	1600	47.91	1	3
25. Boyl/Kil SB LTR	100	71	3.0	267	1600	47.91	1	3
26. Boyl/Kil WB LTTR	100	29	3.0	1096	1600	47.91	1	3
27. Boyl/Kil NB LTR	100	71	3.0	82	1600	47.91	1	3
28. Boyl/Kil EB LTTR	100	29	3.0	1274	1600	47.91	1	3

RECEPTOR LOCATIONS

RECEPTOR	X (FT)	Y (FT)	Z (FT)
1. Fen/Brook NE1	2376.5	3444.0	6.0
2. Fen/Brook NE2	2429.7	3391.0	6.0
3. Fen/Brook NE3	2484.5	3339.8	6.0
4. Fen/Brook NE4	2530.7	3398.9	6.0
5. Fen/Brook NE5	2576.8	3458.0	6.0
6. Fen/Brook SE1	2660.2	3364.9	6.0
7. Fen/Brook SE2	2609.6	3308.8	6.0
8. Fen/Brook SE3	2560.7	3252.7	6.0
9. Fen/Brook SE4	2604.0	3191.4	6.0
10. Fen/Brook SE5	2647.3	3130.2	6.0
11. Fen/Brook SW1	2588.7	3084.8	6.0
12. Fen/Brook SW2	2545.5	3146.0	6.0
13. Fen/Brook SW3	2502.2	3207.3	6.0
14. Fen/Brook SW4	2458.5	3146.4	6.0

RECEPTOR	X	Y	Z
15. Fen/Brook SW5	2414.7	3085.4	6.0
16. Fen/Brook NW1	2353.5	3168.3	6.0
17. Fen/Brook NW2	2397.3	3229.2	6.0

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RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
18. Fen/Brook NW3	2441.0	3290.1	6.0
19. Fen/Brook NW4	2386.2	3341.3	6.0
20. Fen/Brook NW5	2331.4	3392.5	6.0
21. Park/Brook NE1	2546.7	3655.1	6.0
22. Park/Brook NE2	2600.8	3603.1	6.0
23. Park/Brook NE3	2654.8	3551.1	6.0
24. Park/Brook NE4	2699.9	3611.1	6.0
25. Park/Brook NE5	2744.9	3671.1	6.0
26. Park/Brook SE1	2889.0	3493.9	6.0
27. Park/Brook SE2	2818.1	3468.1	6.0
28. Park/Brook SE3	2747.7	3442.5	6.0
29. Park/Brook SE4	2791.4	3381.5	6.0
30. Park/Brook SE5	2834.8	3320.3	6.0
31. Park/Brook SW1	2758.8	3278.8	6.0
32. Park/Brook SW2	2715.4	3340.0	6.0
33. Park/Brook SW3	2672.0	3401.1	6.0
34. Park/Brook SW4	2625.8	3342.0	6.0
35. Park/Brook SW5	2579.6	3282.9	6.0
36. Park/Brook NW1	2506.3	3367.7	6.0
37. Park/Brook NW2	2552.4	3426.8	6.0
38. Park/Brook NW3	2598.6	3485.9	6.0
39. Park/Brook NW4	2544.6	3537.9	6.0
40. Park/Brook NW5	2490.5	3589.9	6.0
41. Park/Brook E1	2853.5	3672.4	6.0
42. Park/Brook E2	2811.9	3617.1	6.0
43. Park/Brook E3	2763.4	3552.5	6.0
44. Park/Brook E4	2838.4	3579.8	6.0
45. Park/Brook E5	2904.4	3603.8	6.0

JOB: Landmark Center RUN: 2018NB

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-360.

WIND ANGLE (DEGR)	REC1	REC2	REC3	REC4	REC5	REC6	REC7	REC8	REC9	REC10	REC11	REC12	REC13	REC14	REC15	REC16	REC17	REC18	REC19	REC20
0.	0.6	1.0	0.6	0.2	0.3	0.8	1.4	1.5	0.6	0.4	0.9	2.1	2.7	1.7	1.2	0.3	0.6	1.6	1.1	0.5
10.	0.6	1.0	0.3	0.2	0.3	0.9	1.4	1.4	0.6	0.5	0.7	1.5	2.5	1.8	1.4	0.4	0.6	1.4	1.1	0.4
20.	0.4	0.8	0.3	0.2	0.3	0.9	1.1	1.6	0.5	0.4	0.6	1.1	2.5	1.8	1.6	0.5	0.7	1.4	1.1	0.4
30.	0.5	0.8	0.4	0.4	0.6	0.9	1.2	1.3	0.6	0.5	0.6	0.9	2.5	1.6	1.5	0.8	1.0	1.5	1.1	0.3
40.	0.5	0.7	1.0	0.7	0.6	0.9	0.9	1.0	0.6	0.5	0.7	0.9	2.2	1.2	1.2	1.3	1.7	2.2	1.1	0.3
50.	0.5	1.0	1.5	1.0	1.0	1.1	0.8	1.0	0.5	0.3	0.4	0.8	1.8	1.0	1.0	1.7	1.8	2.6	1.5	0.4
60.	0.7	1.3	1.9	1.5	1.3	1.3	0.9	0.6	0.3	0.1	0.3	0.6	1.6	0.7	0.4	1.8	1.7	2.9	1.7	0.8
70.	1.1	1.5	2.2	1.7	1.6	1.0	0.5	0.3	0.1	0.0	0.2	0.3	1.3	0.5	0.3	1.5	1.3	2.6	1.8	1.0
80.	1.1	1.5	2.0	1.9	1.5	0.9	0.3	0.2	0.0	0.0	0.2	0.3	0.9	0.4	0.3	1.1	1.2	2.3	2.0	1.1
90.	0.9	1.6	1.7	1.8	1.0	0.8	0.2	0.0	0.0	0.0	0.2	0.3	1.0	0.4	0.2	1.1	1.0	1.8	2.1	1.4
100.	1.1	1.5	1.5	1.7	0.8	0.7	0.1	0.0	0.0	0.0	0.1	0.5	1.1	0.4	0.2	1.0	1.0	1.6	1.7	1.4
110.	1.0	1.6	1.4	1.6	1.0	0.5	0.1	0.0	0.0	0.0	0.1	0.5	1.1	0.4	0.2	0.8	1.1	1.4	1.5	1.5
120.	1.0	1.5	1.4	1.6	1.0	0.3	0.0	0.0	0.0	0.0	0.1	0.5	1.2	0.4	0.2	0.7	1.1	1.4	1.3	1.3
130.	1.4	2.0	1.6	1.5	1.1	0.2	0.0	0.0	0.0	0.0	0.0	0.7	1.3	0.4	0.3	0.6	1.0	1.3	1.1	1.1

WIND ANGLE (DEGR)	REC1	REC2	REC3	REC4	REC5	REC6	REC7	REC8	REC9	REC10	REC11	REC12	REC13	REC14	REC15	REC16	REC17	REC18	REC19	REC20
140.	1.4	2.0	1.8	1.4	1.1	0.0	0.0	0.1	0.1	0.0	0.1	1.0	1.4	0.4	0.3	0.6	1.0	1.2	1.0	0.8
150.	1.7	2.3	2.2	1.5	1.0	0.0	0.0	0.3	0.2	0.1	0.3	1.6	1.4	0.4	0.3	0.6	1.0	1.2	0.8	0.7
160.	1.4	2.3	2.9	1.7	1.3	0.1	0.2	0.7	0.5	0.3	0.6	2.1	1.1	0.3	0.1	0.5	1.0	1.1	0.7	0.5
170.	1.1	1.7	2.9	1.8	1.8	0.2	0.4	0.8	0.6	0.4	0.9	2.1	0.6	0.1	0.0	0.4	0.8	1.0	0.4	0.2
180.	0.6	1.4	2.9	1.9	1.8	0.2	0.4	0.8	0.7	0.5	0.9	1.8	0.2	0.0	0.0	0.4	0.6	0.8	0.3	0.1
190.	0.5	1.2	2.8	1.9	1.8	0.3	0.4	0.8	0.7	0.4	0.8	1.4	0.0	0.0	0.0	0.3	0.5	0.7	0.2	0.0
200.	0.3	1.0	2.7	1.7	1.7	0.3	0.4	0.6	0.6	0.5	0.7	1.1	0.1	0.0	0.0	0.2	0.4	0.6	0.1	0.0
210.	0.1	0.9	2.4	1.5	1.5	0.4	0.6	0.7	0.5	0.5	0.7	0.9	0.2	0.1	0.0	0.2	0.3	0.4	0.0	0.0
220.	0.1	0.9	2.0	0.9	0.9	0.8	0.7	0.9	0.5	0.5	0.6	0.8	0.5	0.2	0.1	0.1	0.1	0.2	0.0	0.0
230.	0.1	0.8	1.9	0.9	0.5	1.3	1.1	1.2	0.5	0.5	0.6	0.8	0.8	0.3	0.1	0.0	0.1	0.1	0.0	0.0
240.	0.1	0.8	1.7	0.7	0.4	1.4	1.3	1.3	0.6	0.5	0.6	0.8	1.0	0.5	0.2	0.0	0.0	0.0	0.0	0.0
250.	0.1	0.8	1.8	0.7	0.3	1.7	1.4	1.3	0.8	0.5	0.6	0.9	1.0	0.6	0.2	0.0	0.0	0.0	0.0	0.0
260.	0.0	0.7	1.8	0.7	0.3	1.7	1.3	1.3	0.8	0.6	0.7	1.0	1.0	0.7	0.3	0.0	0.0	0.0	0.0	0.0
270.	0.0	0.7	1.8	0.5	0.2	1.8	1.6	1.1	0.9	0.7	0.7	1.1	0.9	0.8	0.3	0.0	0.0	0.0	0.0	0.0
280.	0.0	0.5	1.9	0.4	0.2	1.6	1.6	1.4	0.9	0.9	0.8	1.3	0.8	0.8	0.4	0.0	0.0	0.1	0.0	0.0
290.	0.0	0.5	1.9	0.3	0.2	1.3	1.7	1.7	1.0	0.9	0.9	1.4	0.7	0.8	0.4	0.0	0.0	0.1	0.0	0.0
300.	0.0	0.4	1.9	0.4	0.2	1.4	1.7	1.8	1.1	0.9	1.0	1.4	0.6	0.9	0.4	0.0	0.0	0.1	0.1	0.0
310.	0.2	0.4	2.0	0.4	0.3	1.3	1.6	2.1	1.4	1.0	1.1	1.8	0.6	0.9	0.4	0.0	0.0	0.3	0.2	0.0
320.	0.2	0.4	1.8	0.4	0.4	1.0	1.6	2.1	1.3	1.0	1.2	2.1	0.9	0.9	0.4	0.0	0.0	0.5	0.3	0.1
330.	0.2	0.4	1.8	0.4	0.3	1.1	1.6	1.7	1.3	1.1	1.5	2.7	1.4	1.1	0.4	0.0	0.0	0.7	0.4	0.2
340.	0.3	0.7	1.7	0.3	0.3	0.9	1.6	1.6	1.0	0.8	1.3	2.9	2.1	1.2	0.7	0.1	0.3	1.2	0.5	0.2
350.	0.6	0.9	1.0	0.2	0.3	0.8	1.4	1.5	0.9	0.5	1.3	2.6	2.5	1.7	1.0	0.2	0.4	1.5	0.8	0.3
360.	0.6	1.0	0.6	0.2	0.3	0.8	1.4	1.5	0.6	0.4	0.9	2.1	2.7	1.7	1.2	0.3	0.6	1.6	1.1	0.5
MAX	1.7	2.3	2.9	1.9	1.8	1.8	1.7	2.1	1.4	1.1	1.5	2.9	2.7	1.8	1.6	1.8	1.8	2.9	2.1	1.5
DEGR.	150	150	160	80	170	270	290	310	310	330	330	340	0	20	20	60	50	60	90	110

JOB: Landmark Center RUN: 2018NB

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-360.

WIND ANGLE (DEGR)	REC21	REC22	REC23	REC24	REC25	REC26	REC27	REC28	REC29	REC30	REC31	REC32	REC33	REC34	REC35	REC36	REC37	REC38	REC39	REC40
0.	0.1	0.0	0.0	0.0	0.0	1.0	1.1	1.2	0.8	0.4	1.4	1.4	1.0	1.4	1.4	0.1	0.2	0.5	0.5	0.3
10.	0.1	0.0	0.0	0.0	0.0	1.0	1.0	1.1	0.6	0.4	1.3	1.5	1.0	1.4	1.5	0.1	0.2	0.4	0.4	0.4
20.	0.0	0.0	0.0	0.0	0.0	1.0	1.1	1.2	0.6	0.4	0.9	1.6	1.0	1.2	1.6	0.3	0.2	0.4	0.4	0.3
30.	0.0	0.0	0.2	0.1	0.0	1.0	1.1	1.1	0.6	0.4	0.8	1.6	1.2	1.2	1.4	0.2	0.5	0.6	0.4	0.4
40.	0.0	0.0	0.5	0.1	0.0	1.1	1.2	1.3	0.6	0.4	0.7	1.5	1.3	1.2	1.3	0.9	0.6	0.8	0.4	0.4
50.	0.0	0.0	0.7	0.3	0.1	1.1	1.3	1.4	0.6	0.3	0.5	1.7	1.2	1.1	1.0	1.3	1.0	1.1	0.4	0.4
60.	0.0	0.1	0.9	0.7	0.1	1.0	1.2	1.3	0.4	0.2	0.3	1.5	1.3	1.0	0.8	1.7	1.4	1.5	0.7	0.4
70.	0.1	0.4	1.3	0.9	0.2	0.7	0.7	0.8	0.1	0.0	0.2	1.1	1.0	0.8	0.4	2.1	1.5	1.8	1.0	0.5
80.	0.2	0.7	1.5	1.4	0.6	0.3	0.2	0.2	0.0	0.0	0.2	1.0	0.8	0.5	0.2	1.9	1.3	1.8		

1.4   1.1

90.	0.6	0.9	1.4	1.5	0.6	0.0	0.0	0.0	0.0	0.0	0.2	0.9	0.7	0.4	0.1	1.8	1.0	1.4	1.3	1.1
100.	0.6	0.9	1.2	1.6	0.7	0.0	0.0	0.0	0.0	0.0	0.2	0.8	1.0	0.3	0.0	1.7	1.3	1.2	1.2	1.1
110.	0.6	1.0	1.0	1.7	0.7	0.0	0.0	0.0	0.0	0.0	0.2	0.7	1.1	0.2	0.0	1.6	1.4	1.0	1.0	1.0
120.	0.7	0.8	0.9	1.7	0.8	0.0	0.0	0.0	0.0	0.0	0.2	0.5	1.0	0.1	0.0	1.4	1.4	1.0	0.8	1.0
130.	0.7	0.6	0.8	1.6	0.8	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.8	0.0	0.0	1.3	1.5	1.0	0.9	0.8
140.	0.8	0.8	0.9	1.6	0.8	0.0	0.0	0.1	0.1	0.0	0.1	0.1	0.5	0.0	0.0	1.3	1.4	0.8	0.6	0.5
150.	1.0	1.0	1.2	1.5	0.9	0.0	0.0	0.4	0.1	0.1	0.0	0.1	0.2	0.0	0.1	1.6	1.5	0.9	0.5	0.4
160.	1.0	1.0	1.2	1.5	1.0	0.0	0.0	0.7	0.2	0.1	0.0	0.1	0.1	0.1	0.3	1.9	1.6	1.0	0.7	0.6
170.	1.0	1.1	1.1	1.7	1.3	0.0	0.2	1.0	0.5	0.3	0.1	0.1	0.2	0.3	0.5	2.1	1.9	1.3	0.9	0.8
180.	1.2	1.2	1.2	1.4	1.4	0.1	0.2	1.2	0.5	0.3	0.2	0.2	0.2	0.5	0.6	2.1	1.9	1.7	1.0	0.8
190.	1.0	1.3	1.3	1.4	1.6	0.1	0.3	1.2	0.8	0.3	0.2	0.2	0.2	0.5	0.6	1.9	1.8	1.5	1.0	0.7
200.	0.8	1.2	1.8	1.1	1.4	0.2	0.4	1.1	0.7	0.3	0.2	0.2	0.5	0.4	0.5	1.7	1.9	1.4	0.7	0.5
210.	0.7	1.0	1.6	1.1	1.2	0.3	0.5	0.8	0.9	0.3	0.2	0.3	0.7	0.7	0.7	1.8	1.3	1.4	0.5	0.4
220.	0.6	0.7	1.3	0.9	0.9	0.4	0.6	1.0	1.0	0.3	0.2	0.3	1.2	1.1	1.1	1.4	1.1	0.9	0.3	0.3
230.	0.6	0.6	0.7	0.5	0.4	0.7	0.8	1.0	1.3	0.3	0.2	0.4	1.4	1.5	1.5	1.2	0.8	0.5	0.3	0.3
240.	0.6	0.6	0.6	0.3	0.3	0.9	1.0	1.4	1.4	0.5	0.3	0.7	1.8	1.8	1.4	1.1	0.6	0.3	0.2	0.3
250.	0.5	0.6	0.5	0.3	0.2	0.9	1.1	1.4	1.6	0.5	0.4	0.7	1.7	1.7	1.4	1.1	0.5	0.3	0.2	0.3
260.	0.4	0.6	0.6	0.3	0.2	1.0	1.0	1.1	1.7	0.7	0.6	1.0	1.8	2.0	1.4	1.1	0.4	0.2	0.2	0.3
270.	0.5	0.7	0.6	0.3	0.2	1.2	0.9	0.9	1.6	1.0	0.6	1.0	1.6	2.0	1.5	1.0	0.4	0.2	0.2	0.3
280.	0.4	0.7	0.7	0.2	0.1	1.3	1.1	1.0	1.4	1.3	0.7	1.2	1.3	1.9	1.5	0.9	0.3	0.2	0.2	0.5
290.	0.4	0.6	0.7	0.2	0.1	1.4	1.2	1.0	1.1	1.2	0.8	1.0	1.1	1.8	1.7	0.7	0.3	0.2	0.3	0.4
300.	0.5	0.6	0.6	0.1	0.1	1.5	1.3	1.2	0.9	1.3	0.7	0.9	1.0	1.7	1.8	0.6	0.3	0.3	0.3	0.4
310.	0.4	0.4	0.5	0.1	0.1	1.3	1.3	1.3	1.0	1.0	0.5	0.7	1.0	1.9	1.9	0.6	0.3	0.4	0.5	0.4
320.	0.2	0.3	0.3	0.1	0.1	1.3	1.3	1.0	0.7	0.9	0.7	0.6	0.9	1.7	1.7	0.6	0.3	0.5	0.6	0.5
330.	0.2	0.1	0.1	0.1	0.0	1.1	1.4	1.0	0.8	0.9	1.0	0.8	1.0	1.7	1.6	0.7	0.3	0.7	0.5	0.5
340.	0.1	0.1	0.0	0.0	0.0	1.0	1.2	1.0	0.6	0.5	1.2	1.0	0.9	1.6	1.7	0.5	0.3	0.6	0.5	0.3
350.	0.0	0.0	0.0	0.0	0.0	1.0	1.1	1.0	0.7	0.6	1.5	1.2	0.8	1.5	1.6	0.3	0.3	0.5	0.5	0.3
360.	0.1	0.0	0.0	0.0	0.0	1.0	1.1	1.2	0.8	0.4	1.4	1.4	1.0	1.4	1.4	0.1	0.2	0.5	0.5	0.3
MAX	1.2	1.3	1.8	1.7	1.6	1.5	1.4	1.4	1.7	1.3	1.5	1.7	1.8	2.0	1.9	2.1	1.9	1.8	1.4	1.1
DEGR.	180	190	200	110	190	300	330	50	260	280	350	50	240	260	310	70	170	70	80	80

JOB: Landmark Center RUN: 2018NB

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-360.

WIND ANGLE (DEGR)	CONCENTRATION (PPM) REC41	REC42	REC43	REC44	REC45
0.	0.0	0.1	0.5	0.0	0.0
10.	0.0	0.1	0.4	0.0	0.0
20.	0.0	0.1	0.3	0.0	0.0
30.	0.0	0.0	0.2	0.0	0.0
40.	0.0	0.0	0.1	0.0	0.0
50.	0.0	0.0	0.1	0.1	0.1
60.	0.0	0.1	0.5	0.6	0.5
70.	0.2	0.4	1.2	1.2	1.1
80.	0.5	0.7	1.6	1.5	1.5

90.	0.5	0.8	1.6	1.6	1.4
100.	0.5	0.7	1.5	1.5	1.3
110.	0.4	0.8	1.4	1.5	1.2
120.	0.5	0.8	1.4	1.4	1.2
130.	0.5	0.8	1.2	1.3	1.2
140.	0.5	0.8	1.2	1.2	1.3
150.	0.6	0.8	1.2	1.2	1.2
160.	0.6	0.8	1.3	1.2	1.2
170.	0.6	0.9	1.5	1.3	1.2
180.	0.7	1.1	1.5	1.4	1.4
190.	0.9	1.1	1.5	1.6	1.4
200.	0.9	1.2	1.5	1.8	1.7
210.	1.0	1.2	1.5	1.9	1.8
220.	1.1	1.2	1.5	2.1	2.1
230.	1.1	1.2	1.7	1.9	2.2
240.	0.8	1.0	1.3	1.5	1.7
250.	0.7	1.0	1.0	1.1	1.2
260.	0.5	0.9	0.9	0.9	0.6
270.	0.4	0.8	0.8	0.6	0.5
280.	0.2	0.7	0.9	0.7	0.4
290.	0.2	0.5	0.9	0.5	0.3
300.	0.1	0.5	0.9	0.5	0.2
310.	0.1	0.4	0.9	0.4	0.2
320.	0.1	0.4	0.9	0.3	0.1
330.	0.0	0.3	0.8	0.1	0.0
340.	0.0	0.2	0.7	0.1	0.0
350.	0.0	0.2	0.6	0.1	0.0
360.	0.0	0.1	0.5	0.0	0.0
MAX	1.1	1.2	1.7	2.1	2.2
DEGR.	220	200	230	220	230

THE HIGHEST CONCENTRATION OF 2.90 PPM OCCURRED AT RECEPTOR REC18.

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♀                    CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 95221                        PAGE  1

      JOB: Landmark Center                                       RUN: 2018NB

      DATE :  7/ 9/13
      TIME : 13:21:27

         The MODE flag has been set to C for calculating CO averages.

       SITE & METEOROLOGICAL VARIABLES
       -------------------------------
       VS =   0.0 CM/S       VD =   0.0 CM/S       Z0 = 175. CM
        U =  1.0 M/S         CLAS =   4  (D)     ATIM =  60. MINUTES     MIXH =  1000. M   AMB =  0.0 PPM

       LINK VARIABLES
       --------------
         LINK DESCRIPTION     *         LINK COORDINATES (FT)          *    LENGTH  BRG TYPE   VPH    EF      H   W
V/C QUEUE
                              *   X1        Y1        X2        Y2     *     (FT)  (DEG)            (G/MI)  (FT) (FT)
   (VEH)

------------------------*---------------------------------------*-------------------------------------------------------
----
       1. Fen/Brook WB TT     *   2508.3    3314.8    2585.7    3415.8 *     127.    37. AG    139. 100.0   1.0 20.0
0.66   6.5
       2. Fen/Brook EB TTTR   *   2469.9    3221.1    2414.6    3144.9 *      94.   216. AG    208. 100.0   1.0 30.0
0.49   4.8
       3. Fen/Brook SB L      *   2487.6    3319.0    2363.3    3436.9 *     171.   313. AG     59. 100.0   1.0 10.0
0.83   8.7
       4. Fen/Brook SB LTT    *   2476.2    3307.2    2395.5    3381.8 *     110.   313. AG    118. 100.0   1.0 20.0
0.56   5.6
       5. Fen/Brook SB R      *   2463.2    3293.4    2439.4    3316.5 *      33.   314. AG     59. 100.0   1.0 10.0
0.17   1.7
       6. Park/Brook WB TTR   *   2701.3    3561.7    2751.4    3627.8 *      83.    37. AG    262. 100.0   1.0 30.0
0.52   4.2
       7. Park/Brook NWB LLRRR*   2745.9    3510.4    3745.0    3896.3 *    1071.    69. AG    289. 100.0   1.0 30.0
1.25  54.4
       8. Park/Brook NB LTTTR *   2715.4    3403.8    2772.3    3331.3 *      92.   142. AG    350. 100.0   1.0 40.0
0.57   4.7
       9. Park/Brook EB L     *   2628.6    3435.0    2596.0    3392.8 *      53.   218. AG    109. 100.0   1.0 10.0
0.67   2.7
      10. Park/Brook EB T     *   2637.5    3428.1    2557.0    3325.2 *     131.   218. AG     73. 100.0   1.0 10.0
0.69   6.6
      11. Park/Brook EB RR    *   2648.5    3416.9    2594.3    3345.2 *      90.   217. AG     82. 100.0   1.0 20.0
0.51   4.6
      12. River/Park SB       *   2213.3    3801.8    3580.3    6597.8 *    3112.    26. AG    100. 100.0   1.0 10.0
2.01 158.1
      13. River/Park SB East  *   2256.2    3801.2    2279.3    3925.6 *     127.    11. AG    200. 100.0   1.0 20.0
0.87   6.4
      14. River/Park WB North *   2272.8    3765.2    2365.1    3765.6 *      92.    90. AG    227. 100.0   1.0 30.0
0.50   4.7
      15. River/Park WB South *   2270.5    3707.9    2337.8    3736.7 *      73.    67. AG    152. 100.0   1.0 20.0
0.39   3.7
      16. River/Park NEB      *   2169.9    3720.6    2153.5    3704.8 *      23.   226. AG    188. 100.0   1.0 20.0
0.16   1.2
      17. Beacon/Park SB LTT  *   1962.9    4712.6    1930.9    4813.0 *     105.   342. AG    143. 100.0   1.0 20.0
0.49   5.4
      18. Beacon/Park WB LTT  *   2055.3    4691.7    2200.7    4745.3 *     155.    70. AG    131. 100.0   1.0 20.0
0.71   7.9
      19. Beacon/Park NB LTT  *   2041.7    4597.4    3032.8    1710.0 *    3053.   161. AG    241. 100.0   1.0 20.0
**** 155.1
      20. Beacon/Park EB LTTT *   1966.3    4608.1    1913.4    4584.3 *      58.   246. AG    238. 100.0   1.0 30.0
0.29   2.9
      21. Beacon/Park EB R    *   1975.6    4560.5    1953.5    4563.9 *      22.   279. AG    143. 100.0   1.0 20.0
0.10   1.1
      22. Beacon/Park SB R    *   1917.2    4688.3    1919.9    4692.5 *       5.    32. AG     71. 100.0   1.0 10.0
0.02   0.3
      23. Beacon/Park WB R    *   2019.8    4741.2    2032.4    4736.8 *      13.   109. AG     79. 100.0   1.0 10.0
0.07   0.7
      24. Beacon/Park NB R    *   2095.2    4627.5    2086.9    4605.4 *      24.   201. AG     71. 100.0   1.0 10.0
0.11   1.2
      25. Boyl/Kil SB LTR     *   3322.0    3753.8    3306.1    3803.0 *      52.   342. AG    182. 100.0   1.0 20.0
0.35   2.6
      26. Boyl/Kil WB LTTR    *   3373.3    3738.7    3453.9    3771.3 *      87.    68. AG     75. 100.0   1.0 20.0
0.52   4.4
      27. Boyl/Kil NB LTR     *   3365.2    3677.7    3376.9    3648.1 *      32.   158. AG     91. 100.0   1.0 10.0
0.21   1.6
      28. Boyl/Kil EB LTTR    *   3320.4    3695.3    3225.5    3660.7 *     101.   250. AG     75. 100.0   1.0 20.0
0.60   5.1
      29. Fenway/Brook South  *   2496.9    3278.9    2636.6    3081.1 *     242.   145. AG    936.   8.8   1.0 54.0
      30. Fenway/Brook West   *   2481.8    3262.9    2347.3    3075.6 *     231.   216. AG   1965.   8.8   1.0 78.0
      31. Fenway/Brook North  *   2491.0    3288.6    2373.1    3398.7 *     161.   313. AG   1653.   8.8   1.0 66.0
      32. Fenway/Brook East   *   2497.8    3264.6    2608.7    3389.7 *     167.    42. AG   2407.   8.8   1.0 90.0
      33. Park/Brook South    *   2691.9    3447.3    2838.3    3241.2 *     253.   145. AG    992.   8.8   1.0 66.0
      34. Park/Brook West     *   2672.2    3490.7    2502.8    3273.8 *     275.   218. AG   2418.   8.8   1.0 90.0
      35. Park/Brook North    *   2656.7    3489.7    2496.1    3644.1 *     223.   314. AG   1821.   8.8   1.0 66.0
      36. Park/Brook East     *   2663.3    3490.8    2801.7    3675.1 *     230.    37. AG   1249.   8.8   1.0 66.0
      37. Park/Brook SE       *   2681.0    3470.4    2968.4    3574.9 *     306.    70. AG   2358.   8.8   1.0 78.0
      38. River/Park N        *   2254.7    3768.2    2266.4    3911.9 *     144.     5. AG    473.   8.8   1.0 42.0
      39. River/Park SE       *   2239.1    3675.4    2343.7    3750.1 *     129.    54. AG    454.   8.8   1.0 42.0
      40. River/Park NE       *   2237.1    3772.1    2377.4    3769.2 *     140.    91. AG    858.   8.8   1.0 54.0
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      41. River/Park S        *   2231.1    3745.1    2210.1    3564.3 *     182.   187. AG    927.   8.8   1.0 54.0
      42. River/Park SW       *   2211.1    3765.1    2058.1    3624.4 *     208.   227. AG   1520.   8.8   1.0 54.0
      43. River/Park NW       *   2194.0    3770.2    2250.7    3886.0 *     129.    26. AG    548.   8.8   1.0 30.0
      44. Beacon/Park N       *   1996.0    4667.5    1894.2    4948.4 *     299.   340. AG   1143.   8.8   1.0 78.0
♀                                                                                                             PAGE  2
      JOB: Landmark Center                                       RUN: 2018NB

      DATE :  7/ 9/13
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       LINK VARIABLES
       --------------
         LINK DESCRIPTION     *         LINK COORDINATES (FT)          *    LENGTH  BRG TYPE   VPH    EF      H   W
V/C QUEUE
                              *   X1        Y1        X2        Y2     *     (FT)  (DEG)            (G/MI)  (FT) (FT)
   (VEH)

------------------------*---------------------------------------*-------------------------------------------------------
----
      45. Beacon/Park NR      *   1908.0    4673.8    1956.1    4744.7 *      86.    34. AG     15.   8.8   1.0 30.0
      46. Beacon/Park E       *   1997.8    4657.7    2274.4    4755.8 *     293.    70. AG   1622.   8.8   1.0 78.0
      47. Beacon/Park ER      *   1991.4    4750.8    2112.1    4710.6 *     127.   108. AG     36.   8.8   1.0 30.0
      48. Beacon/Park S       *   2009.1    4646.4    2098.7    4401.0 *     261.   160. AG   1714.   8.8   1.0 78.0
      49. Beacon/Park SR      *   2102.5    4662.0    2076.2    4571.2 *      95.   196. AG     71.   8.8   1.0 42.0
      50. Beacon/Park W EB    *   1995.6    4607.6    1704.2    4488.4 *     315.   248. AG    603.   8.8   1.0 66.0
      51. Beacon/Park W EBR   *   2009.1    4551.2    1907.4    4575.2 *     104.   283. AG    134.   8.8   1.0 38.0
      52. Beacon/Park W WB    *   1989.3    4675.4    1658.3    4556.1 *     352.   250. AG    833.   8.8   1.0 78.0
      53. Boyl/Kil N          *   3344.5    3717.0    3289.1    3876.3 *     169.   341. AG    379.   8.8   1.0 54.0
      54. Boyl/Kil E          *   3348.9    3715.0    3516.2    3780.7 *     180.    69. AG   2426.   8.8   1.0 78.0
      55. Boyl/Kil S          *   3349.9    3702.1    3425.5    3502.1 *     214.   159. AG    241.   8.8   1.0 54.0
      56. Boyl/Kil W          *   3346.0    3717.8    3141.9    3641.3 *     218.   249. AG   2392.   8.8   1.0 78.0
♀                                                                                                             PAGE  3
      JOB: Landmark Center                                       RUN: 2018NB

      DATE :  7/ 9/13
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       ADDITIONAL QUEUE LINK PARAMETERS
       --------------------------------
         LINK DESCRIPTION     *    CYCLE    RED     CLEARANCE  APPROACH  SATURATION   IDLE   SIGNAL    ARRIVAL
                              *    LENGTH   TIME    LOST TIME    VOL     FLOW RATE   EM FAC   TYPE      RATE
                              *    (SEC)   (SEC)     (SEC)      (VPH)      (VPH)    (gm/hr)
      ------------------------*--------------------------------------------------------------------------------
       1. Fen/Brook WB TT     *     100      54        3.0        863       1600      47.91      1         3
       2. Fen/Brook EB TTTR   *     100      54        3.0        959       1600      47.91      1         3
       3. Fen/Brook SB L      *     100      46        3.0        647       1600      47.91      1         3
       4. Fen/Brook SB LTT    *     100      46        3.0        874       1600      47.91      1         3
       5. Fen/Brook SB R      *     100      46        3.0        132       1600      47.91      1         3
       6. Park/Brook WB TTR   *     100      68        3.0        669       1600      47.91      1         3
       7. Park/Brook NWB LLRRR*     100      75        3.0       1203       1600      47.91      1         3
       8. Park/Brook NB LTTTR *     100      68        3.0        992       1600      47.91      1         3
       9. Park/Brook EB L     *     100      85        3.0        107       1600      47.91      1         3
      10. Park/Brook EB T     *     100      57        3.0        419       1600      47.91      1         3
      11. Park/Brook EB RR    *     100      32        3.0       1029       1600      47.91      1         3
      12. River/Park SB       *     100      78        3.0        548       1600      47.91      1         3
      13. River/Park SB East  *     100      78        3.0        473       1600      47.91      1         3
      14. River/Park WB North *     100      59        3.0        858       1600      47.91      1         3
      15. River/Park WB South *     100      59        3.0        454       1600      47.91      1         3
      16. River/Park NEB      *     100      73        3.0        114       1600      47.91      1         3
      17. Beacon/Park SB LTT  *     110      61        3.0        632       1600      47.91      1         3
      18. Beacon/Park WB LTT  *     110      56        3.0       1012       1600      47.91      1         3
      19. Beacon/Park NB LTT  *     110     103        3.0        591       1600      47.91      1         3
      20. Beacon/Park EB LTTT *     110      68        3.0        469       1600      47.91      1         3
      21. Beacon/Park EB R    *     110      61        3.0        134       1600      47.91      1         3
      22. Beacon/Park SB R    *     110      61        3.0         15       1600      47.91      1         3
      23. Beacon/Park WB R    *     110      68        3.0         36       1600      47.91      1         3
      24. Beacon/Park NB R    *     110      61        3.0         71       1600      47.91      1         3
      25. Boyl/Kil SB LTR     *     100      71        3.0        267       1600      47.91      1         3
      26. Boyl/Kil WB LTTR    *     100      29        3.0       1096       1600      47.91      1         3
      27. Boyl/Kil NB LTR     *     100      71        3.0         82       1600      47.91      1         3
      28. Boyl/Kil EB LTTR    *     100      29        3.0       1274       1600      47.91      1         3

       RECEPTOR LOCATIONS
       ------------------
                              *       COORDINATES (FT)        *
         RECEPTOR             *     X          Y          Z     *
      ------------------------*-------------------------------*
       1. Beacon/Park NE1     *     1956.0     4921.7      6.0   *
       2. Beacon/Park NE2     *     1981.6     4851.2      6.0   *
       3. Beacon/Park NE3     *     2059.7     4754.4      6.0   *
       4. Beacon/Park NE4     *     2163.5     4768.4      6.0   *
       5. Beacon/Park NE5     *     2234.2     4793.5      6.0   *
       6. Beacon/Park SE1     *     2273.6     4703.5      6.0   *
       7. Beacon/Park SE2     *     2202.9     4678.4      6.0   *
       8. Beacon/Park SE3     *     2119.1     4608.0      6.0   *
       9. Beacon/Park SE4     *     2120.2     4485.0      6.0   *
      10. Beacon/Park SE5     *     2146.8     4412.1      6.0   *
      11. Beacon/Park SW1     *     2053.4     4382.2      6.0   *
      12. Beacon/Park SW2     *     2027.7     4452.7      6.0   *
      13. Beacon/Park SW3     *     1951.6     4535.0      6.0   *
      14. Beacon/Park SW4     *     1869.5     4509.6      6.0   *
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RECEPTOR	X	Y	Z
15. Beacon/Park SW5	1800.1	4481.2	6.0
16. Beacon/Park NW1	1748.7	4640.8	6.0
17. Beacon/Park NW2	1819.3	4666.2	6.0

JOB: Landmark Center RUN: 2018NB

DATE : 7/ 9/13
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RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
18. Beacon/Park NW3	1911.4	4723.3	6.0
19. Beacon/Park NW4	1893.8	4805.6	6.0
20. Beacon/Park NW5	1868.3	4876.1	6.0
21. Riverway/Park NE1	2301.3	3957.6	6.0
22. Riverway/Park NE2	2295.2	3882.8	6.0
23. Riverway/Park NE3	2289.1	3808.1	6.0
24. Riverway/Park NE4	2364.1	3806.5	6.0
25. Riverway/Park NE5	2439.1	3806.0	6.0
26. Riverway/Park SE1	2427.5	3594.7	6.0
27. Riverway/Park SE2	2406.6	3667.7	6.0
28. Riverway/Park SE3	2309.4	3687.5	6.0
29. Riverway/Park SE4	2248.8	3576.7	6.0
30. Riverway/Park SE5	2296.6	3506.9	6.0
31. Riverway/Park SW1	2170.6	3544.5	6.0
32. Riverway/Park SW2	2179.2	3619.0	6.0
33. Riverway/Park SW3	2187.9	3693.5	6.0
34. Riverway/Park SW4	2132.7	3642.7	6.0
35. Riverway/Park SW5	2077.5	3592.0	6.0
36. Riverway/Park NW1	2059.1	3675.6	6.0
37. Riverway/Park NW2	2114.4	3726.4	6.0
38. Riverway/Park NW3	2169.6	3777.2	6.0
39. Riverway/Park NW4	2202.6	3844.5	6.0
40. Riverway/Park NW5	2235.3	3912.0	6.0
41. Boyl/Kil NE1	3320.8	3917.2	6.0
42. Boyl/Kil NE2	3339.3	3844.4	6.0
43. Boyl/Kil NE3	3364.0	3773.6	6.0
44. Boyl/Kil NE4	3433.8	3801.0	6.0
45. Boyl/Kil NE5	3503.6	3828.4	6.0
46. Boyl/Kil SE1	3537.2	3736.3	6.0
47. Boyl/Kil SE2	3467.1	3708.8	6.0
48. Boyl/Kil SE3	3397.3	3681.4	6.0
49. Boyl/Kil SE4	3423.8	3611.2	6.0
50. Boyl/Kil SE5	3450.3	3541.1	6.0
51. Boyl/Kil SW1	3379.9	3518.0	6.0
52. Boyl/Kil SW2	3353.1	3589.0	6.0
53. Boyl/Kil SW3	3326.9	3658.3	6.0
54. Boyl/Kil SW4	3256.7	3632.0	6.0
55. Boyl/Kil SW5	3186.4	3605.7	6.0
56. Boyl/Kil NW1	3153.2	3697.9	6.0
57. Boyl/Kil NW2	3223.4	3724.2	6.0
58. Boyl/Kil NW3	3293.6	3750.5	6.0
59. Boyl/Kil NW4	3269.0	3821.4	6.0
60. Boyl/Kil NW5	3244.5	3891.9	6.0

JOB: Landmark Center RUN: 2018NB

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-360.

WIND * CONCENTRATION
ANGLE * (PPM)

(DEGR)	REC1	REC2	REC3	REC4	REC5	REC6	REC7	REC8	REC9	REC10	REC11	REC12	REC13	REC14	REC15	REC16	REC17	REC18	REC19	REC20
0.	0.0	0.0	0.0	0.0	0.0	0.2	0.4	0.4	0.2	0.2	0.9	0.8	0.9	0.3	0.2	0.0	0.0	0.3	0.2	0.1
10.	0.0	0.0	0.0	0.0	0.0	0.1	0.4	0.4	0.2	0.1	1.0	0.9	1.0	0.3	0.2	0.0	0.1	0.4	0.3	0.1
20.	0.0	0.0	0.0	0.0	0.0	0.1	0.4	0.4	0.1	0.1	0.9	1.0	0.7	0.6	0.4	0.0	0.1	0.5	0.3	0.2
30.	0.0	0.0	0.0	0.0	0.0	0.1	0.4	0.4	0.1	0.0	0.9	0.9	0.9	0.7	0.4	0.1	0.1	0.4	0.3	0.2
40.	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.2	0.0	0.1	0.7	0.9	0.8	0.8	0.6	0.1	0.2	0.4	0.3	0.2
50.	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.2	0.1	0.1	0.7	0.8	0.7	0.7	0.6	0.2	0.2	0.4	0.2	0.2
60.	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.0	0.1	0.6	0.7	0.7	0.5	0.5	0.2	0.2	0.4		

2018BD_CO_2.out

(DEGR)	REC1	REC2	REC3	REC4	REC5	REC6	REC7	REC8	REC9	REC10	REC11	REC12	REC13	REC14	REC15	REC16	REC17	REC18	REC19	REC20
																			0.2	0.3
70.	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.6	0.8	0.6	0.5	0.4	0.3	0.4	0.5	0.4	0.3
80.	0.0	0.0	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.8	0.5	0.4	0.2	0.4	0.6	0.6	0.4	0.2
90.	0.0	0.0	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.7	0.6	0.4	0.2	0.5	0.6	0.7	0.5	0.2
100.	0.0	0.1	0.5	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.4	0.8	0.6	0.4	0.2	0.6	0.6	0.6	0.8	0.3
110.	0.0	0.1	0.5	0.5	0.1	0.0	0.0	0.0	0.0	0.0	0.5	0.7	0.6	0.3	0.1	0.6	0.5	0.7	0.9	0.4
120.	0.1	0.2	0.5	0.5	0.1	0.0	0.0	0.1	0.1	0.1	0.5	0.8	0.6	0.4	0.3	0.7	0.9	0.7	0.9	0.6
130.	0.2	0.3	0.6	0.7	0.3	0.1	0.1	0.1	0.1	0.1	0.6	0.8	0.6	0.3	0.2	0.6	0.8	0.7	1.0	0.6
140.	0.2	0.2	0.6	0.6	0.3	0.1	0.1	0.1	0.1	0.1	0.5	0.7	0.4	0.2	0.2	0.5	0.7	0.8	0.9	0.7
150.	0.4	0.6	0.6	0.7	0.3	0.1	0.0	0.1	0.2	0.2	0.5	0.7	0.4	0.2	0.2	0.5	0.5	0.8	1.0	0.9
160.	0.7	0.6	0.9	0.8	0.5	0.1	0.1	0.3	0.6	0.5	0.4	0.5	0.3	0.1	0.1	0.4	0.4	0.7	0.8	0.8
170.	0.8	0.8	1.1	0.9	0.5	0.2	0.2	0.5	0.9	0.7	0.2	0.2	0.1	0.0	0.0	0.3	0.3	0.5	0.4	0.3
180.	0.6	0.7	0.9	0.9	0.5	0.2	0.3	0.5	0.9	0.7	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.2	0.1
190.	0.5	0.7	0.8	1.0	0.6	0.2	0.2	0.6	0.9	0.6	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.4	0.1	0.1
200.	0.5	0.6	0.6	1.0	0.8	0.2	0.3	0.7	0.9	0.5	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.3	0.1	0.1
210.	0.4	0.6	0.6	1.0	0.7	0.3	0.3	0.6	0.8	0.5	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.3	0.1	0.0
220.	0.3	0.6	0.6	0.9	0.9	0.2	0.3	0.6	0.9	0.5	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.1	0.0
230.	0.2	0.3	0.5	0.8	0.8	0.2	0.4	0.6	0.9	0.5	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.0	0.0
240.	0.2	0.3	0.4	0.7	0.7	0.3	0.3	0.6	0.9	0.6	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.0	0.0
250.	0.3	0.3	0.5	0.5	0.5	0.4	0.7	0.7	0.9	0.6	0.0	0.0	0.1	0.1	0.0	0.1	0.1	0.0	0.0	0.0
260.	0.3	0.2	0.3	0.3	0.2	0.7	0.5	0.8	0.9	0.7	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0
270.	0.2	0.2	0.3	0.2	0.1	0.7	0.7	0.7	0.9	0.8	0.0	0.0	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0
280.	0.2	0.3	0.3	0.1	0.1	0.8	0.6	0.6	1.0	0.8	0.0	0.0	0.3	0.3	0.1	0.0	0.0	0.0	0.0	0.0
290.	0.2	0.3	0.3	0.1	0.1	0.6	0.8	0.7	1.2	0.9	0.0	0.2	0.2	0.3	0.1	0.0	0.0	0.0	0.0	0.0
300.	0.1	0.3	0.3	0.1	0.0	0.6	0.7	0.6	1.2	1.0	0.0	0.2	0.2	0.3	0.2	0.0	0.0	0.0	0.0	0.0
310.	0.1	0.3	0.2	0.0	0.0	0.4	0.7	0.5	1.2	1.3	0.1	0.3	0.3	0.2	0.2	0.0	0.0	0.0	0.0	0.0
320.	0.1	0.2	0.1	0.0	0.0	0.3	0.5	0.5	1.0	1.0	0.1	0.3	0.4	0.2	0.2	0.0	0.0	0.0	0.0	0.0
330.	0.1	0.2	0.1	0.0	0.0	0.3	0.6	0.5	0.8	1.0	0.3	0.4	0.5	0.2	0.2	0.0	0.0	0.0	0.0	0.0
340.	0.0	0.1	0.0	0.0	0.0	0.3	0.6	0.4	0.5	0.6	0.5	0.5	0.6	0.2	0.2	0.0	0.0	0.1	0.1	0.0
350.	0.0	0.0	0.0	0.0	0.0	0.3	0.5	0.4	0.3	0.3	0.8	0.6	0.9	0.2	0.2	0.0	0.0	0.2	0.2	0.1
360.	0.0	0.0	0.0	0.0	0.0	0.2	0.4	0.4	0.2	0.2	0.9	0.8	0.9	0.3	0.2	0.0	0.0	0.3	0.2	0.1
MAX	0.8	0.8	1.1	1.0	0.9	0.8	0.8	0.8	1.2	1.3	1.0	1.0	1.0	0.8	0.6	0.7	0.9	0.8	1.0	0.9
DEGR.	170	170	170	190	220	280	290	260	290	310	10	20	10	40	40	120	120	140	130	150

JOB: Landmark Center RUN: 2018NB

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-360.

WIND * CONCENTRATION
ANGLE * (PPM)

(DEGR)	REC21	REC22	REC23	REC24	REC25	REC26	REC27	REC28	REC29	REC30	REC31	REC32	REC33	REC34	REC35	REC36	REC37	REC38	REC39	REC40
0.	0.4	1.0	1.6	0.1	0.1	0.1	0.1	1.6	0.8	0.7	0.4	0.6	0.8	0.6	0.5	0.1	0.2	0.2	0.3	0.6

10. *	0.5	0.5	1.2	0.1	0.1	0.1	0.1	1.5	1.0	0.5	0.7	0.6	0.9	0.8	0.5	0.1	0.2	0.2	0.3	0.6
20. *	0.5	0.4	1.0	0.1	0.1	0.0	0.1	1.4	0.6	0.4	0.7	0.7	1.1	0.9	0.6	0.3	0.3	0.4	0.5	0.7
30. *	0.4	0.3	0.8	0.0	0.0	0.0	0.0	1.1	0.5	0.3	0.6	0.8	1.1	1.0	0.7	0.2	0.5	0.7	0.7	0.8
40. *	0.2	0.1	0.7	0.0	0.0	0.1	0.0	0.9	0.3	0.2	0.6	0.9	0.9	1.0	0.6	0.4	0.7	0.8	0.9	0.8
50. *	0.0	0.1	0.6	0.0	0.0	0.1	0.0	0.6	0.2	0.2	0.4	0.9	0.8	0.6	0.5	0.5	0.6	0.9	1.0	0.8
60. *	0.0	0.0	0.6	0.0	0.0	0.2	0.0	0.4	0.2	0.3	0.3	0.7	0.8	0.6	0.4	0.7	0.8	0.8	1.0	0.8
70. *	0.0	0.0	0.6	0.0	0.0	0.3	0.0	0.4	0.4	0.4	0.4	0.4	0.9	0.5	0.2	0.9	0.8	1.0	1.0	0.9
80. *	0.0	0.0	0.6	0.1	0.1	0.7	0.1	0.5	0.5	0.7	0.5	0.5	0.8	0.4	0.3	0.8	1.1	0.9	1.0	1.0
90. *	0.1	0.1	0.9	0.1	0.1	0.8	0.3	0.6	0.6	0.7	0.5	0.8	0.7	0.5	0.5	0.7	1.2	0.8	1.1	1.2
100. *	0.1	0.2	1.0	0.2	0.2	0.9	0.7	0.9	0.6	0.6	0.6	0.7	0.8	0.6	0.6	0.9	1.3	1.0	1.2	1.3
110. *	0.1	0.2	1.3	0.2	0.3	0.6	0.7	0.8	0.4	0.7	0.4	0.7	0.7	0.6	0.2	0.7	1.2	1.2	1.4	1.3
120. *	0.2	0.4	1.6	0.3	0.4	0.5	0.6	0.8	0.4	0.8	0.5	0.6	0.6	0.5	0.4	0.8	0.8	1.1	1.5	1.4
130. *	0.2	0.6	1.7	0.3	0.5	0.5	0.5	0.8	0.6	0.8	0.5	0.7	0.6	0.6	0.3	0.7	1.0	0.9	1.4	1.7
140. *	0.2	0.9	1.9	0.3	0.3	0.3	0.4	0.8	0.6	1.1	0.4	0.5	0.8	0.4	0.3	0.6	0.7	1.0	1.3	1.8
150. *	0.4	1.7	2.1	0.6	0.3	0.6	0.4	1.0	0.5	0.6	0.3	0.5	0.8	0.3	0.2	0.5	0.7	0.9	1.1	1.9
160. *	0.7	2.3	1.9	0.8	0.5	0.8	0.7	0.7	0.3	0.4	0.2	0.3	0.5	0.1	0.1	0.4	0.5	0.8	0.9	1.7
170. *	1.0	2.4	1.5	0.9	0.6	1.1	1.0	0.4	0.2	0.2	0.0	0.1	0.2	0.0	0.0	0.3	0.4	0.6	0.5	1.3
180. *	1.1	2.2	0.9	1.1	0.4	1.0	0.8	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.2	0.4	0.6	0.4	0.8
190. *	1.5	2.1	0.9	1.2	0.3	0.8	0.8	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.2	0.4	0.5	0.4	0.4
200. *	1.6	2.0	0.7	1.3	0.3	0.6	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	0.6	0.4	0.3
210. *	1.6	1.8	0.7	1.6	0.3	0.5	0.5	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.5	0.2	0.2
220. *	1.5	2.0	0.7	1.5	0.2	0.5	0.5	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.2	0.3	0.1	0.1
230. *	1.1	1.8	0.6	1.5	0.6	0.5	0.4	0.1	0.1	0.0	0.0	0.0	0.2	0.1	0.0	0.0	0.1	0.2	0.1	0.0
240. *	1.0	1.9	0.5	1.2	0.8	0.5	0.4	0.1	0.1	0.0	0.0	0.0	0.3	0.2	0.0	0.0	0.0	0.1	0.0	0.0
250. *	0.9	1.7	0.6	1.0	0.8	0.5	0.5	0.3	0.1	0.0	0.0	0.0	0.4	0.3	0.0	0.0	0.0	0.0	0.0	0.0
260. *	0.8	1.7	0.6	0.9	0.6	0.5	0.6	0.3	0.2	0.0	0.0	0.1	0.4	0.3	0.0	0.0	0.0	0.0	0.0	0.0
270. *	0.8	1.8	0.6	0.7	0.5	0.6	0.6	0.4	0.2	0.0	0.0	0.1	0.5	0.4	0.0	0.0	0.0	0.0	0.0	0.0
280. *	0.8	1.6	0.7	0.8	0.3	0.7	0.7	0.5	0.3	0.0	0.0	0.2	0.5	0.4	0.0	0.0	0.0	0.0	0.0	0.0
290. *	0.8	1.7	0.7	0.8	0.4	0.7	0.7	0.5	0.3	0.0	0.0	0.2	0.6	0.4	0.0	0.0	0.0	0.0	0.0	0.0
300. *	0.9	1.8	0.7	0.9	0.5	0.7	0.8	0.5	0.3	0.2	0.1	0.2	0.6	0.3	0.0	0.0	0.0	0.0	0.0	0.0
310. *	0.9	2.0	0.8	0.8	0.5	0.8	1.1	0.6	0.3	0.2	0.1	0.2	0.7	0.4	0.0	0.0	0.0	0.0	0.0	0.0
320. *	0.9	2.4	0.9	0.8	0.4	1.0	1.1	0.6	0.3	0.2	0.1	0.2	0.6	0.4	0.1	0.0	0.0	0.0	0.0	0.0
330. *	1.0	2.5	1.0	0.7	0.3	0.9	1.1	0.9	0.4	0.2	0.2	0.2	0.6	0.4	0.2	0.0	0.0	0.0	0.0	0.1
340. *	0.9	2.3	1.4	0.5	0.2	0.8	0.8	1.5	0.5	0.3	0.2	0.3	0.5	0.4	0.2	0.0	0.0	0.1	0.1	0.5
350. *	0.6	1.7	1.5	0.3	0.1	0.3	0.4	1.7	0.7	0.6	0.3	0.4	0.6	0.5	0.3	0.0	0.1	0.2	0.3	0.6
360. *	0.4	1.0	1.6	0.1	0.1	0.1	0.1	1.6	0.8	0.7	0.4	0.6	0.8	0.6	0.5	0.1	0.2	0.2	0.3	0.6
MAX *	1.6	2.5	2.1	1.6	0.8	1.1	1.1	1.7	1.0	1.1	0.7	0.9	1.1	1.0	0.7	0.9	1.3	1.2	1.5	1.9
DEGR. *	200	330	150	210	240	170	310	350	10	140	10	40	30	30	30	70	100	110	120	150

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JOB: Landmark Center RUN: 2018NB

MODEL RESULTS

REMARKS : In search of the angle corresponding to
the maximum concentration, only the first
angle, of the angles with same maximum
concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-360.

WIND * CONCENTRATION
ANGLE * (PPM)

(DEGR)*	REC41	REC42	REC43	REC44	REC45	REC46	REC47	REC48	REC49	REC50	REC51	REC52	REC53	REC54	REC55	REC56	REC57	REC58	REC59	REC60
0. *	0.0	0.0	0.0	0.0	0.0	0.5	0.9	1.0	0.6	0.4	0.6	0.7	1.2	1.0	1.0	0.0	0.0	0.2	0.0	0.0
10. *	0.0	0.0	0.0	0.0	0.0	0.4	0.9	1.1	0.6	0.3	0.5	0.8	1.3	1.2	1.0	0.0	0.0	0.3	0.0	0.0
20. *	0.0	0.0	0.0	0.0	0.0	0.5	1.0	1.2	0.5	0.3	0.5	0.7	1.1	1.4	1.1	0.0	0.0	0.4	0.1	0.0
30. *	0.0	0.0	0.0	0.0	0.0	0.5	0.9	1.2	0.5	0.2	0.4	0.7	1.2	1.4	1.2	0.0	0.0	0.5	0.1	0.0
40. *	0.0	0.0	0.0	0.0	0.0	0.5	0.9	1.1	0.4	0.1	0.3	0.6	1.3	1.4	1.4	0.0	0.1	0.5	0.1	0.0
50. *	0.0	0.0	0.1	0.1	0.1	0.3	0.7	1.0	0.2	0.1	0.2	0.4	1.3	1.3	1.4	0.1	0.2	0.6	0.1	0.0
60. *	0.0	0.0	0.6	0.4	0.4	0.2	0.5	0.7	0.1	0.0	0.1	0.2	1.1	1.0	1.2	0.7	0.7	1.0	0.1	0.0
70. *	0.0	0.1	1.2	0.9	0.7	0.1	0.2	0.3	0.0	0.0	0.1	0.1	0.7	0.6	0.6	1.3	1.3	1.4	0.2	0.0
80. *	0.0	0.2	1.8	1.4	1.1	0.0	0.0	0.1	0.0	0.0	0.1	0.1	0.3	0.3	0.3	1.8	1.8	2.0	0.4	0.1
90. *	0.1	0.4	1.9	1.5	1.2	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.0	0.0	1.9	1.8	2.1	0.6	0.2
100. *	0.2	0.5	1.9	1.5	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.0	0.0	1.8	1.7	2.0	0.8	0.2
110. *	0.3	0.6	1.9	1.4	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	1.6	1.7	1.7	1.0	0.4
120. *	0.4	0.7	1.8	1.4	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	1.5	1.6	1.6	1.0	0.6
130. *	0.4	0.8	1.6	1.4	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	1.3	1.4	1.5	1.1	0.6
140. *	0.4	0.7	1.5	1.4	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	1.3	1.4	1.4	1.0	0.7
150. *	0.4	0.8	1.4	1.4	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	1.3	1.4	1.3	0.9	0.6
160. *	0.4	0.7	1.5	1.6	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	1.4	1.4	0.8	0.6
170. *	0.6	0.8	1.4	1.4	1.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	1.4	1.4	0.7	0.4
180. *	0.7	0.9	1.3	1.5	1.2	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	1.2	1.4	1.4	0.8	0.4
190. *	0.7	1.0	1.6	1.6	1.4	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.1	1.2	1.4	1.4	0.8	0.6
200. *	0.7	1.1	1.8	1.9	1.5	0.0	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	1.2	1.6	1.7	0.8	0.5
210. *	0.6	1.1	2.0	2.1	1.8	0.1	0.1	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	1.3	1.7	1.8	0.7	0.5
220. *	0.6	1.0	2.2	2.1	2.1	0.1	0.1	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	1.3	1.7	1.9	0.7	0.5
230. *	0.4	0.9	2.4	2.3	2.3	0.1	0.1	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	1.6	1.8	2.0	0.7	0.5
240. *	0.3	0.7	2.3	2.2	2.2	0.4	0.4	0.5	0.2	0.2	0.1	0.1	0.4	0.4	0.5	1.5	1.7	1.9	0.6	0.3
250. *	0.1	0.4	1.7	1.6	1.6	1.0	0.9	1.0	0.4	0.2	0.1	0.4	0.9	0.7	0.6	1.1	1.2	1.3	0.3	0.1
260. *	0.1	0.2	1.0	0.8	0.8	1.4	1.3	1.5	0.5	0.4	0.4	0.5	1.3	1.0	0.9	0.6	0.6	0.6	0.1	0.1
270. *	0.1	0.2	0.6	0.3	0.2	1.6	1.3	1.5	0.7	0.5	0.3	0.6	1.5	1.1	0.8	0.2	0.2	0.2	0.1	0.1
280. *	0.1	0.2	0.5	0.1	0.1	1.4	1.3	1.4	0.7	0.6	0.4	0.6	1.3	1.1	0.8	0.1	0.1	0.1	0.1	0.1
290. *	0.1	0.2	0.4	0.1	0.0	1.2	1.5	1.2	0.8	0.5	0.4	0.6	1.4	1.2	0.8	0.1	0.1	0.1	0.1	0.1
300. *	0.0	0.1	0.3	0.0	0.0	1.0	1.3	1.1	0.7	0.6	0.4	0.7	1.4	1.2	0.8	0.1	0.1	0.0	0.0	0.0
310. *	0.0	0.1	0.2	0.0	0.0	0.9	1.0	1.2	0.8	0.5	0.4	0.7	1.2	1.1	0.8	0.0	0.0	0.0	0.0	0.0
320. *	0.0	0.0	0.1	0.0	0.0	0.8	1.0	1.1	0.8	0.6	0.4	0.7	1.0	1.0	0.8	0.0	0.0	0.0	0.0	0.0
330. *	0.0	0.0	0.1	0.0	0.0	0.7	1.0	1.1	0.7	0.5	0.4	0.7	1.0	1.0	1.0	0.0	0.0	0.0	0.0	0.0
340. *	0.0	0.0	0.0	0.0	0.0	0.6	1.1	1.0	0.6	0.4	0.4	0.6	1.1	1.0	1.0	0.0	0.0	0.0	0.0	0.0
350. *	0.0	0.0	0.0	0.0	0.0	0.5	0.9	1.0	0.6	0.4	0.5	0.7	1.2	1.0	1.0	0.0	0.0	0.2	0.0	0.0
360. *	0.0	0.0	0.0	0.0	0.0	0.5	0.9	1.0	0.6	0.4	0.6	0.7	1.2	1.0	1.0	0.0	0.0	0.2	0.0	0.0
MAX *	0.7	1.1	2.4	2.3	2.3	1.6	1.5	1.5	0.8	0.6	0.6	0.8	1.5	1.4	1.4	1.9	1.8	2.1	1.1	0.7
DEGR. *	180	200	230	230	230	270	290	260	290	280	0	10	270	20	40	90	90	90	130	140

THE HIGHEST CONCENTRATION OF   2.50 PPM OCCURRED AT RECEPTOR REC22.

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 95221 PAGE 1

JOB: LANDMARKCENTER RUN: 2018_BD_CO_3

DATE : 7/11/13
TIME : 7:40:55

The MODE flag has been set to C for calculating CO averages.

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 175. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	X1 (FT)	Y1 (FT)	X2 (FT)	Y2 (FT)	LENGTH (FT)	BRG (DEG)	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)	V/C	QUEUE (VEH)
1. Brook/Full EB L	3074.7	4018.5	3063.2	4003.4	19.	217.	AG	42.	100.0	1.0	10.0	0.11	1.0
2. Brook/Full EB TR	3083.6	4012.0	3036.0	3948.7	79.	217.	AG	42.	100.0	1.0	10.0	0.44	4.0
3. Brook/Full NB LTR	3121.3	4022.6	3159.5	4002.1	43.	118.	AG	42.	100.0	1.0	10.0	0.24	2.2
4. Brook/Full WB LTR	3127.2	4100.9	3164.8	4150.3	62.	37.	AG	111.	100.0	1.0	20.0	0.32	3.2
5. Brook/Full SB LT	3068.3	4050.9	3017.3	4088.5	63.	306.	AG	86.	100.0	1.0	10.0	0.39	3.2
6. Brook/Full SB R	3061.2	4041.4	3029.5	4064.1	39.	306.	AG	73.	100.0	1.0	10.0	0.21	2.0
7. Brook/Full N	3091.9	4045.7	2925.8	4161.5	203.	305.	AG	554.	8.8	1.0	54.0		
8. Brook/Full E	3091.9	4045.7	3246.2	4230.8	241.	40.	AG	997.	8.8	1.0	54.0		
9. Brook/Full S	3100.3	4031.3	3190.0	3977.6	105.	121.	AG	456.	8.8	1.0	42.0		
10. Brook/Full W	3091.9	4048.0	2946.1	3847.4	248.	216.	AG	1213.	8.8	1.0	54.0		

PAGE 2

JOB: LANDMARKCENTER RUN: 2018_BD_CO_3

DATE : 7/11/13
TIME : 7:40:55

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE
1. Brook/Full EB L	100	33	3.0	105	1600	47.91	1	3
2. Brook/Full EB TR	100	33	3.0	439	1600	47.91	1	3
3. Brook/Full NB LTR	100	33	3.0	240	1600	47.91	1	3
4. Brook/Full WB LTR	100	43	3.0	528	1600	47.91	1	3
5. Brook/Full SB LT	100	67	3.0	173	1600	47.91	1	3
6. Brook/Full SB R	100	57	3.0	125	1600	47.91	1	3

RECEPTOR LOCATIONS

RECEPTOR	X (FT)	Y (FT)	Z (FT)
1. Brook/Full NE1	2962.2	4181.2	6.0
2. Brook/Full NE2	3023.7	4138.3	6.0
3. Brook/Full NE3	3085.3	4095.4	6.0
4. Brook/Full NE4	3133.3	4153.0	6.0
5. Brook/Full NE5	3188.7	4204.0	6.0
6. Brook/Full SE1	3235.0	4159.5	6.0
7. Brook/Full SE2	3187.0	4101.9	6.0
8. Brook/Full SE3	3130.3	4049.5	6.0
9. Brook/Full SE4	3203.3	4005.7	6.0
10. Brook/Full SE5	3267.6	3967.2	6.0
11. Brook/Full SW1	3228.3	3918.5	6.0
12. Brook/Full SW2	3163.9	3957.1	6.0
13. Brook/Full SW3	3099.6	3995.6	6.0
14. Brook/Full SW4	3055.5	3934.9	6.0
15. Brook/Full SW5	3011.4	3874.3	6.0
16. Brook/Full NW1	2950.5	3916.4	6.0
17. Brook/Full NW2	2994.6	3977.0	6.0
18. Brook/Full NW3	3038.7	4037.7	6.0
19. Brook/Full NW4	2977.2	4080.6	6.0
20. Brook/Full NW5	2915.6	4123.5	6.0

PAGE 3

JOB: LANDMARKCENTER RUN: 2018_BD_CO_3

MODEL RESULTS

REMARKS : In search of the angle corresponding to
the maximum concentration, only the first

angle, of the angles with same maximum
concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-360.

WIND ANGLE (DEGR) * CONCENTRATION (PPM)

WIND ANGLE (DEGR)	REC1	REC2	REC3	REC4	REC5	REC6	REC7	REC8	REC9	REC10	REC11	REC12	REC13	REC14	REC15	REC16	REC17	REC18	REC19	REC20
0.	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.4	0.1	0.0	0.1	0.2	0.5	0.5	0.4	0.0	0.1	0.5	0.1	0.0
10.	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.6	0.1	0.0	0.0	0.2	0.5	0.5	0.4	0.0	0.1	0.5	0.1	0.1
20.	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.5	0.0	0.0	0.0	0.2	0.6	0.5	0.4	0.0	0.1	0.4	0.1	0.1
30.	0.0	0.0	0.1	0.0	0.1	0.1	0.2	0.5	0.0	0.0	0.0	0.1	0.4	0.3	0.3	0.1	0.4	0.6	0.1	0.1
40.	0.0	0.0	0.2	0.1	0.1	0.0	0.1	0.3	0.0	0.0	0.0	0.1	0.2	0.2	0.2	0.3	0.3	0.7	0.1	0.1
50.	0.0	0.0	0.4	0.2	0.2	0.0	0.0	0.2	0.0	0.0	0.0	0.1	0.3	0.0	0.0	0.4	0.3	0.8	0.1	0.1
60.	0.0	0.0	0.5	0.3	0.2	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.4	0.4	0.8	0.2	0.1
70.	0.0	0.1	0.5	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.4	0.4	0.7	0.2	0.1
80.	0.0	0.1	0.4	0.4	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.3	0.3	0.5	0.4	0.3
90.	0.1	0.2	0.4	0.4	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.3	0.4	0.5	0.4	0.3
100.	0.1	0.2	0.2	0.4	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.3	0.4	0.5	0.4	0.3
110.	0.1	0.2	0.2	0.4	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.3	0.3	0.4	0.4	0.2
120.	0.1	0.1	0.2	0.4	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.4	0.3	0.2
130.	0.2	0.2	0.2	0.5	0.3	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.1	0.1
140.	0.3	0.3	0.3	0.5	0.3	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.1	0.1
150.	0.3	0.3	0.3	0.5	0.3	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.4	0.1	0.1
160.	0.3	0.4	0.5	0.5	0.3	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.4	0.1	0.1
170.	0.3	0.4	0.5	0.6	0.3	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.1	0.1
180.	0.2	0.4	0.4	0.5	0.3	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.4	0.1	0.0
190.	0.1	0.3	0.5	0.6	0.5	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.4	0.1	0.0
200.	0.1	0.2	0.6	0.5	0.6	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.4	0.0	0.0
210.	0.1	0.1	0.6	0.4	0.6	0.2	0.1	0.3	0.1	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.2	0.3	0.0	0.0
220.	0.1	0.1	0.5	0.3	0.5	0.2	0.2	0.5	0.1	0.0	0.0	0.0	0.2	0.2	0.1	0.0	0.1	0.1	0.0	0.0
230.	0.1	0.1	0.4	0.2	0.4	0.4	0.4	0.6	0.2	0.0	0.0	0.0	0.4	0.3	0.1	0.0	0.0	0.0	0.0	0.0
240.	0.1	0.1	0.2	0.1	0.1	0.5	0.3	0.5	0.2	0.0	0.0	0.1	0.5	0.3	0.2	0.0	0.0	0.0	0.0	0.0
250.	0.1	0.1	0.2	0.1	0.0	0.4	0.5	0.4	0.2	0.1	0.0	0.1	0.5	0.3	0.2	0.0	0.0	0.0	0.0	0.0
260.	0.0	0.1	0.3	0.1	0.0	0.4	0.5	0.5	0.2	0.1	0.1	0.1	0.4	0.3	0.3	0.0	0.0	0.0	0.0	0.0
270.	0.0	0.1	0.2	0.0	0.0	0.4	0.5	0.6	0.2	0.1	0.1	0.1	0.4	0.3	0.3	0.0	0.0	0.0	0.0	0.0
280.	0.0	0.1	0.2	0.0	0.0	0.2	0.4	0.5	0.2	0.2	0.1	0.1	0.4	0.3	0.3	0.0	0.0	0.0	0.0	0.0
290.	0.0	0.1	0.1	0.0	0.0	0.2	0.4	0.6	0.4	0.2	0.1	0.1	0.4	0.3	0.3	0.0	0.0	0.0	0.0	0.0
300.	0.0	0.1	0.1	0.0	0.0	0.2	0.4	0.4	0.2	0.1	0.1	0.1	0.5	0.3	0.3	0.0	0.0	0.0	0.0	0.0
310.	0.0	0.0	0.0	0.0	0.0	0.2	0.4	0.4	0.1	0.1	0.2	0.3	0.6	0.4	0.3	0.0	0.0	0.1	0.1	0.0
320.	0.0	0.0	0.0	0.0	0.0	0.2	0.4	0.3	0.1	0.1	0.2	0.4	0.6	0.4	0.3	0.0	0.0	0.1	0.1	0.0
330.	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.3	0.2	0.1	0.1	0.2	0.5	0.4	0.3	0.0	0.0	0.4	0.1	0.0
340.	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.3	0.2	0.1	0.1	0.2	0.4	0.5	0.3	0.0	0.0	0.4	0.1	0.0
350.	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.4	0.1	0.1	0.1	0.2	0.4	0.5	0.3	0.0	0.1	0.4	0.1	0.0
360.	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.4	0.1	0.0	0.1	0.2	0.5	0.5	0.4	0.0	0.1	0.5	0.1	0.0
MAX	0.3	0.4	0.6	0.6	0.6	0.5	0.5	0.6	0.4	0.2	0.2	0.4	0.6	0.5	0.4	0.4	0.4	0.8	0.4	0.3

```
 DEGR. *  140   160   200   170   200   240   250    10   290   280   310   320    20     0     0    50    30    50
80    80

 THE HIGHEST CONCENTRATION OF    0.80 PPM OCCURRED AT RECEPTOR REC18.
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2013 Existing
Microscale Output Files
(Particulate Matter 10 (PM10))

♀ CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 95221 PAGE 1

JOB: Landmark Center RUN: 2013EX

DATE : 7/22/13
TIME : 17:22:14

The MODE flag has been set to P for calculating PM averages.

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 175. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 ug/m**3

LINK VARIABLES

LINK DESCRIPTION	X1	Y1	X2	Y2	LENGTH (FT)	BRG (DEG)	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)	V/C	QUEUE (VEH)
1. Fen/Brook WB TT	2508.3	3314.8	2585.8	3415.9	127.	37.	AG	0.	100.0	1.0	20.0	0.69	6.5
2. Fen/Brook EB TTTR	2469.9	3221.1	2414.8	3145.1	94.	216.	AG	0.	100.0	1.0	30.0	0.51	4.8
3. Fen/Brook SB L	2487.6	3319.0	2337.7	3461.3	207.	313.	AG	0.	100.0	1.0	10.0	0.90	10.5
4. Fen/Brook SB LTT	2476.2	3307.2	2381.9	3394.4	128.	313.	AG	0.	100.0	1.0	20.0	0.68	6.5
5. Fen/Brook SB R	2463.2	3293.4	2437.5	3318.3	36.	314.	AG	0.	100.0	1.0	10.0	0.19	1.8
6. Park/Brook WB TTR	2701.3	3561.7	2742.4	3616.0	68.	37.	AG	0.	100.0	1.0	30.0	0.42	3.5
7. Park/Brook NWB LLRRR	2745.9	3510.4	2860.1	3554.5	122.	69.	AG	0.	100.0	1.0	30.0	0.68	6.2
8. Park/Brook NB LTTTR	2715.4	3403.8	2776.1	3326.4	98.	142.	AG	1.	100.0	1.0	40.0	0.64	5.0
9. Park/Brook EB TT	2632.5	3431.9	2592.3	3379.9	66.	218.	AG	0.	100.0	1.0	20.0	0.41	3.3
10. Park/Brook EB RR	2648.5	3416.9	2601.3	3354.5	78.	217.	AG	0.	100.0	1.0	20.0	0.46	4.0
11. River/Park SB	2213.3	3801.8	2273.3	3924.6	137.	26.	AG	0.	100.0	1.0	10.0	0.69	6.9
12. River/Park SB East	2256.2	3801.2	2267.2	3860.3	60.	11.	AG	0.	100.0	1.0	20.0	0.31	3.1
13. River/Park WB North	2272.8	3765.2	2352.4	3765.6	80.	90.	AG	0.	100.0	1.0	30.0	0.40	4.0
14. River/Park WB South	2270.5	3707.9	2318.7	3728.6	52.	67.	AG	0.	100.0	1.0	20.0	0.27	2.7
15. Beacon/Park SB LTT	1962.9	4712.6	1921.1	4843.8	138.	342.	AG	0.	100.0	1.0	20.0	0.79	7.0
16. Beacon/Park WB LTT	2055.3	4691.7	5464.4	5948.8	3634.	70.	AG	0.	100.0	1.0	20.0	3.24	184.6
17. Beacon/Park NB LTT	2041.7	4597.4	2895.5	2109.9	2630.	161.	AG	0.	100.0	1.0	20.0	5.00	133.6
18. Beacon/Park EB LTTT	1966.3	4608.1	1908.7	4582.2	63.	246.	AG	0.	100.0	1.0	30.0	0.32	3.2
19. Beacon/Park EB R	1975.6	4560.5	1951.0	4564.3	25.	279.	AG	0.	100.0	1.0	20.0	0.13	1.3
20. Beacon/Park SB R	1917.2	4688.3	1920.6	4693.8	6.	32.	AG	0.	100.0	1.0	10.0	0.04	0.3
21. Beacon/Park WB R	2019.8	4741.2	2027.2	4738.6	8.	109.	AG	0.	100.0	1.0	10.0	0.10	0.4
22. Beacon/Park NB R	2095.2	4627.5	2063.1	4542.0	91.	201.	AG	0.	100.0	1.0	10.0	1.03	4.6
23. Boyl/Kil SB LTR	3322.0	3753.8	3306.5	3801.8	50.	342.	AG	0.	100.0	1.0	20.0	0.34	2.6
24. Boyl/Kil WB LTTR	3373.3	3738.7	3445.4	3767.8	78.	68.	AG	0.	100.0	1.0	20.0	0.46	3.9
25. Boyl/Kil NB LTR	3365.2	3677.7	3376.7	3648.8	31.	158.	AG	0.	100.0	1.0	10.0	0.21	1.6
26. Boyl/Kil EB LTTR	3320.4	3695.3	3233.7	3663.7	92.	250.	AG	0.	100.0	1.0	20.0	0.55	4.7
27. Fenway/Brook South	2496.9	3278.9	2636.6	3081.1	242.	145.	AG	775.	0.0	1.0	54.0		
28. Fenway/Brook West	2481.8	3262.9	2347.3	3075.6	231.	216.	AG	1780.	0.0	1.0	78.0		
29. Fenway/Brook North	2491.0	3288.6	2373.1	3398.7	161.	313.	AG	1485.	0.0	1.0	66.0		
30. Fenway/Brook East	2497.8	3264.6	2608.7	3389.7	167.	42.	AG	2090.	0.0	1.0	90.0		
31. Park/Brook South	2691.9	3447.3	2838.3	3241.2	253.	145.	AG	1030.	0.0	1.0	66.0		
32. Park/Brook West	2672.2	3490.7	2502.8	3273.8	275.	218.	AG	2100.	0.0	1.0	90.0		
33. Park/Brook North	2656.7	3489.7	2496.1	3644.1	223.	314.	AG	1675.	0.0	1.0	66.0		
34. Park/Brook East	2663.3	3490.8	2801.7	3675.1	230.	37.	AG	1010.	0.0	1.0	66.0		
35. Park/Brook SE	2681.0	3470.4	2968.4	3574.9	306.	70.	AG	2135.	0.0	1.0	78.0		
36. River/Park N	2254.7	3768.2	2266.4	3911.9	144.	5.	AG	440.	0.0	1.0	42.0		
37. River/Park SE	2239.1	3675.4	2343.7	3750.1	129.	54.	AG	260.	0.0	1.0	42.0		
38. River/Park NE	2237.1	3772.1	2377.4	3769.2	140.	91.	AG	750.	0.0	1.0	54.0		
39. River/Park S	2231.1	3745.1	2210.1	3564.3	182.	187.	AG	700.	0.0	1.0	54.0		
40. River/Park SW	2211.1	3765.1	2058.1	3624.4	208.	227.	AG	1250.	0.0	1.0	54.0		
41. River/Park NW	2194.0	3770.2	2250.7	3886.0	129.	26.	AG	500.	0.0	1.0	30.0		
42. Beacon/Park N	1996.0	4667.5	1894.2	4948.4	299.	340.	AG	1105.	0.0	1.0	78.0		

43. Beacon/Park NR	1908.0	4673.8	1956.1	4744.7	86.	34.	AG	15.	0.0	1.0	30.0
44. Beacon/Park E	1997.8	4657.7	2274.4	4755.8	293.	70.	AG	1470.	0.0	1.0	78.0

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JOB: Landmark Center RUN: 2013EX

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LINK VARIABLES

LINK DESCRIPTION	X1	Y1	X2	Y2	LENGTH (FT)	BRG (DEG)	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)	V/C	QUEUE (VEH)
45. Beacon/Park ER	1991.4	4750.8	2112.1	4710.6	127.	108.	AG	15.	0.0	1.0	30.0		
46. Beacon/Park S	2009.1	4646.4	2098.7	4401.0	261.	160.	AG	1610.	0.0	1.0	78.0		
47. Beacon/Park SR	2102.5	4662.0	2076.2	4571.2	95.	196.	AG	60.	0.0	1.0	42.0		
48. Beacon/Park W EB	1995.6	4607.6	1704.2	4488.4	315.	248.	AG	495.	0.0	1.0	66.0		
49. Beacon/Park W EBR	2009.1	4551.2	1907.4	4575.2	104.	283.	AG	130.	0.0	1.0	38.0		
50. Beacon/Park W WB	1989.3	4675.4	1658.3	4556.1	352.	250.	AG	825.	0.0	1.0	78.0		
51. Boyl/Kil N	3344.5	3717.0	3289.1	3876.3	169.	341.	AG	320.	0.0	1.0	54.0		
52. Boyl/Kil E	3348.9	3715.0	3516.2	3780.7	180.	69.	AG	2250.	0.0	1.0	78.0		
53. Boyl/Kil S	3349.9	3702.1	3425.5	3502.1	214.	159.	AG	205.	0.0	1.0	54.0		
54. Boyl/Kil W	3346.0	3717.8	3141.9	3641.3	218.	249.	AG	2195.	0.0	1.0	78.0		

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JOB: Landmark Center RUN: 2013EX

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1. Fen/Brook WB TT	100	59	3.0	790	1600	0.08	1	3
2. Fen/Brook EB TTTR	100	59	3.0	875	1600	0.08	1	3
3. Fen/Brook SB L	100	57	3.0	545	1600	0.08	1	3
4. Fen/Brook SB LTT	100	57	3.0	825	1600	0.08	1	3
5. Fen/Brook SB R	100	57	3.0	115	1600	0.08	1	3
6. Park/Brook WB TTR	100	68	3.0	550	1600	0.08	1	3
7. Park/Brook NWB LLRRR	100	62	3.0	1085	1600	0.08	1	3
8. Park/Brook NB LTTTR	100	70	3.0	1030	1600	0.08	1	3
9. Park/Brook EB TT	100	68	3.0	355	1600	0.08	1	3
10. Park/Brook EB RR	100	30	3.0	955	1600	0.08	1	3
11. River/Park SB	100	50	3.0	500	1600	0.08	1	3
12. River/Park SB East	100	50	3.0	440	1600	0.08	1	3
13. River/Park WB North	100	50	3.0	875	1600	0.08	1	3
14. River/Park WB South	100	50	3.0	385	1600	0.08	1	3
15. Beacon/Park SB LTT	110	79	3.0	595	1600	0.08	1	3
16. Beacon/Park WB LTT	110	95	3.0	940	1600	0.08	1	3
17. Beacon/Park NB LTT	110	101	3.0	580	1600	0.08	1	3
18. Beacon/Park EB LTTT	110	70	3.0	495	1600	0.08	1	3
19. Beacon/Park EB R	110	70	3.0	130	1600	0.08	1	3
20. Beacon/Park SB R	110	79	3.0	15	1600	0.08	1	3
21. Beacon/Park WB R	110	95	3.0	15	1600	0.08	1	3
22. Beacon/Park NB R	110	101	3.0	60	1600	0.08	1	3
23. Boyl/Kil SB LTR	100	71	3.0	260	1600	0.08	1	3
24. Boyl/Kil WB LTTR	100	29	3.0	980	1600	0.08	1	3
25. Boyl/Kil NB LTR	100	71	3.0	80	1600	0.08	1	3
26. Boyl/Kil EB LTTR	100	29	3.0	1165	1600	0.08	1	3

RECEPTOR LOCATIONS

RECEPTOR	X (FT)	Y (FT)	Z (FT)
1. Fen/Brook NE1	2376.5	3444.0	6.0
2. Fen/Brook NE2	2429.7	3391.0	6.0
3. Fen/Brook NE3	2484.5	3339.8	6.0
4. Fen/Brook NE4	2530.7	3398.9	6.0
5. Fen/Brook NE5	2576.8	3458.0	6.0
6. Fen/Brook SE1	2660.2	3364.9	6.0
7. Fen/Brook SE2	2609.6	3308.8	6.0
8. Fen/Brook SE3	2560.7	3252.7	6.0
9. Fen/Brook SE4	2604.0	3191.4	6.0
10. Fen/Brook SE5	2647.3	3130.2	6.0
11. Fen/Brook SW1	2588.7	3084.8	6.0
12. Fen/Brook SW2	2545.5	3146.0	6.0
13. Fen/Brook SW3	2502.2	3207.3	6.0
14. Fen/Brook SW4	2458.5	3146.4	6.0
15. Fen/Brook SW5	2414.7	3085.4	6.0
16. Fen/Brook NW1	2353.5	3168.3	6.0
17. Fen/Brook NW2	2397.3	3229.2	6.0
18. Fen/Brook NW3	2441.0	3290.1	6.0
19. Fen/Brook NW4	2386.2	3341.3	6.0
20. Fen/Brook NW5	2331.4	3392.5	6.0
21. Park/Brook NE1	2546.7	3655.1	6.0
22. Park/Brook NE2	2600.8	3603.1	6.0
23. Park/Brook NE3	2654.8	3551.1	6.0
24. Park/Brook NE4	2699.9	3611.1	6.0
25. Park/Brook NE5	2744.9	3671.1	6.0

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JOB: Landmark Center RUN: 2013EX

DATE : 7/22/13
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RECEPTOR LOCATIONS

RECEPTOR	X (FT)	Y (FT)	Z (FT)
26. Park/Brook SE1	2889.0	3493.9	6.0
27. Park/Brook SE2	2818.1	3468.1	6.0
28. Park/Brook SE3	2747.7	3442.5	6.0
29. Park/Brook SE4	2791.4	3381.5	6.0
30. Park/Brook SE5	2834.8	3320.3	6.0
31. Park/Brook SW1	2758.8	3278.8	6.0
32. Park/Brook SW2	2715.4	3340.0	6.0
33. Park/Brook SW3	2672.0	3401.1	6.0
34. Park/Brook SW4	2625.8	3342.0	6.0
35. Park/Brook SW5	2579.6	3282.9	6.0
36. Park/Brook NW1	2506.3	3367.7	6.0
37. Park/Brook NW2	2552.4	3426.8	6.0
38. Park/Brook NW3	2598.6	3485.9	6.0
39. Park/Brook NW4	2544.6	3537.9	6.0
40. Park/Brook NW5	2490.5	3589.9	6.0
41. Park/Brook E1	2853.5	3672.4	6.0
42. Park/Brook E2	2811.9	3617.1	6.0
43. Park/Brook E3	2763.4	3552.5	6.0
44. Park/Brook E4	2838.4	3579.8	6.0
45. Park/Brook E5	2904.4	3603.8	6.0

JOB: Landmark Center RUN: 2013EX

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-360.

WIND ANGLE (DEGR) * CONCENTRATION (ug/m**3)

WIND ANGLE (DEGR)	REC1	REC2	REC3	REC4	REC5	REC6	REC7	REC8	REC9	REC10	REC11	REC12	REC13	REC14	REC15	REC16	REC17	REC18	REC19	REC20
0.	1.	2.	2.	1.	2.	3.	5.	5.	3.	2.	3.	6.	8.	6.	4.	1.	2.	4.	3.	1.
10.	1.	2.	1.	1.	1.	3.	5.	5.	3.	2.	3.	5.	8.	6.	5.	1.	2.	4.	3.	1.
20.	1.	2.	1.	1.	2.	3.	4.	6.	2.	2.	3.	4.	8.	6.	5.	2.	3.	4.	3.	1.
30.	1.	2.	2.	2.	2.	3.	4.	5.	2.	2.	2.	4.	8.	6.	5.	3.	3.	5.	4.	1.
40.	1.	2.	3.	2.	3.	3.	3.	3.	2.	1.	2.	3.	7.	4.	4.	4.	5.	7.	4.	1.
50.	1.	3.	5.	4.	4.	3.	2.	2.	1.	1.	1.	2.	5.	3.	2.	5.	6.	8.	4.	2.
60.	2.	3.	6.	5.	4.	3.	2.	2.	1.	0.	1.	2.	4.	2.	2.	5.	6.	9.	6.	2.
70.	2.	4.	6.	5.	5.	2.	2.	1.	0.	0.	1.	1.	3.	2.	1.	5.	5.	8.	6.	3.
80.	3.	4.	6.	5.	5.	2.	1.	1.	0.	0.	1.	1.	3.	1.	1.	4.	4.	7.	6.	4.
90.	3.	4.	6.	5.	4.	2.	1.	0.	0.	0.	0.	1.	2.	1.	1.	3.	3.	6.	6.	4.
100.	3.	5.	5.	5.	3.	2.	0.	0.	0.	0.	0.	1.	2.	1.	0.	3.	3.	5.	6.	5.
110.	3.	4.	5.	5.	3.	2.	0.	0.	0.	0.	0.	1.	3.	1.	0.	2.	3.	4.	5.	5.
120.	3.	5.	5.	5.	4.	1.	0.	0.	0.	0.	0.	1.	3.	1.	0.	2.	3.	4.	5.	4.
130.	4.	5.	5.	5.	4.	0.	0.	0.	0.	0.	0.	2.	3.	1.	0.	2.	3.	4.	4.	3.
140.	5.	6.	6.	4.	3.	0.	0.	0.	0.	0.	0.	2.	3.	1.	0.	2.	3.	4.	3.	2.
150.	5.	6.	7.	4.	3.	0.	0.	1.	0.	0.	0.	3.	3.	1.	0.	2.	3.	3.	3.	2.
160.	4.	6.	8.	5.	4.	0.	0.	2.	1.	0.	1.	4.	2.	0.	0.	2.	3.	3.	2.	1.
170.	3.	5.	8.	6.	5.	0.	1.	2.	2.	1.	2.	4.	1.	0.	0.	2.	2.	3.	2.	1.
180.	2.	4.	8.	6.	5.	0.	1.	2.	2.	1.	2.	3.	0.	0.	0.	1.	2.	3.	1.	0.
190.	2.	4.	8.	6.	6.	1.	1.	2.	2.	1.	2.	3.	0.	0.	0.	1.	2.	3.	1.	0.

WIND ANGLE (DEGR)	REC1	REC2	REC3	REC4	REC5	REC6	REC7	REC8	REC9	REC10	REC11	REC12	REC13	REC14	REC15	REC16	REC17	REC18	REC19	REC20
200.	1.	3.	8.	6.	6.	1.	1.	2.	2.	1.	1.	2.	0.	0.	0.	1.	2.	2.	0.	0.
210.	0.	3.	7.	5.	5.	1.	2.	2.	2.	1.	1.	2.	1.	0.	0.	1.	1.	2.	0.	0.
220.	0.	3.	6.	3.	3.	2.	3.	2.	1.	1.	1.	2.	2.	1.	0.	0.	0.	1.	0.	0.
230.	0.	3.	5.	2.	2.	4.	4.	3.	2.	1.	1.	2.	2.	1.	0.	0.	0.	0.	0.	0.
240.	0.	3.	4.	2.	1.	5.	4.	4.	2.	1.	1.	2.	3.	2.	1.	0.	0.	0.	0.	0.
250.	0.	3.	4.	2.	1.	5.	5.	4.	2.	2.	1.	2.	3.	2.	1.	0.	0.	0.	0.	0.
260.	0.	2.	4.	2.	1.	5.	5.	4.	2.	2.	1.	2.	3.	2.	1.	0.	0.	0.	0.	0.
270.	0.	2.	5.	2.	1.	5.	6.	4.	3.	2.	2.	3.	3.	2.	1.	0.	0.	0.	0.	0.
280.	0.	2.	5.	1.	0.	5.	5.	4.	3.	2.	2.	3.	2.	2.	2.	0.	0.	0.	0.	0.
290.	0.	2.	5.	1.	1.	4.	5.	5.	3.	2.	2.	3.	2.	3.	2.	0.	0.	0.	0.	0.
300.	0.	2.	5.	1.	1.	4.	5.	6.	3.	3.	2.	4.	2.	3.	2.	0.	0.	1.	0.	0.
310.	0.	2.	5.	1.	1.	4.	5.	7.	4.	3.	3.	4.	3.	3.	2.	0.	0.	1.	1.	0.
320.	0.	1.	4.	1.	1.	3.	5.	6.	4.	4.	3.	6.	3.	3.	2.	0.	0.	2.	1.	0.
330.	1.	1.	4.	1.	1.	4.	5.	6.	4.	3.	4.	7.	4.	3.	2.	0.	0.	3.	2.	0.
340.	1.	2.	4.	1.	2.	4.	5.	5.	4.	3.	4.	8.	6.	4.	2.	0.	1.	4.	2.	1.
350.	2.	2.	3.	1.	2.	3.	5.	5.	3.	2.	4.	7.	7.	5.	3.	1.	2.	4.	3.	1.
360.	1.	2.	2.	1.	2.	3.	5.	5.	3.	2.	3.	6.	8.	6.	4.	1.	2.	4.	3.	1.
MAX	5.	6.	8.	6.	6.	5.	6.	7.	4.	4.	4.	8.	8.	6.	5.	5.	6.	9.	6.	5.
DEGR.	150	150	170	180	190	260	270	310	320	320	340	340	20	20	20	60	60	60	80	100

JOB: Landmark Center RUN: 2013EX

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-360.

WIND ANGLE (DEGR) * CONCENTRATION (ug/m**3)

WIND ANGLE (DEGR)	REC21	REC22	REC23	REC24	REC25	REC26	REC27	REC28	REC29	REC30	REC31	REC32	REC33	REC34	REC35	REC36	REC37	REC38	REC39	REC40
0.	0.	0.	0.	0.	0.	2.	3.	3.	2.	1.	4.	4.	3.	5.	6.	1.	1.	2.	2.	1.
10.	0.	0.	0.	0.	0.	2.	3.	3.	2.	1.	4.	4.	4.	5.	6.	1.	1.	2.	2.	1.
20.	0.	0.	0.	0.	0.	2.	3.	3.	2.	1.	3.	5.	4.	4.	6.	1.	1.	2.	2.	1.
30.	0.	0.	1.	0.	0.	2.	3.	3.	1.	1.	2.	4.	4.	4.	5.	2.	2.	2.	2.	2.
40.	0.	0.	1.	1.	0.	2.	3.	3.	1.	1.	2.	4.	4.	4.	4.	3.	2.	3.	2.	2.
50.	0.	0.	2.	1.	0.	2.	3.	3.	1.	0.	2.	4.	4.	3.	3.	4.	4.	4.	2.	2.
60.	0.	0.	2.	1.	0.	2.	2.	3.	1.	0.	1.	3.	3.	2.	2.	6.	4.	5.	2.	2.
70.	0.	1.	3.	2.	1.	1.	2.	2.	0.	0.	1.	3.	3.	2.	1.	6.	4.	5.	3.	2.
80.	0.	1.	3.	2.	1.	0.	1.	1.	0.	0.	1.	3.	2.	2.	1.	6.	4.	5.	4.	3.
90.	1.	2.	4.	3.	1.	0.	0.	0.	0.	0.	1.	3.	2.	1.	1.	6.	4.	5.	4.	3.
100.	1.	2.	3.	3.	1.	0.	0.	0.	0.	0.	1.	2.	3.	1.	0.	5.	4.	4.	4.	4.
110.	2.	2.	3.	4.	2.	0.	0.	0.	0.	0.	1.	2.	3.	1.	0.	4.	4.	4.	4.	4.
120.	2.	2.	3.	4.	2.	0.	0.	0.	0.	0.	1.	2.	3.	0.	0.	4.	5.	4.	3.	3.
130.	2.	2.	3.	4.	2.	0.	0.	0.	0.	0.	1.	1.	2.	0.	0.	4.	5.	4.	3.	3.
140.	3.	3.	4.	4.	2.	0.	0.	0.	0.	0.	0.	1.	2.	0.	0.	4.	4.	3.		

																				2.	2.
150.	*	3.	4.	4.	4.	2.	0.	0.	1.	1.	0.	0.	0.	1.	0.	0.	5.	4.	3.	2.	2.
160.	*	4.	4.	4.	4.	3.	0.	0.	2.	1.	0.	0.	0.	0.	0.	1.	6.	5.	3.	3.	2.
170.	*	4.	4.	4.	4.	3.	0.	0.	3.	1.	1.	0.	0.	0.	1.	1.	6.	6.	4.	3.	3.
180.	*	4.	4.	5.	4.	4.	0.	1.	3.	2.	1.	0.	0.	1.	1.	2.	6.	6.	5.	3.	2.
190.	*	4.	5.	5.	4.	4.	0.	1.	3.	2.	1.	0.	0.	1.	1.	1.	6.	6.	5.	3.	2.
200.	*	3.	4.	6.	5.	5.	1.	2.	3.	2.	1.	0.	0.	1.	1.	2.	6.	6.	5.	2.	2.
210.	*	2.	3.	6.	4.	4.	1.	2.	3.	3.	1.	0.	0.	2.	2.	2.	5.	5.	4.	2.	1.
220.	*	2.	3.	5.	3.	3.	2.	2.	4.	3.	1.	0.	1.	4.	4.	3.	4.	3.	3.	1.	1.
230.	*	2.	2.	3.	2.	2.	2.	3.	4.	4.	2.	1.	1.	5.	5.	4.	3.	2.	2.	1.	0.
240.	*	2.	2.	2.	1.	1.	3.	4.	5.	4.	2.	1.	2.	6.	6.	5.	3.	2.	1.	1.	0.
250.	*	2.	2.	2.	1.	1.	4.	4.	5.	5.	2.	1.	3.	6.	6.	5.	3.	2.	1.	0.	0.
260.	*	2.	2.	2.	1.	1.	4.	4.	5.	5.	3.	2.	3.	6.	6.	5.	3.	1.	1.	0.	1.
270.	*	1.	2.	2.	1.	1.	4.	4.	4.	5.	4.	2.	4.	5.	6.	5.	3.	1.	1.	1.	1.
280.	*	2.	2.	2.	1.	1.	5.	4.	4.	4.	4.	2.	3.	4.	6.	6.	2.	1.	1.	1.	1.
290.	*	1.	2.	3.	1.	0.	4.	4.	4.	4.	4.	2.	3.	3.	5.	6.	2.	1.	1.	1.	1.
300.	*	1.	2.	2.	1.	0.	4.	4.	5.	4.	4.	2.	3.	3.	6.	6.	2.	1.	1.	1.	1.
310.	*	1.	1.	2.	0.	0.	4.	4.	4.	4.	4.	2.	3.	4.	6.	6.	2.	1.	2.	1.	1.
320.	*	0.	1.	1.	0.	0.	3.	4.	4.	3.	3.	3.	3.	4.	6.	6.	2.	1.	2.	2.	1.
330.	*	1.	1.	1.	0.	0.	3.	4.	4.	3.	2.	3.	3.	4.	6.	5.	2.	1.	2.	2.	1.
340.	*	0.	0.	0.	0.	0.	3.	4.	4.	2.	2.	4.	4.	4.	5.	5.	2.	1.	2.	2.	1.
350.	*	0.	0.	0.	0.	0.	2.	3.	3.	2.	2.	4.	4.	4.	5.	5.	1.	1.	2.	2.	1.
360.	*	0.	0.	0.	0.	0.	2.	3.	3.	2.	1.	4.	4.	3.	5.	6.	1.	1.	2.	2.	1.
MAX	*	4.	5.	6.	5.	5.	5.	4.	5.	5.	4.	4.	5.	6.	6.	6.	6.	6.	5.	4.	4.
DEGR.	*	180	190	200	200	200	280	300	240	260	300	350	20	250	260	300	70	190	80	90	100

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-360.

WIND ANGLE (DEGR)	*	CONCENTRATION (ug/m**3) REC41	REC42	REC43	REC44	REC45
0.	*	0.	1.	1.	0.	0.
10.	*	0.	0.	1.	0.	0.
20.	*	0.	0.	1.	0.	0.
30.	*	0.	0.	1.	0.	0.
40.	*	0.	0.	0.	0.	0.
50.	*	0.	0.	0.	0.	0.
60.	*	0.	0.	1.	1.	0.
70.	*	0.	0.	2.	1.	1.
80.	*	1.	1.	3.	2.	1.
90.	*	1.	1.	4.	2.	1.
100.	*	0.	1.	4.	2.	1.
110.	*	0.	1.	4.	2.	1.
120.	*	0.	2.	4.	2.	2.
130.	*	1.	2.	3.	2.	2.
140.	*	1.	2.	3.	2.	2.
150.	*	1.	2.	3.	3.	2.
160.	*	1.	2.	4.	3.	2.
170.	*	2.	2.	4.	3.	2.
180.	*	2.	3.	4.	4.	2.
190.	*	2.	3.	4.	4.	3.
200.	*	3.	3.	5.	5.	3.

210.	*	3.	4.	5.	5.	4.
220.	*	4.	5.	6.	6.	5.
230.	*	4.	4.	6.	6.	6.
240.	*	3.	4.	5.	5.	5.
250.	*	2.	3.	4.	3.	3.
260.	*	2.	3.	3.	3.	2.
270.	*	1.	2.	3.	2.	2.
280.	*	1.	2.	3.	2.	1.
290.	*	0.	2.	3.	2.	1.
300.	*	0.	1.	3.	1.	1.
310.	*	0.	1.	2.	1.	0.
320.	*	0.	1.	2.	1.	0.
330.	*	0.	1.	2.	1.	0.
340.	*	0.	1.	2.	0.	0.
350.	*	0.	1.	2.	0.	0.
360.	*	0.	1.	1.	0.	0.
MAX	*	4.	5.	6.	6.	6.
DEGR.	*	220	220	220	230	230

THE HIGHEST CONCENTRATION OF 9. ug/m**3 OCCURRED AT RECEPTOR REC18.

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The MODE flag has been set to P for calculating PM averages.

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 175. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 ug/m**3

LINK VARIABLES

LINK DESCRIPTION	*	X1	Y1	X2	Y2	*	LENGTH (FT)	BRG (DEG)	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)	V/C	QUEUE (VEH)
1. Fen/Brook WB TT	*	2508.3	3314.8	2585.8	3415.9	*	127.	37.	AG	0.	100.0	1.0	20.0	0.69	6.5
2. Fen/Brook EB TTTR	*	2469.9	3221.1	2414.8	3145.1	*	94.	216.	AG	0.	100.0	1.0	30.0	0.51	4.8
3. Fen/Brook SB L	*	2487.6	3319.0	2337.7	3461.3	*	207.	313.	AG	0.	100.0	1.0	10.0	0.90	10.5
4. Fen/Brook SB LTT	*	2476.2	3307.2	2381.9	3394.4	*	128.	313.	AG	0.	100.0	1.0	20.0	0.68	6.5
5. Fen/Brook SB R	*	2463.2	3293.4	2437.5	3318.3	*	36.	314.	AG	0.	100.0	1.0	10.0	0.19	1.8
6. Park/Brook WB TTR	*	2701.3	3561.7	2742.4	3616.0	*	68.	37.	AG	0.	100.0	1.0	30.0	0.42	3.5
7. Park/Brook NWB LLRRR	*	2745.9	3510.4	2860.1	3554.5	*	122.	69.	AG	0.	100.0	1.0	30.0	0.68	6.2
8. Park/Brook NB LTTTR	*	2715.4	3403.8	2776.1	3326.4	*	98.	142.	AG	1.	100.0	1.0	40.0	0.64	5.0
9. Park/Brook EB TT	*	2632.5	3431.9	2592.3	3379.9	*	66.	218.	AG	0.	100.0	1.0	20.0	0.41	3.3
10. Park/Brook EB RR	*	2648.5	3416.9	2601.3	3354.5	*	78.	217.	AG	0.	100.0	1.0	20.0	0.46	4.0
11. River/Park SB	*	2213.3	3801.8	2273.3	3924.6	*	137.	26.	AG	0.	100.0	1.0	10.0	0.69	6.9
12. River/Park SB East	*	2256.2	3801.2	2267.2	3860.3	*	60.	11.	AG	0.	100.0	1.0	20.0	0.31	3.1
13. River/Park WB North	*	2272.8	3765.2	2352.4	3765.6	*	80.	90.	AG	0.	100.0	1.0	30.0	0.40	4.0
14. River/Park WB South	*	2270.5	3707.9	2318.7	3728.6	*	52.	67.	AG	0.	100.0	1.0	20.0	0.27	2.7
15. Beacon/Park SB LTT	*	1962.9	4712.6	1921.1	4843.8	*	138.	342.	AG	0.	100.0	1.0	20.0	0.79	7.0
16. Beacon/Park WB LTT	*	2055.3	4691.7	5464.4	5948.8	*	3634.	70.	AG	0.	100.0	1.0	20.0	3.24	184.6
17. Beacon/Park NB LTT	*	2041.7	4597.4	2895.5	2109.9	*	2630.	161.	AG	0.	100.0	1.0	20.0	5.00	133.6
18. Beacon/Park EB LTTT	*	1966.3	4608.1	1908.7	4582.2	*	63.	246.	AG	0.	100.0	1.0	30.0	0.32	3.2
19. Beacon/Park EB R	*	1975.6	4560.5	1951.0	4564.3	*	25.	279.	AG	0.	100.0	1.0	20.0	0.13	1.3
20. Beacon/Park SB R	*	1917.2	4688.3	1920.6	4693.8	*	6.	32.	AG	0.	100.0	1.0	10.0	0.04	0.3
21. Beacon/Park WB R	*	2019.8	4741.2	2027.2	4738.6	*	8.	109.	AG	0.	100.0	1.0	10.0	0.10	0.4
22. Beacon/Park NB R	*	2095.2	4627.5	2063.1	4542.0	*	91.	201.	AG	0.	100.0	1.0	10.0	1.03	4.6
23. Boyl/Kil SB LTR	*	3322.0	3753.8	3306.5	3801.8	*	50.	342.	AG	0.	100.0	1.0	20.0	0.34	2.6
24. Boyl/Kil WB LTTR	*	3373.3	3738.7	3445.4	3767.8	*	78.	68.	AG	0.	100.0	1.0	20.0	0.46	3.9
25. Boyl/Kil NB LTR	*	3365.2	3677.7	3376.7	3648.8	*	31.	158.	AG	0.	100.0	1.0	10.0	0.21	1.6
26. Boyl/Kil EB LTTR	*	3320.4	3695.3	3233.7	3663.7	*	92.	250.	AG	0.	100.0	1.0	20.0	0.55	4.7
27. Fenway/Brook South	*	2496.9	3278.9	2636.6	3081.1	*	242.	145.	AG	775.	0.0	1.0	54.0		
28. Fenway/Brook West	*	2481.8	3262.9	2347.3	3075.6	*	231.	216.	AG	1780.	0.0	1.0	78.0		
29. Fenway/Brook North	*	2491.0	3288.6	2373.1	3398.7	*	161.	313.	AG	1485.	0.0	1.0	66.0		
30. Fenway/Brook East	*	2497.8	3264.6	2608.7	3389.7	*	167.	42.	AG	2090.	0.0	1.0	90.0		
31. Park/Brook South	*	2691.9	3447.3	2838.3	3241.2	*	253.	145.	AG	1030.	0.0	1.0	66.0		
32. Park/Brook West	*	2672.2	3490.7	2502.8	3273.8	*	275.	218.	AG	2100.	0.0	1.0	90.0		
33. Park/Brook North	*	2656.7	3489.7	2496.1	3644.1	*	223.	314.	AG	1675.	0.0	1.0	66.0		
34. Park/Brook East	*	2663.3	3490.8	2801.7	3675.1	*	230.	37.	AG	1010.	0.0	1.0	66.0		
35. Park/Brook SE	*	2681.0	3470.4	2968.4	3574.9	*	306.	70.	AG	2135.	0.0	1.0	78.0		
36. River/Park N	*	2254.7	3768.2	2266.4	3911.9	*	144.	5.	AG	440.	0.0	1.0	42.0		
37. River/Park SE	*	2239.1	3675.4	2343.7	3750.1	*	129.	54.	AG	260.	0.0	1.0	42.0		
38. River/Park NE	*	2237.1	3772.1	2377.4	3769.2	*	140.	91.	AG	750.	0.0	1.0	54.0		
39. River/Park S	*	2231.1	3745.1	2210.1	3564.3	*	182.	187.	AG	700.	0.0	1.0	54.0		
40. River/Park SW	*	2211.1	3765.1	2058.1	3624.4	*	208.	227.	AG	1250.	0.0	1.0	54.0		
41. River/Park NW	*	2194.0	3770.2	2250.7	3886.0	*	129.	26.	AG	500.	0.0	1.0	30.0		
42. Beacon/Park N	*	1996.0	4667.5	1894.2	4948.4	*	299.	340.	AG	1105.	0.0	1.0	78.0		

43. Beacon/Park NR	*	1908.0	4673.8	1956.1	4744.7	*	86.	34.	AG	15.	0.0	1.0	30.0
44. Beacon/Park E	*	1997.8	4657.7	2274.4	4755.8	*	293.	70.	AG	1470.	0.0	1.0	78.0

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LINK VARIABLES

LINK DESCRIPTION	*	X1	Y1	X2	Y2	*	LENGTH (FT)	BRG (DEG)	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)	V/C	QUEUE (VEH)
45. Beacon/Park ER	*	1991.4	4750.8	2112.1	4710.6	*	127.	108.	AG	15.	0.0	1.0	30.0		
46. Beacon/Park S	*	2009.1	4646.4	2098.7	4401.0	*	261.	160.	AG	1610.	0.0	1.0	78.0		
47. Beacon/Park SR	*	2102.5	4662.0	2076.2	4571.2	*	95.	196.	AG	60.	0.0	1.0	42.0		
48. Beacon/Park W EB	*	1995.6	4607.6	1704.2	4488.4	*	315.	248.	AG	495.	0.0	1.0	66.0		
49. Beacon/Park W EBR	*	2009.1	4551.2	1907.4	4575.2	*	104.	283.	AG	130.	0.0	1.0	38.0		
50. Beacon/Park W WB	*	1989.3	4675.4	1658.3	4556.1	*	352.	250.	AG	825.	0.0	1.0	78.0		
51. Boyl/Kil N	*	3344.5	3717.0	3289.1	3876.3	*	169.	341.	AG	320.	0.0	1.0	54.0		
52. Boyl/Kil E	*	3348.9	3715.0	3516.2	3780.7	*	180.	69.	AG	2250.	0.0	1.0	78.0		
53. Boyl/Kil S	*	3349.9	3702.1	3425.5	3502.1	*	214.	159.	AG	205.	0.0	1.0	54.0		
54. Boyl/Kil W	*	3346.0	3717.8	3141.9	3641.3	*	218.	249.	AG	2195.	0.0	1.0	78.0		

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1. Fen/Brook WB TT	*	100	59	3.0	790	1600	0.08	1	3
2. Fen/Brook EB TTTR	*	100	59	3.0	875	1600	0.08	1	3
3. Fen/Brook SB L	*	100	57	3.0	545	1600	0.08	1	3
4. Fen/Brook SB LTT	*	100	57	3.0	825	1600	0.08	1	3
5. Fen/Brook SB R	*	100	57	3.0	115	1600	0.08	1	3
6. Park/Brook WB TTR	*	100	68	3.0	550	1600	0.08	1	3
7. Park/Brook NWB LLRRR	*	100	62	3.0	1085	1600	0.08	1	3
8. Park/Brook NB LTTTR	*	100	70	3.0	1030	1600	0.08	1	3
9. Park/Brook EB TT	*	100	68	3.0	355	1600	0.08	1	3
10. Park/Brook EB RR	*	100	30	3.0	955	1600	0.08	1	3
11. River/Park SB	*	100	50	3.0	500	1600	0.08	1	3
12. River/Park SB East	*	100	50	3.0	440	1600	0.08	1	3
13. River/Park WB North	*	100	50	3.0	875	1600	0.08	1	3
14. River/Park WB South	*	100	50	3.0	385	1600	0.08	1	3
15. Beacon/Park SB LTT	*	110	79	3.0	595	1600	0.08	1	3
16. Beacon/Park WB LTT	*	110	95	3.0	940	1600	0.08	1	3
17. Beacon/Park NB LTT	*	110	101	3.0	580	1600	0.08	1	3
18. Beacon/Park EB LTTT	*	110	70	3.0	495	1600	0.08	1	3
19. Beacon/Park EB R	*	110	70	3.0	130	1600	0.08	1	3
20. Beacon/Park SB R	*	110	79	3.0	15	1600	0.08	1	3
21. Beacon/Park WB R	*	110	95	3.0	15	1600	0.08	1	3
22. Beacon/Park NB R	*	110	101	3.0	60	1600	0.08	1	3
23. Boyl/Kil SB LTR	*	100	71	3.0	260	1600	0.08	1	3
24. Boyl/Kil WB LTTR	*	100	29	3.0	980	1600	0.08	1	3
25. Boyl/Kil NB LTR	*	100	71	3.0	80	1600	0.08	1	3
26. Boyl/Kil EB LTTR	*	100	29	3.0	1165	1600	0.08	1	3

RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (FT) X	Y	Z	*
1. Beacon/Park NE1	*	1956.0	4921.7	6.0	*
2. Beacon/Park NE2	*	1981.6	4851.2	6.0	*
3. Beacon/Park NE3	*	2059.7	4754.4	6.0	*
4. Beacon/Park NE4	*	2163.5	4768.4	6.0	*
5. Beacon/Park NE5	*	2234.2	4793.5	6.0	*
6. Beacon/Park SE1	*	2273.6	4703.5	6.0	*
7. Beacon/Park SE2	*	2202.9	4678.4	6.0	*
8. Beacon/Park SE3	*	2119.1	4608.0	6.0	*
9. Beacon/Park SE4	*	2120.2	4485.0	6.0	*
10. Beacon/Park SE5	*	2146.8	4412.1	6.0	*
11. Beacon/Park SW1	*	2053.4	4382.2	6.0	*
12. Beacon/Park SW2	*	2027.7	4452.7	6.0	*
13. Beacon/Park SW3	*	1951.6	4535.0	6.0	*
14. Beacon/Park SW4	*	1869.5	4509.6	6.0	*
15. Beacon/Park SW5	*	1800.1	4481.2	6.0	*
16. Beacon/Park NW1	*	1748.7	4640.8	6.0	*
17. Beacon/Park NW2	*	1819.3	4666.2	6.0	*
18. Beacon/Park NW3	*	1911.4	4723.3	6.0	*
19. Beacon/Park NW4	*	1893.8	4805.6	6.0	*
20. Beacon/Park NW5	*	1868.3	4876.1	6.0	*
21. Riverway/Park NE1	*	2301.3	3957.6	6.0	*
22. Riverway/Park NE2	*	2295.2	3882.8	6.0	*
23. Riverway/Park NE3	*	2289.1	3808.1	6.0	*
24. Riverway/Park NE4	*	2364.1	3806.5	6.0	*
25. Riverway/Park NE5	*	2439.1	3806.0	6.0	*

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RECEPTOR LOCATIONS

RECEPTOR	*	X	Y	Z	*
	*	COORDINATES (FT)			*
26. Riverway/Park SE1	*	2427.5	3594.7	6.0	*
27. Riverway/Park SE2	*	2406.6	3667.7	6.0	*
28. Riverway/Park SE3	*	2309.4	3687.5	6.0	*
29. Riverway/Park SE4	*	2248.8	3576.7	6.0	*
30. Riverway/Park SE5	*	2296.6	3506.9	6.0	*
31. Riverway/Park SW1	*	2170.6	3544.5	6.0	*
32. Riverway/Park SW2	*	2179.2	3619.0	6.0	*
33. Riverway/Park SW3	*	2187.9	3693.5	6.0	*
34. Riverway/Park SW4	*	2132.7	3642.7	6.0	*
35. Riverway/Park SW5	*	2077.5	3592.0	6.0	*
36. Riverway/Park NW1	*	2059.1	3675.6	6.0	*
37. Riverway/Park NW2	*	2114.4	3726.4	6.0	*
38. Riverway/Park NW3	*	2169.6	3777.2	6.0	*
39. Riverway/Park NW4	*	2202.6	3844.5	6.0	*
40. Riverway/Park NW5	*	2235.3	3912.0	6.0	*
41. Boyl/Kil NE1	*	3320.8	3917.2	6.0	*
42. Boyl/Kil NE2	*	3339.3	3844.4	6.0	*
43. Boyl/Kil NE3	*	3364.0	3773.6	6.0	*
44. Boyl/Kil NE4	*	3433.8	3801.0	6.0	*
45. Boyl/Kil NE5	*	3503.6	3828.4	6.0	*
46. Boyl/Kil SE1	*	3537.2	3736.3	6.0	*
47. Boyl/Kil SE2	*	3467.1	3708.8	6.0	*
48. Boyl/Kil SE3	*	3397.3	3681.4	6.0	*
49. Boyl/Kil SE4	*	3423.8	3611.2	6.0	*
50. Boyl/Kil SE5	*	3450.3	3541.1	6.0	*
51. Boyl/Kil SW1	*	3379.9	3518.0	6.0	*
52. Boyl/Kil SW2	*	3353.1	3589.0	6.0	*
53. Boyl/Kil SW3	*	3326.9	3658.3	6.0	*
54. Boyl/Kil SW4	*	3256.7	3632.0	6.0	*
55. Boyl/Kil SW5	*	3186.4	3605.7	6.0	*
56. Boyl/Kil NW1	*	3153.2	3697.9	6.0	*
57. Boyl/Kil NW2	*	3223.4	3724.2	6.0	*
58. Boyl/Kil NW3	*	3293.6	3750.5	6.0	*
59. Boyl/Kil NW4	*	3269.0	3821.4	6.0	*
60. Boyl/Kil NW5	*	3244.5	3891.9	6.0	*

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MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-360.

WIND * CONCENTRATION
ANGLE * (ug/m**3)

(DEGR)*	REC1	REC2	REC3	REC4	REC5	REC6	REC7	REC8	REC9	REC10	REC11	REC12	REC13	REC14	REC15	REC16	REC17	REC18	REC19	REC20
0. *	0.	0.	0.	0.	0.	1.	2.	2.	1.	1.	3.	3.	3.	1.	1.	0.	0.	1.	1.	0.
10. *	0.	0.	0.	0.	0.	1.	2.	2.	1.	1.	4.	3.	3.	2.	1.	0.	0.	2.	1.	1.
20. *	0.	0.	0.	0.	0.	1.	2.	2.	1.	1.	3.	4.	3.	2.	2.	0.	0.	2.	1.	1.
30. *	0.	0.	0.	0.	0.	1.	2.	2.	1.	0.	3.	3.	3.	2.	2.	0.	1.	2.	2.	1.
40. *	0.	0.	0.	0.	0.	1.	2.	2.	0.	0.	2.	3.	3.	2.	2.	0.	1.	2.	2.	1.
50. *	0.	0.	0.	0.	0.	1.	2.	1.	0.	0.	2.	3.	3.	3.	2.	1.	1.	2.	2.	1.
60. *	0.	0.	0.	1.	0.	1.	2.	1.	0.	0.	2.	3.	3.	3.	2.	1.	1.	2.	2.	1.
70. *	0.	0.	1.	2.	1.	1.	1.	1.	0.	0.	2.	2.	2.	2.	2.	2.	2.	2.	2.	1.
80. *	0.	0.	2.	2.	2.	0.	0.	0.	0.	0.	1.	2.	2.	2.	1.	2.	2.	3.	2.	1.
90. *	0.	1.	2.	2.	2.	0.	0.	0.	0.	0.	1.	2.	2.	1.	1.	2.	2.	3.	2.	2.
100. *	0.	1.	2.	2.	2.	0.	0.	0.	0.	0.	1.	2.	2.	1.	1.	2.	2.	3.	3.	2.
110. *	0.	1.	2.	2.	2.	0.	0.	0.	0.	0.	1.	2.	2.	1.	0.	2.	2.	3.	3.	2.
120. *	1.	1.	2.	2.	2.	0.	0.	0.	0.	0.	1.	2.	2.	1.	0.	2.	2.	3.	3.	2.

(DEGR)*	REC1	REC2	REC3	REC4	REC5	REC6	REC7	REC8	REC9	REC10	REC11	REC12	REC13	REC14	REC15	REC16	REC17	REC18	REC19	REC20
130. *	1.	1.	2.	2.	2.	0.	0.	0.	0.	0.	1.	2.	2.	1.	0.	2.	2.	3.	3.	3.
140. *	1.	1.	2.	2.	2.	0.	0.	0.	0.	0.	1.	2.	2.	1.	1.	2.	2.	3.	3.	3.
150. *	2.	2.	2.	2.	2.	0.	0.	0.	1.	1.	1.	2.	1.	1.	1.	2.	2.	3.	4.	3.
160. *	2.	2.	3.	3.	3.	0.	0.	1.	2.	1.	1.	2.	1.	0.	0.	1.	2.	3.	2.	2.
170. *	3.	3.	3.	3.	3.	1.	1.	1.	2.	2.	0.	1.	0.	0.	0.	1.	1.	2.	2.	1.
180. *	3.	3.	3.	3.	3.	0.	1.	2.	2.	1.	0.	0.	0.	0.	0.	1.	1.	1.	1.	1.
190. *	2.	3.	3.	3.	3.	0.	1.	2.	2.	1.	0.	0.	0.	0.	0.	1.	1.	1.	1.	0.
200. *	2.	2.	2.	4.	3.	0.	1.	2.	2.	1.	0.	0.	0.	0.	0.	1.	1.	1.	1.	0.
210. *	2.	2.	2.	4.	4.	1.	1.	2.	2.	1.	0.	0.	0.	0.	0.	1.	1.	1.	0.	0.
220. *	1.	2.	2.	4.	4.	1.	1.	2.	2.	1.	0.	0.	0.	0.	0.	1.	1.	1.	0.	0.
230. *	1.	2.	2.	3.	4.	1.	1.	2.	2.	1.	0.	0.	0.	0.	0.	1.	1.	1.	0.	0.
240. *	1.	2.	2.	3.	3.	2.	2.	2.	2.	1.	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
250. *	1.	2.	2.	2.	2.	2.	2.	3.	2.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
260. *	1.	1.	1.	1.	1.	3.	2.	3.	2.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
270. *	1.	1.	1.	1.	0.	3.	3.	3.	3.	2.	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.
280. *	1.	1.	1.	1.	0.	3.	3.	3.	3.	2.	0.	0.	1.	1.	1.	0.	0.	0.	0.	0.
290. *	1.	1.	1.	1.	0.	3.	3.	3.	3.	3.	0.	0.	1.	1.	1.	0.	0.	0.	0.	0.
300. *	1.	1.	1.	0.	0.	3.	3.	2.	4.	3.	0.	1.	1.	1.	1.	0.	0.	0.	0.	0.
310. *	0.	1.	1.	0.	0.	2.	2.	2.	4.	4.	0.	1.	1.	1.	1.	0.	0.	0.	0.	0.
320. *	0.	1.	0.	0.	0.	2.	2.	2.	4.	4.	1.	1.	2.	1.	1.	0.	0.	0.	0.	0.
330. *	0.	1.	0.	0.	0.	2.	2.	2.	3.	3.	1.	2.	2.	1.	1.	0.	0.	0.	0.	0.
340. *	0.	0.	0.	0.	0.	2.	2.	2.	2.	2.	2.	2.	2.	1.	1.	0.	0.	0.	0.	0.
350. *	0.	0.	0.	0.	0.	2.	2.	2.	1.	1.	3.	3.	3.	1.	1.	0.	0.	1.	1.	0.
360. *	0.	0.	0.	0.	0.	1.	2.	2.	1.	1.	3.	3.	3.	1.	1.	0.	0.	1.	1.	0.
MAX *	3.	3.	3.	4.	4.	3.	3.	3.	4.	4.	4.	4.	3.	3.	2.	2.	2.	3.	4.	3.
DEGR. *	180	170	180	200	220	270	270	270	320	320	10	20	50	50	60	90	80	150	150	150

♀ PAGE 6

JOB: Landmark Center RUN: 2013EX

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-360.

WIND * CONCENTRATION
ANGLE * (ug/m**3)

(DEGR)*	REC21	REC22	REC23	REC24	REC25	REC26	REC27	REC28	REC29	REC30	REC31	REC32	REC33	REC34	REC35	REC36	REC37	REC38	REC39	REC40
0. *	0.	2.	2.	0.	0.	0.	0.	3.	2.	2.	1.	2.	2.	2.	2.	1.	1.	1.	1.	2.
10. *	0.	1.	2.	0.	0.	0.	0.	3.	2.	1.	2.	2.	3.	2.	2.	1.	1.	1.	1.	1.
20. *	0.	0.	2.	0.	0.	0.	0.	2.	1.	1.	2.	2.	3.	2.	2.	0.	0.	1.	1.	1.
30. *	0.	0.	2.	0.	0.	0.	0.	2.	1.	1.	2.	2.	3.	2.	2.	1.	1.	1.	1.	1.
40. *	0.	0.	1.	0.	0.	0.	0.	2.	1.	1.	2.	2.	2.	2.	2.	1.	1.	2.	1.	1.
50. *	0.	0.	1.	0.	0.	0.	0.	1.	0.	1.	1.	2.	2.	2.	2.	2.	2.	2.	2.	1.
60. *	0.	0.	1.	0.	0.	1.	0.	1.	0.	1.	1.	2.	2.	2.	1.	2.	2.	2.	2.	1.

```
  70.  *    0.    0.    1.    0.    0.    1.    0.    1.    1.    2.    1.    1.    2.    1.    1.    2.    2.    2.
2.    1.
  80.  *    0.    0.    1.    0.    0.    2.    0.    1.    1.    2.    1.    2.    2.    1.    1.    3.    3.    2.
2.    1.
  90.  *    0.    0.    2.    0.    0.    2.    1.    2.    2.    2.    1.    2.    2.    1.    1.    3.    3.    3.
2.    2.
 100.  *    0.    0.    2.    0.    0.    2.    2.    2.    2.    2.    2.    2.    2.    2.    2.    3.    3.    3.
3.    2.
 110.  *    0.    1.    3.    1.    0.    2.    2.    2.    2.    2.    2.    2.    2.    2.    1.    3.    3.    3.
3.    2.
 120.  *    0.    1.    4.    1.    1.    2.    2.    3.    2.    2.    2.    2.    2.    2.    2.    3.    3.    4.
4.    2.
 130.  *    1.    2.    4.    2.    1.    2.    2.    2.    2.    3.    2.    2.    2.    2.    1.    3.    3.    3.
4.    3.
 140.  *    1.    3.    5.    2.    2.    2.    2.    2.    2.    3.    1.    2.    2.    2.    1.    2.    3.    3.
4.    4.
 150.  *    2.    4.    5.    2.    2.    2.    2.    2.    2.    2.    1.    2.    2.    1.    0.    2.    2.    3.
3.    4.
 160.  *    2.    5.    4.    2.    2.    3.    2.    2.    1.    2.    0.    1.    1.    0.    0.    1.    2.    2.
3.    4.
 170.  *    2.    5.    4.    3.    2.    3.    3.    1.    0.    1.    0.    0.    1.    0.    0.    1.    2.    2.
2.    3.
 180.  *    3.    5.    2.    3.    2.    3.    2.    0.    0.    0.    0.    0.    0.    0.    0.    1.    2.    2.
2.    2.
 190.  *    2.    4.    2.    2.    1.    2.    2.    0.    0.    0.    0.    0.    0.    0.    0.    1.    2.    2.
1.    2.
 200.  *    3.    4.    2.    2.    1.    2.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    2.
1.    1.
 210.  *    2.    4.    2.    3.    0.    1.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    2.
1.    1.
 220.  *    2.    4.    2.    3.    1.    1.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.
0.    0.
 230.  *    1.    4.    2.    3.    1.    1.    1.    0.    0.    0.    0.    0.    1.    0.    0.    0.    0.    1.
0.    0.
 240.  *    1.    3.    2.    3.    2.    1.    1.    1.    0.    0.    0.    0.    1.    1.    0.    0.    0.    0.
0.    0.
 250.  *    1.    3.    2.    3.    2.    1.    1.    1.    0.    0.    0.    0.    2.    1.    0.    0.    0.    0.
0.    0.
 260.  *    1.    3.    2.    2.    2.    1.    1.    1.    0.    0.    0.    0.    2.    1.    0.    0.    0.    0.
0.    0.
 270.  *    1.    3.    2.    2.    1.    1.    2.    1.    1.    0.    0.    0.    2.    1.    0.    0.    0.    0.
0.    0.
 280.  *    1.    3.    1.    2.    1.    1.    2.    1.    1.    0.    0.    1.    1.    1.    0.    0.    0.    0.
0.    0.
 290.  *    1.    3.    1.    2.    1.    2.    2.    1.    1.    0.    0.    1.    1.    1.    0.    0.    0.    0.
0.    0.
 300.  *    1.    3.    2.    1.    1.    2.    2.    2.    1.    0.    0.    1.    1.    1.    0.    0.    0.    0.
0.    0.
 310.  *    1.    3.    2.    2.    1.    2.    2.    2.    1.    1.    0.    1.    1.    1.    0.    0.    0.    0.
0.    0.
 320.  *    2.    4.    2.    2.    1.    2.    2.    2.    1.    1.    0.    1.    1.    1.    0.    0.    0.    0.
0.    0.
 330.  *    2.    4.    2.    2.    1.    2.    2.    2.    1.    1.    1.    1.    1.    1.    1.    0.    0.    0.
0.    1.
 340.  *    1.    4.    3.    1.    1.    2.    2.    3.    2.    1.    1.    1.    2.    2.    1.    0.    0.    0.
1.    1.
 350.  *    1.    3.    3.    1.    0.    1.    1.    4.    2.    2.    1.    1.    2.    2.    2.    0.    1.    1.
1.    2.
 360.  *    0.    2.    2.    0.    0.    0.    0.    3.    2.    2.    1.    2.    2.    2.    2.    1.    1.    1.
1.    2.

------*------------------------------------------------------------------------------------------------------------
-------
 MAX   *    3.    5.    5.    3.    2.    3.    3.    4.    2.    3.    2.    3.    3.    3.    2.    3.    3.    4.
4.    4.
 DEGR. *  200   170   150   240   250   170   170   350     0   140   120   130    10    30    30   110    90   120
130   150

♀                                                                                                              PAGE  7
      JOB: Landmark Center                                            RUN: 2013EX

       MODEL RESULTS
       -------------

       REMARKS : In search of the angle corresponding to
                 the maximum concentration, only the first
                 angle, of the angles with same maximum
                 concentrations, is indicated as maximum.

 WIND ANGLE RANGE:   0.-360.

 WIND  * CONCENTRATION
 ANGLE *      (ug/m**3)
 (DEGR)* REC41 REC42 REC43 REC44 REC45 REC46 REC47 REC48 REC49 REC50 REC51 REC52 REC53 REC54 REC55 REC56 REC57 REC58
REC59 REC60

------*------------------------------------------------------------------------------------------------------------
-------
   0.  *    0.    0.    0.    0.    0.    0.    2.    2.    1.    1.    1.    2.    3.    2.    2.    0.    0.    1.
0.    0.
  10.  *    0.    0.    0.    0.    0.    0.    2.    2.    1.    1.    1.    2.    3.    3.    2.    0.    0.    1.
```



```
0.    0.
  20.  *    0.    0.    0.    0.    0.    0.    2.    3.    1.    0.    1.    2.    3.    3.    2.    0.    0.    1.
0.    0.
  30.  *    0.    0.    0.    0.    0.    0.    2.    3.    1.    0.    1.    2.    3.    3.    3.    0.    0.    1.
0.    0.
  40.  *    0.    0.    0.    0.    0.    0.    2.    3.    0.    0.    0.    1.    3.    3.    3.    0.    0.    1.
0.    0.
  50.  *    0.    0.    0.    0.    0.    0.    1.    2.    0.    0.    0.    1.    3.    3.    3.    0.    1.    1.
0.    0.
  60.  *    0.    0.    0.    0.    0.    0.    1.    2.    0.    0.    0.    0.    2.    3.    3.    1.    1.    2.
0.    0.
  70.  *    0.    0.    1.    0.    0.    0.    0.    1.    0.    0.    0.    0.    2.    2.    2.    2.    2.    2.
0.    0.
  80.  *    0.    0.    2.    1.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.    1.    3.    3.    3.
0.    0.
  90.  *    0.    0.    2.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    3.    3.    3.
1.    0.
 100.  *    0.    0.    3.    2.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    3.    3.    3.
1.    0.
 110.  *    0.    1.    3.    2.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    3.    3.    3.
2.    1.
 120.  *    0.    1.    3.    2.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    2.    3.    3.
2.    1.
 130.  *    1.    1.    2.    2.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    2.    2.    3.
2.    1.
 140.  *    1.    1.    2.    2.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    2.    2.    3.
2.    1.
 150.  *    1.    1.    2.    2.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    2.    2.    3.
2.    1.
 160.  *    1.    2.    2.    2.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    2.    2.    2.
2.    1.
 170.  *    1.    2.    3.    2.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    2.    2.    2.
1.    1.
 180.  *    1.    2.    3.    2.    2.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    2.    2.    2.
1.    1.
 190.  *    2.    2.    2.    3.    2.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    2.    2.
1.    1.
 200.  *    1.    2.    3.    3.    2.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    2.    3.
1.    1.
 210.  *    1.    2.    3.    3.    3.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    2.    3.
1.    1.
 220.  *    1.    2.    3.    4.    3.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    2.    3.
1.    1.
 230.  *    2.    2.    4.    4.    4.    0.    0.    1.    0.    0.    0.    0.    1.    1.    1.    2.    3.    3.
2.    2.
 240.  *    1.    2.    4.    4.    4.    2.    2.    2.    1.    0.    0.    1.    1.    1.    1.    2.    3.    3.
2.    1.
 250.  *    0.    1.    3.    3.    3.    3.    3.    3.    1.    1.    1.    1.    3.    2.    2.    2.    2.    2.
1.    0.
 260.  *    0.    1.    2.    2.    1.    4.    4.    4.    2.    1.    1.    2.    3.    3.    2.    1.    1.    1.
0.    0.
 270.  *    0.    0.    1.    1.    0.    4.    4.    4.    2.    1.    1.    1.    3.    3.    2.    0.    1.    0.
0.    0.
 280.  *    0.    0.    1.    0.    0.    3.    3.    3.    2.    1.    1.    1.    3.    2.    1.    0.    0.    0.
0.    0.
 290.  *    0.    0.    1.    0.    0.    3.    3.    3.    2.    1.    1.    1.    3.    2.    1.    0.    0.    0.
0.    0.
 300.  *    0.    0.    1.    0.    0.    2.    3.    3.    2.    1.    1.    1.    3.    2.    1.    0.    0.    0.
0.    0.
 310.  *    0.    0.    1.    0.    0.    2.    3.    3.    2.    1.    1.    1.    3.    2.    1.    0.    0.    0.
0.    0.
 320.  *    0.    0.    0.    0.    0.    2.    2.    3.    2.    1.    1.    1.    2.    2.    2.    0.    0.    0.
0.    0.
 330.  *    0.    0.    0.    0.    0.    1.    2.    3.    2.    1.    1.    2.    3.    2.    2.    0.    0.    0.
0.    0.
 340.  *    0.    0.    0.    0.    0.    1.    2.    3.    2.    1.    1.    2.    3.    2.    2.    0.    0.    0.
0.    0.
 350.  *    0.    0.    0.    0.    0.    0.    2.    2.    2.    1.    1.    2.    3.    2.    2.    0.    0.    0.
0.    0.
 360.  *    0.    0.    0.    0.    0.    0.    2.    2.    1.    1.    1.    2.    3.    2.    2.    0.    0.    1.
0.    0.

------*------------------------------------------------------------------------------------------------------------
-------
 MAX   *    2.    2.    4.    4.    4.    4.    4.    4.    2.    1.    1.    2.    3.    3.    3.    3.    3.    3.
2.    2.
 DEGR. *  190   200   240   230   240   270   270   260   320   260   340     0   260    40    50    90   100   240
120   230

 THE HIGHEST CONCENTRATION OF      5. ug/m**3 OCCURRED AT RECEPTOR REC22.
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♀                     CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 95221                        PAGE  1

      JOB: LANDMARKCENTER                                          RUN: 2013_EX

      DATE :  7/22/13
      TIME : 14:22:33

         The MODE flag has been set to P for calculating PM averages.

       SITE & METEOROLOGICAL VARIABLES
       -------------------------------
       VS =   0.0 CM/S       VD =   0.0 CM/S       Z0 = 175. CM
        U =  1.0 M/S         CLAS =   4  (D)     ATIM =  60. MINUTES     MIXH =  1000. M   AMB =  0.0 ug/m**3

       LINK VARIABLES
       --------------
         LINK DESCRIPTION     *         LINK COORDINATES (FT)          *    LENGTH  BRG TYPE   VPH    EF      H   W
V/C QUEUE
                              *   X1        Y1        X2        Y2     *     (FT)  (DEG)           (G/MI)  (FT) (FT)
   (VEH)
------------------------*-----------------------------------------*------------------------------------------------------
----
       1. Brook/Full EB L     *   3074.7    4018.5    3064.9    4005.6 *      16.   217. AG      0. 100.0   1.0 10.0
0.09   0.8
       2. Brook/Full EB TR    *   3083.6    4012.0    3045.6    3961.5 *      63.   217. AG      0. 100.0   1.0 10.0
0.35   3.2
       3. Brook/Full NB LTR   *   3121.3    4022.6    3148.4    4008.1 *      31.   118. AG      0. 100.0   1.0 10.0
0.17   1.6
       4. Brook/Full WB LTR   *   3127.2    4100.9    3155.0    4137.4 *      46.    37. AG      0. 100.0   1.0 20.0
0.23   2.3
       5. Brook/Full SB LT    *   3068.3    4050.9    3031.4    4078.1 *      46.   306. AG      0. 100.0   1.0 10.0
0.28   2.3
       6. Brook/Full SB R     *   3061.2    4041.4    3027.0    4066.0 *      42.   306. AG      0. 100.0   1.0 10.0
0.22   2.1
       7. Brook/Full N        *   3091.9    4045.7    2925.8    4161.5 *     203.   305. AG    420.   0.0   1.0 54.0
       8. Brook/Full E        *   3091.9    4045.7    3246.2    4230.8 *     241.    40. AG    815.   0.0   1.0 54.0
       9. Brook/Full S        *   3100.3    4031.3    3190.0    3977.6 *     105.   121. AG    305.   0.0   1.0 42.0
      10. Brook/Full W        *   3091.9    4048.0    2946.1    3847.4 *     248.   216. AG    980.   0.0   1.0 54.0
♀                                                                                                             PAGE  2
      JOB: LANDMARKCENTER                                          RUN: 2013_EX

      DATE :  7/22/13
      TIME : 14:22:33

       1. Brook/Full EB L     *     100       33       3.0        90       1600       0.08      1        3
       2. Brook/Full EB TR    *     100       33       3.0       350       1600       0.08      1        3
       3. Brook/Full NB LTR   *     100       33       3.0       170       1600       0.08      1        3
       4. Brook/Full WB LTR   *     100       43       3.0       390       1600       0.08      1        3
       5. Brook/Full SB LT    *     100       67       3.0       125       1600       0.08      1        3
       6. Brook/Full SB R     *     100       57       3.0       135       1600       0.08      1        3

       RECEPTOR LOCATIONS
       ------------------
                              *          COORDINATES (FT)          *
         RECEPTOR             *      X          Y          Z       *
     -------------------------*------------------------------------*
      1. Brook/Full NE1       *      2962.2     4181.2       6.0   *
      2. Brook/Full NE2       *      3023.7     4138.3       6.0   *
      3. Brook/Full NE3       *      3085.3     4095.4       6.0   *
      4. Brook/Full NE4       *      3133.3     4153.0       6.0   *
      5. Brook/Full NE5       *      3188.7     4204.0       6.0   *
      6. Brook/Full SE1       *      3235.0     4159.5       6.0   *
      7. Brook/Full SE2       *      3187.0     4101.9       6.0   *
      8. Brook/Full SE3       *      3130.3     4049.5       6.0   *
      9. Brook/Full SE4       *      3203.3     4005.7       6.0   *
     10. Brook/Full SE5       *      3267.6     3967.2       6.0   *
     11. Brook/Full SW1       *      3228.3     3918.5       6.0   *
     12. Brook/Full SW2       *      3163.9     3957.1       6.0   *
     13. Brook/Full SW3       *      3099.6     3995.6       6.0   *
     14. Brook/Full SW4       *      3055.5     3934.9       6.0   *
     15. Brook/Full SW5       *      3011.4     3874.3       6.0   *
     16. Brook/Full NW1       *      2950.5     3916.4       6.0   *
     17. Brook/Full NW2       *      2994.6     3977.0       6.0   *
     18. Brook/Full NW3       *      3038.7     4037.7       6.0   *
     19. Brook/Full NW4       *      2977.2     4080.6       6.0   *
     20. Brook/Full NW5       *      2915.6     4123.5       6.0   *
♀                                                                                                             PAGE  3
      JOB: LANDMARKCENTER                                          RUN: 2013_EX

       MODEL RESULTS
       -------------

       REMARKS : In search of the angle corresponding to
                 the maximum concentration, only the first
                 angle, of the angles with same maximum
                 concentrations, is indicated as maximum.

 WIND ANGLE RANGE:   0.-360.

 WIND  * CONCENTRATION
```



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 ANGLE *      (ug/m**3)
 (DEGR)* REC1  REC2  REC3  REC4  REC5  REC6  REC7  REC8  REC9  REC10 REC11 REC12 REC13 REC14 REC15 REC16 REC17 REC18
REC19 REC20

------*------------------------------------------------------------------------------------------------------------------
-------
   0.  *    0.    0.    0.    0.    0.    1.    1.    1.    0.    0.    0.    1.    2.    2.    1.    0.    0.    1.
0.    0.
  10.  *    0.    0.    0.    0.    0.    1.    1.    2.    0.    0.    0.    1.    2.    2.    2.    0.    0.    1.
0.    0.
  20.  *    0.    0.    0.    0.    0.    0.    1.    2.    0.    0.    0.    0.    2.    2.    2.    0.    1.    1.
0.    0.
  30.  *    0.    0.    0.    0.    0.    0.    1.    1.    0.    0.    0.    0.    1.    1.    1.    1.    1.    1.
0.    0.
  40.  *    0.    0.    1.    0.    0.    0.    0.    1.    0.    0.    0.    0.    1.    1.    1.    1.    1.    2.
0.    0.
  50.  *    0.    0.    1.    1.    1.    0.    0.    1.    0.    0.    0.    0.    1.    0.    0.    2.    2.    2.
0.    0.
  60.  *    0.    0.    1.    1.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    2.    2.    2.
1.    0.
  70.  *    0.    0.    1.    1.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    2.    2.    2.
1.    1.
  80.  *    0.    0.    1.    1.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    2.    2.
1.    1.
  90.  *    0.    0.    1.    1.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.    2.
1.    1.
 100.  *    0.    0.    1.    1.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.    2.
1.    1.
 110.  *    0.    0.    1.    1.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.    1.
1.    1.
 120.  *    0.    1.    1.    1.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.    2.
1.    1.
 130.  *    1.    1.    1.    1.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.    1.
1.    0.
 140.  *    1.    1.    1.    1.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.    1.
0.    0.
 150.  *    1.    1.    1.    1.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.    1.
0.    0.
 160.  *    1.    1.    1.    2.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.    1.
0.    0.
 170.  *    1.    1.    2.    2.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.    1.
0.    0.
 180.  *    1.    1.    2.    2.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.    1.
0.    0.
 190.  *    0.    1.    2.    2.    2.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.    1.
0.    0.
 200.  *    0.    1.    2.    2.    2.    0.    0.    1.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.
0.    0.
 210.  *    0.    0.    2.    2.    2.    0.    0.    1.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.
0.    0.
 220.  *    0.    0.    1.    1.    2.    1.    1.    2.    0.    0.    0.    0.    1.    1.    0.    0.    0.    0.
0.    0.
 230.  *    0.    0.    1.    1.    1.    1.    1.    2.    0.    0.    0.    0.    1.    1.    0.    0.    0.    0.
0.    0.
 240.  *    0.    0.    1.    0.    0.    1.    1.    2.    1.    0.    0.    0.    1.    1.    1.    0.    0.    0.
0.    0.
 250.  *    0.    0.    1.    0.    0.    2.    2.    2.    1.    0.    0.    0.    2.    1.    1.    0.    0.    0.
0.    0.
 260.  *    0.    0.    1.    0.    0.    1.    2.    2.    1.    0.    0.    0.    1.    1.    1.    0.    0.    0.
0.    0.
 270.  *    0.    0.    0.    0.    0.    1.    1.    2.    1.    0.    0.    0.    1.    1.    1.    0.    0.    0.
0.    0.
 280.  *    0.    0.    0.    0.    0.    1.    1.    2.    1.    1.    0.    0.    1.    1.    1.    0.    0.    0.
0.    0.
 290.  *    0.    0.    0.    0.    0.    1.    1.    2.    1.    1.    0.    1.    1.    1.    1.    0.    0.    0.
0.    0.
 300.  *    0.    0.    0.    0.    0.    1.    1.    2.    1.    0.    0.    1.    2.    1.    1.    0.    0.    0.
0.    0.
 310.  *    0.    0.    0.    0.    0.    1.    1.    1.    0.    0.    1.    1.    2.    1.    1.    0.    0.    0.
0.    0.
 320.  *    0.    0.    0.    0.    0.    1.    1.    1.    1.    0.    1.    1.    2.    1.    1.    0.    0.    1.
0.    0.
 330.  *    0.    0.    0.    0.    0.    1.    1.    1.    0.    0.    0.    1.    2.    1.    1.    0.    0.    1.
0.    0.
 340.  *    0.    0.    0.    0.    0.    1.    1.    1.    0.    0.    0.    1.    2.    1.    1.    0.    0.    1.
0.    0.
 350.  *    0.    0.    0.    0.    0.    1.    1.    1.    0.    0.    0.    1.    1.    2.    1.    0.    0.    1.
0.    0.
 360.  *    0.    0.    0.    0.    0.    1.    1.    1.    0.    0.    0.    1.    2.    2.    1.    0.    0.    1.
0.    0.

------*------------------------------------------------------------------------------------------------------------------
-------
 MAX   *    1.    1.    2.    2.    2.    2.    2.    2.    1.    1.    1.    1.    2.    2.    2.    2.    2.    2.
1.    1.
 DEGR. *  140   160   190   200   210   250   250   240   270   280   310   340   310     0    10    50    50    50
100   100

 THE HIGHEST CONCENTRATION OF      2. ug/m**3 OCCURRED AT RECEPTOR REC18.
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2018 No-Build
Microscale Output Files
(Particulate Matter 10 (PM10))

♀ CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 95221 PAGE 1

JOB: Landmark Center RUN: 2018NB

DATE : 7/22/13
TIME : 14:36:10

The MODE flag has been set to P for calculating PM averages.

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 175. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 ug/m**3

LINK VARIABLES

LINK DESCRIPTION	X1	Y1	X2	Y2	LENGTH (FT)	BRG (DEG)	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)	V/C	QUEUE (VEH)
1. Fen/Brook WB TT	2508.3	3314.8	2586.4	3416.7	128.	37.	AG	0.	100.0	1.0	20.0	0.66	6.5
2. Fen/Brook EB TTTR	2469.9	3221.1	2415.3	3145.8	93.	216.	AG	0.	100.0	1.0	30.0	0.48	4.7
3. Fen/Brook SB L	2487.6	3319.0	2362.9	3437.3	172.	313.	AG	0.	100.0	1.0	10.0	0.83	8.7
4. Fen/Brook SB LTT	2476.2	3307.2	2397.4	3380.1	107.	313.	AG	0.	100.0	1.0	20.0	0.54	5.5
5. Fen/Brook SB R	2463.2	3293.4	2440.4	3315.4	32.	314.	AG	0.	100.0	1.0	10.0	0.16	1.6
6. Park/Brook WB TTR	2701.3	3561.7	2742.4	3616.0	68.	37.	AG	0.	100.0	1.0	30.0	0.42	3.5
7. Park/Brook NWB LLRRR	2745.9	3510.4	3745.0	3896.3	1071.	69.	AG	0.	100.0	1.0	30.0	1.25	54.4
8. Park/Brook NB LTTTR	2715.4	3403.8	2770.2	3333.9	89.	142.	AG	1.	100.0	1.0	40.0	0.55	4.5
9. Park/Brook EB L	2628.6	3435.0	2599.8	3397.7	47.	218.	AG	0.	100.0	1.0	10.0	0.61	2.4
10. Park/Brook EB T	2637.5	3428.1	2557.6	3326.0	130.	218.	AG	0.	100.0	1.0	10.0	0.68	6.6
11. Park/Brook EB RR	2648.5	3416.9	2594.3	3345.2	90.	217.	AG	0.	100.0	1.0	20.0	0.51	4.6
12. River/Park SB	2213.3	3801.8	3580.3	6597.8	3112.	26.	AG	0.	100.0	1.0	10.0	2.01	158.1
13. River/Park SB East	2256.2	3801.2	2279.3	3925.6	127.	11.	AG	0.	100.0	1.0	20.0	0.87	6.4
14. River/Park WB North	2272.8	3765.2	2366.7	3765.6	94.	90.	AG	0.	100.0	1.0	30.0	0.51	4.8
15. River/Park WB South	2270.5	3707.9	2327.4	3732.3	62.	67.	AG	0.	100.0	1.0	20.0	0.33	3.1
16. River/Park NEB	2169.9	3720.6	2157.8	3709.0	17.	226.	AG	0.	100.0	1.0	20.0	0.12	0.9
17. Beacon/Park SB LTT	1962.9	4712.6	1931.1	4812.3	105.	342.	AG	0.	100.0	1.0	20.0	0.49	5.3
18. Beacon/Park WB LTT	2055.3	4691.7	2201.8	4745.7	156.	70.	AG	0.	100.0	1.0	20.0	0.72	7.9
19. Beacon/Park NB LTT	2041.7	4597.4	3065.8	1613.7	3155.	161.	AG	0.	100.0	1.0	20.0	****	160.3
20. Beacon/Park EB LTTT	1966.3	4608.1	1913.8	4584.5	58.	246.	AG	0.	100.0	1.0	30.0	0.29	2.9
21. Beacon/Park EB R	1975.6	4560.5	1953.5	4563.9	22.	279.	AG	0.	100.0	1.0	20.0	0.10	1.1
22. Beacon/Park SB R	1917.2	4688.3	1919.9	4692.5	5.	32.	AG	0.	100.0	1.0	10.0	0.02	0.3
23. Beacon/Park WB R	2019.8	4741.2	2031.4	4737.2	12.	109.	AG	0.	100.0	1.0	10.0	0.06	0.6
24. Beacon/Park NB R	2095.2	4627.5	2086.9	4605.4	24.	201.	AG	0.	100.0	1.0	10.0	0.11	1.2
25. Boyl/Kil SB LTR	3322.0	3753.8	3307.4	3798.9	47.	342.	AG	0.	100.0	1.0	20.0	0.32	2.4
26. Boyl/Kil WB LTTR	3373.3	3738.7	3451.2	3770.2	84.	68.	AG	0.	100.0	1.0	20.0	0.50	4.3
27. Boyl/Kil NB LTR	3365.2	3677.7	3376.9	3648.1	32.	158.	AG	0.	100.0	1.0	10.0	0.21	1.6
28. Boyl/Kil EB LTTR	3320.4	3695.3	3225.5	3660.7	101.	250.	AG	0.	100.0	1.0	20.0	0.60	5.1
29. Fenway/Brook South	2496.9	3278.9	2636.6	3081.1	242.	145.	AG	916.	0.0	1.0	54.0		
30. Fenway/Brook West	2481.8	3262.9	2347.3	3075.6	231.	216.	AG	1881.	0.0	1.0	78.0		
31. Fenway/Brook North	2491.0	3288.6	2373.1	3398.7	161.	313.	AG	1628.	0.0	1.0	66.0		
32. Fenway/Brook East	2497.8	3264.6	2608.7	3389.7	167.	42.	AG	2403.	0.0	1.0	90.0		
33. Park/Brook South	2691.9	3447.3	2838.3	3241.2	253.	145.	AG	958.	0.0	1.0	66.0		
34. Park/Brook West	2672.2	3490.7	2502.8	3273.8	275.	218.	AG	2413.	0.0	1.0	90.0		
35. Park/Brook North	2656.7	3489.7	2496.1	3644.1	223.	314.	AG	1794.	0.0	1.0	66.0		
36. Park/Brook East	2663.3	3490.8	2801.7	3675.1	230.	37.	AG	1249.	0.0	1.0	66.0		
37. Park/Brook SE	2681.0	3470.4	2968.4	3574.9	306.	70.	AG	2358.	0.0	1.0	78.0		
38. River/Park N	2254.7	3768.2	2266.4	3911.9	144.	5.	AG	473.	0.0	1.0	42.0		
39. River/Park SE	2239.1	3675.4	2343.7	3750.1	129.	54.	AG	428.	0.0	1.0	42.0		
40. River/Park NE	2237.1	3772.1	2377.4	3769.2	140.	91.	AG	872.	0.0	1.0	54.0		

LINK DESCRIPTION	X1	Y1	X2	Y2	LENGTH (FT)	BRG (DEG)	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)
41. River/Park S	2231.1	3745.1	2210.1	3564.3	182.	187.	AG	901.	0.0	1.0	54.0
42. River/Park SW	2211.1	3765.1	2058.1	3624.4	208.	227.	AG	1420.	0.0	1.0	54.0
43. River/Park NW	2194.0	3770.2	2250.7	3886.0	129.	26.	AG	548.	0.0	1.0	30.0
44. Beacon/Park N	1996.0	4667.5	1894.2	4948.4	299.	340.	AG	1153.	0.0	1.0	78.0

♀ PAGE 2

JOB: Landmark Center RUN: 2018NB

DATE : 7/22/13
TIME : 14:36:10

LINK VARIABLES

LINK DESCRIPTION	X1	Y1	X2	Y2	LENGTH (FT)	BRG (DEG)	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)	V/C	QUEUE (VEH)
45. Beacon/Park NR	1908.0	4673.8	1956.1	4744.7	86.	34.	AG	15.	0.0	1.0	30.0		
46. Beacon/Park E	1997.8	4657.7	2274.4	4755.8	293.	70.	AG	1621.	0.0	1.0	78.0		
47. Beacon/Park ER	1991.4	4750.8	2112.1	4710.6	127.	108.	AG	33.	0.0	1.0	30.0		
48. Beacon/Park S	2009.1	4646.4	2098.7	4401.0	261.	160.	AG	1732.	0.0	1.0	78.0		
49. Beacon/Park SR	2102.5	4662.0	2076.2	4571.2	95.	196.	AG	71.	0.0	1.0	42.0		
50. Beacon/Park W EB	1995.6	4607.6	1704.2	4488.4	315.	248.	AG	600.	0.0	1.0	66.0		
51. Beacon/Park W EBR	2009.1	4551.2	1907.4	4575.2	104.	283.	AG	134.	0.0	1.0	38.0		
52. Beacon/Park W WB	1989.3	4675.4	1658.3	4556.1	352.	250.	AG	843.	0.0	1.0	78.0		
53. Boyl/Kil N	3344.5	3717.0	3289.1	3876.3	169.	341.	AG	320.	0.0	1.0	54.0		
54. Boyl/Kil E	3348.9	3715.0	3516.2	3780.7	180.	69.	AG	2366.	0.0	1.0	78.0		
55. Boyl/Kil S	3349.9	3702.1	3425.5	3502.1	214.	159.	AG	242.	0.0	1.0	54.0		
56. Boyl/Kil W	3346.0	3717.8	3141.9	3641.3	218.	249.	AG	2392.	0.0	1.0	78.0		

♀ PAGE 3

JOB: Landmark Center RUN: 2018NB

DATE : 7/22/13
TIME : 14:36:10

1. Fen/Brook WB TT	100	54	3.0	870	1600	0.07	1	3
2. Fen/Brook EB TTTR	100	54	3.0	947	1600	0.07	1	3
3. Fen/Brook SB L	100	46	3.0	648	1600	0.07	1	3
4. Fen/Brook SB LTT	100	46	3.0	854	1600	0.07	1	3
5. Fen/Brook SB R	100	46	3.0	126	1600	0.07	1	3
6. Park/Brook WB TTR	100	68	3.0	550	1600	0.07	1	3
7. Park/Brook NWB LLRRR	100	75	3.0	1203	1600	0.07	1	3
8. Park/Brook NB LTTTR	100	68	3.0	958	1600	0.07	1	3
9. Park/Brook EB L	100	85	3.0	98	1600	0.07	1	3
10. Park/Brook EB T	100	57	3.0	416	1600	0.07	1	3
11. Park/Brook EB RR	100	32	3.0	1029	1600	0.07	1	3
12. River/Park SB	100	78	3.0	548	1600	0.07	1	3
13. River/Park SB East	100	78	3.0	473	1600	0.07	1	3
14. River/Park WB North	100	59	3.0	875	1600	0.07	1	3
15. River/Park WB South	100	59	3.0	385	1600	0.07	1	3
16. River/Park NEB	100	73	3.0	84	1600	0.07	1	3
17. Beacon/Park SB LTT	110	61	3.0	629	1600	0.07	1	3
18. Beacon/Park WB LTT	110	56	3.0	1020	1600	0.07	1	3
19. Beacon/Park NB LTT	110	103	3.0	609	1600	0.07	1	3
20. Beacon/Park EB LTTT	110	68	3.0	466	1600	0.07	1	3
21. Beacon/Park EB R	110	61	3.0	134	1600	0.07	1	3
22. Beacon/Park SB R	110	61	3.0	15	1600	0.07	1	3
23. Beacon/Park WB R	110	68	3.0	33	1600	0.07	1	3
24. Beacon/Park NB R	110	61	3.0	71	1600	0.07	1	3
25. Boyl/Kil SB LTR	100	71	3.0	244	1600	0.07	1	3
26. Boyl/Kil WB LTTR	100	29	3.0	1060	1600	0.07	1	3
27. Boyl/Kil NB LTR	100	71	3.0	82	1600	0.07	1	3
28. Boyl/Kil EB LTTR	100	29	3.0	1274	1600	0.07	1	3

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. Fen/Brook NE1	2376.5	3444.0	6.0
2. Fen/Brook NE2	2429.7	3391.0	6.0
3. Fen/Brook NE3	2484.5	3339.8	6.0
4. Fen/Brook NE4	2530.7	3398.9	6.0
5. Fen/Brook NE5	2576.8	3458.0	6.0
6. Fen/Brook SE1	2660.2	3364.9	6.0
7. Fen/Brook SE2	2609.6	3308.8	6.0
8. Fen/Brook SE3	2560.7	3252.7	6.0
9. Fen/Brook SE4	2604.0	3191.4	6.0
10. Fen/Brook SE5	2647.3	3130.2	6.0
11. Fen/Brook SW1	2588.7	3084.8	6.0
12. Fen/Brook SW2	2545.5	3146.0	6.0
13. Fen/Brook SW3	2502.2	3207.3	6.0
14. Fen/Brook SW4	2458.5	3146.4	6.0
15. Fen/Brook SW5	2414.7	3085.4	6.0
16. Fen/Brook NW1	2353.5	3168.3	6.0
17. Fen/Brook NW2	2397.3	3229.2	6.0
18. Fen/Brook NW3	2441.0	3290.1	6.0
19. Fen/Brook NW4	2386.2	3341.3	6.0
20. Fen/Brook NW5	2331.4	3392.5	6.0

21. Park/Brook NE1	*	2546.7	3655.1	6.0 *
22. Park/Brook NE2	*	2600.8	3603.1	6.0 *
23. Park/Brook NE3	*	2654.8	3551.1	6.0 *

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JOB: Landmark Center RUN: 2018NB

DATE : 7/22/13
TIME : 14:36:10

RECEPTOR LOCATIONS

RECEPTOR	* COORDINATES (FT) X	Y	Z *
24. Park/Brook NE4	2699.9	3611.1	6.0
25. Park/Brook NE5	2744.9	3671.1	6.0
26. Park/Brook SE1	2889.0	3493.9	6.0
27. Park/Brook SE2	2818.1	3468.1	6.0
28. Park/Brook SE3	2747.7	3442.5	6.0
29. Park/Brook SE4	2791.4	3381.5	6.0
30. Park/Brook SE5	2834.8	3320.3	6.0
31. Park/Brook SW1	2758.8	3278.8	6.0
32. Park/Brook SW2	2715.4	3340.0	6.0
33. Park/Brook SW3	2672.0	3401.1	6.0
34. Park/Brook SW4	2625.8	3342.0	6.0
35. Park/Brook SW5	2579.6	3282.9	6.0
36. Park/Brook NW1	2506.3	3367.7	6.0
37. Park/Brook NW2	2552.4	3426.8	6.0
38. Park/Brook NW3	2598.6	3485.9	6.0
39. Park/Brook NW4	2544.6	3537.9	6.0
40. Park/Brook NW5	2490.5	3589.9	6.0
41. Park/Brook E1	2853.5	3672.4	6.0
42. Park/Brook E2	2811.9	3617.1	6.0
43. Park/Brook E3	2763.4	3552.5	6.0
44. Park/Brook E4	2838.4	3579.8	6.0
45. Park/Brook E5	2904.4	3603.8	6.0

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JOB: Landmark Center RUN: 2018NB

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-360.

WIND * CONCENTRATION
ANGLE * (ug/m**3)

(DEGR)*	REC1	REC2	REC3	REC4	REC5	REC6	REC7	REC8	REC9	REC10	REC11	REC12	REC13	REC14	REC15	REC16	REC17	REC18	REC19	REC20
0. *	1.	2.	2.	1.	1.	3.	5.	5.	3.	2.	3.	5.	7.	5.	4.	1.	2.	4.	3.	1.
10. *	1.	2.	1.	1.	1.	3.	5.	5.	2.	2.	3.	5.	7.	5.	4.	1.	2.	4.	3.	1.
20. *	1.	2.	1.	1.	1.	3.	4.	5.	2.	2.	2.	4.	7.	5.	5.	2.	2.	4.	3.	1.
30. *	1.	2.	2.	1.	2.	3.	4.	5.	2.	1.	2.	3.	7.	5.	4.	2.	3.	4.	3.	1.
40. *	1.	2.	3.	2.	3.	3.	3.	3.	2.	1.	2.	3.	6.	4.	3.	4.	4.	6.	3.	1.
50. *	1.	2.	5.	4.	3.	3.	3.	3.	2.	1.	2.	2.	5.	3.	2.	5.	6.	8.	4.	1.
60. *	2.	3.	6.	5.	4.	3.	2.	2.	1.	0.	1.	2.	4.	2.	2.	5.	6.	9.	5.	2.
70. *	3.	4.	6.	5.	5.	2.	2.	1.	0.	0.	1.	1.	3.	1.	1.	4.	5.	8.	5.	3.
80. *	3.	4.	6.	5.	5.	2.	1.	0.	0.	0.	1.	1.	2.	1.	1.	3.	4.	7.	6.	4.
90. *	3.	4.	5.	5.	4.	2.	0.	0.	0.	0.	1.	1.	2.	1.	1.	3.	3.	6.	6.	4.
100. *	2.	4.	5.	5.	3.	2.	0.	0.	0.	0.	0.	1.	2.	1.	0.	2.	3.	5.	5.	4.
110. *	3.	4.	4.	4.	3.	1.	0.	0.	0.	0.	0.	1.	2.	1.	0.	2.	3.	4.	5.	4.
120. *	3.	4.	5.	5.	3.	1.	0.	0.	0.	0.	0.	1.	3.	1.	0.	2.	3.	4.	4.	4.
130. *	4.	5.	5.	5.	3.	0.	0.	0.	0.	0.	0.	2.	3.	1.	0.	2.	3.	4.	4.	3.
140. *	4.	6.	6.	4.	3.	0.	0.	0.	0.	0.	0.	2.	3.	1.	0.	2.	3.	3.	3.	2.
150. *	4.	6.	7.	4.	3.	0.	0.	1.	0.	0.	0.	3.	3.	1.	0.	2.	3.	3.	2.	2.
160. *	4.	6.	7.	5.	4.	0.	0.	2.	1.	0.	1.	4.	2.	0.	0.	2.	2.	3.	2.	1.

(DEGR)*	REC1	REC2	REC3	REC4	REC5	REC6	REC7	REC8	REC9	REC10	REC11	REC12	REC13	REC14	REC15	REC16	REC17	REC18	REC19	REC20
170. *	3.	5.	8.	6.	5.	0.	1.	2.	2.	1.	2.	4.	1.	0.	0.	2.	2.	3.	2.	1.
180. *	2.	4.	7.	6.	5.	0.	1.	2.	2.	1.	2.	3.	0.	0.	0.	1.	2.	3.	1.	0.
190. *	1.	3.	7.	6.	6.	1.	1.	2.	2.	1.	1.	2.	0.	0.	0.	1.	2.	2.	1.	0.
200. *	1.	3.	7.	5.	5.	1.	1.	2.	2.	1.	1.	2.	0.	0.	0.	1.	2.	2.	0.	0.
210. *	0.	2.	6.	4.	4.	1.	1.	2.	1.	1.	1.	2.	1.	0.	0.	1.	1.	1.	0.	0.
220. *	0.	2.	5.	3.	3.	2.	2.	2.	1.	1.	1.	1.	1.	1.	0.	0.	0.	1.	0.	0.
230. *	0.	2.	4.	2.	2.	4.	4.	3.	1.	1.	1.	1.	2.	1.	0.	0.	0.	0.	0.	0.
240. *	0.	2.	4.	2.	1.	5.	4.	4.	2.	1.	1.	2.	3.	2.	1.	0.	0.	0.	0.	0.
250. *	0.	2.	4.	2.	1.	5.	5.	4.	2.	2.	1.	2.	3.	2.	1.	0.	0.	0.	0.	0.
260. *	0.	2.	4.	2.	1.	5.	5.	4.	2.	2.	1.	2.	3.	2.	1.	0.	0.	0.	0.	0.
270. *	0.	2.	4.	1.	1.	5.	5.	4.	2.	2.	1.	2.	2.	2.	1.	0.	0.	0.	0.	0.
280. *	0.	2.	4.	1.	1.	5.	5.	4.	3.	2.	2.	3.	2.	2.	1.	0.	0.	0.	0.	0.
290. *	0.	1.	4.	1.	1.	4.	5.	5.	3.	2.	2.	3.	2.	2.	2.	0.	0.	0.	0.	0.
300. *	0.	1.	4.	1.	1.	4.	5.	6.	3.	3.	2.	3.	2.	2.	2.	0.	0.	0.	0.	0.
310. *	0.	1.	4.	1.	1.	3.	5.	6.	4.	3.	2.	4.	2.	2.	2.	0.	0.	1.	1.	0.
320. *	0.	1.	4.	1.	1.	3.	5.	6.	4.	3.	3.	5.	3.	3.	2.	0.	0.	2.	1.	0.
330. *	1.	1.	4.	1.	1.	3.	5.	5.	4.	3.	4.	6.	4.	3.	2.	0.	0.	3.	2.	0.
340. *	2.	2.	3.	1.	1.	3.	5.	5.	3.	2.	4.	7.	6.	4.	2.	0.	1.	3.	2.	1.
350. *	2.	2.	2.	1.	1.	3.	5.	5.	3.	2.	4.	6.	7.	4.	3.	1.	2.	4.	3.	1.
360. *	1.	2.	2.	1.	1.	3.	5.	5.	3.	2.	3.	5.	7.	5.	4.	1.	2.	4.	3.	1.
MAX *	4.	6.	8.	6.	6.	5.	5.	6.	4.	3.	4.	7.	7.	5.	5.	5.	6.	9.	6.	4.
DEGR. *	150	140	170	180	190	250	300	310	320	320	340	340	20	30	20	60	50	60	80	110

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JOB: Landmark Center RUN: 2018NB

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-360.

WIND * CONCENTRATION
ANGLE * (ug/m**3)

(DEGR)*	REC21	REC22	REC23	REC24	REC25	REC26	REC27	REC28	REC29	REC30	REC31	REC32	REC33	REC34	REC35	REC36	REC37	REC38	REC39	REC40
0. *	0.	0.	0.	0.	0.	3.	3.	3.	2.	1.	3.	4.	3.	5.	6.	1.	1.	2.	2.	1.
10. *	0.	0.	0.	0.	0.	3.	3.	3.	2.	1.	3.	4.	4.	4.	6.	1.	1.	2.	2.	1.
20. *	0.	0.	0.	0.	0.	3.	3.	3.	2.	1.	2.	4.	4.	4.	5.	1.	1.	2.	2.	1.
30. *	0.	0.	0.	0.	0.	3.	3.	3.	2.	1.	2.	4.	4.	4.	5.	2.	1.	2.	2.	2.
40. *	0.	0.	1.	0.	0.	3.	3.	4.	2.	1.	2.	4.	4.	3.	4.	3.	2.	3.	2.	2.
50. *	0.	0.	2.	1.	0.	3.	4.	4.	2.	1.	2.	4.	4.	3.	3.	4.	4.	4.	2.	2.
60. *	0.	0.	2.	1.	0.	3.	3.	4.	1.	0.	1.	3.	4.	3.	2.	6.	4.	5.	2.	2.
70. *	0.	1.	3.	2.	1.	2.	2.	2.	0.	0.	1.	3.	3.	2.	1.	6.	5.	6.	3.	2.
80. *	1.	2.	4.	3.	2.	1.	1.	1.	0.	0.	1.	2.	2.	2.	1.	6.	4.	6.	4.	3.
90. *	1.	2.	4.	3.	2.	0.	0.	0.	0.	0.	1.	2.	2.	1.	1.	5.	4.	5.	4.	4.
100. *	2.	2.	4.	4.	2.	0.	0.	0.	0.	0.	1.	2.	2.	1.	0.	5.	4.	4.	4.	4.
110. *	2.	2.	3.	4.	2.	0.	0.	0.	0.	0.	1.	2.	2.	0.	0.	4.	4.	4.		

																			4.	4.
120. *	2.	2.	3.	4.	2.	0.	0.	0.	0.	0.	1.	1.	2.	0.	0.	4.	4.	4.	3.	3.
130. *	2.	2.	3.	4.	2.	0.	0.	0.	0.	0.	0.	1.	2.	0.	0.	4.	4.	3.	3.	3.
140. *	3.	3.	4.	4.	2.	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.	4.	4.	3.	2.	2.
150. *	3.	3.	4.	4.	2.	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.	5.	4.	3.	2.	2.
160. *	3.	4.	4.	4.	3.	0.	0.	2.	1.	0.	0.	0.	0.	0.	1.	6.	5.	3.	3.	2.
170. *	4.	4.	4.	4.	3.	0.	0.	2.	1.	1.	0.	0.	0.	1.	1.	6.	6.	4.	3.	2.
180. *	4.	4.	4.	4.	4.	0.	1.	2.	2.	1.	0.	0.	1.	1.	1.	6.	6.	4.	3.	2.
190. *	4.	4.	5.	4.	4.	0.	1.	2.	2.	1.	0.	0.	1.	1.	1.	6.	6.	5.	3.	2.
200. *	3.	4.	6.	4.	4.	1.	1.	2.	2.	1.	0.	0.	1.	1.	2.	5.	5.	5.	2.	1.
210. *	2.	3.	6.	4.	4.	1.	1.	2.	2.	1.	0.	0.	2.	2.	2.	5.	4.	4.	2.	1.
220. *	2.	3.	4.	3.	3.	1.	2.	3.	2.	1.	0.	1.	4.	4.	3.	3.	3.	3.	1.	1.
230. *	2.	2.	3.	2.	2.	2.	3.	4.	3.	1.	1.	1.	5.	5.	4.	3.	2.	2.	1.	0.
240. *	2.	2.	2.	1.	1.	3.	3.	4.	4.	2.	1.	2.	6.	6.	4.	2.	1.	1.	0.	0.
250. *	2.	2.	2.	1.	1.	3.	4.	4.	4.	2.	1.	3.	6.	6.	5.	2.	1.	1.	0.	0.
260. *	1.	2.	2.	1.	1.	4.	4.	4.	5.	2.	2.	3.	5.	6.	5.	2.	1.	0.	0.	0.
270. *	2.	2.	2.	1.	1.	4.	4.	4.	4.	3.	2.	3.	4.	6.	5.	2.	1.	0.	1.	1.
280. *	2.	2.	2.	1.	1.	5.	4.	4.	4.	3.	2.	3.	4.	6.	5.	2.	1.	1.	1.	1.
290. *	2.	2.	2.	1.	0.	5.	4.	4.	4.	4.	2.	3.	3.	6.	6.	2.	1.	1.	1.	1.
300. *	1.	2.	2.	1.	0.	4.	4.	4.	3.	4.	2.	3.	3.	5.	6.	2.	1.	1.	1.	1.
310. *	1.	1.	2.	0.	0.	4.	4.	4.	3.	3.	2.	3.	3.	6.	6.	1.	1.	1.	2.	2.
320. *	1.	1.	1.	0.	0.	3.	4.	4.	3.	3.	2.	2.	4.	6.	5.	1.	1.	2.	2.	1.
330. *	1.	1.	1.	0.	0.	3.	4.	4.	2.	2.	3.	3.	4.	5.	5.	2.	1.	2.	2.	1.
340. *	0.	0.	0.	0.	0.	3.	4.	3.	2.	2.	3.	3.	4.	5.	5.	2.	1.	2.	2.	1.
350. *	0.	0.	0.	0.	0.	3.	3.	3.	2.	2.	4.	4.	3.	5.	5.	1.	1.	2.	2.	1.
360. *	0.	0.	0.	0.	0.	3.	3.	3.	2.	1.	3.	4.	3.	5.	6.	1.	1.	2.	2.	1.
MAX *	4.	4.	6.	5.	4.	5.	4.	4.	5.	4.	4.	4.	6.	6.	6.	6.	6.	6.	4.	4.
DEGR. *	180	180	200	200	200	280	290	250	260	290	350	10	240	250	300	70	180	80	90	100

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JOB: Landmark Center RUN: 2018NB

MODEL RESULTS

REMARKS : In search of the angle corresponding to
the maximum concentration, only the first
angle, of the angles with same maximum
concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-360.

WIND ANGLE (DEGR) *	CONCENTRATION (ug/m**3) REC41	REC42	REC43	REC44	REC45
0. *	0.	1.	1.	0.	0.
10. *	0.	0.	1.	0.	0.
20. *	0.	0.	1.	0.	0.
30. *	0.	0.	1.	0.	0.
40. *	0.	0.	0.	0.	0.
50. *	0.	0.	0.	0.	0.
60. *	0.	0.	1.	1.	1.
70. *	1.	1.	3.	3.	2.
80. *	1.	2.	4.	4.	3.
90. *	1.	2.	4.	4.	3.
100. *	1.	2.	4.	4.	3.
110. *	1.	2.	4.	4.	3.
120. *	1.	2.	4.	4.	3.
130. *	1.	2.	3.	3.	3.
140. *	1.	2.	3.	3.	3.
150. *	2.	2.	3.	3.	3.
160. *	2.	2.	4.	3.	3.
170. *	2.	2.	4.	3.	3.
180. *	2.	2.	4.	4.	4.
190. *	2.	3.	4.	4.	4.
200. *	2.	3.	4.	4.	4.
210. *	3.	4.	5.	5.	5.
220. *	4.	4.	6.	6.	5.
230. *	4.	4.	6.	6.	6.
240. *	3.	4.	4.	5.	5.
250. *	2.	3.	3.	3.	4.
260. *	2.	2.	3.	2.	2.
270. *	1.	2.	3.	2.	2.
280. *	1.	2.	3.	2.	1.
290. *	0.	2.	3.	2.	1.
300. *	0.	1.	2.	1.	1.
310. *	0.	1.	2.	1.	0.
320. *	0.	1.	2.	1.	0.
330. *	0.	1.	2.	1.	0.
340. *	0.	1.	2.	0.	0.
350. *	0.	1.	2.	0.	0.
360. *	0.	1.	1.	0.	0.
MAX *	4.	4.	6.	6.	6.
DEGR. *	220	220	220	230	230

THE HIGHEST CONCENTRATION OF 9. ug/m**3 OCCURRED AT RECEPTOR REC18.

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♀                    CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 95221                        PAGE  1

      JOB: Landmark Center                                          RUN: 2018NB

      DATE :  7/22/13
      TIME : 14:36:19

         The MODE flag has been set to P for calculating PM averages.

       SITE & METEOROLOGICAL VARIABLES
       -------------------------------
       VS =   0.0 CM/S       VD =   0.0 CM/S       Z0 = 175. CM
        U =  1.0 M/S         CLAS =   4  (D)     ATIM =  60. MINUTES     MIXH =  1000. M   AMB =  0.0 ug/m**3

       LINK VARIABLES
       --------------
         LINK DESCRIPTION     *         LINK COORDINATES (FT)          *    LENGTH  BRG TYPE   VPH    EF      H   W
V/C QUEUE
                              *   X1       Y1       X2       Y2     *     (FT)  (DEG)           (G/MI)  (FT) (FT)
   (VEH)

------------------------*--------------------------------------*---------------------------------------------------
----
       1. Fen/Brook WB TT     *   2508.3    3314.8    2586.4    3416.7 *     128.    37. AG      0. 100.0   1.0 20.0
0.66   6.5
       2. Fen/Brook EB TTTR   *   2469.9    3221.1    2415.3    3145.8 *      93.   216. AG      0. 100.0   1.0 30.0
0.48   4.7
       3. Fen/Brook SB L      *   2487.6    3319.0    2362.9    3437.3 *     172.   313. AG      0. 100.0   1.0 10.0
0.83   8.7
       4. Fen/Brook SB LTT    *   2476.2    3307.2    2397.4    3380.1 *     107.   313. AG      0. 100.0   1.0 20.0
0.54   5.5
       5. Fen/Brook SB R      *   2463.2    3293.4    2440.4    3315.4 *      32.   314. AG      0. 100.0   1.0 10.0
0.16   1.6
       6. Park/Brook WB TTR   *   2701.3    3561.7    2742.4    3616.0 *      68.    37. AG      0. 100.0   1.0 30.0
0.42   3.5
       7. Park/Brook NWB LLRRR*   2745.9    3510.4    3745.0    3896.3 *    1071.    69. AG      0. 100.0   1.0 30.0
1.25  54.4
       8. Park/Brook NB LTTTR *   2715.4    3403.8    2770.2    3333.9 *      89.   142. AG      1. 100.0   1.0 40.0
0.55   4.5
       9. Park/Brook EB L     *   2628.6    3435.0    2599.8    3397.7 *      47.   218. AG      0. 100.0   1.0 10.0
0.61   2.4
      10. Park/Brook EB T     *   2637.5    3428.1    2557.6    3326.0 *     130.   218. AG      0. 100.0   1.0 10.0
0.68   6.6
      11. Park/Brook EB RR    *   2648.5    3416.9    2594.3    3345.2 *      90.   217. AG      0. 100.0   1.0 20.0
0.51   4.6
      12. River/Park SB       *   2213.3    3801.8    3580.3    6597.8 *    3112.    26. AG      0. 100.0   1.0 10.0
2.01 158.1
      13. River/Park SB East  *   2256.2    3801.2    2279.3    3925.6 *     127.    11. AG      0. 100.0   1.0 20.0
0.87   6.4
      14. River/Park WB North *   2272.8    3765.2    2366.7    3765.6 *      94.    90. AG      0. 100.0   1.0 30.0
0.51   4.8
      15. River/Park WB South *   2270.5    3707.9    2327.4    3732.3 *      62.    67. AG      0. 100.0   1.0 20.0
0.33   3.1
      16. River/Park NEB      *   2169.9    3720.6    2157.8    3709.0 *      17.   226. AG      0. 100.0   1.0 20.0
0.12   0.9
      17. Beacon/Park SB LTT  *   1962.9    4712.6    1931.1    4812.3 *     105.   342. AG      0. 100.0   1.0 20.0
0.49   5.3
      18. Beacon/Park WB LTT  *   2055.3    4691.7    2201.8    4745.7 *     156.    70. AG      0. 100.0   1.0 20.0
0.72   7.9
      19. Beacon/Park NB LTT  *   2041.7    4597.4    3065.8    1613.7 *    3155.   161. AG      0. 100.0   1.0 20.0
**** 160.3
      20. Beacon/Park EB LTTT *   1966.3    4608.1    1913.8    4584.5 *      58.   246. AG      0. 100.0   1.0 30.0
0.29   2.9
      21. Beacon/Park EB R    *   1975.6    4560.5    1953.5    4563.9 *      22.   279. AG      0. 100.0   1.0 20.0
0.10   1.1
      22. Beacon/Park SB R    *   1917.2    4688.3    1919.9    4692.5 *       5.    32. AG      0. 100.0   1.0 10.0
0.02   0.3
      23. Beacon/Park WB R    *   2019.8    4741.2    2031.4    4737.2 *      12.   109. AG      0. 100.0   1.0 10.0
0.06   0.6
      24. Beacon/Park NB R    *   2095.2    4627.5    2086.9    4605.4 *      24.   201. AG      0. 100.0   1.0 10.0
0.11   1.2
      25. Boyl/Kil SB LTR     *   3322.0    3753.8    3307.4    3798.9 *      47.   342. AG      0. 100.0   1.0 20.0
0.32   2.4
      26. Boyl/Kil WB LTTR    *   3373.3    3738.7    3451.2    3770.2 *      84.    68. AG      0. 100.0   1.0 20.0
0.50   4.3
      27. Boyl/Kil NB LTR     *   3365.2    3677.7    3376.9    3648.1 *      32.   158. AG      0. 100.0   1.0 10.0
0.21   1.6
      28. Boyl/Kil EB LTTR    *   3320.4    3695.3    3225.5    3660.7 *     101.   250. AG      0. 100.0   1.0 20.0
0.60   5.1
      29. Fenway/Brook South  *   2496.9    3278.9    2636.6    3081.1 *     242.   145. AG    916.    0.0   1.0 54.0
      30. Fenway/Brook West   *   2481.8    3262.9    2347.3    3075.6 *     231.   216. AG   1881.    0.0   1.0 78.0
      31. Fenway/Brook North  *   2491.0    3288.6    2373.1    3398.7 *     161.   313. AG   1628.    0.0   1.0 66.0
      32. Fenway/Brook East   *   2497.8    3264.6    2608.7    3389.7 *     167.    42. AG   2403.    0.0   1.0 90.0
      33. Park/Brook South    *   2691.9    3447.3    2838.3    3241.2 *     253.   145. AG    958.    0.0   1.0 66.0
      34. Park/Brook West     *   2672.2    3490.7    2502.8    3273.8 *     275.   218. AG   2413.    0.0   1.0 90.0
      35. Park/Brook North    *   2656.7    3489.7    2496.1    3644.1 *     223.   314. AG   1794.    0.0   1.0 66.0
      36. Park/Brook East     *   2663.3    3490.8    2801.7    3675.1 *     230.    37. AG   1249.    0.0   1.0 66.0
      37. Park/Brook SE       *   2681.0    3470.4    2968.4    3574.9 *     306.    70. AG   2358.    0.0   1.0 78.0
      38. River/Park N        *   2254.7    3768.2    2266.4    3911.9 *     144.     5. AG    473.    0.0   1.0 42.0
      39. River/Park SE       *   2239.1    3675.4    2343.7    3750.1 *     129.    54. AG    428.    0.0   1.0 42.0
      40. River/Park NE       *   2237.1    3772.1    2377.4    3769.2 *     140.    91. AG    872.    0.0   1.0 54.0
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NB_PM10_2.out

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      41. River/Park S        *   2231.1    3745.1    2210.1    3564.3 *     182.   187. AG    901.    0.0   1.0 54.0
      42. River/Park SW       *   2211.1    3765.1    2058.1    3624.4 *     208.   227. AG   1420.    0.0   1.0 54.0
      43. River/Park NW       *   2194.0    3770.2    2250.7    3886.0 *     129.    26. AG    548.    0.0   1.0 30.0
      44. Beacon/Park N       *   1996.0    4667.5    1894.2    4948.4 *     299.   340. AG   1153.    0.0   1.0 78.0
♀                                                                                                           PAGE  2
      JOB: Landmark Center                                          RUN: 2018NB

      DATE :  7/22/13
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       LINK VARIABLES
       --------------
         LINK DESCRIPTION     *         LINK COORDINATES (FT)          *    LENGTH  BRG TYPE   VPH    EF      H   W
V/C QUEUE
                              *   X1       Y1       X2       Y2     *     (FT)  (DEG)           (G/MI)  (FT) (FT)
   (VEH)

------------------------*--------------------------------------*---------------------------------------------------
----
      45. Beacon/Park NR      *   1908.0    4673.8    1956.1    4744.7 *      86.    34. AG     15.    0.0   1.0 30.0
      46. Beacon/Park E       *   1997.8    4657.7    2274.4    4755.8 *     293.    70. AG   1621.    0.0   1.0 78.0
      47. Beacon/Park ER      *   1991.4    4750.8    2112.1    4710.6 *     127.   108. AG     33.    0.0   1.0 30.0
      48. Beacon/Park S       *   2009.1    4646.4    2098.7    4401.0 *     261.   160. AG   1732.    0.0   1.0 78.0
      49. Beacon/Park SR      *   2102.5    4662.0    2076.2    4571.2 *      95.   196. AG     71.    0.0   1.0 42.0
      50. Beacon/Park W EB    *   1995.6    4607.6    1704.2    4488.4 *     315.   248. AG    600.    0.0   1.0 66.0
      51. Beacon/Park W EBR   *   2009.1    4551.2    1907.4    4575.2 *     104.   283. AG    134.    0.0   1.0 38.0
      52. Beacon/Park W WB    *   1989.3    4675.4    1658.3    4556.1 *     352.   250. AG    843.    0.0   1.0 78.0
      53. Boyl/Kil N          *   3344.5    3717.0    3289.1    3876.3 *     169.   341. AG    320.    0.0   1.0 54.0
      54. Boyl/Kil E          *   3348.9    3715.0    3516.2    3780.7 *     180.    69. AG   2366.    0.0   1.0 78.0
      55. Boyl/Kil S          *   3349.9    3702.1    3425.5    3502.1 *     214.   159. AG    242.    0.0   1.0 54.0
      56. Boyl/Kil W          *   3346.0    3717.8    3141.9    3641.3 *     218.   249. AG   2392.    0.0   1.0 78.0
♀                                                                                                           PAGE  3
      JOB: Landmark Center                                          RUN: 2018NB

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       1. Fen/Brook WB TT     *     100       54        3.0        870       1600       0.07       1        3
       2. Fen/Brook EB TTTR   *     100       54        3.0        947       1600       0.07       1        3
       3. Fen/Brook SB L      *     100       46        3.0        648       1600       0.07       1        3
       4. Fen/Brook SB LTT    *     100       46        3.0        854       1600       0.07       1        3
       5. Fen/Brook SB R      *     100       46        3.0        126       1600       0.07       1        3
       6. Park/Brook WB TTR   *     100       68        3.0        550       1600       0.07       1        3
       7. Park/Brook NWB LLRRR*     100       75        3.0       1203       1600       0.07       1        3
       8. Park/Brook NB LTTTR *     100       68        3.0        958       1600       0.07       1        3
       9. Park/Brook EB L     *     100       85        3.0         98       1600       0.07       1        3
      10. Park/Brook EB T     *     100       57        3.0        416       1600       0.07       1        3
      11. Park/Brook EB RR    *     100       32        3.0       1029       1600       0.07       1        3
      12. River/Park SB       *     100       78        3.0        548       1600       0.07       1        3
      13. River/Park SB East  *     100       78        3.0        473       1600       0.07       1        3
      14. River/Park WB North *     100       59        3.0        875       1600       0.07       1        3
      15. River/Park WB South *     100       59        3.0        385       1600       0.07       1        3
      16. River/Park NEB      *     100       73        3.0         84       1600       0.07       1        3
      17. Beacon/Park SB LTT  *     110       61        3.0        629       1600       0.07       1        3
      18. Beacon/Park WB LTT  *     110       56        3.0       1020       1600       0.07       1        3
      19. Beacon/Park NB LTT  *     110      103        3.0        609       1600       0.07       1        3
      20. Beacon/Park EB LTTT *     110       68        3.0        466       1600       0.07       1        3
      21. Beacon/Park EB R    *     110       61        3.0        134       1600       0.07       1        3
      22. Beacon/Park SB R    *     110       61        3.0         15       1600       0.07       1        3
      23. Beacon/Park WB R    *     110       68        3.0         33       1600       0.07       1        3
      24. Beacon/Park NB R    *     110       61        3.0         71       1600       0.07       1        3
      25. Boyl/Kil SB LTR     *     100       71        3.0        244       1600       0.07       1        3
      26. Boyl/Kil WB LTTR    *     100       29        3.0       1060       1600       0.07       1        3
      27. Boyl/Kil NB LTR     *     100       71        3.0         82       1600       0.07       1        3
      28. Boyl/Kil EB LTTR    *     100       29        3.0       1274       1600       0.07       1        3

       RECEPTOR LOCATIONS
       ------------------
                              *          COORDINATES (FT)          *
         RECEPTOR             *       X          Y           Z      *
     -------------------------*-----------------------------------*
      1. Beacon/Park NE1      *       1956.0     4921.7        6.0   *
      2. Beacon/Park NE2      *       1981.6     4851.2        6.0   *
      3. Beacon/Park NE3      *       2059.7     4754.4        6.0   *
      4. Beacon/Park NE4      *       2163.5     4768.4        6.0   *
      5. Beacon/Park NE5      *       2234.2     4793.5        6.0   *
      6. Beacon/Park SE1      *       2273.6     4703.5        6.0   *
      7. Beacon/Park SE2      *       2202.9     4678.4        6.0   *
      8. Beacon/Park SE3      *       2119.1     4608.0        6.0   *
      9. Beacon/Park SE4      *       2120.2     4485.0        6.0   *
     10. Beacon/Park SE5      *       2146.8     4412.1        6.0   *
     11. Beacon/Park SW1      *       2053.4     4382.2        6.0   *
     12. Beacon/Park SW2      *       2027.7     4452.7        6.0   *
     13. Beacon/Park SW3      *       1951.6     4535.0        6.0   *
     14. Beacon/Park SW4      *       1869.5     4509.6        6.0   *
     15. Beacon/Park SW5      *       1800.1     4481.2        6.0   *
     16. Beacon/Park NW1      *       1748.7     4640.8        6.0   *
     17. Beacon/Park NW2      *       1819.3     4666.2        6.0   *
     18. Beacon/Park NW3      *       1911.4     4723.3        6.0   *
     19. Beacon/Park NW4      *       1893.8     4805.6        6.0   *
     20. Beacon/Park NW5      *       1868.3     4876.1        6.0   *
```

21. Riverway/Park NE1	*	2301.3	3957.6	6.0	*
22. Riverway/Park NE2	*	2295.2	3882.8	6.0	*
23. Riverway/Park NE3	*	2289.1	3808.1	6.0	*

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RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (FT) X	Y	Z	*
24. Riverway/Park NE4	*	2364.1	3806.5	6.0	*
25. Riverway/Park NE5	*	2439.1	3806.0	6.0	*
26. Riverway/Park SE1	*	2427.5	3594.7	6.0	*
27. Riverway/Park SE2	*	2406.6	3667.7	6.0	*
28. Riverway/Park SE3	*	2309.4	3687.5	6.0	*
29. Riverway/Park SE4	*	2248.8	3576.7	6.0	*
30. Riverway/Park SE5	*	2296.6	3506.9	6.0	*
31. Riverway/Park SW1	*	2170.6	3544.5	6.0	*
32. Riverway/Park SW2	*	2179.2	3619.0	6.0	*
33. Riverway/Park SW3	*	2187.9	3693.5	6.0	*
34. Riverway/Park SW4	*	2132.7	3642.7	6.0	*
35. Riverway/Park SW5	*	2077.5	3592.0	6.0	*
36. Riverway/Park NW1	*	2059.1	3675.6	6.0	*
37. Riverway/Park NW2	*	2114.4	3726.4	6.0	*
38. Riverway/Park NW3	*	2169.6	3777.2	6.0	*
39. Riverway/Park NW4	*	2202.6	3844.5	6.0	*
40. Riverway/Park NW5	*	2235.3	3912.0	6.0	*
41. Boyl/Kil NE1	*	3320.8	3917.2	6.0	*
42. Boyl/Kil NE2	*	3339.3	3844.4	6.0	*
43. Boyl/Kil NE3	*	3364.0	3773.6	6.0	*
44. Boyl/Kil NE4	*	3433.8	3801.0	6.0	*
45. Boyl/Kil NE5	*	3503.6	3828.4	6.0	*
46. Boyl/Kil SE1	*	3537.2	3736.3	6.0	*
47. Boyl/Kil SE2	*	3467.1	3708.8	6.0	*
48. Boyl/Kil SE3	*	3397.3	3681.4	6.0	*
49. Boyl/Kil SE4	*	3423.8	3611.2	6.0	*
50. Boyl/Kil SE5	*	3450.3	3541.1	6.0	*
51. Boyl/Kil SW1	*	3379.9	3518.0	6.0	*
52. Boyl/Kil SW2	*	3353.1	3589.0	6.0	*
53. Boyl/Kil SW3	*	3326.9	3658.3	6.0	*
54. Boyl/Kil SW4	*	3256.7	3632.0	6.0	*
55. Boyl/Kil SW5	*	3186.4	3605.7	6.0	*
56. Boyl/Kil NW1	*	3153.2	3697.9	6.0	*
57. Boyl/Kil NW2	*	3223.4	3724.2	6.0	*
58. Boyl/Kil NW3	*	3293.6	3750.5	6.0	*
59. Boyl/Kil NW4	*	3269.0	3821.4	6.0	*
60. Boyl/Kil NW5	*	3244.5	3891.9	6.0	*

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-360.

WIND ANGLE (DEGR) * CONCENTRATION (ug/m**3)

WIND ANGLE (DEGR)	*	REC1	REC2	REC3	REC4	REC5	REC6	REC7	REC8	REC9	REC10	REC11	REC12	REC13	REC14	REC15	REC16	REC17	REC18	REC19	REC20
0.	*	0.	0.	0.	0.	0.	1.	2.	1.	1.	1.	3.	3.	3.	1.	1.	0.	0.	1.	1.	0.
10.	*	0.	0.	0.	0.	0.	0.	1.	1.	1.	0.	3.	3.	2.	2.	1.	0.	0.	1.	1.	1.
20.	*	0.	0.	0.	0.	0.	0.	1.	1.	1.	0.	3.	3.	2.	2.	1.	0.	0.	1.	1.	1.
30.	*	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.	2.	3.	3.	2.	2.	0.	0.	1.	1.	1.
40.	*	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.	2.	2.	3.	2.	2.	0.	0.	1.	1.	1.
50.	*	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.	2.	2.	3.	2.	2.	0.	1.	1.	1.	1.
60.	*	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.	2.	2.	2.	2.	2.	1.	1.	1.	1.	1.
70.	*	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.	2.	2.	2.	1.	1.	1.	2.	1.	1.
80.	*	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.	1.	2.	2.	1.	1.	2.	2.	2.	1.	1.
90.	*	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.	1.	2.	2.	1.	1.	2.	2.	2.		

WIND ANGLE (DEGR)	*	REC1	REC2	REC3	REC4	REC5	REC6	REC7	REC8	REC9	REC10	REC11	REC12	REC13	REC14	REC15	REC16	REC17	REC18	REC19	REC20
																				1.	1.
100.	*	0.	0.	2.	1.	0.	0.	0.	0.	0.	0.	1.	2.	2.	1.	0.	2.	2.	2.	2.	1.
110.	*	0.	0.	2.	2.	0.	0.	0.	0.	0.	0.	1.	2.	2.	1.	1.	2.	2.	2.	2.	2.
120.	*	0.	1.	2.	2.	1.	0.	0.	0.	0.	0.	1.	2.	2.	1.	1.	2.	2.	2.	2.	2.
130.	*	1.	1.	2.	2.	1.	0.	0.	0.	0.	0.	1.	2.	2.	1.	0.	2.	2.	2.	3.	2.
140.	*	1.	1.	2.	2.	1.	0.	0.	0.	0.	0.	2.	2.	2.	1.	1.	2.	2.	3.	3.	3.
150.	*	2.	2.	2.	2.	2.	0.	0.	1.	1.	1.	1.	2.	1.	1.	1.	1.	2.	3.	3.	3.
160.	*	2.	2.	2.	2.	2.	0.	1.	1.	2.	1.	1.	1.	1.	0.	0.	1.	1.	2.	2.	2.
170.	*	2.	3.	3.	2.	2.	1.	1.	1.	2.	2.	1.	0.	0.	0.	0.	1.	1.	2.	1.	1.
180.	*	2.	2.	3.	3.	2.	0.	0.	1.	2.	1.	0.	0.	0.	0.	0.	1.	1.	1.	1.	0.
190.	*	2.	2.	3.	3.	2.	0.	1.	2.	2.	1.	0.	0.	0.	0.	0.	1.	1.	1.	0.	0.
200.	*	2.	2.	2.	3.	2.	0.	1.	2.	2.	1.	0.	0.	0.	0.	0.	1.	1.	1.	0.	0.
210.	*	2.	2.	2.	3.	2.	1.	1.	2.	2.	1.	0.	0.	0.	0.	0.	1.	1.	1.	0.	0.
220.	*	1.	2.	2.	3.	3.	1.	1.	2.	2.	1.	0.	0.	0.	0.	0.	1.	1.	1.	0.	0.
230.	*	1.	1.	2.	3.	3.	1.	1.	2.	2.	1.	0.	0.	0.	0.	0.	1.	1.	1.	0.	0.
240.	*	1.	1.	2.	3.	3.	1.	2.	2.	2.	1.	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
250.	*	1.	1.	1.	2.	2.	2.	2.	2.	2.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
260.	*	1.	1.	1.	1.	1.	2.	2.	2.	2.	2.	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
270.	*	1.	1.	1.	1.	0.	3.	2.	2.	2.	2.	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.
280.	*	1.	1.	1.	1.	0.	2.	2.	2.	3.	2.	0.	0.	1.	1.	1.	0.	0.	0.	0.	0.
290.	*	1.	1.	1.	0.	0.	2.	2.	2.	3.	2.	0.	0.	1.	1.	1.	0.	0.	0.	0.	0.
300.	*	0.	1.	1.	0.	0.	2.	2.	2.	3.	3.	0.	0.	1.	1.	1.	0.	0.	0.	0.	0.
310.	*	0.	1.	1.	0.	0.	2.	2.	2.	3.	3.	0.	1.	1.	1.	1.	0.	0.	0.	0.	0.
320.	*	0.	1.	0.	0.	0.	1.	2.	2.	3.	3.	1.	1.	1.	1.	1.	0.	0.	0.	0.	0.
330.	*	0.	1.	0.	0.	0.	1.	2.	2.	3.	3.	1.	1.	2.	1.	1.	0.	0.	0.	0.	0.
340.	*	0.	0.	0.	0.	0.	1.	2.	2.	2.	2.	2.	2.	2.	1.	1.	0.	0.	0.	0.	0.
350.	*	0.	0.	0.	0.	0.	1.	2.	1.	1.	1.	3.	2.	2.	1.	1.	0.	0.	1.	1.	0.
360.	*	0.	0.	0.	0.	0.	1.	2.	1.	1.	1.	3.	3.	3.	1.	1.	0.	0.	1.	1.	0.
MAX	*	2.	3.	3.	3.	3.	3.	2.	2.	3.	3.	3.	3.	3.	2.	2.	2.	2.	3.	3.	3.
DEGR.	*	170	170	180	220	230	270	270	270	320	320	10	10	30	50	50	90	110	150	150	140

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-360.

WIND ANGLE (DEGR) * CONCENTRATION (ug/m**3)

WIND ANGLE (DEGR)	*	REC21	REC22	REC23	REC24	REC25	REC26	REC27	REC28	REC29	REC30	REC31	REC32	REC33	REC34	REC35	REC36	REC37	REC38	REC39	REC40
0.	*	1.	2.	3.	0.	0.	0.	0.	4.	2.	2.	2.	2.	2.	2.	2.	0.	0.	1.	1.	1.
10.	*	1.	1.	2.	0.	0.	0.	0.	3.	2.	1.	2.	2.	3.	2.	2.	0.	0.	1.	1.	1.
20.	*	1.	1.	2.	0.	0.	0.	0.	3.	2.	1.	2.	2.	3.	2.	2.	0.	0.	1.	1.	1.
30.	*	1.	0.	1.	0.	0.	0.	0.	2.	1.	1.	2.	2.	3.	3.	2.	1.	1.	2.	1.	1.

40.	0.	0.	1.	0.	0.	0.	0.	2.	1.	0.	2.	2.	3.	2.	2.	1.	1.	2.	2.	1.
50.	0.	0.	1.	0.	0.	0.	0.	1.	0.	1.	1.	2.	2.	2.	2.	2.	2.	2.	2.	1.
60.	0.	0.	1.	0.	0.	1.	0.	1.	0.	1.	1.	2.	2.	2.	1.	2.	2.	2.	2.	1.
70.	0.	0.	1.	0.	0.	1.	0.	1.	1.	1.	1.	1.	2.	2.	1.	3.	2.	2.	2.	2.
80.	0.	0.	1.	0.	0.	2.	1.	1.	2.	2.	2.	2.	2.	2.	1.	3.	3.	2.	2.	2.
90.	0.	0.	2.	0.	0.	2.	2.	2.	2.	2.	2.	2.	2.	2.	1.	3.	4.	3.	2.	2.
100.	0.	0.	2.	1.	1.	3.	2.	2.	2.	2.	2.	2.	2.	2.	1.	3.	4.	3.	3.	2.
110.	0.	1.	3.	1.	1.	2.	2.	2.	2.	2.	2.	2.	2.	2.	1.	3.	3.	3.	3.	3.
120.	1.	1.	4.	1.	1.	2.	2.	2.	2.	2.	2.	2.	2.	2.	1.	3.	3.	4.	4.	3.
130.	1.	2.	4.	2.	1.	1.	2.	2.	2.	2.	1.	2.	2.	2.	1.	2.	3.	3.	4.	4.
140.	1.	2.	5.	2.	2.	2.	2.	2.	2.	2.	1.	2.	2.	1.	1.	2.	3.	3.	4.	4.
150.	2.	4.	5.	2.	2.	2.	2.	2.	2.	2.	1.	2.	2.	1.	0.	2.	2.	3.	3.	5.
160.	2.	5.	4.	2.	2.	2.	2.	2.	1.	1.	0.	1.	2.	0.	0.	1.	2.	3.	3.	4.
170.	2.	5.	3.	3.	2.	3.	2.	1.	0.	0.	0.	1.	1.	0.	0.	1.	1.	2.	2.	3.
180.	3.	4.	2.	3.	2.	2.	2.	0.	0.	0.	0.	0.	0.	0.	0.	1.	1.	2.	2.	2.
190.	3.	4.	2.	3.	1.	2.	1.	0.	0.	0.	0.	0.	0.	0.	0.	1.	2.	2.	2.	2.
200.	3.	4.	2.	3.	1.	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.	2.	1.	1.
210.	3.	4.	2.	3.	0.	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.	2.	1.	1.
220.	3.	4.	2.	3.	1.	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.
230.	2.	4.	2.	4.	1.	1.	1.	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.	1.	0.	0.
240.	2.	4.	2.	3.	2.	1.	1.	1.	0.	0.	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.
250.	1.	4.	2.	3.	2.	1.	1.	1.	0.	0.	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.
260.	1.	3.	2.	2.	2.	1.	1.	1.	0.	0.	0.	0.	2.	1.	0.	0.	0.	0.	0.	0.
270.	1.	3.	2.	2.	1.	1.	1.	2.	1.	0.	0.	0.	2.	1.	0.	0.	0.	0.	0.	0.
280.	1.	3.	2.	2.	1.	1.	2.	2.	1.	0.	0.	1.	2.	1.	0.	0.	0.	0.	0.	0.
290.	1.	3.	2.	2.	1.	2.	2.	2.	1.	0.	0.	1.	2.	1.	0.	0.	0.	0.	0.	0.
300.	2.	4.	2.	2.	1.	2.	2.	2.	1.	0.	0.	1.	2.	1.	0.	0.	0.	0.	0.	0.
310.	2.	4.	2.	2.	1.	2.	2.	2.	1.	1.	0.	1.	2.	1.	0.	0.	0.	0.	0.	0.
320.	2.	4.	2.	2.	1.	2.	2.	2.	1.	1.	0.	1.	2.	1.	0.	0.	0.	0.	0.	0.
330.	2.	5.	2.	1.	1.	2.	2.	3.	2.	1.	0.	1.	2.	1.	1.	0.	0.	0.	0.	0.
340.	2.	5.	3.	1.	1.	2.	2.	4.	2.	1.	1.	1.	2.	1.	1.	0.	0.	0.	1.	1.
350.	1.	3.	3.	1.	0.	1.	1.	4.	2.	2.	1.	2.	2.	2.	2.	0.	0.	1.	1.	1.
360.	1.	2.	3.	0.	0.	0.	0.	4.	2.	2.	2.	2.	2.	2.	2.	0.	0.	1.	1.	1.
MAX	3.	5.	5.	4.	2.	3.	2.	4.	2.	2.	2.	2.	3.	3.	2.	3.	4.	4.	4.	5.
DEGR.	200	160	150	230	250	170	170	350	0	130	20	40	30	30	30	90	90	120	130	150

PAGE 7

JOB: Landmark Center RUN: 2018NB

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-360.

WIND * CONCENTRATION
ANGLE * (ug/m**3)
(DEGR)* REC41 REC42 REC43 REC44 REC45 REC46 REC47 REC48 REC49 REC50 REC51 REC52 REC53 REC54 REC55 REC56 REC57 REC58 REC59 REC60

0.	0.	0.	0.	0.	0.	1.	3.	3.	2.	1.	2.	2.	3.	3.	3.	0.	0.	0.	0.	0.
10.	0.	0.	0.	0.	0.	1.	3.	3.	2.	1.	2.	2.	3.	3.	3.	0.	0.	1.	0.	0.
20.	0.	0.	0.	0.	0.	1.	3.	3.	1.	1.	1.	2.	3.	4.	3.	0.	0.	1.	0.	0.
30.	0.	0.	0.	0.	0.	1.	2.	3.	1.	0.	1.	2.	4.	4.	4.	0.	0.	1.	0.	0.
40.	0.	0.	0.	0.	0.	1.	2.	3.	1.	0.	1.	2.	4.	4.	4.	0.	0.	1.	0.	0.
50.	0.	0.	0.	0.	0.	1.	2.	3.	0.	0.	0.	1.	4.	4.	4.	1.	1.	1.	0.	0.
60.	0.	0.	1.	1.	1.	0.	1.	2.	0.	0.	0.	0.	3.	3.	3.	2.	2.	2.	0.	0.
70.	0.	0.	2.	2.	1.	0.	1.	1.	0.	0.	0.	0.	2.	2.	2.	3.	3.	3.	0.	0.
80.	0.	0.	4.	3.	2.	0.	0.	0.	0.	0.	0.	0.	1.	1.	1.	5.	4.	4.	1.	0.
90.	0.	1.	4.	3.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	5.	5.	5.	1.	0.
100.	0.	1.	4.	3.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	5.	5.	5.	2.	1.
110.	0.	1.	4.	3.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	4.	4.	4.	2.	1.
120.	1.	2.	4.	3.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	4.	4.	4.	2.	1.
130.	1.	2.	4.	3.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	3.	4.	4.	2.	2.
140.	1.	2.	4.	4.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	3.	4.	4.	2.	2.
150.	1.	2.	4.	4.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	3.	4.	4.	2.	2.
160.	1.	2.	4.	4.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	3.	4.	4.	2.	2.
170.	2.	2.	4.	4.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	3.	3.	4.	2.	2.
180.	2.	2.	4.	4.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	3.	3.	4.	2.	1.
190.	2.	2.	4.	4.	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	3.	4.	4.	2.	1.
200.	2.	3.	4.	4.	4.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	2.	4.	4.	2.	1.
210.	2.	3.	5.	5.	4.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	3.	4.	4.	2.	1.
220.	2.	2.	5.	5.	5.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	3.	4.	5.	2.	1.
230.	2.	2.	6.	6.	6.	0.	0.	1.	0.	0.	0.	0.	0.	1.	1.	4.	5.	5.	2.	2.
240.	1.	2.	6.	6.	6.	2.	2.	2.	1.	0.	0.	1.	2.	2.	1.	4.	4.	5.	2.	1.
250.	1.	1.	4.	4.	4.	3.	3.	3.	1.	1.	1.	1.	3.	3.	2.	3.	3.	3.	1.	0.
260.	0.	1.	3.	2.	2.	4.	4.	4.	2.	2.	1.	2.	4.	3.	3.	2.	1.	2.	0.	0.
270.	0.	0.	1.	1.	1.	4.	4.	4.	2.	1.	1.	2.	4.	3.	3.	1.	1.	1.	0.	0.
280.	0.	0.	1.	0.	0.	4.	4.	4.	2.	1.	1.	2.	4.	3.	2.	0.	0.	0.	0.	0.
290.	0.	0.	1.	0.	0.	4.	4.	4.	2.	1.	1.	2.	4.	3.	2.	0.	0.	0.	0.	0.
300.	0.	0.	1.	0.	0.	3.	4.	3.	2.	2.	1.	2.	3.	3.	2.	0.	0.	0.	0.	0.
310.	0.	0.	0.	0.	0.	2.	3.	3.	2.	2.	1.	2.	3.	3.	2.	0.	0.	0.	0.	0.
320.	0.	0.	0.	0.	0.	2.	3.	3.	2.	2.	1.	2.	3.	3.	2.	0.	0.	0.	0.	0.
330.	0.	0.	0.	0.	0.	2.	3.	3.	2.	2.	1.	2.	3.	3.	3.	0.	0.	0.	0.	0.
340.	0.	0.	0.	0.	0.	2.	3.	3.	2.	1.	2.	2.	3.	3.	3.	0.	0.	0.	0.	0.
350.	0.	0.	0.	0.	0.	1.	3.	3.	2.	1.	2.	2.	3.	3.	3.	0.	0.	0.	0.	0.
360.	0.	0.	0.	0.	0.	1.	3.	3.	2.	1.	2.	2.	3.	3.	3.	0.	0.	0.	0.	0.
MAX	2.	3.	6.	6.	6.	4.	4.	4.	2.	2.	2.	2.	4.	4.	4.	5.	5.	5.	2.	2.
DEGR.	190	200	230	240	240	270	270	270	280	300	0	0	270	40	50	80	90	230	140	150

THE HIGHEST CONCENTRATION OF 6. ug/m**3 OCCURRED AT RECEPTOR REC43.

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♀                       CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 95221                        PAGE  1

      JOB: LANDMARKCENTER                                          RUN: 2018_NB_CO_3

      DATE :  7/22/13
      TIME : 14:33:48

         The MODE flag has been set to P for calculating PM averages.

       SITE & METEOROLOGICAL VARIABLES
       -------------------------------
       VS =   0.0 CM/S       VD =   0.0 CM/S       Z0 = 175. CM
        U =  1.0 M/S         CLAS =   4  (D)     ATIM =  60. MINUTES     MIXH =  1000. M   AMB =  0.0 ug/m**3

       LINK VARIABLES
       --------------
         LINK DESCRIPTION     *         LINK COORDINATES (FT)          *    LENGTH  BRG TYPE   VPH    EF      H   W
V/C QUEUE
                              *   X1        Y1        X2        Y2     *     (FT)  (DEG)           (G/MI)  (FT) (FT)
   (VEH)

------------------------*----------------------------------------*-----------------------------------------------------
----
       1. Brook/Full EB L     *   3074.7    4018.5    3064.6    4005.3 *      17.   217. AG      0. 100.0   1.0 10.0
0.09   0.8
       2. Brook/Full EB TR    *   3083.6    4012.0    3036.0    3948.7 *      79.   217. AG      0. 100.0   1.0 10.0
0.44   4.0
       3. Brook/Full NB LTR   *   3121.3    4022.6    3148.7    4007.9 *      31.   118. AG      0. 100.0   1.0 10.0
0.17   1.6
       4. Brook/Full WB LTR   *   3127.2    4100.9    3163.9    4149.2 *      61.    37. AG      0. 100.0   1.0 20.0
0.31   3.1
       5. Brook/Full SB LT    *   3068.3    4050.9    3030.2    4078.9 *      47.   306. AG      0. 100.0   1.0 10.0
0.29   2.4
       6. Brook/Full SB R     *   3061.2    4041.4    3026.2    4066.5 *      43.   306. AG      0. 100.0   1.0 10.0
0.23   2.2
       7. Brook/Full N        *   3091.9    4045.7    2925.8    4161.5 *     203.   305. AG    431.   0.0   1.0 54.0
       8. Brook/Full E        *   3091.9    4045.7    3246.2    4230.8 *     241.    40. AG    989.   0.0   1.0 54.0
       9. Brook/Full S        *   3100.3    4031.3    3190.0    3977.6 *     105.   121. AG    341.   0.0   1.0 42.0
      10. Brook/Full W        *   3091.9    4048.0    2946.1    3847.4 *     248.   216. AG   1213.   0.0   1.0 54.0
♀                                                                                                               PAGE  2
      JOB: LANDMARKCENTER                                          RUN: 2018_NB_CO_3

      DATE :  7/22/13
      TIME : 14:33:48

       1. Brook/Full EB L     *     100       33       3.0        92       1600       0.07      1        3
       2. Brook/Full EB TR    *     100       33       3.0       439       1600       0.07      1        3
       3. Brook/Full NB LTR   *     100       33       3.0       172       1600       0.07      1        3
       4. Brook/Full WB LTR   *     100       43       3.0       517       1600       0.07      1        3
       5. Brook/Full SB LT    *     100       67       3.0       129       1600       0.07      1        3
       6. Brook/Full SB R     *     100       57       3.0       138       1600       0.07      1        3

       RECEPTOR LOCATIONS
       ------------------
                              *          COORDINATES (FT)          *
         RECEPTOR             *      X          Y          Z       *
     -------------------------*------------------------------------*
      1. Brook/Full NE1       *      2962.2     4181.2       6.0   *
      2. Brook/Full NE2       *      3023.7     4138.3       6.0   *
      3. Brook/Full NE3       *      3085.3     4095.4       6.0   *
      4. Brook/Full NE4       *      3133.3     4153.0       6.0   *
      5. Brook/Full NE5       *      3188.7     4204.0       6.0   *
      6. Brook/Full SE1       *      3235.0     4159.5       6.0   *
      7. Brook/Full SE2       *      3187.0     4101.9       6.0   *
      8. Brook/Full SE3       *      3130.3     4049.5       6.0   *
      9. Brook/Full SE4       *      3203.3     4005.7       6.0   *
     10. Brook/Full SE5       *      3267.6     3967.2       6.0   *
     11. Brook/Full SW1       *      3228.3     3918.5       6.0   *
     12. Brook/Full SW2       *      3163.9     3957.1       6.0   *
     13. Brook/Full SW3       *      3099.6     3995.6       6.0   *
     14. Brook/Full SW4       *      3055.5     3934.9       6.0   *
     15. Brook/Full SW5       *      3011.4     3874.3       6.0   *
     16. Brook/Full NW1       *      2950.5     3916.4       6.0   *
     17. Brook/Full NW2       *      2994.6     3977.0       6.0   *
     18. Brook/Full NW3       *      3038.7     4037.7       6.0   *
     19. Brook/Full NW4       *      2977.2     4080.6       6.0   *
     20. Brook/Full NW5       *      2915.6     4123.5       6.0   *
♀                                                                                                               PAGE  3
      JOB: LANDMARKCENTER                                          RUN: 2018_NB_CO_3

       MODEL RESULTS
       -------------

       REMARKS : In search of the angle corresponding to
                 the maximum concentration, only the first
                 angle, of the angles with same maximum
                 concentrations, is indicated as maximum.

 WIND ANGLE RANGE:   0.-360.

 WIND  * CONCENTRATION
```



```
 ANGLE *      (ug/m**3)
 (DEGR)* REC1  REC2  REC3  REC4  REC5  REC6  REC7  REC8  REC9  REC10 REC11 REC12 REC13 REC14 REC15 REC16 REC17 REC18
REC19 REC20

------*----------------------------------------------------------------------------------------------------------------
-------
   0.  *    0.    0.    0.    0.    0.    1.    1.    1.    0.    0.    0.    1.    2.    2.    1.    0.    0.    1.
0.    0.
  10.  *    0.    0.    0.    0.    0.    1.    1.    2.    0.    0.    0.    1.    2.    2.    2.    0.    0.    1.
0.    0.
  20.  *    0.    0.    0.    0.    0.    0.    1.    2.    0.    0.    0.    0.    2.    2.    2.    0.    1.    1.
0.    0.
  30.  *    0.    0.    0.    0.    0.    0.    1.    2.    0.    0.    0.    0.    1.    1.    1.    1.    1.    1.
0.    0.
  40.  *    0.    0.    1.    0.    1.    0.    0.    1.    0.    0.    0.    0.    1.    1.    1.    1.    2.    2.
0.    0.
  50.  *    0.    0.    1.    1.    1.    0.    0.    1.    0.    0.    0.    0.    1.    0.    0.    2.    2.    2.
0.    0.
  60.  *    0.    0.    1.    1.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    2.    2.    2.
1.    0.
  70.  *    0.    0.    1.    1.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    2.    2.    2.
1.    1.
  80.  *    0.    0.    1.    1.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    2.    2.
1.    1.
  90.  *    0.    1.    1.    1.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.    2.
1.    1.
 100.  *    0.    0.    1.    1.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.    2.
1.    1.
 110.  *    0.    0.    1.    1.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.    1.
1.    1.
 120.  *    0.    0.    1.    1.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.    1.
1.    1.
 130.  *    1.    1.    1.    1.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.    1.
1.    0.
 140.  *    1.    1.    1.    1.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.    1.
1.    0.
 150.  *    1.    1.    1.    1.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.    1.
1.    0.
 160.  *    1.    1.    2.    2.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.    1.
0.    0.
 170.  *    1.    1.    2.    2.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.    1.
1.    0.
 180.  *    1.    1.    2.    2.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.    1.
0.    0.
 190.  *    0.    1.    2.    2.    2.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.    1.
0.    0.
 200.  *    0.    1.    2.    2.    2.    0.    0.    1.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.
0.    0.
 210.  *    0.    0.    2.    2.    2.    0.    0.    1.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.
0.    0.
 220.  *    0.    0.    1.    1.    2.    1.    1.    2.    0.    0.    0.    0.    1.    1.    0.    0.    0.    0.
0.    0.
 230.  *    0.    0.    1.    1.    1.    2.    2.    2.    0.    0.    0.    0.    1.    1.    0.    0.    0.    0.
0.    0.
 240.  *    0.    0.    1.    0.    0.    2.    1.    2.    1.    0.    0.    0.    2.    1.    1.    0.    0.    0.
0.    0.
 250.  *    0.    0.    1.    0.    0.    2.    2.    2.    1.    0.    0.    0.    2.    1.    1.    0.    0.    0.
0.    0.
 260.  *    0.    0.    0.    0.    0.    1.    1.    2.    1.    0.    0.    1.    2.    1.    1.    0.    0.    0.
0.    0.
 270.  *    0.    0.    0.    0.    0.    1.    1.    2.    1.    0.    0.    1.    1.    1.    1.    0.    0.    0.
0.    0.
 280.  *    0.    0.    0.    0.    0.    1.    1.    2.    1.    1.    0.    1.    1.    1.    1.    0.    0.    0.
0.    0.
 290.  *    0.    0.    0.    0.    0.    1.    1.    2.    1.    1.    0.    1.    1.    1.    1.    0.    0.    0.
0.    0.
 300.  *    0.    0.    0.    0.    0.    1.    1.    2.    1.    0.    1.    1.    2.    1.    1.    0.    0.    0.
0.    0.
 310.  *    0.    0.    0.    0.    0.    1.    1.    1.    0.    0.    1.    1.    2.    1.    1.    0.    0.    0.
0.    0.
 320.  *    0.    0.    0.    0.    0.    1.    1.    1.    1.    0.    1.    1.    2.    1.    1.    0.    0.    0.
0.    0.
 330.  *    0.    0.    0.    0.    0.    1.    1.    1.    1.    0.    0.    1.    2.    1.    1.    0.    0.    1.
0.    0.
 340.  *    0.    0.    0.    0.    0.    1.    1.    1.    0.    0.    0.    1.    2.    2.    1.    0.    0.    1.
0.    0.
 350.  *    0.    0.    0.    0.    0.    1.    1.    1.    1.    0.    0.    1.    1.    2.    1.    0.    0.    1.
0.    0.
 360.  *    0.    0.    0.    0.    0.    1.    1.    1.    0.    0.    0.    1.    2.    2.    1.    0.    0.    1.
0.    0.

------*----------------------------------------------------------------------------------------------------------------
-------
 MAX   *    1.    1.    2.    2.    2.    2.    2.    2.    1.    1.    1.    1.    2.    2.    2.    2.    2.    2.
1.    1.
 DEGR. *  140   150   200   190   200   240   230   240   260   280   300   340   310    20    20    60    60    50
90   110

 THE HIGHEST CONCENTRATION OF      2. ug/m**3 OCCURRED AT RECEPTOR REC18.
```

2018 Build
Microscale Output Files
(Particulate Matter 10 (PM10))

```
♀                    CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 95221                       PAGE  1

      JOB: Landmark Center                                            RUN: 2018NB

      DATE :  7/22/13
      TIME : 14:34:32

         The MODE flag has been set to P for calculating PM averages.

       SITE & METEOROLOGICAL VARIABLES
       -------------------------------
       VS =   0.0 CM/S       VD =   0.0 CM/S       Z0 = 175. CM
        U =  1.0 M/S         CLAS =   4  (D)     ATIM =  60. MINUTES     MIXH =  1000. M   AMB =  0.0 ug/m**3

       LINK VARIABLES
       --------------
         LINK DESCRIPTION     *         LINK COORDINATES (FT)          *    LENGTH  BRG TYPE   VPH    EF      H   W
V/C QUEUE
                              *   X1        Y1        X2        Y2     *     (FT)  (DEG)            (G/MI)  (FT) (FT)
   (VEH)

------------------------*---------------------------------------*---------------------------------------------------
----
       1. Fen/Brook WB TT     *   2508.3    3314.8    2585.7    3415.8 *     127.    37. AG      0. 100.0   1.0 20.0
0.66   6.5
       2. Fen/Brook EB TTTR   *   2469.9    3221.1    2414.6    3144.9 *      94.   216. AG      0. 100.0   1.0 30.0
0.49   4.8
       3. Fen/Brook SB L      *   2487.6    3319.0    2363.3    3436.9 *     171.   313. AG      0. 100.0   1.0 10.0
0.83   8.7
       4. Fen/Brook SB LTT    *   2476.2    3307.2    2395.5    3381.8 *     110.   313. AG      0. 100.0   1.0 20.0
0.56   5.6
       5. Fen/Brook SB R      *   2463.2    3293.4    2439.4    3316.5 *      33.   314. AG      0. 100.0   1.0 10.0
0.17   1.7
       6. Park/Brook WB TTR   *   2701.3    3561.7    2751.4    3627.8 *      83.    37. AG      0. 100.0   1.0 30.0
0.52   4.2
       7. Park/Brook NWB LLRRR*   2745.9    3510.4    3745.0    3896.3 *    1071.    69. AG      0. 100.0   1.0 30.0
1.25  54.4
       8. Park/Brook NB LTTTR *   2715.4    3403.8    2772.3    3331.3 *      92.   142. AG      1. 100.0   1.0 40.0
0.57   4.7
       9. Park/Brook EB L     *   2628.6    3435.0    2596.0    3392.8 *      53.   218. AG      0. 100.0   1.0 10.0
0.67   2.7
      10. Park/Brook EB T     *   2637.5    3428.1    2557.0    3325.2 *     131.   218. AG      0. 100.0   1.0 10.0
0.69   6.6
      11. Park/Brook EB RR    *   2648.5    3416.9    2594.3    3345.2 *      90.   217. AG      0. 100.0   1.0 20.0
0.51   4.6
      12. River/Park SB       *   2213.3    3801.8    3580.3    6597.8 *    3112.    26. AG      0. 100.0   1.0 10.0
2.01 158.1
      13. River/Park SB East  *   2256.2    3801.2    2279.3    3925.6 *     127.    11. AG      0. 100.0   1.0 20.0
0.87   6.4
      14. River/Park WB North *   2272.8    3765.2    2365.1    3765.6 *      92.    90. AG      0. 100.0   1.0 30.0
0.50   4.7
      15. River/Park WB South *   2270.5    3707.9    2337.8    3736.7 *      73.    67. AG      0. 100.0   1.0 20.0
0.39   3.7
      16. River/Park NEB      *   2169.9    3720.6    2153.5    3704.8 *      23.   226. AG      0. 100.0   1.0 20.0
0.16   1.2
      17. Beacon/Park SB LTT  *   1962.9    4712.6    1930.9    4813.0 *     105.   342. AG      0. 100.0   1.0 20.0
0.49   5.4
      18. Beacon/Park WB LTT  *   2055.3    4691.7    2200.7    4745.3 *     155.    70. AG      0. 100.0   1.0 20.0
0.71   7.9
      19. Beacon/Park NB LTT  *   2041.7    4597.4    3032.8    1710.0 *    3053.   161. AG      0. 100.0   1.0 20.0
**** 155.1
      20. Beacon/Park EB LTTT *   1966.3    4608.1    1913.4    4584.3 *      58.   246. AG      0. 100.0   1.0 30.0
0.29   2.9
      21. Beacon/Park EB R    *   1975.6    4560.5    1953.5    4563.9 *      22.   279. AG      0. 100.0   1.0 20.0
0.10   1.1
      22. Beacon/Park SB R    *   1917.2    4688.3    1919.9    4692.5 *       5.    32. AG      0. 100.0   1.0 10.0
0.02   0.3
      23. Beacon/Park WB R    *   2019.8    4741.2    2032.4    4736.8 *      13.   109. AG      0. 100.0   1.0 10.0
0.07   0.7
      24. Beacon/Park NB R    *   2095.2    4627.5    2086.9    4605.4 *      24.   201. AG      0. 100.0   1.0 10.0
0.11   1.2
      25. Boyl/Kil SB LTR     *   3322.0    3753.8    3306.1    3803.0 *      52.   342. AG      0. 100.0   1.0 20.0
0.35   2.6
      26. Boyl/Kil WB LTTR    *   3373.3    3738.7    3453.9    3771.3 *      87.    68. AG      0. 100.0   1.0 20.0
0.52   4.4
      27. Boyl/Kil NB LTR     *   3365.2    3677.7    3376.9    3648.1 *      32.   158. AG      0. 100.0   1.0 10.0
0.21   1.6
      28. Boyl/Kil EB LTTR    *   3320.4    3695.3    3225.5    3660.7 *     101.   250. AG      0. 100.0   1.0 20.0
0.60   5.1
      29. Fenway/Brook South  *   2496.9    3278.9    2636.6    3081.1 *     242.   145. AG    936.   0.0   1.0 54.0
      30. Fenway/Brook West   *   2481.8    3262.9    2347.3    3075.6 *     231.   216. AG   1965.   0.0   1.0 78.0
      31. Fenway/Brook North  *   2491.0    3288.6    2373.1    3398.7 *     161.   313. AG   1653.   0.0   1.0 66.0
      32. Fenway/Brook East   *   2497.8    3264.6    2608.7    3389.7 *     167.    42. AG   2407.   0.0   1.0 90.0
      33. Park/Brook South    *   2691.9    3447.3    2838.3    3241.2 *     253.   145. AG    992.   0.0   1.0 66.0
      34. Park/Brook West     *   2672.2    3490.7    2502.8    3273.8 *     275.   218. AG   2418.   0.0   1.0 90.0
      35. Park/Brook North    *   2656.7    3489.7    2496.1    3644.1 *     223.   314. AG   1821.   0.0   1.0 66.0
      36. Park/Brook East     *   2663.3    3490.8    2801.7    3675.1 *     230.    37. AG   1249.   0.0   1.0 66.0
      37. Park/Brook SE       *   2681.0    3470.4    2968.4    3574.9 *     306.    70. AG   2358.   0.0   1.0 78.0
      38. River/Park N        *   2254.7    3768.2    2266.4    3911.9 *     144.     5. AG    473.   0.0   1.0 42.0
      39. River/Park SE       *   2239.1    3675.4    2343.7    3750.1 *     129.    54. AG    454.   0.0   1.0 42.0
      40. River/Park NE       *   2237.1    3772.1    2377.4    3769.2 *     140.    91. AG    858.   0.0   1.0 54.0
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      41. River/Park S        *   2231.1    3745.1    2210.1    3564.3 *     182.   187. AG    927.   0.0   1.0 54.0
      42. River/Park SW       *   2211.1    3765.1    2058.1    3624.4 *     208.   227. AG   1520.   0.0   1.0 54.0
      43. River/Park NW       *   2194.0    3770.2    2250.7    3886.0 *     129.    26. AG    548.   0.0   1.0 30.0
      44. Beacon/Park N       *   1996.0    4667.5    1894.2    4948.4 *     299.   340. AG   1143.   0.0   1.0 78.0
♀                                                                                                             PAGE  2
      JOB: Landmark Center                                            RUN: 2018NB

      DATE :  7/22/13
      TIME : 14:34:32

       LINK VARIABLES
       --------------
         LINK DESCRIPTION     *         LINK COORDINATES (FT)          *    LENGTH  BRG TYPE   VPH    EF      H   W
V/C QUEUE
                              *   X1        Y1        X2        Y2     *     (FT)  (DEG)            (G/MI)  (FT) (FT)
   (VEH)

------------------------*---------------------------------------*---------------------------------------------------
----
      45. Beacon/Park NR      *   1908.0    4673.8    1956.1    4744.7 *      86.    34. AG     15.   0.0   1.0 30.0
      46. Beacon/Park E       *   1997.8    4657.7    2274.4    4755.8 *     293.    70. AG   1622.   0.0   1.0 78.0
      47. Beacon/Park ER      *   1991.4    4750.8    2112.1    4710.6 *     127.   108. AG     36.   0.0   1.0 30.0
      48. Beacon/Park S       *   2009.1    4646.4    2098.7    4401.0 *     261.   160. AG   1714.   0.0   1.0 78.0
      49. Beacon/Park SR      *   2102.5    4662.0    2076.2    4571.2 *      95.   196. AG     71.   0.0   1.0 42.0
      50. Beacon/Park W EB    *   1995.6    4607.6    1704.2    4488.4 *     315.   248. AG    603.   0.0   1.0 66.0
      51. Beacon/Park W EBR   *   2009.1    4551.2    1907.4    4575.2 *     104.   283. AG    134.   0.0   1.0 38.0
      52. Beacon/Park W WB    *   1989.3    4675.4    1658.3    4556.1 *     352.   250. AG    833.   0.0   1.0 78.0
      53. Boyl/Kil N          *   3344.5    3717.0    3289.1    3876.3 *     169.   341. AG    379.   0.0   1.0 54.0
      54. Boyl/Kil E          *   3348.9    3715.0    3516.2    3780.7 *     180.    69. AG   2426.   0.0   1.0 78.0
      55. Boyl/Kil S          *   3349.9    3702.1    3425.5    3502.1 *     214.   159. AG    241.   0.0   1.0 54.0
      56. Boyl/Kil W          *   3346.0    3717.8    3141.9    3641.3 *     218.   249. AG   2392.   0.0   1.0 78.0
♀                                                                                                             PAGE  3
      JOB: Landmark Center                                            RUN: 2018NB

      DATE :  7/22/13
      TIME : 14:34:32

       1. Fen/Brook WB TT     *     100        54       3.0       863       1600       0.07       1        3
       2. Fen/Brook EB TTTR   *     100        54       3.0       959       1600       0.07       1        3
       3. Fen/Brook SB L      *     100        46       3.0       647       1600       0.07       1        3
       4. Fen/Brook SB LTT    *     100        46       3.0       874       1600       0.07       1        3
       5. Fen/Brook SB R      *     100        46       3.0       132       1600       0.07       1        3
       6. Park/Brook WB TTR   *     100        68       3.0       669       1600       0.07       1        3
       7. Park/Brook NWB LLRRR*     100        75       3.0      1203       1600       0.07       1        3
       8. Park/Brook NB LTTTR *     100        68       3.0       992       1600       0.07       1        3
       9. Park/Brook EB L     *     100        85       3.0       107       1600       0.07       1        3
      10. Park/Brook EB T     *     100        57       3.0       419       1600       0.07       1        3
      11. Park/Brook EB RR    *     100        32       3.0      1029       1600       0.07       1        3
      12. River/Park SB       *     100        78       3.0       548       1600       0.07       1        3
      13. River/Park SB East  *     100        78       3.0       473       1600       0.07       1        3
      14. River/Park WB North *     100        59       3.0       858       1600       0.07       1        3
      15. River/Park WB South *     100        59       3.0       454       1600       0.07       1        3
      16. River/Park NEB      *     100        73       3.0       114       1600       0.07       1        3
      17. Beacon/Park SB LTT  *     110        61       3.0       632       1600       0.07       1        3
      18. Beacon/Park WB LTT  *     110        56       3.0      1012       1600       0.07       1        3
      19. Beacon/Park NB LTT  *     110       103       3.0       591       1600       0.07       1        3
      20. Beacon/Park EB LTTT *     110        68       3.0       469       1600       0.07       1        3
      21. Beacon/Park EB R    *     110        61       3.0       134       1600       0.07       1        3
      22. Beacon/Park SB R    *     110        61       3.0        15       1600       0.07       1        3
      23. Beacon/Park WB R    *     110        68       3.0        36       1600       0.07       1        3
      24. Beacon/Park NB R    *     110        61       3.0        71       1600       0.07       1        3
      25. Boyl/Kil SB LTR     *     100        71       3.0       267       1600       0.07       1        3
      26. Boyl/Kil WB LTTR    *     100        29       3.0      1096       1600       0.07       1        3
      27. Boyl/Kil NB LTR     *     100        71       3.0        82       1600       0.07       1        3
      28. Boyl/Kil EB LTTR    *     100        29       3.0      1274       1600       0.07       1        3

       RECEPTOR LOCATIONS
       ------------------
                              *       COORDINATES (FT)        *
         RECEPTOR             *      X          Y         Z    *
     -------------------------*-------------------------------*
      1. Fen/Brook NE1        *      2376.5     3444.0     6.0  *
      2. Fen/Brook NE2        *      2429.7     3391.0     6.0  *
      3. Fen/Brook NE3        *      2484.5     3339.8     6.0  *
      4. Fen/Brook NE4        *      2530.7     3398.9     6.0  *
      5. Fen/Brook NE5        *      2576.8     3458.0     6.0  *
      6. Fen/Brook SE1        *      2660.2     3364.9     6.0  *
      7. Fen/Brook SE2        *      2609.6     3308.8     6.0  *
      8. Fen/Brook SE3        *      2560.7     3252.7     6.0  *
      9. Fen/Brook SE4        *      2604.0     3191.4     6.0  *
     10. Fen/Brook SE5        *      2647.3     3130.2     6.0  *
     11. Fen/Brook SW1        *      2588.7     3084.8     6.0  *
     12. Fen/Brook SW2        *      2545.5     3146.0     6.0  *
     13. Fen/Brook SW3        *      2502.2     3207.3     6.0  *
     14. Fen/Brook SW4        *      2458.5     3146.4     6.0  *
     15. Fen/Brook SW5        *      2414.7     3085.4     6.0  *
     16. Fen/Brook NW1        *      2353.5     3168.3     6.0  *
     17. Fen/Brook NW2        *      2397.3     3229.2     6.0  *
     18. Fen/Brook NW3        *      2441.0     3290.1     6.0  *
     19. Fen/Brook NW4        *      2386.2     3341.3     6.0  *
     20. Fen/Brook NW5        *      2331.4     3392.5     6.0  *
```

RECEPTOR	*	X	Y	Z	*
21. Park/Brook NE1	*	2546.7	3655.1	6.0	*
22. Park/Brook NE2	*	2600.8	3603.1	6.0	*
23. Park/Brook NE3	*	2654.8	3551.1	6.0	*

JOB: Landmark Center RUN: 2018NB

DATE : 7/22/13
TIME : 14:34:32

RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (FT) X	Y	Z	*
24. Park/Brook NE4	*	2699.9	3611.1	6.0	*
25. Park/Brook NE5	*	2744.9	3671.1	6.0	*
26. Park/Brook SE1	*	2889.0	3493.9	6.0	*
27. Park/Brook SE2	*	2818.1	3468.1	6.0	*
28. Park/Brook SE3	*	2747.7	3442.5	6.0	*
29. Park/Brook SE4	*	2791.4	3381.5	6.0	*
30. Park/Brook SE5	*	2834.8	3320.3	6.0	*
31. Park/Brook SW1	*	2758.8	3278.8	6.0	*
32. Park/Brook SW2	*	2715.4	3340.0	6.0	*
33. Park/Brook SW3	*	2672.0	3401.1	6.0	*
34. Park/Brook SW4	*	2625.8	3342.0	6.0	*
35. Park/Brook SW5	*	2579.6	3282.9	6.0	*
36. Park/Brook NW1	*	2506.3	3367.7	6.0	*
37. Park/Brook NW2	*	2552.4	3426.8	6.0	*
38. Park/Brook NW3	*	2598.6	3485.9	6.0	*
39. Park/Brook NW4	*	2544.6	3537.9	6.0	*
40. Park/Brook NW5	*	2490.5	3589.9	6.0	*
41. Park/Brook E1	*	2853.5	3672.4	6.0	*
42. Park/Brook E2	*	2811.9	3617.1	6.0	*
43. Park/Brook E3	*	2763.4	3552.5	6.0	*
44. Park/Brook E4	*	2838.4	3579.8	6.0	*
45. Park/Brook E5	*	2904.4	3603.8	6.0	*

JOB: Landmark Center RUN: 2018NB

MODEL RESULTS

REMARKS : In search of the angle corresponding to
the maximum concentration, only the first
angle, of the angles with same maximum
concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-360.

WIND * CONCENTRATION
ANGLE * (ug/m**3)

(DEGR)*	REC1	REC2	REC3	REC4	REC5	REC6	REC7	REC8	REC9	REC10	REC11	REC12	REC13	REC14	REC15	REC16	REC17	REC18	REC19	REC20
0. *	1.	2.	2.	1.	1.	3.	5.	5.	3.	2.	3.	6.	7.	5.	4.	1.	2.	4.	3.	1.
10. *	1.	2.	1.	1.	1.	3.	5.	5.	2.	2.	3.	5.	7.	5.	5.	1.	2.	4.	3.	1.
20. *	1.	2.	1.	1.	1.	3.	4.	5.	2.	2.	2.	4.	8.	5.	5.	2.	2.	4.	3.	1.
30. *	1.	2.	2.	1.	2.	3.	4.	5.	2.	1.	2.	3.	7.	5.	4.	2.	3.	4.	3.	1.
40. *	1.	2.	3.	2.	3.	3.	3.	3.	2.	1.	2.	3.	7.	4.	3.	4.	4.	6.	3.	1.
50. *	1.	2.	5.	4.	3.	3.	3.	3.	2.	1.	2.	2.	5.	3.	2.	5.	6.	8.	4.	1.
60. *	2.	3.	6.	5.	5.	3.	2.	2.	1.	0.	1.	2.	4.	2.	2.	5.	6.	9.	5.	2.
70. *	3.	4.	6.	5.	5.	2.	2.	1.	0.	0.	1.	1.	3.	1.	1.	4.	5.	8.	6.	3.
80. *	3.	4.	6.	5.	5.	2.	1.	1.	0.	0.	1.	1.	2.	1.	1.	3.	4.	7.	6.	4.
90. *	3.	4.	5.	5.	4.	2.	1.	0.	0.	0.	1.	1.	2.	1.	1.	3.	3.	6.	6.	4.
100. *	2.	4.	5.	5.	3.	2.	0.	0.	0.	0.	0.	1.	2.	1.	0.	2.	3.	5.	5.	4.
110. *	3.	4.	4.	4.	3.	1.	0.	0.	0.	0.	0.	1.	2.	1.	0.	2.	3.	4.	5.	4.
120. *	3.	4.	5.	5.	3.	1.	0.	0.	0.	0.	0.	1.	3.	1.	0.	2.	3.	4.	4.	4.
130. *	4.	5.	5.	5.	3.	0.	0.	0.	0.	0.	0.	2.	3.	1.	0.	2.	3.	4.	4.	3.
140. *	4.	6.	6.	4.	3.	0.	0.	0.	0.	0.	0.	2.	3.	1.	0.	2.	3.	3.	3.	2.
150. *	4.	6.	7.	4.	3.	0.	0.	1.	0.	0.	0.	3.	3.	1.	0.	2.	3.	3.	2.	2.
160. *	4.	6.	8.	5.	4.	0.	0.	2.	1.	0.	1.	4.	2.	0.	0.	2.	2.	3.	2.	1.

(DEGR)*	REC1	REC2	REC3	REC4	REC5	REC6	REC7	REC8	REC9	REC10	REC11	REC12	REC13	REC14	REC15	REC16	REC17	REC18	REC19	REC20
170. *	3.	5.	8.	6.	5.	0.	1.	2.	2.	1.	2.	4.	1.	0.	0.	2.	2.	3.	2.	1.
180. *	2.	4.	7.	6.	5.	0.	1.	2.	2.	1.	2.	3.	0.	0.	0.	1.	2.	3.	1.	0.
190. *	1.	3.	7.	6.	6.	1.	1.	2.	2.	1.	1.	2.	0.	0.	0.	1.	2.	2.	1.	0.
200. *	1.	3.	7.	5.	5.	1.	1.	2.	2.	1.	1.	2.	0.	0.	0.	1.	2.	2.	0.	0.
210. *	0.	2.	6.	4.	4.	1.	1.	2.	1.	1.	1.	2.	1.	0.	0.	1.	1.	2.	0.	0.
220. *	0.	2.	5.	3.	3.	2.	2.	2.	1.	1.	1.	1.	2.	1.	0.	0.	0.	1.	0.	0.
230. *	0.	2.	4.	2.	2.	4.	4.	3.	1.	1.	1.	1.	2.	1.	0.	0.	0.	0.	0.	0.
240. *	0.	2.	4.	2.	1.	5.	4.	4.	2.	1.	1.	2.	3.	2.	1.	0.	0.	0.	0.	0.
250. *	0.	2.	4.	2.	1.	5.	5.	4.	2.	2.	1.	2.	3.	2.	1.	0.	0.	0.	0.	0.
260. *	0.	2.	4.	2.	1.	5.	5.	4.	2.	2.	1.	2.	3.	2.	1.	0.	0.	0.	0.	0.
270. *	0.	2.	4.	1.	1.	5.	5.	4.	2.	2.	1.	2.	2.	2.	1.	0.	0.	0.	0.	0.
280. *	0.	2.	4.	1.	1.	5.	5.	4.	3.	2.	2.	3.	2.	2.	1.	0.	0.	0.	0.	0.
290. *	0.	1.	4.	1.	1.	4.	5.	5.	3.	2.	2.	3.	2.	2.	2.	0.	0.	0.	0.	0.
300. *	0.	1.	4.	1.	1.	4.	5.	6.	3.	3.	2.	3.	2.	2.	2.	0.	0.	0.	0.	0.
310. *	0.	1.	4.	1.	1.	3.	5.	6.	4.	3.	2.	4.	2.	3.	2.	0.	0.	1.	1.	0.
320. *	0.	1.	4.	1.	1.	3.	5.	6.	4.	3.	3.	5.	3.	3.	2.	0.	0.	2.	1.	0.
330. *	1.	1.	4.	1.	1.	3.	5.	5.	4.	3.	4.	6.	4.	3.	2.	0.	0.	3.	2.	0.
340. *	2.	2.	3.	1.	1.	3.	5.	5.	3.	2.	4.	7.	6.	4.	2.	0.	1.	4.	2.	1.
350. *	2.	2.	2.	1.	1.	3.	5.	5.	3.	2.	4.	7.	7.	4.	3.	1.	2.	4.	3.	1.
360. *	1.	2.	2.	1.	1.	3.	5.	5.	3.	2.	3.	6.	7.	5.	4.	1.	2.	4.	3.	1.
MAX *	4.	6.	8.	6.	6.	5.	5.	6.	4.	3.	4.	7.	8.	5.	5.	5.	6.	9.	6.	4.
DEGR. *	140	140	170	180	190	250	300	310	320	320	340	340	20	30	20	60	50	60	80	110

JOB: Landmark Center RUN: 2018NB

MODEL RESULTS

REMARKS : In search of the angle corresponding to
the maximum concentration, only the first
angle, of the angles with same maximum
concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-360.

WIND * CONCENTRATION
ANGLE * (ug/m**3)

(DEGR)*	REC21	REC22	REC23	REC24	REC25	REC26	REC27	REC28	REC29	REC30	REC31	REC32	REC33	REC34	REC35	REC36	REC37	REC38	REC39	REC40
0. *	0.	0.	0.	0.	0.	3.	3.	3.	2.	1.	3.	4.	3.	5.	6.	1.	1.	2.	2.	1.
10. *	0.	0.	0.	0.	0.	3.	3.	3.	2.	1.	3.	4.	4.	4.	6.	1.	1.	2.	2.	1.
20. *	0.	0.	0.	0.	0.	3.	3.	3.	2.	1.	3.	4.	4.	4.	5.	1.	1.	2.	2.	1.
30. *	0.	0.	0.	0.	0.	3.	3.	3.	2.	1.	2.	4.	4.	4.	5.	2.	1.	2.	2.	2.
40. *	0.	0.	1.	1.	0.	3.	3.	4.	2.	1.	2.	4.	4.	3.	4.	3.	2.	3.	2.	2.
50. *	0.	0.	2.	1.	0.	3.	4.	4.	2.	1.	2.	4.	4.	3.	3.	4.	4.	4.	2.	2.
60. *	0.	0.	3.	2.	0.	3.	3.	4.	1.	0.	1.	3.	4.	3.	2.	6.	4.	5.	2.	2.
70. *	0.	1.	3.	3.	1.	2.	2.	2.	0.	0.	1.	3.	3.	2.	1.	6.	5.	6.	3.	2.
80. *	1.	2.	4.	4.	2.	1.	1.	1.	0.	0.	1.	2.	2.	2.	1.	6.	4.	6.	4.	3.
90. *	1.	2.	4.	4.	2.	0.	0.	0.	0.	0.	1.	2.	2.	1.	1.	5.	4.	5.	4.	4.
100. *	2.	2.	4.	4.	2.	0.	0.	0.	0.	0.	1.	2.	2.	1.	0.	5.	4.	4.	4.	4.
110. *	2.	2.	3.	4.	2.	0.	0.	0.	0.	0.	1.	2.	2.	0.	0.	4.	4.	4.		

4. 4.

120.	*	2.	2.	3.	4.	2.	0.	0.	0.	0.	0.	1.	1.	2.	0.	0.	4.	4.	4.	3.	3.
130.	*	2.	2.	3.	4.	2.	0.	0.	0.	0.	0.	0.	1.	2.	0.	0.	4.	4.	3.	3.	3.
140.	*	3.	3.	4.	4.	2.	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.	4.	4.	3.	2.	2.
150.	*	3.	4.	4.	4.	3.	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.	5.	4.	3.	2.	2.
160.	*	3.	4.	4.	4.	3.	0.	0.	2.	1.	0.	0.	0.	0.	0.	1.	6.	5.	3.	3.	2.
170.	*	4.	4.	4.	4.	4.	0.	0.	2.	1.	1.	0.	0.	0.	1.	1.	6.	6.	4.	3.	2.
180.	*	4.	4.	4.	4.	4.	0.	1.	3.	1.	1.	0.	0.	1.	1.	1.	6.	6.	4.	3.	2.
190.	*	4.	4.	5.	4.	4.	0.	1.	3.	2.	1.	0.	0.	1.	1.	1.	6.	6.	5.	3.	2.
200.	*	3.	4.	6.	5.	4.	1.	1.	2.	2.	1.	0.	0.	1.	1.	2.	5.	5.	5.	2.	1.
210.	*	2.	3.	6.	4.	4.	1.	2.	2.	2.	1.	0.	0.	2.	2.	2.	5.	4.	4.	2.	1.
220.	*	2.	3.	4.	3.	3.	1.	2.	3.	2.	1.	0.	1.	4.	4.	3.	4.	3.	3.	1.	1.
230.	*	2.	2.	3.	2.	2.	2.	3.	4.	3.	1.	1.	1.	5.	5.	4.	3.	2.	2.	1.	0.
240.	*	2.	2.	2.	1.	1.	3.	4.	4.	4.	2.	1.	2.	6.	6.	4.	2.	1.	1.	0.	0.
250.	*	2.	2.	2.	1.	1.	3.	4.	4.	4.	2.	1.	3.	6.	6.	5.	2.	1.	1.	0.	0.
260.	*	1.	2.	2.	1.	1.	4.	4.	4.	5.	3.	2.	3.	5.	6.	5.	2.	1.	0.	0.	0.
270.	*	2.	2.	2.	1.	1.	4.	4.	4.	4.	3.	2.	3.	4.	6.	5.	2.	1.	0.	1.	1.
280.	*	2.	2.	2.	1.	1.	5.	4.	4.	4.	4.	2.	3.	4.	6.	5.	2.	1.	1.	1.	1.
290.	*	2.	2.	3.	1.	1.	5.	4.	4.	4.	4.	2.	3.	3.	6.	6.	2.	1.	1.	1.	1.
300.	*	1.	2.	2.	1.	0.	4.	4.	4.	3.	4.	2.	3.	3.	5.	6.	2.	1.	1.	1.	1.
310.	*	1.	1.	2.	0.	0.	4.	4.	4.	4.	3.	2.	2.	3.	6.	6.	1.	1.	1.	2.	2.
320.	*	1.	1.	1.	0.	0.	3.	4.	4.	3.	3.	2.	2.	4.	6.	5.	1.	1.	2.	2.	2.
330.	*	1.	1.	1.	0.	0.	3.	4.	4.	2.	2.	3.	3.	4.	5.	6.	2.	1.	2.	2.	1.
340.	*	0.	0.	0.	0.	0.	3.	4.	3.	2.	2.	3.	3.	4.	5.	5.	2.	1.	2.	2.	1.
350.	*	0.	0.	0.	0.	0.	3.	3.	3.	2.	2.	4.	4.	3.	5.	5.	1.	1.	2.	2.	1.
360.	*	0.	0.	0.	0.	0.	3.	3.	3.	2.	1.	3.	4.	3.	5.	6.	1.	1.	2.	2.	1.
MAX	*	4.	4.	6.	5.	4.	5.	4.	4.	5.	4.	4.	4.	6.	6.	6.	6.	6.	6.	4.	4.
DEGR.	*	180	180	200	200	200	280	290	240	260	290	350	10	240	250	300	70	180	80	90	100

♀ PAGE 7

JOB: Landmark Center RUN: 2018NB

MODEL RESULTS

REMARKS : In search of the angle corresponding to
the maximum concentration, only the first
angle, of the angles with same maximum
concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-360.

WIND ANGLE (DEGR)	*	CONCENTRATION (ug/m**3) REC41	REC42	REC43	REC44	REC45
0.	*	0.	1.	2.	0.	0.
10.	*	0.	0.	1.	0.	0.
20.	*	0.	0.	1.	0.	0.
30.	*	0.	0.	1.	0.	0.
40.	*	0.	0.	0.	0.	0.
50.	*	0.	0.	0.	0.	0.
60.	*	0.	0.	1.	1.	1.
70.	*	1.	1.	3.	3.	2.
80.	*	1.	2.	4.	4.	3.
90.	*	1.	2.	4.	4.	3.
100.	*	1.	2.	4.	4.	3.
110.	*	1.	2.	4.	4.	3.
120.	*	1.	2.	4.	4.	3.
130.	*	1.	2.	3.	3.	3.
140.	*	1.	2.	3.	3.	3.

150.	*	2.	2.	3.	3.	3.
160.	*	2.	2.	4.	3.	3.
170.	*	2.	2.	4.	3.	3.
180.	*	2.	2.	4.	4.	3.
190.	*	2.	3.	4.	4.	4.
200.	*	2.	3.	4.	4.	4.
210.	*	3.	4.	5.	5.	5.
220.	*	4.	4.	6.	6.	6.
230.	*	4.	4.	6.	6.	6.
240.	*	3.	4.	4.	5.	5.
250.	*	2.	3.	4.	3.	4.
260.	*	2.	3.	3.	2.	2.
270.	*	1.	3.	3.	2.	2.
280.	*	1.	2.	3.	2.	1.
290.	*	0.	2.	3.	2.	1.
300.	*	0.	1.	2.	1.	1.
310.	*	0.	1.	2.	1.	0.
320.	*	0.	1.	2.	1.	0.
330.	*	0.	1.	2.	1.	0.
340.	*	0.	1.	2.	0.	0.
350.	*	0.	1.	2.	0.	0.
360.	*	0.	1.	2.	0.	0.
MAX	*	4.	4.	6.	6.	6.
DEGR.	*	220	220	220	230	230

THE HIGHEST CONCENTRATION OF 9. ug/m**3 OCCURRED AT RECEPTOR REC18.

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♀                     CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 95221                        PAGE  1

      JOB: Landmark Center                                          RUN: 2018NB

      DATE :  7/22/13
      TIME : 14:34:46

         The MODE flag has been set to P for calculating PM averages.

       SITE & METEOROLOGICAL VARIABLES
       -------------------------------
       VS =   0.0 CM/S       VD =   0.0 CM/S       Z0 = 175. CM
        U =  1.0 M/S         CLAS =   4  (D)     ATIM =  60. MINUTES     MIXH =  1000. M   AMB =  0.0 ug/m**3

       LINK VARIABLES
       --------------
         LINK DESCRIPTION     *         LINK COORDINATES (FT)          *    LENGTH  BRG TYPE   VPH    EF      H   W
V/C QUEUE
                              *   X1        Y1        X2        Y2    *     (FT)  (DEG)            (G/MI)  (FT) (FT)
   (VEH)

------------------------*-----------------------------------------*------------------------------------------------------
----
       1. Fen/Brook WB TT     *   2508.3    3314.8    2585.7    3415.8 *     127.    37. AG      0. 100.0   1.0 20.0
0.66   6.5
       2. Fen/Brook EB TTTR   *   2469.9    3221.1    2414.6    3144.9 *      94.   216. AG      0. 100.0   1.0 30.0
0.49   4.8
       3. Fen/Brook SB L      *   2487.6    3319.0    2363.3    3436.9 *     171.   313. AG      0. 100.0   1.0 10.0
0.83   8.7
       4. Fen/Brook SB LTT    *   2476.2    3307.2    2395.5    3381.8 *     110.   313. AG      0. 100.0   1.0 20.0
0.56   5.6
       5. Fen/Brook SB R      *   2463.2    3293.4    2439.4    3316.5 *      33.   314. AG      0. 100.0   1.0 10.0
0.17   1.7
       6. Park/Brook WB TTR   *   2701.3    3561.7    2751.4    3627.8 *      83.    37. AG      0. 100.0   1.0 30.0
0.52   4.2
       7. Park/Brook NWB LLRRR*   2745.9    3510.4    3745.0    3896.3 *    1071.    69. AG      0. 100.0   1.0 30.0
1.25  54.4
       8. Park/Brook NB LTTTR *   2715.4    3403.8    2772.3    3331.3 *      92.   142. AG      1. 100.0   1.0 40.0
0.57   4.7
       9. Park/Brook EB L     *   2628.6    3435.0    2596.0    3392.8 *      53.   218. AG      0. 100.0   1.0 10.0
0.67   2.7
      10. Park/Brook EB T     *   2637.5    3428.1    2557.0    3325.2 *     131.   218. AG      0. 100.0   1.0 10.0
0.69   6.6
      11. Park/Brook EB RR    *   2648.5    3416.9    2594.3    3345.2 *      90.   217. AG      0. 100.0   1.0 20.0
0.51   4.6
      12. River/Park SB       *   2213.3    3801.8    3580.3    6597.8 *    3112.    26. AG      0. 100.0   1.0 10.0
2.01 158.1
      13. River/Park SB East  *   2256.2    3801.2    2279.3    3925.6 *     127.    11. AG      0. 100.0   1.0 20.0
0.87   6.4
      14. River/Park WB North *   2272.8    3765.2    2365.1    3765.6 *      92.    90. AG      0. 100.0   1.0 30.0
0.50   4.7
      15. River/Park WB South *   2270.5    3707.9    2337.8    3736.7 *      73.    67. AG      0. 100.0   1.0 20.0
0.39   3.7
      16. River/Park NEB      *   2169.9    3720.6    2153.5    3704.8 *      23.   226. AG      0. 100.0   1.0 20.0
0.16   1.2
      17. Beacon/Park SB LTT  *   1962.9    4712.6    1930.9    4813.0 *     105.   342. AG      0. 100.0   1.0 20.0
0.49   5.4
      18. Beacon/Park WB LTT  *   2055.3    4691.7    2200.7    4745.3 *     155.    70. AG      0. 100.0   1.0 20.0
0.71   7.9
      19. Beacon/Park NB LTT  *   2041.7    4597.4    3032.8    1710.0 *    3053.   161. AG      0. 100.0   1.0 20.0
**** 155.1
      20. Beacon/Park EB LTTT *   1966.3    4608.1    1913.4    4584.3 *      58.   246. AG      0. 100.0   1.0 30.0
0.29   2.9
      21. Beacon/Park EB R    *   1975.6    4560.5    1953.5    4563.9 *      22.   279. AG      0. 100.0   1.0 20.0
0.10   1.1
      22. Beacon/Park SB R    *   1917.2    4688.3    1919.9    4692.5 *       5.    32. AG      0. 100.0   1.0 10.0
0.02   0.3
      23. Beacon/Park WB R    *   2019.8    4741.2    2032.4    4736.8 *      13.   109. AG      0. 100.0   1.0 10.0
0.07   0.7
      24. Beacon/Park NB R    *   2095.2    4627.5    2086.9    4605.4 *      24.   201. AG      0. 100.0   1.0 10.0
0.11   1.2
      25. Boyl/Kil SB LTR     *   3322.0    3753.8    3306.1    3803.0 *      52.   342. AG      0. 100.0   1.0 20.0
0.35   2.6
      26. Boyl/Kil WB LTTR    *   3373.3    3738.7    3453.9    3771.3 *      87.    68. AG      0. 100.0   1.0 20.0
0.52   4.4
      27. Boyl/Kil NB LTR     *   3365.2    3677.7    3376.9    3648.1 *      32.   158. AG      0. 100.0   1.0 10.0
0.21   1.6
      28. Boyl/Kil EB LTTR    *   3320.4    3695.3    3225.5    3660.7 *     101.   250. AG      0. 100.0   1.0 20.0
0.60   5.1
      29. Fenway/Brook South  *   2496.9    3278.9    2636.6    3081.1 *     242.   145. AG    936.    0.0   1.0 54.0
      30. Fenway/Brook West   *   2481.8    3262.9    2347.3    3075.6 *     231.   216. AG   1965.    0.0   1.0 78.0
      31. Fenway/Brook North  *   2491.0    3288.6    2373.1    3398.7 *     161.   313. AG   1653.    0.0   1.0 66.0
      32. Fenway/Brook East   *   2497.8    3264.6    2608.7    3389.7 *     167.    42. AG   2407.    0.0   1.0 90.0
      33. Park/Brook South    *   2691.9    3447.3    2838.3    3241.2 *     253.   145. AG    992.    0.0   1.0 66.0
      34. Park/Brook West     *   2672.2    3490.7    2502.8    3273.8 *     275.   218. AG   2418.    0.0   1.0 90.0
      35. Park/Brook North    *   2656.7    3489.7    2496.1    3644.1 *     223.   314. AG   1821.    0.0   1.0 66.0
      36. Park/Brook East     *   2663.3    3490.8    2801.7    3675.1 *     230.    37. AG   1249.    0.0   1.0 66.0
      37. Park/Brook SE       *   2681.0    3470.4    2968.4    3574.9 *     306.    70. AG   2358.    0.0   1.0 78.0
      38. River/Park N        *   2254.7    3768.2    2266.4    3911.9 *     144.     5. AG    473.    0.0   1.0 42.0
      39. River/Park SE       *   2239.1    3675.4    2343.7    3750.1 *     129.    54. AG    454.    0.0   1.0 42.0
      40. River/Park NE       *   2237.1    3772.1    2377.4    3769.2 *     140.    91. AG    858.    0.0   1.0 54.0
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      41. River/Park S        *   2231.1    3745.1    2210.1    3564.3 *     182.   187. AG    927.    0.0   1.0 54.0
      42. River/Park SW       *   2211.1    3765.1    2058.1    3624.4 *     208.   227. AG   1520.    0.0   1.0 54.0
      43. River/Park NW       *   2194.0    3770.2    2250.7    3886.0 *     129.    26. AG    548.    0.0   1.0 30.0
      44. Beacon/Park N       *   1996.0    4667.5    1894.2    4948.4 *     299.   340. AG   1143.    0.0   1.0 78.0
♀                                                                                                           PAGE  2
      JOB: Landmark Center                                          RUN: 2018NB

      DATE :  7/22/13
      TIME : 14:34:46

       LINK VARIABLES
       --------------
         LINK DESCRIPTION     *         LINK COORDINATES (FT)          *    LENGTH  BRG TYPE   VPH    EF      H   W
V/C QUEUE
                              *   X1        Y1        X2        Y2    *     (FT)  (DEG)            (G/MI)  (FT) (FT)
   (VEH)

------------------------*-----------------------------------------*------------------------------------------------------
----
      45. Beacon/Park NR      *   1908.0    4673.8    1956.1    4744.7 *      86.    34. AG     15.    0.0   1.0 30.0
      46. Beacon/Park E       *   1997.8    4657.7    2274.4    4755.8 *     293.    70. AG   1622.    0.0   1.0 78.0
      47. Beacon/Park ER      *   1991.4    4750.8    2112.1    4710.6 *     127.   108. AG     36.    0.0   1.0 30.0
      48. Beacon/Park S       *   2009.1    4646.4    2098.7    4401.0 *     261.   160. AG   1714.    0.0   1.0 78.0
      49. Beacon/Park SR      *   2102.5    4662.0    2076.2    4571.2 *      95.   196. AG     71.    0.0   1.0 42.0
      50. Beacon/Park W EB    *   1995.6    4607.6    1704.2    4488.4 *     315.   248. AG    603.    0.0   1.0 66.0
      51. Beacon/Park W EBR   *   2009.1    4551.2    1907.4    4575.2 *     104.   283. AG    134.    0.0   1.0 38.0
      52. Beacon/Park W WB    *   1989.3    4675.4    1658.3    4556.1 *     352.   250. AG    833.    0.0   1.0 78.0
      53. Boyl/Kil N          *   3344.5    3717.0    3289.1    3876.3 *     169.   341. AG    379.    0.0   1.0 54.0
      54. Boyl/Kil E          *   3348.9    3715.0    3516.2    3780.7 *     180.    69. AG   2426.    0.0   1.0 78.0
      55. Boyl/Kil S          *   3349.9    3702.1    3425.5    3502.1 *     214.   159. AG    241.    0.0   1.0 54.0
      56. Boyl/Kil W          *   3346.0    3717.8    3141.9    3641.3 *     218.   249. AG   2392.    0.0   1.0 78.0
♀                                                                                                           PAGE  3
      JOB: Landmark Center                                          RUN: 2018NB

      DATE :  7/22/13
      TIME : 14:34:46

       1. Fen/Brook WB TT     *     100       54       3.0       863       1600       0.07      1        3
       2. Fen/Brook EB TTTR   *     100       54       3.0       959       1600       0.07      1        3
       3. Fen/Brook SB L      *     100       46       3.0       647       1600       0.07      1        3
       4. Fen/Brook SB LTT    *     100       46       3.0       874       1600       0.07      1        3
       5. Fen/Brook SB R      *     100       46       3.0       132       1600       0.07      1        3
       6. Park/Brook WB TTR   *     100       68       3.0       669       1600       0.07      1        3
       7. Park/Brook NWB LLRRR*     100       75       3.0      1203       1600       0.07      1        3
       8. Park/Brook NB LTTTR *     100       68       3.0       992       1600       0.07      1        3
       9. Park/Brook EB L     *     100       85       3.0       107       1600       0.07      1        3
      10. Park/Brook EB T     *     100       57       3.0       419       1600       0.07      1        3
      11. Park/Brook EB RR    *     100       32       3.0      1029       1600       0.07      1        3
      12. River/Park SB       *     100       78       3.0       548       1600       0.07      1        3
      13. River/Park SB East  *     100       78       3.0       473       1600       0.07      1        3
      14. River/Park WB North *     100       59       3.0       858       1600       0.07      1        3
      15. River/Park WB South *     100       59       3.0       454       1600       0.07      1        3
      16. River/Park NEB      *     100       73       3.0       114       1600       0.07      1        3
      17. Beacon/Park SB LTT  *     110       61       3.0       632       1600       0.07      1        3
      18. Beacon/Park WB LTT  *     110       56       3.0      1012       1600       0.07      1        3
      19. Beacon/Park NB LTT  *     110      103       3.0       591       1600       0.07      1        3
      20. Beacon/Park EB LTTT *     110       68       3.0       469       1600       0.07      1        3
      21. Beacon/Park EB R    *     110       61       3.0       134       1600       0.07      1        3
      22. Beacon/Park SB R    *     110       61       3.0        15       1600       0.07      1        3
      23. Beacon/Park WB R    *     110       68       3.0        36       1600       0.07      1        3
      24. Beacon/Park NB R    *     110       61       3.0        71       1600       0.07      1        3
      25. Boyl/Kil SB LTR     *     100       71       3.0       267       1600       0.07      1        3
      26. Boyl/Kil WB LTTR    *     100       29       3.0      1096       1600       0.07      1        3
      27. Boyl/Kil NB LTR     *     100       71       3.0        82       1600       0.07      1        3
      28. Boyl/Kil EB LTTR    *     100       29       3.0      1274       1600       0.07      1        3

       RECEPTOR LOCATIONS
       ------------------
                              *          COORDINATES (FT)          *
         RECEPTOR             *      X           Y           Z     *
     -------------------------*------------------------------------*
      1. Beacon/Park NE1      *      1956.0      4921.7       6.0  *
      2. Beacon/Park NE2      *      1981.6      4851.2       6.0  *
      3. Beacon/Park NE3      *      2059.7      4754.4       6.0  *
      4. Beacon/Park NE4      *      2163.5      4768.4       6.0  *
      5. Beacon/Park NE5      *      2234.2      4793.5       6.0  *
      6. Beacon/Park SE1      *      2273.6      4703.5       6.0  *
      7. Beacon/Park SE2      *      2202.9      4678.4       6.0  *
      8. Beacon/Park SE3      *      2119.1      4608.0       6.0  *
      9. Beacon/Park SE4      *      2120.2      4485.0       6.0  *
     10. Beacon/Park SE5      *      2146.8      4412.1       6.0  *
     11. Beacon/Park SW1      *      2053.4      4382.2       6.0  *
     12. Beacon/Park SW2      *      2027.7      4452.7       6.0  *
     13. Beacon/Park SW3      *      1951.6      4535.0       6.0  *
     14. Beacon/Park SW4      *      1869.5      4509.6       6.0  *
     15. Beacon/Park SW5      *      1800.1      4481.2       6.0  *
     16. Beacon/Park NW1      *      1748.7      4640.8       6.0  *
     17. Beacon/Park NW2      *      1819.3      4666.2       6.0  *
     18. Beacon/Park NW3      *      1911.4      4723.3       6.0  *
     19. Beacon/Park NW4      *      1893.8      4805.6       6.0  *
     20. Beacon/Park NW5      *      1868.3      4876.1       6.0  *
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21. Riverway/Park NE1	*	2301.3	3957.6	6.0	*
22. Riverway/Park NE2	*	2295.2	3882.8	6.0	*
23. Riverway/Park NE3	*	2289.1	3808.1	6.0	*

JOB: Landmark Center RUN: 2018NB

DATE : 7/22/13
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RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (FT) X	Y	Z	*
24. Riverway/Park NE4	*	2364.1	3806.5	6.0	*
25. Riverway/Park NE5	*	2439.1	3806.0	6.0	*
26. Riverway/Park SE1	*	2427.5	3594.7	6.0	*
27. Riverway/Park SE2	*	2406.6	3667.7	6.0	*
28. Riverway/Park SE3	*	2309.4	3687.5	6.0	*
29. Riverway/Park SE4	*	2248.8	3576.7	6.0	*
30. Riverway/Park SE5	*	2296.6	3506.9	6.0	*
31. Riverway/Park SW1	*	2170.6	3544.5	6.0	*
32. Riverway/Park SW2	*	2179.2	3619.0	6.0	*
33. Riverway/Park SW3	*	2187.9	3693.5	6.0	*
34. Riverway/Park SW4	*	2132.7	3642.7	6.0	*
35. Riverway/Park SW5	*	2077.5	3592.0	6.0	*
36. Riverway/Park NW1	*	2059.1	3675.6	6.0	*
37. Riverway/Park NW2	*	2114.4	3726.4	6.0	*
38. Riverway/Park NW3	*	2169.6	3777.2	6.0	*
39. Riverway/Park NW4	*	2202.6	3844.5	6.0	*
40. Riverway/Park NW5	*	2235.3	3912.0	6.0	*
41. Boyl/Kil NE1	*	3320.8	3917.2	6.0	*
42. Boyl/Kil NE2	*	3339.3	3844.4	6.0	*
43. Boyl/Kil NE3	*	3364.0	3773.6	6.0	*
44. Boyl/Kil NE4	*	3433.8	3801.0	6.0	*
45. Boyl/Kil NE5	*	3503.6	3828.4	6.0	*
46. Boyl/Kil SE1	*	3537.2	3736.3	6.0	*
47. Boyl/Kil SE2	*	3467.1	3708.8	6.0	*
48. Boyl/Kil SE3	*	3397.3	3681.4	6.0	*
49. Boyl/Kil SE4	*	3423.8	3611.2	6.0	*
50. Boyl/Kil SE5	*	3450.3	3541.1	6.0	*
51. Boyl/Kil SW1	*	3379.9	3518.0	6.0	*
52. Boyl/Kil SW2	*	3353.1	3589.0	6.0	*
53. Boyl/Kil SW3	*	3326.9	3658.3	6.0	*
54. Boyl/Kil SW4	*	3256.7	3632.0	6.0	*
55. Boyl/Kil SW5	*	3186.4	3605.7	6.0	*
56. Boyl/Kil NW1	*	3153.2	3697.9	6.0	*
57. Boyl/Kil NW2	*	3223.4	3724.2	6.0	*
58. Boyl/Kil NW3	*	3293.6	3750.5	6.0	*
59. Boyl/Kil NW4	*	3269.0	3821.4	6.0	*
60. Boyl/Kil NW5	*	3244.5	3891.9	6.0	*

JOB: Landmark Center RUN: 2018NB

MODEL RESULTS

REMARKS : In search of the angle corresponding to
the maximum concentration, only the first
angle, of the angles with same maximum
concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-360.

WIND * CONCENTRATION
ANGLE * (ug/m**3)

(DEGR)*	REC1	REC2	REC3	REC4	REC5	REC6	REC7	REC8	REC9	REC10	REC11	REC12	REC13	REC14	REC15	REC16	REC17	REC18	REC19	REC20
0. *	0.	0.	0.	0.	0.	1.	1.	1.	1.	1.	3.	3.	3.	1.	1.	0.	0.	1.	1.	0.
10. *	0.	0.	0.	0.	0.	0.	1.	1.	1.	0.	3.	3.	3.	2.	1.	0.	0.	1.	1.	0.
20. *	0.	0.	0.	0.	0.	0.	1.	1.	1.	0.	3.	3.	2.	2.	1.	0.	0.	1.	1.	1.
30. *	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.	2.	3.	3.	2.	2.	0.	0.	1.	1.	1.
40. *	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.	2.	2.	3.	2.	2.	0.	0.	1.	1.	1.
50. *	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.	2.	2.	3.	2.	2.	0.	1.	1.	1.	1.
60. *	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.	2.	2.	2.	2.	2.	1.	1.	1.	1.	1.
70. *	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.	2.	2.	2.	1.	1.	1.	2.	1.	1.
80. *	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.	1.	2.	2.	1.	1.	2.	2.	2.	1.	1.
90. *	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.	1.	2.	2.	1.	1.	2.	2.	2.		

																			2.	1.
100. *	0.	0.	2.	1.	0.	0.	0.	0.	0.	0.	1.	2.	2.	1.	0.	2.	2.	2.	2.	1.
110. *	0.	0.	2.	2.	0.	0.	0.	0.	0.	0.	1.	2.	2.	1.	1.	2.	2.	2.	2.	2.
120. *	0.	1.	2.	2.	1.	0.	0.	0.	0.	0.	1.	2.	2.	1.	1.	2.	2.	2.	2.	2.
130. *	1.	1.	2.	2.	1.	0.	0.	0.	0.	0.	1.	2.	2.	1.	0.	2.	2.	2.	3.	2.
140. *	1.	1.	2.	2.	1.	0.	0.	0.	0.	0.	2.	2.	2.	1.	1.	2.	2.	3.	3.	3.
150. *	2.	2.	2.	2.	2.	0.	0.	1.	1.	1.	1.	2.	1.	1.	1.	1.	2.	3.	3.	3.
160. *	2.	2.	2.	2.	2.	0.	1.	1.	2.	1.	1.	1.	1.	0.	0.	1.	1.	2.	2.	2.
170. *	2.	3.	3.	2.	2.	1.	1.	1.	2.	2.	1.	1.	0.	0.	0.	1.	1.	2.	1.	1.
180. *	2.	2.	3.	2.	2.	0.	0.	1.	2.	1.	0.	0.	0.	0.	0.	1.	1.	1.	1.	0.
190. *	2.	2.	3.	3.	2.	0.	1.	2.	2.	1.	0.	0.	0.	0.	0.	1.	1.	1.	0.	0.
200. *	2.	2.	2.	3.	2.	0.	1.	2.	2.	1.	0.	0.	0.	0.	0.	1.	1.	1.	0.	0.
210. *	1.	2.	2.	3.	2.	1.	1.	2.	2.	1.	0.	0.	0.	0.	0.	1.	1.	1.	0.	0.
220. *	1.	2.	2.	3.	3.	1.	1.	2.	2.	1.	0.	0.	0.	0.	0.	1.	1.	1.	0.	0.
230. *	1.	1.	2.	3.	3.	1.	1.	2.	2.	1.	0.	0.	0.	0.	0.	1.	1.	1.	0.	0.
240. *	1.	1.	2.	3.	3.	1.	2.	2.	2.	1.	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
250. *	1.	1.	1.	2.	2.	2.	2.	2.	2.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
260. *	1.	1.	1.	1.	1.	2.	2.	2.	2.	2.	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
270. *	1.	1.	1.	1.	0.	3.	2.	2.	2.	2.	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.
280. *	1.	1.	1.	1.	0.	2.	2.	2.	3.	2.	0.	0.	1.	1.	1.	0.	0.	0.	0.	0.
290. *	1.	1.	1.	0.	0.	2.	2.	2.	3.	2.	0.	0.	1.	1.	1.	0.	0.	0.	0.	0.
300. *	0.	1.	1.	0.	0.	2.	2.	2.	3.	3.	0.	0.	1.	1.	1.	0.	0.	0.	0.	0.
310. *	0.	1.	1.	0.	0.	2.	2.	2.	3.	3.	0.	1.	1.	1.	1.	0.	0.	0.	0.	0.
320. *	0.	1.	0.	0.	0.	1.	2.	2.	3.	3.	1.	1.	1.	1.	1.	0.	0.	0.	0.	0.
330. *	0.	1.	0.	0.	0.	1.	2.	2.	3.	3.	1.	1.	2.	1.	1.	0.	0.	0.	0.	0.
340. *	0.	0.	0.	0.	0.	1.	2.	2.	2.	2.	2.	2.	2.	1.	1.	0.	0.	0.	0.	0.
350. *	0.	0.	0.	0.	0.	1.	2.	1.	1.	1.	2.	2.	2.	1.	1.	0.	0.	1.	1.	0.
360. *	0.	0.	0.	0.	0.	1.	1.	1.	1.	1.	3.	3.	3.	1.	1.	0.	0.	1.	1.	0.
MAX *	2.	3.	3.	3.	3.	3.	2.	2.	3.	3.	3.	3.	3.	2.	2.	2.	2.	3.	3.	3.
DEGR. *	170	170	180	220	230	270	270	270	320	320	10	10	30	50	50	90	130	150	150	140

JOB: Landmark Center RUN: 2018NB

MODEL RESULTS

REMARKS : In search of the angle corresponding to
the maximum concentration, only the first
angle, of the angles with same maximum
concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-360.

WIND * CONCENTRATION
ANGLE * (ug/m**3)

(DEGR)*	REC21	REC22	REC23	REC24	REC25	REC26	REC27	REC28	REC29	REC30	REC31	REC32	REC33	REC34	REC35	REC36	REC37	REC38	REC39	REC40
0. *	1.	2.	3.	0.	0.	0.	0.	4.	2.	2.	2.	2.	2.	2.	2.	0.	0.	1.	1.	1.
10. *	1.	1.	2.	0.	0.	0.	0.	3.	2.	1.	2.	2.	3.	2.	2.	0.	0.	1.	1.	1.
20. *	1.	1.	2.	0.	0.	0.	0.	3.	2.	1.	2.	2.	3.	3.	2.	0.	0.	1.	1.	1.
30. *	1.	0.	1.	0.	0.	0.	0.	2.	1.	1.	2.	2.	3.	3.	3.	1.	1.	2.	1.	1.

```
  40.  *    0.    0.    1.    0.    0.    0.    0.    2.    1.    0.    2.    2.    3.    2.    2.    1.    1.    2.
2.    1.
  50.  *    0.    0.    1.    0.    0.    0.    0.    1.    0.    1.    1.    2.    2.    2.    2.    2.    2.    2.
2.    1.
  60.  *    0.    0.    1.    0.    0.    1.    0.    1.    0.    1.    1.    2.    2.    2.    1.    2.    2.    2.
2.    1.
  70.  *    0.    0.    1.    0.    0.    1.    0.    1.    1.    2.    1.    2.    2.    2.    1.    3.    2.    2.
2.    2.
  80.  *    0.    0.    1.    0.    0.    2.    1.    1.    2.    2.    2.    2.    2.    2.    1.    3.    3.    2.
2.    2.
  90.  *    0.    0.    2.    0.    0.    2.    2.    2.    2.    2.    2.    2.    2.    2.    1.    3.    4.    3.
2.    2.
 100.  *    0.    0.    2.    1.    1.    3.    2.    2.    2.    2.    2.    2.    3.    2.    1.    3.    4.    3.
3.    2.
 110.  *    0.    1.    3.    1.    1.    2.    2.    2.    2.    2.    2.    2.    2.    2.    1.    3.    4.    3.
3.    3.
 120.  *    1.    1.    4.    1.    1.    2.    2.    2.    2.    2.    2.    2.    2.    2.    1.    3.    3.    4.
4.    3.
 130.  *    1.    2.    4.    2.    1.    1.    2.    2.    2.    2.    1.    2.    2.    2.    1.    3.    3.    4.
4.    4.
 140.  *    1.    2.    4.    2.    2.    2.    2.    2.    2.    2.    1.    2.    2.    1.    1.    2.    3.    3.
4.    4.
 150.  *    2.    4.    5.    2.    2.    2.    2.    2.    2.    2.    1.    2.    2.    1.    0.    2.    2.    3.
3.    5.
 160.  *    2.    5.    4.    2.    2.    2.    2.    2.    1.    1.    0.    1.    2.    0.    0.    1.    2.    3.
3.    4.
 170.  *    2.    5.    3.    3.    2.    3.    2.    1.    0.    0.    0.    1.    1.    0.    0.    1.    2.    2.
2.    3.
 180.  *    3.    4.    2.    3.    2.    3.    2.    0.    0.    0.    0.    0.    0.    0.    0.    1.    2.    2.
2.    2.
 190.  *    3.    4.    2.    3.    1.    2.    1.    0.    0.    0.    0.    0.    0.    0.    0.    1.    2.    2.
2.    2.
 200.  *    3.    4.    2.    3.    1.    1.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    2.    2.
1.    1.
 210.  *    3.    4.    2.    3.    0.    1.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    2.
1.    1.
 220.  *    3.    4.    2.    3.    1.    1.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.
0.    0.
 230.  *    2.    4.    2.    4.    1.    1.    1.    0.    0.    0.    0.    0.    1.    0.    0.    0.    0.    1.
0.    0.
 240.  *    2.    4.    2.    3.    2.    1.    1.    1.    0.    0.    0.    0.    1.    1.    0.    0.    0.    0.
0.    0.
 250.  *    1.    4.    2.    3.    2.    1.    1.    1.    0.    0.    0.    0.    2.    1.    0.    0.    0.    0.
0.    0.
 260.  *    1.    3.    2.    2.    2.    1.    1.    1.    1.    0.    0.    0.    2.    1.    0.    0.    0.    0.
0.    0.
 270.  *    1.    3.    2.    2.    2.    1.    2.    2.    1.    0.    0.    0.    2.    1.    0.    0.    0.    0.
0.    0.
 280.  *    1.    3.    2.    2.    1.    1.    2.    2.    1.    0.    0.    1.    2.    1.    0.    0.    0.    0.
0.    0.
 290.  *    1.    3.    2.    2.    1.    2.    2.    2.    1.    0.    0.    1.    2.    1.    0.    0.    0.    0.
0.    0.
 300.  *    2.    4.    2.    2.    1.    2.    2.    2.    1.    0.    0.    1.    2.    1.    0.    0.    0.    0.
0.    0.
 310.  *    2.    4.    2.    2.    1.    2.    3.    2.    1.    1.    0.    1.    2.    1.    0.    0.    0.    0.
0.    0.
 320.  *    2.    4.    2.    2.    1.    2.    2.    2.    2.    1.    0.    1.    2.    1.    0.    0.    0.    0.
0.    0.
 330.  *    2.    5.    2.    1.    1.    2.    2.    3.    2.    1.    1.    1.    2.    1.    1.    0.    0.    0.
0.    0.
 340.  *    2.    5.    3.    1.    1.    2.    2.    3.    2.    1.    1.    1.    2.    1.    1.    0.    0.    0.
1.    1.
 350.  *    1.    3.    3.    1.    0.    1.    1.    4.    2.    2.    1.    2.    2.    2.    2.    0.    0.    1.
1.    1.
 360.  *    1.    2.    3.    0.    0.    0.    0.    4.    2.    2.    2.    2.    2.    2.    2.    0.    0.    1.
1.    1.

------*------------------------------------------------------------------------------------------------------------
-------
 MAX   *    3.    5.    5.    4.    2.    3.    3.    4.    2.    2.    2.    2.    3.    3.    3.    3.    4.    4.
4.    5.
 DEGR. *  200   160   150   230   250   170   310   350     0   130    20    40    20    30    30    90   100   120
130   150

♀                                                                                                              PAGE  7
     JOB: Landmark Center                                                RUN: 2018NB

      MODEL RESULTS
      -------------

      REMARKS : In search of the angle corresponding to
                the maximum concentration, only the first
                angle, of the angles with same maximum
                concentrations, is indicated as maximum.

 WIND ANGLE RANGE:   0.-360.

 WIND  * CONCENTRATION
 ANGLE *      (ug/m**3)
 (DEGR)* REC41 REC42 REC43 REC44 REC45 REC46 REC47 REC48 REC49 REC50 REC51 REC52 REC53 REC54 REC55 REC56 REC57 REC58
REC59 REC60
```



```
------*------------------------------------------------------------------------------------------------------------
-------
   0.  *    0.    0.    0.    0.    0.    1.    3.    3.    2.    1.    2.    2.    4.    3.    3.    0.    0.    0.
0.    0.
  10.  *    0.    0.    0.    0.    0.    1.    3.    3.    2.    1.    2.    2.    3.    3.    3.    0.    0.    1.
0.    0.
  20.  *    0.    0.    0.    0.    0.    1.    3.    3.    1.    1.    1.    2.    4.    4.    3.    0.    0.    1.
0.    0.
  30.  *    0.    0.    0.    0.    0.    1.    2.    3.    1.    0.    1.    2.    4.    4.    4.    0.    0.    1.
0.    0.
  40.  *    0.    0.    0.    0.    0.    1.    2.    3.    1.    0.    1.    2.    4.    4.    4.    0.    0.    1.
0.    0.
  50.  *    0.    0.    0.    0.    0.    1.    2.    3.    0.    0.    0.    1.    4.    4.    4.    1.    1.    1.
0.    0.
  60.  *    0.    0.    1.    1.    1.    0.    1.    2.    0.    0.    0.    0.    3.    3.    3.    2.    2.    2.
0.    0.
  70.  *    0.    0.    3.    2.    1.    0.    1.    1.    0.    0.    0.    0.    2.    2.    2.    3.    3.    3.
0.    0.
  80.  *    0.    0.    4.    3.    2.    0.    0.    0.    0.    0.    0.    0.    1.    1.    1.    5.    4.    4.
1.    0.
  90.  *    0.    1.    4.    3.    2.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    5.    5.    5.
1.    0.
 100.  *    0.    1.    4.    3.    2.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    5.    5.    5.
2.    1.
 110.  *    0.    1.    4.    4.    2.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    4.    4.    4.
2.    1.
 120.  *    1.    2.    4.    3.    2.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    4.    4.    4.
3.    1.
 130.  *    1.    2.    4.    3.    2.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    3.    4.    4.
3.    2.
 140.  *    1.    2.    4.    4.    2.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    3.    4.    4.
3.    2.
 150.  *    1.    2.    4.    4.    2.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    3.    4.    4.
2.    2.
 160.  *    2.    2.    4.    4.    2.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    3.    4.    4.
2.    2.
 170.  *    2.    2.    4.    4.    3.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    3.    3.    4.
2.    2.
 180.  *    2.    2.    4.    4.    3.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    3.    3.    4.
2.    1.
 190.  *    2.    3.    4.    4.    3.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    3.    4.    4.
2.    1.
 200.  *    2.    3.    4.    4.    4.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    2.    4.    4.
2.    1.
 210.  *    2.    3.    5.    5.    4.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    3.    4.    4.
2.    1.
 220.  *    2.    3.    5.    5.    5.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    3.    4.    5.
2.    2.
 230.  *    2.    2.    6.    6.    6.    0.    0.    1.    0.    0.    0.    0.    1.    1.    1.    4.    5.    5.
2.    2.
 240.  *    1.    2.    6.    6.    6.    2.    2.    2.    1.    0.    0.    1.    2.    2.    1.    4.    4.    5.
2.    1.
 250.  *    1.    1.    4.    4.    4.    3.    3.    3.    1.    1.    1.    1.    3.    3.    2.    3.    3.    3.
1.    0.
 260.  *    0.    1.    3.    2.    2.    4.    4.    4.    2.    2.    1.    2.    4.    3.    3.    2.    2.    2.
0.    0.
 270.  *    0.    0.    1.    1.    1.    4.    4.    4.    2.    1.    1.    2.    4.    3.    3.    1.    1.    1.
0.    0.
 280.  *    0.    0.    1.    0.    0.    4.    4.    4.    2.    1.    1.    2.    4.    3.    2.    0.    0.    0.
0.    0.
 290.  *    0.    0.    1.    0.    0.    4.    4.    4.    2.    1.    1.    2.    4.    3.    2.    0.    0.    0.
0.    0.
 300.  *    0.    0.    1.    0.    0.    3.    4.    4.    2.    2.    1.    2.    3.    3.    2.    0.    0.    0.
0.    0.
 310.  *    0.    0.    1.    0.    0.    2.    3.    3.    2.    2.    1.    2.    3.    3.    2.    0.    0.    0.
0.    0.
 320.  *    0.    0.    0.    0.    0.    2.    3.    3.    2.    2.    1.    2.    3.    3.    2.    0.    0.    0.
0.    0.
 330.  *    0.    0.    0.    0.    0.    2.    3.    3.    2.    2.    1.    2.    3.    3.    3.    0.    0.    0.
0.    0.
 340.  *    0.    0.    0.    0.    0.    2.    3.    3.    2.    1.    2.    2.    3.    3.    3.    0.    0.    0.
0.    0.
 350.  *    0.    0.    0.    0.    0.    1.    3.    3.    2.    1.    2.    2.    4.    3.    3.    0.    0.    0.
0.    0.
 360.  *    0.    0.    0.    0.    0.    1.    3.    3.    2.    1.    2.    2.    4.    3.    3.    0.    0.    0.
0.    0.

------*------------------------------------------------------------------------------------------------------------
-------
 MAX   *    2.    3.    6.    6.    6.    4.    4.    4.    2.    2.    2.    2.    4.    4.    4.    5.    5.    5.
3.    2.
 DEGR. *  190   200   240   240   230   270   270   270   280   260     0     0   270    40    50    80    90   230
130   150

 THE HIGHEST CONCENTRATION OF      6. ug/m**3 OCCURRED AT RECEPTOR REC43.
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♀                  CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 95221                    PAGE  1

      JOB: LANDMARKCENTER                                        RUN: 2018_BD_CO_3

      DATE :  7/22/13
      TIME : 14:34:23

         The MODE flag has been set to P for calculating PM averages.

       SITE & METEOROLOGICAL VARIABLES
       -------------------------------
       VS =   0.0 CM/S       VD =   0.0 CM/S       Z0 = 175. CM
        U =  1.0 M/S         CLAS =   4  (D)     ATIM =  60. MINUTES     MIXH =  1000. M   AMB =  0.0 ug/m**3

       LINK VARIABLES
       --------------
         LINK DESCRIPTION     *         LINK COORDINATES (FT)          *    LENGTH  BRG TYPE   VPH    EF      H   W
V/C QUEUE
                              *   X1        Y1        X2        Y2     *     (FT)  (DEG)            (G/MI)  (FT) (FT)
   (VEH)

------------------------*----------------------------------------*---------------------------------------------------
----
       1. Brook/Full EB L     *   3074.7    4018.5    3063.2    4003.4 *      19.   217. AG      0. 100.0   1.0 10.0
0.11   1.0
       2. Brook/Full EB TR    *   3083.6    4012.0    3036.0    3948.7 *      79.   217. AG      0. 100.0   1.0 10.0
0.44   4.0
       3. Brook/Full NB LTR   *   3121.3    4022.6    3159.5    4002.1 *      43.   118. AG      0. 100.0   1.0 10.0
0.24   2.2
       4. Brook/Full WB LTR   *   3127.2    4100.9    3164.8    4150.3 *      62.    37. AG      0. 100.0   1.0 20.0
0.32   3.2
       5. Brook/Full SB LT    *   3068.3    4050.9    3017.3    4088.5 *      63.   306. AG      0. 100.0   1.0 10.0
0.39   3.2
       6. Brook/Full SB R     *   3061.2    4041.4    3029.5    4064.1 *      39.   306. AG      0. 100.0   1.0 10.0
0.21   2.0
       7. Brook/Full N        *   3091.9    4045.7    2925.8    4161.5 *     203.   305. AG    554.   0.0   1.0 54.0
       8. Brook/Full E        *   3091.9    4045.7    3246.2    4230.8 *     241.    40. AG    997.   0.0   1.0 54.0
       9. Brook/Full S        *   3100.3    4031.3    3190.0    3977.6 *     105.   121. AG    456.   0.0   1.0 42.0
      10. Brook/Full W        *   3091.9    4048.0    2946.1    3847.4 *     248.   216. AG   1213.   0.0   1.0 54.0
♀                                                                                                          PAGE  2
      JOB: LANDMARKCENTER                                        RUN: 2018_BD_CO_3

      DATE :  7/22/13
      TIME : 14:34:23

       1. Brook/Full EB L     *     100       33       3.0       105       1600       0.07      1        3
       2. Brook/Full EB TR    *     100       33       3.0       439       1600       0.07      1        3
       3. Brook/Full NB LTR   *     100       33       3.0       240       1600       0.07      1        3
       4. Brook/Full WB LTR   *     100       43       3.0       528       1600       0.07      1        3
       5. Brook/Full SB LT    *     100       67       3.0       173       1600       0.07      1        3
       6. Brook/Full SB R     *     100       57       3.0       125       1600       0.07      1        3

       RECEPTOR LOCATIONS
       ------------------
                              *           COORDINATES (FT)           *
         RECEPTOR             *      X          Y          Z         *
     -------------------------*--------------------------------------*
      1. Brook/Full NE1       *      2962.2     4181.2       6.0    *
      2. Brook/Full NE2       *      3023.7     4138.3       6.0    *
      3. Brook/Full NE3       *      3085.3     4095.4       6.0    *
      4. Brook/Full NE4       *      3133.3     4153.0       6.0    *
      5. Brook/Full NE5       *      3188.7     4204.0       6.0    *
      6. Brook/Full SE1       *      3235.0     4159.5       6.0    *
      7. Brook/Full SE2       *      3187.0     4101.9       6.0    *
      8. Brook/Full SE3       *      3130.3     4049.5       6.0    *
      9. Brook/Full SE4       *      3203.3     4005.7       6.0    *
     10. Brook/Full SE5       *      3267.6     3967.2       6.0    *
     11. Brook/Full SW1       *      3228.3     3918.5       6.0    *
     12. Brook/Full SW2       *      3163.9     3957.1       6.0    *
     13. Brook/Full SW3       *      3099.6     3995.6       6.0    *
     14. Brook/Full SW4       *      3055.5     3934.9       6.0    *
     15. Brook/Full SW5       *      3011.4     3874.3       6.0    *
     16. Brook/Full NW1       *      2950.5     3916.4       6.0    *
     17. Brook/Full NW2       *      2994.6     3977.0       6.0    *
     18. Brook/Full NW3       *      3038.7     4037.7       6.0    *
     19. Brook/Full NW4       *      2977.2     4080.6       6.0    *
     20. Brook/Full NW5       *      2915.6     4123.5       6.0    *
♀                                                                                                          PAGE  3
      JOB: LANDMARKCENTER                                        RUN: 2018_BD_CO_3

       MODEL RESULTS
       -------------

       REMARKS : In search of the angle corresponding to
                 the maximum concentration, only the first
                 angle, of the angles with same maximum
                 concentrations, is indicated as maximum.

 WIND ANGLE RANGE:   0.-360.

 WIND  * CONCENTRATION
```



```
 ANGLE *      (ug/m**3)
 (DEGR)* REC1  REC2  REC3  REC4  REC5  REC6  REC7  REC8  REC9  REC10 REC11 REC12 REC13 REC14 REC15 REC16 REC17 REC18
REC19 REC20

------*----------------------------------------------------------------------------------------------------------------
-------
   0.  *   0.    0.    0.    0.    0.    1.    1.    2.    0.    0.    0.    1.    2.    2.    2.    0.    0.    1.
0.   0.
  10.  *   0.    0.    0.    0.    0.    1.    1.    2.    0.    0.    0.    1.    2.    2.    2.    0.    0.    1.
0.   0.
  20.  *   0.    0.    0.    0.    0.    0.    1.    2.    0.    0.    0.    1.    2.    2.    2.    0.    1.    1.
0.   0.
  30.  *   0.    0.    0.    0.    0.    0.    1.    2.    0.    0.    0.    0.    2.    2.    2.    1.    1.    1.
0.   0.
  40.  *   0.    0.    1.    0.    1.    0.    0.    1.    0.    0.    0.    0.    1.    1.    1.    1.    2.    2.
0.   0.
  50.  *   0.    0.    1.    1.    1.    0.    0.    1.    0.    0.    0.    0.    1.    0.    0.    2.    2.    2.
1.   0.
  60.  *   0.    0.    1.    1.    1.    0.    0.    0.    0.    0.    0.    0.    1.    0.    0.    2.    2.    2.
1.   1.
  70.  *   0.    0.    1.    1.    1.    0.    0.    0.    0.    0.    0.    0.    1.    0.    0.    2.    2.    2.
1.   1.
  80.  *   0.    0.    1.    1.    1.    0.    0.    0.    0.    0.    0.    0.    1.    0.    0.    1.    2.    2.
1.   1.
  90.  *   0.    1.    1.    1.    1.    0.    0.    0.    0.    0.    0.    0.    1.    0.    0.    1.    1.    2.
1.   1.
 100.  *   0.    1.    1.    1.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.    2.
1.   1.
 110.  *   0.    0.    1.    1.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.    2.
1.   1.
 120.  *   0.    1.    1.    1.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.    2.
1.   1.
 130.  *   1.    1.    1.    1.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.    1.
1.   1.
 140.  *   1.    1.    1.    1.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.    1.
1.   0.
 150.  *   1.    1.    2.    1.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.    1.
1.   0.
 160.  *   1.    2.    2.    2.    1.    0.    0.    1.    0.    0.    0.    0.    0.    0.    0.    1.    1.    1.
0.   0.
 170.  *   1.    2.    2.    2.    1.    0.    0.    1.    0.    0.    0.    0.    0.    0.    0.    1.    1.    1.
1.   0.
 180.  *   1.    1.    2.    2.    2.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.    1.
0.   0.
 190.  *   1.    1.    2.    2.    2.    0.    0.    1.    0.    0.    0.    0.    0.    0.    0.    1.    1.    1.
0.   0.
 200.  *   0.    1.    2.    2.    2.    0.    0.    1.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.
0.   0.
 210.  *   0.    1.    2.    2.    2.    0.    1.    1.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.
0.   0.
 220.  *   0.    0.    1.    1.    2.    1.    1.    2.    0.    0.    0.    0.    1.    1.    0.    0.    0.    0.
0.   0.
 230.  *   0.    0.    1.    1.    1.    2.    2.    2.    1.    0.    0.    0.    1.    1.    0.    0.    0.    0.
0.   0.
 240.  *   0.    0.    1.    0.    1.    2.    2.    2.    1.    0.    0.    0.    2.    1.    1.    0.    0.    0.
0.   0.
 250.  *   0.    0.    1.    0.    0.    2.    2.    2.    1.    0.    0.    0.    2.    1.    1.    0.    0.    0.
0.   0.
 260.  *   0.    1.    1.    0.    0.    2.    2.    2.    1.    0.    0.    1.    2.    1.    1.    0.    0.    0.
0.   0.
 270.  *   0.    0.    1.    0.    0.    1.    2.    2.    1.    0.    0.    1.    1.    1.    1.    0.    0.    0.
0.   0.
 280.  *   0.    0.    1.    0.    0.    1.    1.    2.    1.    1.    0.    1.    1.    1.    1.    0.    0.    0.
0.   0.
 290.  *   0.    0.    0.    0.    0.    1.    1.    2.    1.    1.    1.    1.    1.    1.    1.    0.    0.    0.
0.   0.
 300.  *   0.    0.    0.    0.    0.    1.    1.    2.    1.    1.    1.    1.    2.    1.    1.    0.    0.    0.
0.   0.
 310.  *   0.    0.    0.    0.    0.    1.    1.    2.    1.    0.    1.    1.    2.    1.    1.    0.    0.    0.
0.   0.
 320.  *   0.    0.    0.    0.    0.    1.    1.    1.    1.    0.    1.    1.    2.    1.    1.    0.    0.    1.
0.   0.
 330.  *   0.    0.    0.    0.    0.    1.    1.    1.    1.    0.    1.    1.    2.    1.    1.    0.    0.    1.
0.   0.
 340.  *   0.    0.    0.    0.    0.    1.    1.    1.    1.    0.    0.    1.    2.    2.    1.    0.    0.    1.
0.   0.
 350.  *   0.    0.    0.    0.    0.    1.    1.    1.    1.    0.    0.    1.    2.    2.    1.    0.    0.    1.
0.   0.
 360.  *   0.    0.    0.    0.    0.    1.    1.    2.    0.    0.    0.    1.    2.    2.    2.    0.    0.    1.
0.   0.

------*----------------------------------------------------------------------------------------------------------------
-------
 MAX   *   1.    2.    2.    2.    2.    2.    2.    2.    1.    1.    1.    1.    2.    2.    2.    2.    2.    2.
1.   1.
 DEGR. *  140   160   190   200   210   240   260   230   260   280   310   330   310    20    20    60    50    50
90   110

 THE HIGHEST CONCENTRATION OF      2. ug/m**3 OCCURRED AT RECEPTOR REC18.
```

2013 Existing
Microscale Output Files
(Particulate Matter 2.5 (PM2.5))

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♀                       CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 95221                        PAGE  1

      JOB: Landmark Center                                    RUN: 2013EX

      DATE :  7/22/13
      TIME : 17:25:54

         The MODE flag has been set to P for calculating PM averages.

       SITE & METEOROLOGICAL VARIABLES
       -------------------------------
       VS =   0.0 CM/S       VD =   0.0 CM/S       Z0 = 175. CM
        U =  1.0 M/S         CLAS =   4  (D)     ATIM =  60. MINUTES     MIXH =  1000. M   AMB =  0.0 ug/m**3

       LINK VARIABLES
       --------------
         LINK DESCRIPTION     *         LINK COORDINATES (FT)          *    LENGTH  BRG TYPE   VPH    EF      H   W
V/C QUEUE
                              *   X1        Y1        X2        Y2     *     (FT)  (DEG)            (G/MI)  (FT) (FT)
   (VEH)

------------------------*--------------------------------------*--------------------------------------------------
----
      1. Fen/Brook WB TT     *   2508.3    3314.8    2585.8    3415.9 *     127.    37. AG      0. 100.0   1.0 20.0
0.69   6.5
      2. Fen/Brook EB TTTR   *   2469.9    3221.1    2414.8    3145.1 *      94.   216. AG      0. 100.0   1.0 30.0
0.51   4.8
      3. Fen/Brook SB L      *   2487.6    3319.0    2337.7    3461.3 *     207.   313. AG      0. 100.0   1.0 10.0
0.90  10.5
      4. Fen/Brook SB LTT    *   2476.2    3307.2    2381.9    3394.4 *     128.   313. AG      0. 100.0   1.0 20.0
0.68   6.5
      5. Fen/Brook SB R      *   2463.2    3293.4    2437.5    3318.3 *      36.   314. AG      0. 100.0   1.0 10.0
0.19   1.8
      6. Park/Brook WB TTR   *   2701.3    3561.7    2742.4    3616.0 *      68.    37. AG      0. 100.0   1.0 30.0
0.42   3.5
      7. Park/Brook NWB LLRRR*   2745.9    3510.4    2860.1    3554.5 *     122.    69. AG      0. 100.0   1.0 30.0
0.68   6.2
      8. Park/Brook NB LTTTR *   2715.4    3403.8    2776.1    3326.4 *      98.   142. AG      0. 100.0   1.0 40.0
0.64   5.0
      9. Park/Brook EB TT    *   2632.5    3431.9    2592.3    3379.9 *      66.   218. AG      0. 100.0   1.0 20.0
0.41   3.3
     10. Park/Brook EB RR    *   2648.5    3416.9    2601.3    3354.5 *      78.   217. AG      0. 100.0   1.0 20.0
0.46   4.0
     11. River/Park SB       *   2213.3    3801.8    2273.3    3924.6 *     137.    26. AG      0. 100.0   1.0 10.0
0.69   6.9
     12. River/Park SB East  *   2256.2    3801.2    2267.2    3860.3 *      60.    11. AG      0. 100.0   1.0 20.0
0.31   3.1
     13. River/Park WB North *   2272.8    3765.2    2352.4    3765.6 *      80.    90. AG      0. 100.0   1.0 30.0
0.40   4.0
     14. River/Park WB South *   2270.5    3707.9    2318.7    3728.6 *      52.    67. AG      0. 100.0   1.0 20.0
0.27   2.7
     15. Beacon/Park SB LTT  *   1962.9    4712.6    1921.1    4843.8 *     138.   342. AG      0. 100.0   1.0 20.0
0.79   7.0
     16. Beacon/Park WB LTT  *   2055.3    4691.7    5464.4    5948.8 *    3634.    70. AG      0. 100.0   1.0 20.0
3.24 184.6
     17. Beacon/Park NB LTT  *   2041.7    4597.4    2895.5    2109.9 *    2630.   161. AG      0. 100.0   1.0 20.0
5.00 133.6
     18. Beacon/Park EB LTTT *   1966.3    4608.1    1908.7    4582.2 *      63.   246. AG      0. 100.0   1.0 30.0
0.32   3.2
     19. Beacon/Park EB R    *   1975.6    4560.5    1951.0    4564.3 *      25.   279. AG      0. 100.0   1.0 20.0
0.13   1.3
     20. Beacon/Park SB R    *   1917.2    4688.3    1920.6    4693.8 *       6.    32. AG      0. 100.0   1.0 10.0
0.04   0.3
     21. Beacon/Park WB R    *   2019.8    4741.2    2027.2    4738.6 *       8.   109. AG      0. 100.0   1.0 10.0
0.10   0.4
     22. Beacon/Park NB R    *   2095.2    4627.5    2063.1    4542.0 *      91.   201. AG      0. 100.0   1.0 10.0
1.03   4.6
     23. Boyl/Kil SB LTR     *   3322.0    3753.8    3306.5    3801.8 *      50.   342. AG      0. 100.0   1.0 20.0
0.34   2.6
     24. Boyl/Kil WB LTTR    *   3373.3    3738.7    3445.4    3767.8 *      78.    68. AG      0. 100.0   1.0 20.0
0.46   3.9
     25. Boyl/Kil NB LTR     *   3365.2    3677.7    3376.7    3648.8 *      31.   158. AG      0. 100.0   1.0 10.0
0.21   1.6
     26. Boyl/Kil EB LTTR    *   3320.4    3695.3    3233.7    3663.7 *      92.   250. AG      0. 100.0   1.0 20.0
0.55   4.7
     27. Fenway/Brook South  *   2496.9    3278.9    2636.6    3081.1 *     242.   145. AG    775.   0.0   1.0 54.0
     28. Fenway/Brook West   *   2481.8    3262.9    2347.3    3075.6 *     231.   216. AG   1780.   0.0   1.0 78.0
     29. Fenway/Brook North  *   2491.0    3288.6    2373.1    3398.7 *     161.   313. AG   1485.   0.0   1.0 66.0
     30. Fenway/Brook East   *   2497.8    3264.6    2608.7    3389.7 *     167.    42. AG   2090.   0.0   1.0 90.0
     31. Park/Brook South    *   2691.9    3447.3    2838.3    3241.2 *     253.   145. AG   1030.   0.0   1.0 66.0
     32. Park/Brook West     *   2672.2    3490.7    2502.8    3273.8 *     275.   218. AG   2100.   0.0   1.0 90.0
     33. Park/Brook North    *   2656.7    3489.7    2496.1    3644.1 *     223.   314. AG   1675.   0.0   1.0 66.0
     34. Park/Brook East     *   2663.3    3490.8    2801.7    3675.1 *     230.    37. AG   1010.   0.0   1.0 66.0
     35. Park/Brook SE       *   2681.0    3470.4    2968.4    3574.9 *     306.    70. AG   2135.   0.0   1.0 78.0
     36. River/Park N        *   2254.7    3768.2    2266.4    3911.9 *     144.     5. AG    440.   0.0   1.0 42.0
     37. River/Park SE       *   2239.1    3675.4    2343.7    3750.1 *     129.    54. AG    260.   0.0   1.0 42.0
     38. River/Park NE       *   2237.1    3772.1    2377.4    3769.2 *     140.    91. AG    750.   0.0   1.0 54.0
     39. River/Park S        *   2231.1    3745.1    2210.1    3564.3 *     182.   187. AG    700.   0.0   1.0 54.0
     40. River/Park SW       *   2211.1    3765.1    2058.1    3624.4 *     208.   227. AG   1250.   0.0   1.0 54.0
     41. River/Park NW       *   2194.0    3770.2    2250.7    3886.0 *     129.    26. AG    500.   0.0   1.0 30.0
     42. Beacon/Park N       *   1996.0    4667.5    1894.2    4948.4 *     299.   340. AG   1105.   0.0   1.0 78.0
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EX_PM25.out

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     43. Beacon/Park NR      *   1908.0    4673.8    1956.1    4744.7 *      86.    34. AG     15.   0.0   1.0 30.0
     44. Beacon/Park E       *   1997.8    4657.7    2274.4    4755.8 *     293.    70. AG   1470.   0.0   1.0 78.0
♀                                                                                                              PAGE  2
      JOB: Landmark Center                                    RUN: 2013EX

      DATE :  7/22/13
      TIME : 17:25:54

       LINK VARIABLES
       --------------
         LINK DESCRIPTION     *         LINK COORDINATES (FT)          *    LENGTH  BRG TYPE   VPH    EF      H   W
V/C QUEUE
                              *   X1        Y1        X2        Y2     *     (FT)  (DEG)            (G/MI)  (FT) (FT)
   (VEH)

------------------------*--------------------------------------*--------------------------------------------------
----
     45. Beacon/Park ER      *   1991.4    4750.8    2112.1    4710.6 *     127.   108. AG     15.   0.0   1.0 30.0
     46. Beacon/Park S       *   2009.1    4646.4    2098.7    4401.0 *     261.   160. AG   1610.   0.0   1.0 78.0
     47. Beacon/Park SR      *   2102.5    4662.0    2076.2    4571.2 *      95.   196. AG     60.   0.0   1.0 42.0
     48. Beacon/Park W EB    *   1995.6    4607.6    1704.2    4488.4 *     315.   248. AG    495.   0.0   1.0 66.0
     49. Beacon/Park W EBR   *   2009.1    4551.2    1907.4    4575.2 *     104.   283. AG    130.   0.0   1.0 38.0
     50. Beacon/Park W WB    *   1989.3    4675.4    1658.3    4556.1 *     352.   250. AG    825.   0.0   1.0 78.0
     51. Boyl/Kil N          *   3344.5    3717.0    3289.1    3876.3 *     169.   341. AG    320.   0.0   1.0 54.0
     52. Boyl/Kil E          *   3348.9    3715.0    3516.2    3780.7 *     180.    69. AG   2250.   0.0   1.0 78.0
     53. Boyl/Kil S          *   3349.9    3702.1    3425.5    3502.1 *     214.   159. AG    205.   0.0   1.0 54.0
     54. Boyl/Kil W          *   3346.0    3717.8    3141.9    3641.3 *     218.   249. AG   2195.   0.0   1.0 78.0
♀                                                                                                              PAGE  3
      JOB: Landmark Center                                    RUN: 2013EX

      DATE :  7/22/13
      TIME : 17:25:54

       1. Fen/Brook WB TT     *     100       59        3.0        790       1600       0.05       1        3
       2. Fen/Brook EB TTTR   *     100       59        3.0        875       1600       0.05       1        3
       3. Fen/Brook SB L      *     100       57        3.0        545       1600       0.05       1        3
       4. Fen/Brook SB LTT    *     100       57        3.0        825       1600       0.05       1        3
       5. Fen/Brook SB R      *     100       57        3.0        115       1600       0.05       1        3
       6. Park/Brook WB TTR   *     100       68        3.0        550       1600       0.05       1        3
       7. Park/Brook NWB LLRRR*     100       62        3.0       1085       1600       0.05       1        3
       8. Park/Brook NB LTTTR *     100       70        3.0       1030       1600       0.05       1        3
       9. Park/Brook EB TT    *     100       68        3.0        355       1600       0.05       1        3
      10. Park/Brook EB RR    *     100       30        3.0        955       1600       0.05       1        3
      11. River/Park SB       *     100       50        3.0        500       1600       0.05       1        3
      12. River/Park SB East  *     100       50        3.0        440       1600       0.05       1        3
      13. River/Park WB North *     100       50        3.0        875       1600       0.05       1        3
      14. River/Park WB South *     100       50        3.0        385       1600       0.05       1        3
      15. Beacon/Park SB LTT  *     110       79        3.0        595       1600       0.05       1        3
      16. Beacon/Park WB LTT  *     110       95        3.0        940       1600       0.05       1        3
      17. Beacon/Park NB LTT  *     110      101        3.0        580       1600       0.05       1        3
      18. Beacon/Park EB LTTT *     110       70        3.0        495       1600       0.05       1        3
      19. Beacon/Park EB R    *     110       70        3.0        130       1600       0.05       1        3
      20. Beacon/Park SB R    *     110       79        3.0         15       1600       0.05       1        3
      21. Beacon/Park WB R    *     110       95        3.0         15       1600       0.05       1        3
      22. Beacon/Park NB R    *     110      101        3.0         60       1600       0.05       1        3
      23. Boyl/Kil SB LTR     *     100       71        3.0        260       1600       0.05       1        3
      24. Boyl/Kil WB LTTR    *     100       29        3.0        980       1600       0.05       1        3
      25. Boyl/Kil NB LTR     *     100       71        3.0         80       1600       0.05       1        3
      26. Boyl/Kil EB LTTR    *     100       29        3.0       1165       1600       0.05       1        3

       RECEPTOR LOCATIONS
       ------------------
                              *        COORDINATES (FT)        *
         RECEPTOR             *     X          Y          Z    *
     -------------------------*--------------------------------*
      1. Fen/Brook NE1        *     2376.5     3444.0      6.0  *
      2. Fen/Brook NE2        *     2429.7     3391.0      6.0  *
      3. Fen/Brook NE3        *     2484.5     3339.8      6.0  *
      4. Fen/Brook NE4        *     2530.7     3398.9      6.0  *
      5. Fen/Brook NE5        *     2576.8     3458.0      6.0  *
      6. Fen/Brook SE1        *     2660.2     3364.9      6.0  *
      7. Fen/Brook SE2        *     2609.6     3308.8      6.0  *
      8. Fen/Brook SE3        *     2560.7     3252.7      6.0  *
      9. Fen/Brook SE4        *     2604.0     3191.4      6.0  *
     10. Fen/Brook SE5        *     2647.3     3130.2      6.0  *
     11. Fen/Brook SW1        *     2588.7     3084.8      6.0  *
     12. Fen/Brook SW2        *     2545.5     3146.0      6.0  *
     13. Fen/Brook SW3        *     2502.2     3207.3      6.0  *
     14. Fen/Brook SW4        *     2458.5     3146.4      6.0  *
     15. Fen/Brook SW5        *     2414.7     3085.4      6.0  *
     16. Fen/Brook NW1        *     2353.5     3168.3      6.0  *
     17. Fen/Brook NW2        *     2397.3     3229.2      6.0  *
     18. Fen/Brook NW3        *     2441.0     3290.1      6.0  *
     19. Fen/Brook NW4        *     2386.2     3341.3      6.0  *
     20. Fen/Brook NW5        *     2331.4     3392.5      6.0  *
     21. Park/Brook NE1       *     2546.7     3655.1      6.0  *
     22. Park/Brook NE2       *     2600.8     3603.1      6.0  *
     23. Park/Brook NE3       *     2654.8     3551.1      6.0  *
     24. Park/Brook NE4       *     2699.9     3611.1      6.0  *
     25. Park/Brook NE5       *     2744.9     3671.1      6.0  *
♀                                                                                                              PAGE  4
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JOB: Landmark Center RUN: 2013EX

DATE : 7/22/13
TIME : 17:25:54

RECEPTOR LOCATIONS

RECEPTOR	X (FT)	Y (FT)	Z (FT)
26. Park/Brook SE1	2889.0	3493.9	6.0
27. Park/Brook SE2	2818.1	3468.1	6.0
28. Park/Brook SE3	2747.7	3442.5	6.0
29. Park/Brook SE4	2791.4	3381.5	6.0
30. Park/Brook SE5	2834.8	3320.3	6.0
31. Park/Brook SW1	2758.8	3278.8	6.0
32. Park/Brook SW2	2715.4	3340.0	6.0
33. Park/Brook SW3	2672.0	3401.1	6.0
34. Park/Brook SW4	2625.8	3342.0	6.0
35. Park/Brook SW5	2579.6	3282.9	6.0
36. Park/Brook NW1	2506.3	3367.7	6.0
37. Park/Brook NW2	2552.4	3426.8	6.0
38. Park/Brook NW3	2598.6	3485.9	6.0
39. Park/Brook NW4	2544.6	3537.9	6.0
40. Park/Brook NW5	2490.5	3589.9	6.0
41. Park/Brook E1	2853.5	3672.4	6.0
42. Park/Brook E2	2811.9	3617.1	6.0
43. Park/Brook E3	2763.4	3552.5	6.0
44. Park/Brook E4	2838.4	3579.8	6.0
45. Park/Brook E5	2904.4	3603.8	6.0

PAGE 5

JOB: Landmark Center RUN: 2013EX

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-360.

WIND ANGLE (DEGR) * CONCENTRATION (ug/m**3)

(DEGR)	REC1	REC2	REC3	REC4	REC5	REC6	REC7	REC8	REC9	REC10	REC11	REC12	REC13	REC14	REC15	REC16	REC17	REC18	REC19	REC20
0.	1.	1.	1.	0.	1.	2.	2.	3.	2.	1.	2.	3.	4.	3.	2.	0.	1.	2.	2.	0.
10.	1.	1.	1.	0.	1.	2.	2.	3.	1.	1.	1.	3.	4.	3.	3.	1.	1.	2.	2.	0.
20.	1.	1.	1.	1.	1.	2.	2.	3.	1.	1.	1.	2.	4.	3.	3.	1.	2.	2.	2.	0.
30.	1.	1.	1.	1.	1.	2.	2.	3.	1.	1.	1.	2.	4.	3.	3.	1.	2.	3.	2.	1.
40.	1.	1.	2.	1.	2.	2.	1.	2.	1.	0.	1.	1.	3.	2.	2.	2.	2.	3.	2.	1.
50.	1.	1.	3.	2.	2.	2.	1.	1.	1.	0.	1.	1.	3.	2.	1.	3.	3.	4.	2.	1.
60.	1.	2.	3.	2.	2.	2.	1.	1.	0.	0.	0.	1.	2.	1.	1.	3.	3.	5.	3.	1.
70.	1.	2.	4.	3.	3.	1.	1.	1.	0.	0.	0.	1.	1.	1.	0.	2.	3.	4.	3.	2.
80.	1.	2.	3.	3.	2.	1.	1.	0.	0.	0.	0.	0.	1.	1.	0.	2.	2.	4.	3.	2.
90.	2.	2.	3.	3.	2.	1.	0.	0.	0.	0.	0.	1.	1.	0.	0.	2.	2.	3.	3.	2.
100.	2.	2.	3.	3.	2.	1.	0.	0.	0.	0.	0.	1.	1.	0.	0.	2.	2.	3.	3.	2.
110.	2.	2.	3.	3.	2.	1.	0.	0.	0.	0.	0.	1.	1.	0.	0.	1.	2.	2.	3.	3.
120.	2.	2.	3.	3.	2.	1.	0.	0.	0.	0.	0.	1.	2.	0.	0.	1.	2.	2.	2.	2.
130.	2.	3.	3.	2.	2.	0.	0.	0.	0.	0.	0.	1.	2.	0.	0.	1.	2.	2.	2.	2.
140.	2.	3.	3.	2.	2.	0.	0.	0.	0.	0.	0.	1.	2.	0.	0.	1.	2.	2.	2.	2.
150.	3.	4.	4.	2.	2.	0.	0.	0.	0.	0.	0.	2.	2.	0.	0.	1.	2.	2.	1.	1.
160.	2.	3.	4.	3.	2.	0.	0.	1.	1.	0.	1.	2.	1.	0.	0.	1.	2.	2.	1.	1.
170.	2.	3.	4.	3.	2.	0.	0.	1.	1.	0.	1.	2.	1.	0.	0.	1.	1.	2.	1.	0.
180.	1.	2.	4.	3.	3.	0.	1.	1.	1.	1.	1.	2.	0.	0.	0.	1.	1.	1.	1.	0.
190.	1.	2.	4.	3.	3.	0.	1.	1.	1.	1.	1.	2.	0.	0.	0.	1.	1.	2.	0.	0.
200.	0.	2.	4.	3.	3.	0.	1.	1.	1.	1.	1.	1.	0.	0.	0.	0.	1.	1.	0.	0.
210.	0.	2.	4.	3.	2.	1.	1.	1.	1.	1.	1.	1.	0.	0.	0.	0.	1.	1.	0.	0.
220.	0.	2.	3.	2.	2.	1.	1.	1.	1.	1.	1.	1.	1.	0.	0.	0.	0.	0.	0.	0.
230.	0.	2.	3.	1.	1.	2.	2.	2.	1.	1.	1.	1.	1.	1.	0.	0.	0.	0.	0.	0.
240.	0.	2.	2.	1.	1.	3.	2.	2.	1.	1.	1.	1.	2.	1.	0.	0.	0.	0.	0.	0.
250.	0.	1.	2.	1.	1.	3.	2.	2.	1.	1.	1.	1.	2.	1.	0.	0.	0.	0.	0.	0.
260.	0.	1.	2.	1.	0.	3.	3.	2.	1.	1.	1.	1.	2.	1.	1.	0.	0.	0.	0.	0.
270.	0.	1.	3.	1.	0.	3.	3.	2.	2.	1.	1.	2.	2.	1.	1.	0.	0.	0.	0.	0.
280.	0.	1.	3.	0.	0.	3.	3.	2.	1.	1.	1.	2.	1.	1.	1.	0.	0.	0.	0.	0.
290.	0.	1.	3.	0.	0.	2.	3.	3.	2.	1.	1.	2.	1.	1.	1.	0.	0.	0.	0.	0.
300.	0.	1.	3.	1.	0.	2.	3.	4.	2.	2.	1.	2.	1.	2.	1.	0.	0.	0.	0.	0.
310.	0.	1.	3.	1.	0.	2.	3.	4.	2.	2.	2.	2.	1.	2.	1.	0.	0.	1.	0.	0.
320.	0.	1.	2.	1.	0.	2.	3.	4.	2.	2.	2.	3.	2.	2.	1.	0.	0.	1.	1.	0.
330.	0.	1.	2.	0.	1.	2.	3.	3.	2.	2.	2.	4.	2.	2.	1.	0.	0.	2.	1.	0.
340.	0.	1.	2.	0.	1.	2.	3.	3.	2.	1.	2.	4.	3.	2.	1.	0.	0.	2.	1.	0.
350.	1.	1.	1.	0.	1.	2.	3.	3.	2.	1.	2.	4.	4.	3.	2.	0.	1.	2.	1.	0.
360.	1.	1.	1.	0.	1.	2.	2.	3.	2.	1.	2.	3.	4.	3.	2.	0.	1.	2.	2.	0.
MAX	3.	4.	4.	3.	3.	3.	3.	4.	2.	2.	2.	4.	4.	3.	3.	3.	3.	5.	3.	3.
DEGR.	150	150	180	180	200	260	270	310	320	310	330	340	20	20	20	60	50	60	70	110

EX_PM25.out

PAGE 6

JOB: Landmark Center RUN: 2013EX

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-360.

WIND ANGLE (DEGR) * CONCENTRATION (ug/m**3)

(DEGR)	REC21	REC22	REC23	REC24	REC25	REC26	REC27	REC28	REC29	REC30	REC31	REC32	REC33	REC34	REC35	REC36	REC37	REC38	REC39	REC40
0.	0.	0.	0.	0.	0.	1.	2.	2.	1.	1.	2.	2.	2.	3.	3.	0.	1.	1.	1.	1.
10.	0.	0.	0.	0.	0.	1.	2.	2.	1.	0.	2.	2.	2.	2.	3.	0.	1.	1.	1.	1.
20.	0.	0.	0.	0.	0.	1.	2.	2.	1.	0.	2.	2.	2.	2.	3.	0.	1.	1.	1.	1.
30.	0.	0.	0.	0.	0.	1.	2.	2.	1.	0.	1.	2.	2.	2.	3.	1.	1.	1.	1.	1.
40.	0.	0.	1.	0.	0.	1.	1.	2.	1.	0.	1.	2.	2.	2.	2.	2.	1.	2.	1.	1.
50.	0.	0.	1.	0.	0.	1.	1.	2.	1.	0.	1.	2.	2.	2.	2.	2.	2.	2.	1.	1.
60.	0.	0.	1.	1.	0.	1.	1.	2.	0.	0.	1.	2.	2.	1.	1.	3.	2.	2.	1.	1.
70.	0.	0.	2.	1.	0.	1.	1.	1.	0.	0.	0.	2.	1.	1.	1.	4.	2.	3.	2.	1.
80.	0.	1.	2.	1.	1.	0.	0.	0.	0.	0.	0.	2.	1.	1.	1.	3.	2.	3.	2.	2.
90.	0.	1.	2.	2.	1.	0.	0.	0.	0.	0.	1.	1.	1.	1.	0.	3.	2.	2.	2.	2.
100.	1.	1.	2.	2.	1.	0.	0.	0.	0.	0.	1.	1.	1.	0.	0.	3.	2.	2.	2.	2.
110.	1.	1.	2.	2.	1.	0.	0.	0.	0.	0.	0.	1.	2.	0.	0.	2.	2.	2.	2.	2.
120.	1.	1.	2.	2.	1.	0.	0.	0.	0.	0.	0.	1.	2.	0.	0.	3.	2.	2.	2.	2.
130.	2.	1.	2.	2.	1.	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.	2.	2.	2.	2.	2.
140.	2.	2.	2.	2.	1.	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.	2.	2.	2.		

```
1.   1.
 150.  *    2.    2.    2.    2.    1.    0.    0.    1.    0.    0.    0.    0.    0.    0.    0.    3.    2.    2.
1.   1.
 160.  *    2.    2.    2.    2.    2.    0.    0.    1.    0.    0.    0.    0.    0.    0.    0.    3.    3.    2.
1.   1.
 170.  *    2.    2.    2.    2.    2.    0.    0.    2.    1.    0.    0.    0.    0.    0.    1.    3.    3.    2.
2.   2.
 180.  *    2.    2.    3.    2.    2.    0.    0.    2.    1.    1.    0.    0.    0.    1.    1.    3.    3.    2.
2.   1.
 190.  *    2.    2.    3.    2.    2.    0.    1.    2.    1.    1.    0.    0.    0.    1.    1.    3.    3.    3.
2.   1.
 200.  *    2.    2.    3.    2.    2.    0.    1.    2.    1.    1.    0.    0.    0.    1.    1.    3.    3.    3.
1.   1.
 210.  *    1.    2.    3.    2.    2.    0.    1.    2.    1.    1.    0.    0.    1.    1.    1.    3.    3.    2.
1.   0.
 220.  *    1.    2.    2.    2.    1.    1.    1.    2.    2.    1.    0.    0.    2.    2.    2.    2.    2.    2.
1.   0.
 230.  *    1.    1.    2.    1.    1.    1.    2.    2.    2.    1.    0.    1.    3.    3.    2.    2.    1.    1.
0.   0.
 240.  *    1.    1.    1.    1.    0.    2.    2.    3.    2.    1.    0.    1.    3.    3.    2.    1.    1.    1.
0.   0.
 250.  *    1.    1.    1.    1.    0.    2.    2.    3.    3.    1.    1.    1.    3.    3.    3.    1.    1.    0.
0.   0.
 260.  *    1.    1.    1.    1.    0.    2.    2.    2.    3.    2.    1.    2.    3.    3.    3.    2.    1.    0.
0.   0.
 270.  *    1.    1.    1.    1.    0.    2.    2.    2.    3.    2.    1.    2.    3.    3.    3.    1.    0.    0.
0.   0.
 280.  *    1.    1.    2.    0.    0.    2.    2.    2.    2.    2.    2.    2.    2.    3.    3.    1.    0.    0.
0.   0.
 290.  *    1.    1.    1.    0.    0.    2.    2.    2.    2.    2.    1.    2.    2.    3.    3.    1.    0.    0.
0.   0.
 300.  *    0.    1.    1.    0.    0.    2.    2.    3.    2.    2.    1.    2.    2.    3.    3.    1.    0.    0.
1.   1.
 310.  *    0.    1.    1.    0.    0.    2.    2.    2.    2.    2.    1.    1.    2.    3.    4.    1.    0.    1.
1.   1.
 320.  *    0.    0.    0.    0.    0.    2.    2.    2.    2.    2.    1.    1.    2.    3.    3.    1.    0.    1.
1.   1.
 330.  *    0.    0.    0.    0.    0.    2.    2.    2.    1.    1.    2.    2.    2.    3.    3.    1.    0.    1.
1.   1.
 340.  *    0.    0.    0.    0.    0.    2.    2.    2.    1.    1.    2.    2.    2.    3.    3.    0.    0.    1.
1.   1.
 350.  *    0.    0.    0.    0.    0.    1.    2.    2.    1.    1.    2.    2.    2.    3.    3.    0.    0.    1.
1.   0.
 360.  *    0.    0.    0.    0.    0.    1.    2.    2.    1.    1.    2.    2.    2.    3.    3.    0.    1.    1.
1.   1.

------*------------------------------------------------------------------------------------------------------------------
-------
 MAX   *    2.    2.    3.    2.    2.    2.    2.    3.    3.    2.    3.    2.    3.    3.    4.    4.    3.    3.
2.   2.
 DEGR. *  180   190   200   170   200   280   260   240   260   290   350     0   240   260   310    70   190    80
90   110
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♀   PAGE 7

JOB: Landmark Center   RUN: 2013EX

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      MODEL RESULTS
      -------------

      REMARKS : In search of the angle corresponding to
                the maximum concentration, only the first
                angle, of the angles with same maximum
                concentrations, is indicated as maximum.

 WIND ANGLE RANGE:   0.-360.

 WIND  * CONCENTRATION
 ANGLE *      (ug/m**3)
 (DEGR)* REC41 REC42 REC43 REC44 REC45
 ------*------------------------------
   0.  *    0.    0.    1.    0.    0.
  10.  *    0.    0.    1.    0.    0.
  20.  *    0.    0.    1.    0.    0.
  30.  *    0.    0.    0.    0.    0.
  40.  *    0.    0.    0.    0.    0.
  50.  *    0.    0.    0.    0.    0.
  60.  *    0.    0.    0.    0.    0.
  70.  *    0.    0.    1.    1.    0.
  80.  *    0.    0.    2.    1.    1.
  90.  *    0.    0.    2.    1.    1.
 100.  *    0.    0.    2.    1.    1.
 110.  *    0.    1.    2.    1.    1.
 120.  *    0.    1.    2.    1.    1.
 130.  *    0.    1.    2.    1.    1.
 140.  *    0.    1.    2.    1.    1.
 150.  *    1.    1.    2.    2.    1.
 160.  *    1.    1.    2.    2.    1.
 170.  *    1.    1.    2.    2.    1.
 180.  *    1.    2.    2.    2.    1.
 190.  *    1.    2.    2.    2.    1.
 200.  *    1.    2.    2.    2.    2.
```



```
 210.  *    2.    2.    3.    3.    2.
 220.  *    2.    2.    3.    3.    2.
 230.  *    2.    2.    3.    3.    3.
 240.  *    2.    2.    3.    3.    3.
 250.  *    1.    2.    2.    2.    2.
 260.  *    1.    1.    1.    1.    1.
 270.  *    1.    1.    2.    1.    1.
 280.  *    0.    1.    1.    1.    1.
 290.  *    0.    1.    1.    1.    0.
 300.  *    0.    1.    1.    1.    0.
 310.  *    0.    1.    1.    0.    0.
 320.  *    0.    1.    1.    0.    0.
 330.  *    0.    0.    1.    0.    0.
 340.  *    0.    0.    1.    0.    0.
 350.  *    0.    0.    1.    0.    0.
 360.  *    0.    0.    1.    0.    0.
 ------*------------------------------
 MAX   *    2.    2.    3.    3.    3.
 DEGR. *  220   220   220   230   230

 THE HIGHEST CONCENTRATION OF      5. ug/m**3 OCCURRED AT RECEPTOR REC18.
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♀                    CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 95221                    PAGE  1

      JOB: Landmark Center                                     RUN: 2013EX

      DATE :  7/22/13
      TIME : 17:28: 1

         The MODE flag has been set to P for calculating PM averages.

       SITE & METEOROLOGICAL VARIABLES
       -------------------------------
       VS =   0.0 CM/S      VD =   0.0 CM/S      Z0 = 175. CM
        U =  1.0 M/S        CLAS =   4  (D)     ATIM =  60. MINUTES     MIXH =  1000. M   AMB =  0.0 ug/m**3

       LINK VARIABLES
       --------------
         LINK DESCRIPTION     *         LINK COORDINATES (FT)          *    LENGTH  BRG TYPE   VPH    EF      H   W
V/C QUEUE
                              *   X1       Y1       X2       Y2      *     (FT)  (DEG)            (G/MI)  (FT) (FT)
   (VEH)
------------------------*--------------------------------------*-------------------------------------------------
----
       1. Fen/Brook WB TT     *   2508.3    3314.8    2585.8    3415.9 *     127.    37. AG      0. 100.0   1.0 20.0
0.69   6.5
       2. Fen/Brook EB TTTR   *   2469.9    3221.1    2414.8    3145.1 *      94.   216. AG      0. 100.0   1.0 30.0
0.51   4.8
       3. Fen/Brook SB L      *   2487.6    3319.0    2337.7    3461.3 *     207.   313. AG      0. 100.0   1.0 10.0
0.90  10.5
       4. Fen/Brook SB LTT    *   2476.2    3307.2    2381.9    3394.4 *     128.   313. AG      0. 100.0   1.0 20.0
0.68   6.5
       5. Fen/Brook SB R      *   2463.2    3293.4    2437.5    3318.3 *      36.   314. AG      0. 100.0   1.0 10.0
0.19   1.8
       6. Park/Brook WB TTR   *   2701.3    3561.7    2742.4    3616.0 *      68.    37. AG      0. 100.0   1.0 30.0
0.42   3.5
       7. Park/Brook NWB LLRRR*   2745.9    3510.4    2860.1    3554.5 *     122.    69. AG      0. 100.0   1.0 30.0
0.68   6.2
       8. Park/Brook NB LTTTR *   2715.4    3403.8    2776.1    3326.4 *      98.   142. AG      0. 100.0   1.0 40.0
0.64   5.0
       9. Park/Brook EB TT    *   2632.5    3431.9    2592.3    3379.9 *      66.   218. AG      0. 100.0   1.0 20.0
0.41   3.3
      10. Park/Brook EB RR    *   2648.5    3416.9    2601.3    3354.5 *      78.   217. AG      0. 100.0   1.0 20.0
0.46   4.0
      11. River/Park SB       *   2213.3    3801.8    2273.3    3924.6 *     137.    26. AG      0. 100.0   1.0 10.0
0.69   6.9
      12. River/Park SB East  *   2256.2    3801.2    2267.2    3860.3 *      60.    11. AG      0. 100.0   1.0 20.0
0.31   3.1
      13. River/Park WB North *   2272.8    3765.2    2352.4    3765.6 *      80.    90. AG      0. 100.0   1.0 30.0
0.40   4.0
      14. River/Park WB South *   2270.5    3707.9    2318.7    3728.6 *      52.    67. AG      0. 100.0   1.0 20.0
0.27   2.7
      15. Beacon/Park SB LTT  *   1962.9    4712.6    1921.1    4843.8 *     138.   342. AG      0. 100.0   1.0 20.0
0.79   7.0
      16. Beacon/Park WB LTT  *   2055.3    4691.7    5464.4    5948.8 *    3634.    70. AG      0. 100.0   1.0 20.0
3.24 184.6
      17. Beacon/Park NB LTT  *   2041.7    4597.4    2895.5    2109.9 *    2630.   161. AG      0. 100.0   1.0 20.0
5.00 133.6
      18. Beacon/Park EB LTTT *   1966.3    4608.1    1908.7    4582.2 *      63.   246. AG      0. 100.0   1.0 30.0
0.32   3.2
      19. Beacon/Park EB R    *   1975.6    4560.5    1951.0    4564.3 *      25.   279. AG      0. 100.0   1.0 20.0
0.13   1.3
      20. Beacon/Park SB R    *   1917.2    4688.3    1920.6    4693.8 *       6.    32. AG      0. 100.0   1.0 10.0
0.04   0.3
      21. Beacon/Park WB R    *   2019.8    4741.2    2027.2    4738.6 *       8.   109. AG      0. 100.0   1.0 10.0
0.10   0.4
      22. Beacon/Park NB R    *   2095.2    4627.5    2063.1    4542.0 *      91.   201. AG      0. 100.0   1.0 10.0
1.03   4.6
      23. Boyl/Kil SB LTR     *   3322.0    3753.8    3306.5    3801.8 *      50.   342. AG      0. 100.0   1.0 20.0
0.34   2.6
      24. Boyl/Kil WB LTTR    *   3373.3    3738.7    3445.4    3767.8 *      78.    68. AG      0. 100.0   1.0 20.0
0.46   3.9
      25. Boyl/Kil NB LTR     *   3365.2    3677.7    3376.7    3648.8 *      31.   158. AG      0. 100.0   1.0 10.0
0.21   1.6
      26. Boyl/Kil EB LTTR    *   3320.4    3695.3    3233.7    3663.7 *      92.   250. AG      0. 100.0   1.0 20.0
0.55   4.7
      27. Fenway/Brook South  *   2496.9    3278.9    2636.6    3081.1 *     242.   145. AG    775.   0.0   1.0 54.0
      28. Fenway/Brook West   *   2481.8    3262.9    2347.3    3075.6 *     231.   216. AG   1780.   0.0   1.0 78.0
      29. Fenway/Brook North  *   2491.0    3288.6    2373.1    3398.7 *     161.   313. AG   1485.   0.0   1.0 66.0
      30. Fenway/Brook East   *   2497.8    3264.6    2608.7    3389.7 *     167.    42. AG   2090.   0.0   1.0 90.0
      31. Park/Brook South    *   2691.9    3447.3    2838.3    3241.2 *     253.   145. AG   1030.   0.0   1.0 66.0
      32. Park/Brook West     *   2672.2    3490.7    2502.8    3273.8 *     275.   218. AG   2100.   0.0   1.0 90.0
      33. Park/Brook North    *   2656.7    3489.7    2496.1    3644.1 *     223.   314. AG   1675.   0.0   1.0 66.0
      34. Park/Brook East     *   2663.3    3490.8    2801.7    3675.1 *     230.    37. AG   1010.   0.0   1.0 66.0
      35. Park/Brook SE       *   2681.0    3470.4    2968.4    3574.9 *     306.    70. AG   2135.   0.0   1.0 78.0
      36. River/Park N        *   2254.7    3768.2    2266.4    3911.9 *     144.     5. AG    440.   0.0   1.0 42.0
      37. River/Park SE       *   2239.1    3675.4    2343.7    3750.1 *     129.    54. AG    260.   0.0   1.0 42.0
      38. River/Park NE       *   2237.1    3772.1    2377.4    3769.2 *     140.    91. AG    750.   0.0   1.0 54.0
      39. River/Park S        *   2231.1    3745.1    2210.1    3564.3 *     182.   187. AG    700.   0.0   1.0 54.0
      40. River/Park SW       *   2211.1    3765.1    2058.1    3624.4 *     208.   227. AG   1250.   0.0   1.0 54.0
      41. River/Park NW       *   2194.0    3770.2    2250.7    3886.0 *     129.    26. AG    500.   0.0   1.0 30.0
      42. Beacon/Park N       *   1996.0    4667.5    1894.2    4948.4 *     299.   340. AG   1105.   0.0   1.0 78.0
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EX_PM25_2.out

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      43. Beacon/Park NR      *   1908.0    4673.8    1956.1    4744.7 *      86.    34. AG     15.   0.0   1.0 30.0
      44. Beacon/Park E       *   1997.8    4657.7    2274.4    4755.8 *     293.    70. AG   1470.   0.0   1.0 78.0
♀                                                                                                          PAGE  2
      JOB: Landmark Center                                     RUN: 2013EX

      DATE :  7/22/13
      TIME : 17:28: 1

       LINK VARIABLES
       --------------
         LINK DESCRIPTION     *         LINK COORDINATES (FT)          *    LENGTH  BRG TYPE   VPH    EF      H   W
V/C QUEUE
                              *   X1       Y1       X2       Y2      *     (FT)  (DEG)            (G/MI)  (FT) (FT)
   (VEH)
------------------------*--------------------------------------*-------------------------------------------------
----
      45. Beacon/Park ER      *   1991.4    4750.8    2112.1    4710.6 *     127.   108. AG     15.   0.0   1.0 30.0
      46. Beacon/Park S       *   2009.1    4646.4    2098.7    4401.0 *     261.   160. AG   1610.   0.0   1.0 78.0
      47. Beacon/Park SR      *   2102.5    4662.0    2076.2    4571.2 *      95.   196. AG     60.   0.0   1.0 42.0
      48. Beacon/Park W EB    *   1995.6    4607.6    1704.2    4488.4 *     315.   248. AG    495.   0.0   1.0 66.0
      49. Beacon/Park W EBR   *   2009.1    4551.2    1907.4    4575.2 *     104.   283. AG    130.   0.0   1.0 38.0
      50. Beacon/Park W WB    *   1989.3    4675.4    1658.3    4556.1 *     352.   250. AG    825.   0.0   1.0 78.0
      51. Boyl/Kil N          *   3344.5    3717.0    3289.1    3876.3 *     169.   341. AG    320.   0.0   1.0 54.0
      52. Boyl/Kil E          *   3348.9    3715.0    3516.2    3780.7 *     180.    69. AG   2250.   0.0   1.0 78.0
      53. Boyl/Kil S          *   3349.9    3702.1    3425.5    3502.1 *     214.   159. AG    205.   0.0   1.0 54.0
      54. Boyl/Kil W          *   3346.0    3717.8    3141.9    3641.3 *     218.   249. AG   2195.   0.0   1.0 78.0
♀                                                                                                          PAGE  3
      JOB: Landmark Center                                     RUN: 2013EX

      DATE :  7/22/13
      TIME : 17:28: 1

       1. Fen/Brook WB TT     *    100       59       3.0       790       1600       0.05       1        3
       2. Fen/Brook EB TTTR   *    100       59       3.0       875       1600       0.05       1        3
       3. Fen/Brook SB L      *    100       57       3.0       545       1600       0.05       1        3
       4. Fen/Brook SB LTT    *    100       57       3.0       825       1600       0.05       1        3
       5. Fen/Brook SB R      *    100       57       3.0       115       1600       0.05       1        3
       6. Park/Brook WB TTR   *    100       68       3.0       550       1600       0.05       1        3
       7. Park/Brook NWB LLRRR*    100       62       3.0      1085       1600       0.05       1        3
       8. Park/Brook NB LTTTR *    100       70       3.0      1030       1600       0.05       1        3
       9. Park/Brook EB TT    *    100       68       3.0       355       1600       0.05       1        3
      10. Park/Brook EB RR    *    100       30       3.0       955       1600       0.05       1        3
      11. River/Park SB       *    100       50       3.0       500       1600       0.05       1        3
      12. River/Park SB East  *    100       50       3.0       440       1600       0.05       1        3
      13. River/Park WB North *    100       50       3.0       875       1600       0.05       1        3
      14. River/Park WB South *    100       50       3.0       385       1600       0.05       1        3
      15. Beacon/Park SB LTT  *    110       79       3.0       595       1600       0.05       1        3
      16. Beacon/Park WB LTT  *    110       95       3.0       940       1600       0.05       1        3
      17. Beacon/Park NB LTT  *    110      101       3.0       580       1600       0.05       1        3
      18. Beacon/Park EB LTTT *    110       70       3.0       495       1600       0.05       1        3
      19. Beacon/Park EB R    *    110       70       3.0       130       1600       0.05       1        3
      20. Beacon/Park SB R    *    110       79       3.0        15       1600       0.05       1        3
      21. Beacon/Park WB R    *    110       95       3.0        15       1600       0.05       1        3
      22. Beacon/Park NB R    *    110      101       3.0        60       1600       0.05       1        3
      23. Boyl/Kil SB LTR     *    100       71       3.0       260       1600       0.05       1        3
      24. Boyl/Kil WB LTTR    *    100       29       3.0       980       1600       0.05       1        3
      25. Boyl/Kil NB LTR     *    100       71       3.0        80       1600       0.05       1        3
      26. Boyl/Kil EB LTTR    *    100       29       3.0      1165       1600       0.05       1        3

       RECEPTOR LOCATIONS
       ------------------
                              *          COORDINATES (FT)           *
         RECEPTOR             *      X          Y          Z        *
     -------------------------*-------------------------------------*
      1. Beacon/Park NE1      *     1956.0     4921.7       6.0     *
      2. Beacon/Park NE2      *     1981.6     4851.2       6.0     *
      3. Beacon/Park NE3      *     2059.7     4754.4       6.0     *
      4. Beacon/Park NE4      *     2163.5     4768.4       6.0     *
      5. Beacon/Park NE5      *     2234.2     4793.5       6.0     *
      6. Beacon/Park SE1      *     2273.6     4703.5       6.0     *
      7. Beacon/Park SE2      *     2202.9     4678.4       6.0     *
      8. Beacon/Park SE3      *     2119.1     4608.0       6.0     *
      9. Beacon/Park SE4      *     2120.2     4485.0       6.0     *
     10. Beacon/Park SE5      *     2146.8     4412.1       6.0     *
     11. Beacon/Park SW1      *     2053.4     4382.2       6.0     *
     12. Beacon/Park SW2      *     2027.7     4452.7       6.0     *
     13. Beacon/Park SW3      *     1951.6     4535.0       6.0     *
     14. Beacon/Park SW4      *     1869.5     4509.6       6.0     *
     15. Beacon/Park SW5      *     1800.1     4481.2       6.0     *
     16. Beacon/Park NW1      *     1748.7     4640.8       6.0     *
     17. Beacon/Park NW2      *     1819.3     4666.2       6.0     *
     18. Beacon/Park NW3      *     1911.4     4723.3       6.0     *
     19. Beacon/Park NW4      *     1893.8     4805.6       6.0     *
     20. Beacon/Park NW5      *     1868.3     4876.1       6.0     *
     21. Riverway/Park NE1    *     2301.3     3957.6       6.0     *
     22. Riverway/Park NE2    *     2295.2     3882.8       6.0     *
     23. Riverway/Park NE3    *     2289.1     3808.1       6.0     *
     24. Riverway/Park NE4    *     2364.1     3806.5       6.0     *
     25. Riverway/Park NE5    *     2439.1     3806.0       6.0     *
♀                                                                                                          PAGE  4
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JOB: Landmark Center RUN: 2013EX

DATE : 7/22/13
TIME : 17:28: 1

RECEPTOR LOCATIONS

RECEPTOR	X	Y	Z
26. Riverway/Park SE1	2427.5	3594.7	6.0
27. Riverway/Park SE2	2406.6	3667.7	6.0
28. Riverway/Park SE3	2309.4	3687.5	6.0
29. Riverway/Park SE4	2248.8	3576.7	6.0
30. Riverway/Park SE5	2296.6	3506.9	6.0
31. Riverway/Park SW1	2170.6	3544.5	6.0
32. Riverway/Park SW2	2179.2	3619.0	6.0
33. Riverway/Park SW3	2187.9	3693.5	6.0
34. Riverway/Park SW4	2132.7	3642.7	6.0
35. Riverway/Park SW5	2077.5	3592.0	6.0
36. Riverway/Park NW1	2059.1	3675.6	6.0
37. Riverway/Park NW2	2114.4	3726.4	6.0
38. Riverway/Park NW3	2169.6	3777.2	6.0
39. Riverway/Park NW4	2202.6	3844.5	6.0
40. Riverway/Park NW5	2235.3	3912.0	6.0
41. Boyl/Kil NE1	3320.8	3917.2	6.0
42. Boyl/Kil NE2	3339.3	3844.4	6.0
43. Boyl/Kil NE3	3364.0	3773.6	6.0
44. Boyl/Kil NE4	3433.8	3801.0	6.0
45. Boyl/Kil NE5	3503.6	3828.4	6.0
46. Boyl/Kil SE1	3537.2	3736.3	6.0
47. Boyl/Kil SE2	3467.1	3708.8	6.0
48. Boyl/Kil SE3	3397.3	3681.4	6.0
49. Boyl/Kil SE4	3423.8	3611.2	6.0
50. Boyl/Kil SE5	3450.3	3541.1	6.0
51. Boyl/Kil SW1	3379.9	3518.0	6.0
52. Boyl/Kil SW2	3353.1	3589.0	6.0
53. Boyl/Kil SW3	3326.9	3658.3	6.0
54. Boyl/Kil SW4	3256.7	3632.0	6.0
55. Boyl/Kil SW5	3186.4	3605.7	6.0
56. Boyl/Kil NW1	3153.2	3697.9	6.0
57. Boyl/Kil NW2	3223.4	3724.2	6.0
58. Boyl/Kil NW3	3293.6	3750.5	6.0
59. Boyl/Kil NW4	3269.0	3821.4	6.0
60. Boyl/Kil NW5	3244.5	3891.9	6.0

COORDINATES (FT)

JOB: Landmark Center RUN: 2013EX

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-360.

WIND ANGLE (DEGR) * CONCENTRATION (ug/m**3)

(DEGR)	REC1	REC2	REC3	REC4	REC5	REC6	REC7	REC8	REC9	REC10	REC11	REC12	REC13	REC14	REC15	REC16	REC17	REC18	REC19	REC20
0.	0.	0.	0.	0.	0.	1.	1.	1.	0.	0.	2.	2.	2.	1.	1.	0.	0.	1.	0.	0.
10.	0.	0.	0.	0.	0.	1.	1.	1.	0.	0.	2.	2.	2.	1.	1.	0.	0.	1.	1.	0.
20.	0.	0.	0.	0.	0.	1.	1.	1.	0.	0.	2.	2.	2.	1.	1.	0.	0.	1.	1.	0.
30.	0.	0.	0.	0.	0.	1.	1.	1.	0.	0.	2.	2.	2.	1.	1.	0.	0.	1.	1.	0.
40.	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.	2.	2.	2.	1.	1.	0.	0.	1.	1.	0.
50.	0.	0.	0.	0.	0.	1.	1.	1.	0.	0.	1.	2.	2.	2.	1.	0.	0.	1.	1.	1.
60.	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.	1.	1.	2.	1.	1.	1.	1.	1.	1.	1.
70.	0.	0.	0.	1.	1.	0.	1.	0.	0.	0.	1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
80.	0.	0.	1.	1.	1.	0.	0.	0.	0.	0.	1.	1.	1.	1.	1.	1.	1.	2.	1.	1.
90.	0.	0.	1.	1.	1.	0.	0.	0.	0.	0.	0.	1.	1.	1.	0.	1.	1.	2.	1.	1.
100.	0.	0.	1.	1.	1.	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.	1.	1.	2.	1.	1.
110.	0.	0.	1.	1.	1.	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.	1.	1.	1.	2.	1.
120.	0.	0.	1.	1.	1.	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.	1.	1.	1.	2.	1.

(DEGR)	REC1	REC2	REC3	REC4	REC5	REC6	REC7	REC8	REC9	REC10	REC11	REC12	REC13	REC14	REC15	REC16	REC17	REC18	REC19	REC20
130.	0.	0.	1.	1.	1.	0.	0.	0.	0.	0.	1.	1.	1.	0.	0.	1.	1.	1.	2.	1.
140.	0.	0.	1.	1.	1.	0.	0.	0.	0.	0.	1.	1.	1.	0.	0.	1.	1.	2.	2.	2.
150.	1.	1.	1.	1.	1.	0.	0.	0.	0.	0.	1.	1.	1.	0.	0.	1.	1.	2.	2.	2.
160.	1.	1.	1.	1.	1.	0.	0.	0.	1.	1.	0.	1.	0.	0.	0.	1.	1.	1.	1.	2.
170.	1.	1.	2.	2.	2.	0.	0.	1.	1.	1.	0.	0.	0.	0.	0.	0.	0.	1.	1.	1.
180.	1.	1.	2.	2.	1.	0.	0.	1.	1.	1.	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
190.	1.	1.	1.	2.	2.	0.	0.	1.	1.	1.	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
200.	1.	1.	2.	2.	2.	0.	0.	1.	1.	1.	0.	0.	0.	0.	0.	1.	1.	0.	0.	0.
210.	1.	1.	1.	2.	2.	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
220.	1.	1.	1.	2.	2.	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.
230.	1.	1.	1.	2.	2.	0.	1.	1.	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
240.	1.	1.	1.	2.	2.	1.	1.	1.	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
250.	1.	1.	1.	1.	1.	1.	1.	1.	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
260.	1.	1.	1.	1.	1.	1.	2.	2.	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
270.	0.	1.	1.	0.	0.	2.	2.	1.	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
280.	0.	1.	1.	0.	0.	2.	2.	1.	2.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
290.	0.	1.	1.	0.	0.	2.	2.	1.	2.	2.	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
300.	0.	1.	0.	0.	0.	1.	2.	1.	2.	2.	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
310.	0.	1.	0.	0.	0.	1.	1.	1.	2.	2.	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.
320.	0.	0.	0.	0.	0.	1.	1.	1.	2.	2.	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.
330.	0.	0.	0.	0.	0.	1.	1.	1.	2.	2.	1.	1.	1.	1.	0.	0.	0.	0.	0.	0.
340.	0.	0.	0.	0.	0.	1.	1.	1.	1.	1.	1.	1.	1.	1.	1.	0.	0.	0.	0.	0.
350.	0.	0.	0.	0.	0.	1.	1.	1.	1.	1.	2.	2.	1.	1.	1.	0.	0.	0.	0.	0.
360.	0.	0.	0.	0.	0.	1.	1.	1.	0.	0.	2.	2.	2.	1.	1.	0.	0.	1.	0.	0.
MAX	1.	1.	2.	2.	2.	2.	2.	2.	2.	2.	2.	2.	2.	2.	1.	1.	1.	2.	2.	2.
DEGR.	170	160	170	200	230	280	280	260	320	320	0	10	60	50	60	90	100	90	140	150

JOB: Landmark Center RUN: 2013EX

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-360.

WIND ANGLE (DEGR) * CONCENTRATION (ug/m**3)

(DEGR)	REC21	REC22	REC23	REC24	REC25	REC26	REC27	REC28	REC29	REC30	REC31	REC32	REC33	REC34	REC35	REC36	REC37	REC38	REC39	REC40
0.	0.	1.	1.	0.	0.	0.	0.	2.	1.	0.	1.	1.	1.	1.	1.	0.	0.	0.	1.	1.
10.	0.	0.	1.	0.	0.	0.	0.	2.	1.	1.	1.	1.	2.	1.	1.	0.	0.	0.	0.	1.
20.	0.	0.	1.	0.	0.	0.	0.	1.	1.	0.	1.	1.	2.	1.	1.	0.	0.	0.	0.	1.
30.	0.	0.	1.	0.	0.	0.	0.	1.	1.	0.	1.	1.	1.	2.	1.	0.	0.	1.	0.	1.
40.	0.	0.	1.	0.	0.	0.	0.	1.	0.	0.	1.	1.	1.	1.	1.	0.	1.	1.	1.	1.
50.	0.	0.	1.	0.	0.	0.	0.	1.	0.	0.	1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
60.	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.	1.	1.	1.	1.	1.	1.	1.	1.	0.

```
  70.  *    0.    0.    1.    0.    0.    1.    0.    0.    0.    1.    0.    1.    1.    1.    0.    1.    1.    1.
1.    1.
  80.  *    0.    0.    1.    0.    0.    1.    0.    0.    1.    1.    1.    1.    1.    0.    0.    1.    1.    1.
1.    1.
  90.  *    0.    0.    1.    0.    0.    1.    1.    1.    1.    1.    1.    1.    1.    1.    0.    1.    2.    1.
1.    1.
 100.  *    0.    0.    1.    0.    0.    1.    1.    1.    1.    1.    1.    1.    1.    1.    0.    2.    2.    2.
1.    1.
 110.  *    0.    0.    1.    0.    0.    1.    1.    1.    1.    1.    1.    1.    1.    1.    1.    1.    2.    2.
2.    1.
 120.  *    0.    1.    2.    0.    0.    1.    1.    2.    1.    1.    1.    1.    1.    1.    1.    1.    2.    2.
2.    1.
 130.  *    0.    1.    2.    1.    1.    1.    1.    1.    1.    1.    1.    1.    1.    1.    1.    1.    2.    2.
2.    2.
 140.  *    1.    1.    3.    1.    1.    1.    1.    1.    1.    2.    1.    1.    1.    1.    0.    1.    2.    2.
2.    2.
 150.  *    1.    2.    2.    1.    1.    1.    1.    1.    1.    1.    0.    1.    1.    0.    0.    1.    1.    2.
2.    2.
 160.  *    1.    3.    2.    1.    1.    2.    1.    1.    0.    1.    0.    0.    1.    0.    0.    1.    1.    1.
2.    2.
 170.  *    1.    3.    2.    1.    1.    2.    1.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.    1.
1.    2.
 180.  *    1.    3.    1.    1.    1.    1.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.
1.    1.
 190.  *    2.    2.    1.    1.    0.    1.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.
1.    1.
 200.  *    2.    2.    1.    1.    0.    1.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.
1.    1.
 210.  *    1.    2.    1.    2.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.
0.    0.
 220.  *    1.    2.    1.    2.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.
0.    0.
 230.  *    1.    2.    1.    2.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.
0.    0.
 240.  *    0.    2.    1.    2.    1.    0.    1.    0.    0.    0.    0.    0.    1.    0.    0.    0.    0.    0.
0.    0.
 250.  *    0.    2.    1.    2.    1.    0.    1.    0.    0.    0.    0.    0.    1.    0.    0.    0.    0.    0.
0.    0.
 260.  *    0.    2.    1.    1.    1.    1.    1.    1.    0.    0.    0.    0.    1.    1.    0.    0.    0.    0.
0.    0.
 270.  *    0.    1.    1.    1.    1.    1.    1.    1.    0.    0.    0.    0.    1.    1.    0.    0.    0.    0.
0.    0.
 280.  *    0.    2.    1.    1.    1.    1.    1.    1.    0.    0.    0.    0.    1.    1.    0.    0.    0.    0.
0.    0.
 290.  *    0.    1.    1.    1.    0.    1.    1.    1.    1.    0.    0.    0.    1.    1.    0.    0.    0.    0.
0.    0.
 300.  *    1.    2.    1.    1.    0.    1.    1.    1.    1.    0.    0.    0.    1.    1.    0.    0.    0.    0.
0.    0.
 310.  *    1.    2.    1.    1.    0.    1.    1.    1.    1.    0.    0.    0.    1.    1.    0.    0.    0.    0.
0.    0.
 320.  *    1.    2.    1.    1.    0.    1.    1.    1.    1.    0.    0.    0.    1.    1.    0.    0.    0.    0.
0.    0.
 330.  *    1.    2.    1.    1.    0.    1.    1.    1.    1.    0.    0.    0.    1.    1.    0.    0.    0.    0.
0.    0.
 340.  *    1.    2.    2.    1.    0.    1.    1.    2.    1.    0.    0.    0.    1.    1.    0.    0.    0.    0.
0.    1.
 350.  *    0.    2.    2.    0.    0.    0.    0.    2.    1.    1.    0.    1.    1.    1.    1.    0.    0.    0.
0.    1.
 360.  *    0.    1.    1.    0.    0.    0.    0.    2.    1.    0.    1.    1.    1.    1.    1.    0.    0.    0.
1.    1.

------*------------------------------------------------------------------------------------------------------------
-------
 MAX   *    2.    3.    3.    2.    1.    2.    1.    2.    1.    2.    1.    1.    2.    2.    1.    2.    2.    2.
2.    2.
 DEGR. *  190   160   140   230   250   170   170   350    10   140    10    20    10    30    30   100    90   120
130   160
```

PAGE 7

```
     JOB: Landmark Center                                       RUN: 2013EX

      MODEL RESULTS
      -------------

      REMARKS : In search of the angle corresponding to
                the maximum concentration, only the first
                angle, of the angles with same maximum
                concentrations, is indicated as maximum.

 WIND ANGLE RANGE:   0.-360.

 WIND  * CONCENTRATION
 ANGLE *      (ug/m**3)
 (DEGR)* REC41 REC42 REC43 REC44 REC45 REC46 REC47 REC48 REC49 REC50 REC51 REC52 REC53 REC54 REC55 REC56 REC57 REC58
REC59 REC60

------*------------------------------------------------------------------------------------------------------------
-------
   0.  *    0.    0.    0.    0.    0.    0.    1.    1.    1.    0.    0.    1.    2.    1.    1.    0.    0.    0.
0.    0.
  10.  *    0.    0.    0.    0.    0.    0.    1.    1.    1.    0.    0.    1.    1.    2.    1.    0.    0.    1.
```


EX_PM25_2.out

```
0.    0.
  20.  *    0.    0.    0.    0.    0.    0.    1.    2.    0.    0.    0.    1.    2.    2.    1.    0.    0.    1.
0.    0.
  30.  *    0.    0.    0.    0.    0.    0.    1.    1.    0.    0.    0.    1.    2.    2.    2.    0.    0.    1.
0.    0.
  40.  *    0.    0.    0.    0.    0.    0.    1.    1.    0.    0.    0.    1.    2.    2.    2.    0.    0.    1.
0.    0.
  50.  *    0.    0.    0.    0.    0.    0.    1.    1.    0.    0.    0.    0.    2.    2.    2.    0.    0.    1.
0.    0.
  60.  *    0.    0.    0.    0.    0.    0.    0.    1.    0.    0.    0.    0.    1.    1.    2.    1.    1.    1.
0.    0.
  70.  *    0.    0.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.    1.    1.    1.    1.
0.    0.
  80.  *    0.    0.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    2.    2.    2.
0.    0.
  90.  *    0.    0.    1.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    2.    2.    2.
0.    0.
 100.  *    0.    0.    1.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    2.    2.    2.
1.    0.
 110.  *    0.    0.    2.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    2.    2.    2.
1.    0.
 120.  *    0.    1.    2.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    2.    2.
1.    0.
 130.  *    0.    1.    1.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.    1.
1.    1.
 140.  *    0.    1.    1.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.    1.
1.    1.
 150.  *    0.    1.    1.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.    1.
1.    1.
 160.  *    1.    1.    1.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.    1.
1.    1.
 170.  *    1.    1.    1.    1.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.    1.
1.    0.
 180.  *    1.    1.    1.    1.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.    1.
1.    0.
 190.  *    1.    1.    2.    2.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.    1.
1.    0.
 200.  *    1.    1.    1.    2.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.    2.
1.    0.
 210.  *    0.    1.    2.    2.    2.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    2.
1.    0.
 220.  *    0.    1.    2.    2.    2.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.    2.
0.    1.
 230.  *    1.    1.    2.    2.    2.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    2.    2.
1.    1.
 240.  *    0.    1.    2.    2.    2.    1.    1.    1.    0.    0.    0.    0.    1.    1.    1.    1.    2.    2.
1.    0.
 250.  *    0.    1.    2.    2.    1.    1.    1.    1.    1.    0.    0.    1.    1.    1.    1.    1.    1.    1.
0.    0.
 260.  *    0.    0.    1.    1.    1.    2.    2.    2.    1.    0.    1.    1.    2.    2.    1.    0.    0.    1.
0.    0.
 270.  *    0.    0.    1.    0.    0.    2.    2.    2.    1.    1.    1.    1.    2.    1.    1.    0.    0.    0.
0.    0.
 280.  *    0.    0.    1.    0.    0.    2.    2.    2.    1.    0.    1.    0.    2.    1.    1.    0.    0.    0.
0.    0.
 290.  *    0.    0.    0.    0.    0.    2.    2.    2.    1.    0.    0.    1.    2.    1.    0.    0.    0.    0.
0.    0.
 300.  *    0.    0.    0.    0.    0.    1.    2.    2.    1.    1.    0.    1.    2.    1.    1.    0.    0.    0.
0.    0.
 310.  *    0.    0.    0.    0.    0.    1.    1.    2.    1.    0.    0.    1.    1.    1.    1.    0.    0.    0.
0.    0.
 320.  *    0.    0.    0.    0.    0.    1.    1.    2.    1.    0.    0.    1.    1.    1.    1.    0.    0.    0.
0.    0.
 330.  *    0.    0.    0.    0.    0.    1.    1.    2.    1.    0.    0.    1.    1.    1.    1.    0.    0.    0.
0.    0.
 340.  *    0.    0.    0.    0.    0.    0.    1.    1.    1.    1.    1.    1.    2.    1.    1.    0.    0.    0.
0.    0.
 350.  *    0.    0.    0.    0.    0.    0.    1.    1.    1.    0.    1.    1.    1.    1.    1.    0.    0.    0.
0.    0.
 360.  *    0.    0.    0.    0.    0.    0.    1.    1.    1.    0.    0.    1.    2.    1.    1.    0.    0.    0.
0.    0.

------*------------------------------------------------------------------------------------------------------------
-------
 MAX   *    1.    1.    2.    2.    2.    2.    2.    2.    1.    1.    1.    1.    2.    2.    2.    2.    2.    2.
1.    1.
 DEGR. *  180   200   230   230   230   260   260   260   320   270   260     0   270    30    40   100    90    90
140   140

 THE HIGHEST CONCENTRATION OF      3. ug/m**3 OCCURRED AT RECEPTOR REC22.
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♀                      CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 95221                        PAGE  1

      JOB: LANDMARKCENTER                                        RUN: 2013_EX

      DATE :  7/22/13
      TIME : 14:23:14

         The MODE flag has been set to P for calculating PM averages.

       SITE & METEOROLOGICAL VARIABLES
       -------------------------------
       VS =   0.0 CM/S       VD =   0.0 CM/S       Z0 = 175. CM
        U =  1.0 M/S         CLAS =   4  (D)     ATIM =  60. MINUTES     MIXH =  1000. M   AMB =  0.0 ug/m**3

       LINK VARIABLES
       --------------
         LINK DESCRIPTION     *         LINK COORDINATES (FT)          *    LENGTH  BRG TYPE   VPH    EF      H   W
V/C QUEUE
                              *   X1        Y1        X2        Y2     *     (FT)  (DEG)            (G/MI)  (FT) (FT)
   (VEH)

------------------------*---------------------------------------*--------------------------------------------------
----
       1. Brook/Full EB L     *   3074.7    4018.5    3064.9    4005.6 *      16.   217. AG      0. 100.0   1.0 10.0
0.09   0.8
       2. Brook/Full EB TR    *   3083.6    4012.0    3045.6    3961.5 *      63.   217. AG      0. 100.0   1.0 10.0
0.35   3.2
       3. Brook/Full NB LTR   *   3121.3    4022.6    3148.4    4008.1 *      31.   118. AG      0. 100.0   1.0 10.0
0.17   1.6
       4. Brook/Full WB LTR   *   3127.2    4100.9    3155.0    4137.4 *      46.    37. AG      0. 100.0   1.0 20.0
0.23   2.3
       5. Brook/Full SB LT    *   3068.3    4050.9    3031.4    4078.1 *      46.   306. AG      0. 100.0   1.0 10.0
0.28   2.3
       6. Brook/Full SB R     *   3061.2    4041.4    3027.0    4066.0 *      42.   306. AG      0. 100.0   1.0 10.0
0.22   2.1
       7. Brook/Full N        *   3091.9    4045.7    2925.8    4161.5 *     203.   305. AG    420.   0.0   1.0 54.0
       8. Brook/Full E        *   3091.9    4045.7    3246.2    4230.8 *     241.    40. AG    815.   0.0   1.0 54.0
       9. Brook/Full S        *   3100.3    4031.3    3190.0    3977.6 *     105.   121. AG    305.   0.0   1.0 42.0
      10. Brook/Full W        *   3091.9    4048.0    2946.1    3847.4 *     248.   216. AG    980.   0.0   1.0 54.0
♀                                                                                                               PAGE  2
      JOB: LANDMARKCENTER                                        RUN: 2013_EX

      DATE :  7/22/13
      TIME : 14:23:14

       1. Brook/Full EB L     *     100       33       3.0        90       1600       0.05      1        3
       2. Brook/Full EB TR    *     100       33       3.0       350       1600       0.05      1        3
       3. Brook/Full NB LTR   *     100       33       3.0       170       1600       0.05      1        3
       4. Brook/Full WB LTR   *     100       43       3.0       390       1600       0.05      1        3
       5. Brook/Full SB LT    *     100       67       3.0       125       1600       0.05      1        3
       6. Brook/Full SB R     *     100       57       3.0       135       1600       0.05      1        3

       RECEPTOR LOCATIONS
       ------------------
                              *          COORDINATES (FT)          *
         RECEPTOR             *      X          Y          Z       *
     -------------------------*------------------------------------*
      1. Brook/Full NE1       *      2962.2     4181.2       6.0   *
      2. Brook/Full NE2       *      3023.7     4138.3       6.0   *
      3. Brook/Full NE3       *      3085.3     4095.4       6.0   *
      4. Brook/Full NE4       *      3133.3     4153.0       6.0   *
      5. Brook/Full NE5       *      3188.7     4204.0       6.0   *
      6. Brook/Full SE1       *      3235.0     4159.5       6.0   *
      7. Brook/Full SE2       *      3187.0     4101.9       6.0   *
      8. Brook/Full SE3       *      3130.3     4049.5       6.0   *
      9. Brook/Full SE4       *      3203.3     4005.7       6.0   *
     10. Brook/Full SE5       *      3267.6     3967.2       6.0   *
     11. Brook/Full SW1       *      3228.3     3918.5       6.0   *
     12. Brook/Full SW2       *      3163.9     3957.1       6.0   *
     13. Brook/Full SW3       *      3099.6     3995.6       6.0   *
     14. Brook/Full SW4       *      3055.5     3934.9       6.0   *
     15. Brook/Full SW5       *      3011.4     3874.3       6.0   *
     16. Brook/Full NW1       *      2950.5     3916.4       6.0   *
     17. Brook/Full NW2       *      2994.6     3977.0       6.0   *
     18. Brook/Full NW3       *      3038.7     4037.7       6.0   *
     19. Brook/Full NW4       *      2977.2     4080.6       6.0   *
     20. Brook/Full NW5       *      2915.6     4123.5       6.0   *
♀                                                                                                               PAGE  3
      JOB: LANDMARKCENTER                                        RUN: 2013_EX

       MODEL RESULTS
       -------------

       REMARKS : In search of the angle corresponding to
                 the maximum concentration, only the first
                 angle, of the angles with same maximum
                 concentrations, is indicated as maximum.

 WIND ANGLE RANGE:   0.-360.

 WIND  * CONCENTRATION
```


EX_PM25_3.out

```
 ANGLE *      (ug/m**3)
 (DEGR)* REC1  REC2  REC3  REC4  REC5  REC6  REC7  REC8  REC9  REC10 REC11 REC12 REC13 REC14 REC15 REC16 REC17 REC18
REC19 REC20

------*-------------------------------------------------------------------------------------------------------------
-------
   0.  *    0.    0.    0.    0.    0.    0.    0.    1.    0.    0.    0.    0.    1.    1.    1.    0.    0.    1.
0.   0.
  10.  *    0.    0.    0.    0.    0.    0.    0.    1.    0.    0.    0.    0.    1.    1.    1.    0.    0.    1.
0.   0.
  20.  *    0.    0.    0.    0.    0.    0.    0.    1.    0.    0.    0.    0.    1.    1.    1.    0.    0.    1.
0.   0.
  30.  *    0.    0.    0.    0.    0.    0.    0.    1.    0.    0.    0.    0.    1.    1.    1.    0.    0.    1.
0.   0.
  40.  *    0.    0.    0.    0.    0.    0.    0.    1.    0.    0.    0.    0.    0.    0.    0.    1.    1.    1.
0.   0.
  50.  *    0.    0.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.    1.
0.   0.
  60.  *    0.    0.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.    1.
0.   0.
  70.  *    0.    0.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.    1.
0.   0.
  80.  *    0.    0.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.    1.
0.   0.
  90.  *    0.    0.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.    1.
1.   0.
 100.  *    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.    1.
1.   0.
 110.  *    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.
1.   0.
 120.  *    0.    0.    0.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.    1.
0.   0.
 130.  *    0.    0.    1.    1.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.    1.
0.   0.
 140.  *    0.    0.    1.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.
0.   0.
 150.  *    0.    1.    1.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.
0.   0.
 160.  *    0.    1.    1.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.
0.   0.
 170.  *    0.    1.    1.    1.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.
0.   0.
 180.  *    0.    1.    1.    1.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.
0.   0.
 190.  *    0.    0.    1.    1.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.
0.   0.
 200.  *    0.    0.    1.    1.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.
0.   0.
 210.  *    0.    0.    1.    1.    1.    0.    0.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.
0.   0.
 220.  *    0.    0.    1.    0.    1.    0.    1.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.
0.   0.
 230.  *    0.    0.    0.    0.    0.    1.    1.    1.    0.    0.    0.    0.    1.    0.    0.    0.    0.    0.
0.   0.
 240.  *    0.    0.    0.    0.    0.    1.    1.    1.    0.    0.    0.    0.    1.    1.    0.    0.    0.    0.
0.   0.
 250.  *    0.    0.    0.    0.    0.    1.    1.    1.    0.    0.    0.    0.    1.    1.    0.    0.    0.    0.
0.   0.
 260.  *    0.    0.    0.    0.    0.    1.    1.    1.    0.    0.    0.    0.    1.    1.    0.    0.    0.    0.
0.   0.
 270.  *    0.    0.    0.    0.    0.    1.    1.    1.    0.    0.    0.    0.    1.    1.    0.    0.    0.    0.
0.   0.
 280.  *    0.    0.    0.    0.    0.    0.    1.    1.    1.    0.    0.    0.    1.    1.    0.    0.    0.    0.
0.   0.
 290.  *    0.    0.    0.    0.    0.    0.    1.    1.    0.    0.    0.    0.    1.    0.    0.    0.    0.    0.
0.   0.
 300.  *    0.    0.    0.    0.    0.    0.    1.    1.    0.    0.    0.    0.    1.    1.    1.    0.    0.    0.
0.   0.
 310.  *    0.    0.    0.    0.    0.    0.    1.    1.    0.    0.    0.    0.    1.    1.    1.    0.    0.    0.
0.   0.
 320.  *    0.    0.    0.    0.    0.    0.    1.    1.    0.    0.    0.    1.    1.    0.    0.    0.    0.    0.
0.   0.
 330.  *    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.    1.    0.    0.    0.    0.
0.   0.
 340.  *    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.    1.    0.    0.    0.
0.   0.
 350.  *    0.    0.    0.    0.    0.    0.    0.    1.    0.    0.    0.    0.    1.    1.    1.    0.    0.    1.
0.   0.
 360.  *    0.    0.    0.    0.    0.    0.    0.    1.    0.    0.    0.    0.    1.    1.    1.    0.    0.    1.
0.   0.

------*-------------------------------------------------------------------------------------------------------------
-------
 MAX   *    0.    1.    1.    1.    1.    1.    1.    1.    1.    0.    0.    1.    1.    1.    1.    1.    1.    1.
1.   0.
 DEGR. *  140   170   200   170   210   240   240   270   280   290   300   320    20     0    10    50    50    60
100   90

 THE HIGHEST CONCENTRATION OF      1. ug/m**3 OCCURRED AT RECEPTOR REC18.
```

2018 No-Build
Microscale Output Files
(Particulate Matter 2.5 (PM2.5))

```
♀                      CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 95221                        PAGE  1

      JOB: Landmark Center                                          RUN: 2018NB

      DATE :  7/22/13
      TIME : 14:36:27

         The MODE flag has been set to P for calculating PM averages.

       SITE & METEOROLOGICAL VARIABLES
       -------------------------------
       VS =   0.0 CM/S       VD =   0.0 CM/S       Z0 = 175. CM
        U =  1.0 M/S         CLAS =   4  (D)     ATIM =  60. MINUTES     MIXH =  1000. M   AMB =  0.0 ug/m**3

       LINK VARIABLES
       --------------
         LINK DESCRIPTION     *         LINK COORDINATES (FT)          *    LENGTH  BRG TYPE   VPH    EF      H   W
V/C QUEUE
                              *   X1        Y1        X2        Y2     *     (FT)  (DEG)           (G/MI)  (FT) (FT)
   (VEH)

------------------------*---------------------------------------*---------------------------------------------------
----
       1. Fen/Brook WB TT     *   2508.3    3314.8    2586.4    3416.7 *     128.    37. AG      0. 100.0   1.0 20.0
0.66   6.5
       2. Fen/Brook EB TTTR   *   2469.9    3221.1    2415.3    3145.8 *      93.   216. AG      0. 100.0   1.0 30.0
0.48   4.7
       3. Fen/Brook SB L      *   2487.6    3319.0    2362.9    3437.3 *     172.   313. AG      0. 100.0   1.0 10.0
0.83   8.7
       4. Fen/Brook SB LTT    *   2476.2    3307.2    2397.4    3380.1 *     107.   313. AG      0. 100.0   1.0 20.0
0.54   5.5
       5. Fen/Brook SB R      *   2463.2    3293.4    2440.4    3315.4 *      32.   314. AG      0. 100.0   1.0 10.0
0.16   1.6
       6. Park/Brook WB TTR   *   2701.3    3561.7    2742.4    3616.0 *      68.    37. AG      0. 100.0   1.0 30.0
0.42   3.5
       7. Park/Brook NWB LLRRR*   2745.9    3510.4    3745.0    3896.3 *    1071.    69. AG      0. 100.0   1.0 30.0
1.25  54.4
       8. Park/Brook NB LTTTR *   2715.4    3403.8    2770.2    3333.9 *      89.   142. AG      0. 100.0   1.0 40.0
0.55   4.5
       9. Park/Brook EB L     *   2628.6    3435.0    2599.8    3397.7 *      47.   218. AG      0. 100.0   1.0 10.0
0.61   2.4
      10. Park/Brook EB T     *   2637.5    3428.1    2557.6    3326.0 *     130.   218. AG      0. 100.0   1.0 10.0
0.68   6.6
      11. Park/Brook EB RR    *   2648.5    3416.9    2594.3    3345.2 *      90.   217. AG      0. 100.0   1.0 20.0
0.51   4.6
      12. River/Park SB       *   2213.3    3801.8    3580.3    6597.8 *    3112.    26. AG      0. 100.0   1.0 10.0
2.01 158.1
      13. River/Park SB East  *   2256.2    3801.2    2279.3    3925.6 *     127.    11. AG      0. 100.0   1.0 20.0
0.87   6.4
      14. River/Park WB North *   2272.8    3765.2    2366.7    3765.6 *      94.    90. AG      0. 100.0   1.0 30.0
0.51   4.8
      15. River/Park WB South *   2270.5    3707.9    2327.4    3732.3 *      62.    67. AG      0. 100.0   1.0 20.0
0.33   3.1
      16. River/Park NEB      *   2169.9    3720.6    2157.8    3709.0 *      17.   226. AG      0. 100.0   1.0 20.0
0.12   0.9
      17. Beacon/Park SB LTT  *   1962.9    4712.6    1931.1    4812.3 *     105.   342. AG      0. 100.0   1.0 20.0
0.49   5.3
      18. Beacon/Park WB LTT  *   2055.3    4691.7    2201.8    4745.7 *     156.    70. AG      0. 100.0   1.0 20.0
0.72   7.9
      19. Beacon/Park NB LTT  *   2041.7    4597.4    3065.8    1613.7 *    3155.   161. AG      0. 100.0   1.0 20.0
**** 160.3
      20. Beacon/Park EB LTTT *   1966.3    4608.1    1913.8    4584.5 *      58.   246. AG      0. 100.0   1.0 30.0
0.29   2.9
      21. Beacon/Park EB R    *   1975.6    4560.5    1953.5    4563.9 *      22.   279. AG      0. 100.0   1.0 20.0
0.10   1.1
      22. Beacon/Park SB R    *   1917.2    4688.3    1919.9    4692.5 *       5.    32. AG      0. 100.0   1.0 10.0
0.02   0.3
      23. Beacon/Park WB R    *   2019.8    4741.2    2031.4    4737.2 *      12.   109. AG      0. 100.0   1.0 10.0
0.06   0.6
      24. Beacon/Park NB R    *   2095.2    4627.5    2086.9    4605.4 *      24.   201. AG      0. 100.0   1.0 10.0
0.11   1.2
      25. Boyl/Kil SB LTR     *   3322.0    3753.8    3307.4    3798.9 *      47.   342. AG      0. 100.0   1.0 20.0
0.32   2.4
      26. Boyl/Kil WB LTTR    *   3373.3    3738.7    3451.2    3770.2 *      84.    68. AG      0. 100.0   1.0 20.0
0.50   4.3
      27. Boyl/Kil NB LTR     *   3365.2    3677.7    3376.9    3648.1 *      32.   158. AG      0. 100.0   1.0 10.0
0.21   1.6
      28. Boyl/Kil EB LTTR    *   3320.4    3695.3    3225.5    3660.7 *     101.   250. AG      0. 100.0   1.0 20.0
0.60   5.1
      29. Fenway/Brook South  *   2496.9    3278.9    2636.6    3081.1 *     242.   145. AG    916.    0.0   1.0 54.0
      30. Fenway/Brook West   *   2481.8    3262.9    2347.3    3075.6 *     231.   216. AG   1881.    0.0   1.0 78.0
      31. Fenway/Brook North  *   2491.0    3288.6    2373.1    3398.7 *     161.   313. AG   1628.    0.0   1.0 66.0
      32. Fenway/Brook East   *   2497.8    3264.6    2608.7    3389.7 *     167.    42. AG   2403.    0.0   1.0 90.0
      33. Park/Brook South    *   2691.9    3447.3    2838.3    3241.2 *     253.   145. AG    958.    0.0   1.0 66.0
      34. Park/Brook West     *   2672.2    3490.7    2502.8    3273.8 *     275.   218. AG   2413.    0.0   1.0 90.0
      35. Park/Brook North    *   2656.7    3489.7    2496.1    3644.1 *     223.   314. AG   1794.    0.0   1.0 66.0
      36. Park/Brook East     *   2663.3    3490.8    2801.7    3675.1 *     230.    37. AG   1249.    0.0   1.0 66.0
      37. Park/Brook SE       *   2681.0    3470.4    2968.4    3574.9 *     306.    70. AG   2358.    0.0   1.0 78.0
      38. River/Park N        *   2254.7    3768.2    2266.4    3911.9 *     144.     5. AG    473.    0.0   1.0 42.0
      39. River/Park SE       *   2239.1    3675.4    2343.7    3750.1 *     129.    54. AG    428.    0.0   1.0 42.0
      40. River/Park NE       *   2237.1    3772.1    2377.4    3769.2 *     140.    91. AG    872.    0.0   1.0 54.0
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      41. River/Park S        *   2231.1    3745.1    2210.1    3564.3 *     182.   187. AG    901.    0.0   1.0 54.0
      42. River/Park SW       *   2211.1    3765.1    2058.1    3624.4 *     208.   227. AG   1420.    0.0   1.0 54.0
      43. River/Park NW       *   2194.0    3770.2    2250.7    3886.0 *     129.    26. AG    548.    0.0   1.0 30.0
      44. Beacon/Park N       *   1996.0    4667.5    1894.2    4948.4 *     299.   340. AG   1153.    0.0   1.0 78.0
♀                                                                                                             PAGE  2
      JOB: Landmark Center                                          RUN: 2018NB

      DATE :  7/22/13
      TIME : 14:36:27

       LINK VARIABLES
       --------------
         LINK DESCRIPTION     *         LINK COORDINATES (FT)          *    LENGTH  BRG TYPE   VPH    EF      H   W
V/C QUEUE
                              *   X1        Y1        X2        Y2     *     (FT)  (DEG)           (G/MI)  (FT) (FT)
   (VEH)

------------------------*---------------------------------------*---------------------------------------------------
----
      45. Beacon/Park NR      *   1908.0    4673.8    1956.1    4744.7 *      86.    34. AG     15.    0.0   1.0 30.0
      46. Beacon/Park E       *   1997.8    4657.7    2274.4    4755.8 *     293.    70. AG   1621.    0.0   1.0 78.0
      47. Beacon/Park ER      *   1991.4    4750.8    2112.1    4710.6 *     127.   108. AG     33.    0.0   1.0 30.0
      48. Beacon/Park S       *   2009.1    4646.4    2098.7    4401.0 *     261.   160. AG   1732.    0.0   1.0 78.0
      49. Beacon/Park SR      *   2102.5    4662.0    2076.2    4571.2 *      95.   196. AG     71.    0.0   1.0 42.0
      50. Beacon/Park W EB    *   1995.6    4607.6    1704.2    4488.4 *     315.   248. AG    600.    0.0   1.0 66.0
      51. Beacon/Park W EBR   *   2009.1    4551.2    1907.4    4575.2 *     104.   283. AG    134.    0.0   1.0 38.0
      52. Beacon/Park W WB    *   1989.3    4675.4    1658.3    4556.1 *     352.   250. AG    843.    0.0   1.0 78.0
      53. Boyl/Kil N          *   3344.5    3717.0    3289.1    3876.3 *     169.   341. AG    320.    0.0   1.0 54.0
      54. Boyl/Kil E          *   3348.9    3715.0    3516.2    3780.7 *     180.    69. AG   2366.    0.0   1.0 78.0
      55. Boyl/Kil S          *   3349.9    3702.1    3425.5    3502.1 *     214.   159. AG    242.    0.0   1.0 54.0
      56. Boyl/Kil W          *   3346.0    3717.8    3141.9    3641.3 *     218.   249. AG   2392.    0.0   1.0 78.0
♀                                                                                                             PAGE  3
      JOB: Landmark Center                                          RUN: 2018NB

      DATE :  7/22/13
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       1. Fen/Brook WB TT     *     100        54       3.0       870       1600       0.04      1        3
       2. Fen/Brook EB TTTR   *     100        54       3.0       947       1600       0.04      1        3
       3. Fen/Brook SB L      *     100        46       3.0       648       1600       0.04      1        3
       4. Fen/Brook SB LTT    *     100        46       3.0       854       1600       0.04      1        3
       5. Fen/Brook SB R      *     100        46       3.0       126       1600       0.04      1        3
       6. Park/Brook WB TTR   *     100        68       3.0       550       1600       0.04      1        3
       7. Park/Brook NWB LLRRR*     100        75       3.0      1203       1600       0.04      1        3
       8. Park/Brook NB LTTTR *     100        68       3.0       958       1600       0.04      1        3
       9. Park/Brook EB L     *     100        85       3.0        98       1600       0.04      1        3
      10. Park/Brook EB T     *     100        57       3.0       416       1600       0.04      1        3
      11. Park/Brook EB RR    *     100        32       3.0      1029       1600       0.04      1        3
      12. River/Park SB       *     100        78       3.0       548       1600       0.04      1        3
      13. River/Park SB East  *     100        78       3.0       473       1600       0.04      1        3
      14. River/Park WB North *     100        59       3.0       875       1600       0.04      1        3
      15. River/Park WB South *     100        59       3.0       385       1600       0.04      1        3
      16. River/Park NEB      *     100        73       3.0        84       1600       0.04      1        3
      17. Beacon/Park SB LTT  *     110        61       3.0       629       1600       0.04      1        3
      18. Beacon/Park WB LTT  *     110        56       3.0      1020       1600       0.04      1        3
      19. Beacon/Park NB LTT  *     110       103       3.0       609       1600       0.04      1        3
      20. Beacon/Park EB LTTT *     110        68       3.0       466       1600       0.04      1        3
      21. Beacon/Park EB R    *     110        61       3.0       134       1600       0.04      1        3
      22. Beacon/Park SB R    *     110        61       3.0        15       1600       0.04      1        3
      23. Beacon/Park WB R    *     110        68       3.0        33       1600       0.04      1        3
      24. Beacon/Park NB R    *     110        61       3.0        71       1600       0.04      1        3
      25. Boyl/Kil SB LTR     *     100        71       3.0       244       1600       0.04      1        3
      26. Boyl/Kil WB LTTR    *     100        29       3.0      1060       1600       0.04      1        3
      27. Boyl/Kil NB LTR     *     100        71       3.0        82       1600       0.04      1        3
      28. Boyl/Kil EB LTTR    *     100        29       3.0      1274       1600       0.04      1        3

       RECEPTOR LOCATIONS
       ------------------
                              *          COORDINATES (FT)          *
         RECEPTOR             *       X          Y          Z       *
     -------------------------*------------------------------------*
      1. Fen/Brook NE1        *      2376.5     3444.0       6.0    *
      2. Fen/Brook NE2        *      2429.7     3391.0       6.0    *
      3. Fen/Brook NE3        *      2484.5     3339.8       6.0    *
      4. Fen/Brook NE4        *      2530.7     3398.9       6.0    *
      5. Fen/Brook NE5        *      2576.8     3458.0       6.0    *
      6. Fen/Brook SE1        *      2660.2     3364.9       6.0    *
      7. Fen/Brook SE2        *      2609.6     3308.8       6.0    *
      8. Fen/Brook SE3        *      2560.7     3252.7       6.0    *
      9. Fen/Brook SE4        *      2604.0     3191.4       6.0    *
     10. Fen/Brook SE5        *      2647.3     3130.2       6.0    *
     11. Fen/Brook SW1        *      2588.7     3084.8       6.0    *
     12. Fen/Brook SW2        *      2545.5     3146.0       6.0    *
     13. Fen/Brook SW3        *      2502.2     3207.3       6.0    *
     14. Fen/Brook SW4        *      2458.5     3146.4       6.0    *
     15. Fen/Brook SW5        *      2414.7     3085.4       6.0    *
     16. Fen/Brook NW1        *      2353.5     3168.3       6.0    *
     17. Fen/Brook NW2        *      2397.3     3229.2       6.0    *
     18. Fen/Brook NW3        *      2441.0     3290.1       6.0    *
     19. Fen/Brook NW4        *      2386.2     3341.3       6.0    *
     20. Fen/Brook NW5        *      2331.4     3392.5       6.0    *
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21. Park/Brook NE1	*	2546.7	3655.1	6.0 *
22. Park/Brook NE2	*	2600.8	3603.1	6.0 *
23. Park/Brook NE3	*	2654.8	3551.1	6.0 *

JOB: Landmark Center RUN: 2018NB

DATE : 7/22/13
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RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
24. Park/Brook NE4	2699.9	3611.1	6.0
25. Park/Brook NE5	2744.9	3671.1	6.0
26. Park/Brook SE1	2889.0	3493.9	6.0
27. Park/Brook SE2	2818.1	3468.1	6.0
28. Park/Brook SE3	2747.7	3442.5	6.0
29. Park/Brook SE4	2791.4	3381.5	6.0
30. Park/Brook SE5	2834.8	3320.3	6.0
31. Park/Brook SW1	2758.8	3278.8	6.0
32. Park/Brook SW2	2715.4	3340.0	6.0
33. Park/Brook SW3	2672.0	3401.1	6.0
34. Park/Brook SW4	2625.8	3342.0	6.0
35. Park/Brook SW5	2579.6	3282.9	6.0
36. Park/Brook NW1	2506.3	3367.7	6.0
37. Park/Brook NW2	2552.4	3426.8	6.0
38. Park/Brook NW3	2598.6	3485.9	6.0
39. Park/Brook NW4	2544.6	3537.9	6.0
40. Park/Brook NW5	2490.5	3589.9	6.0
41. Park/Brook E1	2853.5	3672.4	6.0
42. Park/Brook E2	2811.9	3617.1	6.0
43. Park/Brook E3	2763.4	3552.5	6.0
44. Park/Brook E4	2838.4	3579.8	6.0
45. Park/Brook E5	2904.4	3603.8	6.0

JOB: Landmark Center RUN: 2018NB

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-360.

WIND * CONCENTRATION
ANGLE * (ug/m**3)

(DEGR)*	REC1	REC2	REC3	REC4	REC5	REC6	REC7	REC8	REC9	REC10	REC11	REC12	REC13	REC14	REC15	REC16	REC17	REC18	REC19	REC20
0. *	0.	1.	1.	0.	1.	1.	2.	3.	1.	1.	1.	3.	3.	2.	2.	0.	1.	2.	1.	0.
10. *	0.	1.	1.	0.	1.	2.	2.	3.	1.	1.	1.	2.	4.	2.	2.	0.	1.	2.	1.	0.
20. *	0.	1.	0.	0.	1.	2.	2.	2.	1.	1.	1.	2.	4.	3.	2.	1.	1.	2.	1.	0.
30. *	0.	1.	1.	1.	1.	1.	2.	2.	1.	0.	1.	2.	3.	2.	2.	1.	1.	2.	2.	0.
40. *	0.	1.	1.	1.	1.	2.	1.	2.	1.	1.	1.	1.	3.	2.	2.	2.	2.	3.	2.	0.
50. *	0.	1.	2.	2.	2.	2.	1.	1.	1.	0.	1.	1.	2.	2.	1.	3.	3.	4.	2.	0.
60. *	1.	1.	3.	2.	2.	2.	1.	1.	0.	0.	0.	1.	2.	1.	1.	2.	3.	4.	2.	1.
70. *	1.	2.	3.	3.	2.	1.	1.	0.	0.	0.	0.	1.	1.	1.	0.	2.	2.	4.	3.	2.
80. *	1.	2.	3.	2.	2.	1.	0.	0.	0.	0.	0.	0.	1.	0.	0.	2.	2.	3.	3.	2.
90. *	1.	2.	2.	2.	2.	1.	0.	0.	0.	0.	0.	0.	1.	0.	0.	1.	1.	3.	3.	2.
100. *	1.	2.	2.	2.	2.	1.	0.	0.	0.	0.	0.	1.	1.	0.	0.	1.	1.	2.	3.	2.
110. *	1.	2.	2.	2.	1.	1.	0.	0.	0.	0.	0.	1.	1.	0.	0.	1.	1.	2.	2.	2.
120. *	1.	2.	2.	2.	1.	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.	1.	1.	2.	2.	2.
130. *	2.	2.	3.	2.	2.	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.	1.	2.	2.	2.	1.
140. *	2.	3.	3.	2.	2.	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.	1.	1.	2.	1.	1.
150. *	2.	3.	3.	2.	2.	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.	1.	1.	2.	1.	1.
160. *	2.	3.	4.	2.	2.	0.	0.	1.	0.	0.	1.	2.	1.	0.	0.	1.	1.	2.	1.	1.

NB_PM25.out

(DEGR)*	REC1	REC2	REC3	REC4	REC5	REC6	REC7	REC8	REC9	REC10	REC11	REC12	REC13	REC14	REC15	REC16	REC17	REC18	REC19	REC20
170. *	1.	2.	4.	3.	2.	0.	0.	1.	1.	0.	1.	2.	0.	0.	0.	1.	1.	1.	1.	0.
180. *	1.	2.	4.	3.	2.	0.	0.	1.	1.	0.	1.	2.	0.	0.	0.	1.	1.	1.	1.	0.
190. *	0.	2.	3.	3.	3.	0.	0.	1.	1.	0.	1.	1.	0.	0.	0.	0.	1.	1.	0.	0.
200. *	0.	1.	3.	2.	3.	0.	0.	1.	1.	1.	1.	1.	0.	0.	0.	0.	1.	1.	0.	0.
210. *	0.	1.	3.	2.	2.	1.	1.	1.	1.	0.	0.	1.	0.	0.	0.	0.	0.	1.	0.	0.
220. *	0.	1.	2.	2.	1.	1.	1.	1.	1.	1.	0.	1.	1.	0.	0.	0.	0.	0.	0.	0.
230. *	0.	1.	2.	1.	1.	2.	2.	1.	1.	1.	0.	1.	1.	1.	0.	0.	0.	0.	0.	0.
240. *	0.	1.	2.	1.	0.	2.	2.	2.	1.	1.	0.	1.	1.	1.	0.	0.	0.	0.	0.	0.
250. *	0.	1.	2.	1.	0.	2.	2.	2.	1.	1.	0.	1.	1.	1.	0.	0.	0.	0.	0.	0.
260. *	0.	1.	2.	1.	0.	2.	2.	2.	1.	1.	1.	1.	1.	1.	0.	0.	0.	0.	0.	0.
270. *	0.	1.	2.	0.	0.	2.	3.	2.	1.	1.	1.	1.	1.	1.	1.	0.	0.	0.	0.	0.
280. *	0.	1.	2.	0.	0.	2.	2.	2.	1.	1.	1.	1.	1.	1.	1.	0.	0.	0.	0.	0.
290. *	0.	1.	2.	0.	0.	2.	2.	2.	2.	1.	1.	1.	1.	1.	1.	0.	0.	0.	0.	0.
300. *	0.	1.	2.	0.	0.	2.	2.	3.	2.	1.	1.	2.	1.	1.	1.	0.	0.	0.	0.	0.
310. *	0.	1.	2.	0.	0.	2.	2.	3.	2.	1.	1.	2.	1.	1.	1.	0.	0.	0.	0.	0.
320. *	0.	1.	2.	0.	0.	2.	2.	3.	2.	2.	2.	2.	1.	1.	1.	0.	0.	1.	1.	0.
330. *	0.	1.	2.	0.	0.	2.	2.	2.	2.	1.	2.	3.	2.	1.	1.	0.	0.	1.	1.	0.
340. *	0.	1.	1.	0.	0.	1.	2.	2.	2.	1.	2.	3.	2.	2.	1.	0.	0.	2.	1.	0.
350. *	1.	1.	1.	0.	0.	2.	2.	2.	2.	1.	2.	3.	3.	2.	1.	0.	0.	2.	1.	0.
360. *	0.	1.	1.	0.	1.	1.	2.	3.	1.	1.	1.	3.	3.	2.	2.	0.	1.	2.	1.	0.
MAX *	2.	3.	4.	3.	3.	2.	3.	3.	2.	2.	2.	3.	4.	3.	2.	3.	3.	4.	3.	2.
DEGR. *	150	150	160	190	190	250	270	310	310	320	340	340	20	20	20	50	60	60	80	90

JOB: Landmark Center RUN: 2018NB

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-360.

WIND * CONCENTRATION
ANGLE * (ug/m**3)

(DEGR)*	REC21	REC22	REC23	REC24	REC25	REC26	REC27	REC28	REC29	REC30	REC31	REC32	REC33	REC34	REC35	REC36	REC37	REC38	REC39	REC40
0. *	0.	0.	0.	0.	0.	1.	1.	2.	1.	1.	2.	2.	2.	2.	2.	0.	0.	1.	1.	0.
10. *	0.	0.	0.	0.	0.	1.	2.	2.	1.	1.	2.	2.	2.	2.	3.	0.	0.	1.	1.	0.
20. *	0.	0.	0.	0.	0.	1.	2.	2.	1.	0.	1.	2.	2.	2.	2.	0.	0.	1.	1.	1.
30. *	0.	0.	0.	0.	0.	2.	2.	2.	1.	0.	1.	2.	2.	2.	2.	1.	1.	1.	1.	1.
40. *	0.	0.	1.	0.	0.	2.	2.	2.	1.	0.	1.	2.	2.	2.	2.	1.	1.	1.	1.	1.
50. *	0.	0.	1.	0.	0.	1.	2.	2.	1.	0.	1.	2.	2.	1.	1.	2.	2.	2.	1.	1.
60. *	0.	0.	1.	1.	0.	1.	2.	2.	0.	0.	1.	2.	2.	1.	1.	3.	2.	2.	1.	1.
70. *	0.	0.	2.	1.	0.	1.	1.	1.	0.	0.	0.	1.	1.	1.	1.	3.	2.	3.	1.	1.
80. *	0.	1.	2.	2.	1.	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.	3.	2.	3.	2.	2.
90. *	0.	1.	2.	2.	1.	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.	3.	2.	2.	2.	2.
100. *	1.	1.	2.	2.	1.	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.	2.	2.	2.	2.	2.
110. *	1.	1.	2.	2.	1.	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.	2.	2.	2.		

2. 2.

120. *	1.	1.	1.	2.	1.	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.	2.	2.	2.	2.	2.
130. *	1.	1.	1.	2.	1.	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.	2.	2.	2.	1.	1.
140. *	1.	1.	2.	2.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	2.	2.	1.	1.	1.
150. *	2.	2.	2.	2.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	2.	2.	1.	1.	1.
160. *	2.	2.	2.	2.	1.	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.	3.	2.	2.	1.	1.
170. *	2.	2.	2.	2.	2.	0.	0.	1.	0.	0.	0.	0.	0.	0.	1.	3.	3.	2.	1.	1.
180. *	2.	2.	2.	2.	2.	0.	0.	1.	1.	0.	0.	0.	0.	0.	1.	3.	3.	2.	2.	1.
190. *	2.	2.	2.	2.	2.	0.	0.	1.	1.	0.	0.	0.	0.	0.	1.	3.	3.	2.	1.	1.
200. *	1.	2.	3.	2.	2.	0.	0.	1.	1.	0.	0.	0.	0.	1.	1.	2.	3.	2.	1.	1.
210. *	1.	1.	3.	2.	2.	0.	1.	1.	1.	0.	0.	0.	1.	1.	1.	2.	2.	2.	1.	0.
220. *	1.	1.	2.	1.	1.	0.	1.	1.	1.	1.	0.	0.	2.	2.	1.	2.	1.	1.	0.	0.
230. *	1.	1.	1.	1.	1.	1.	1.	2.	1.	1.	0.	0.	2.	2.	2.	1.	1.	1.	0.	0.
240. *	1.	1.	1.	1.	0.	1.	2.	2.	2.	1.	0.	1.	3.	3.	2.	1.	1.	0.	0.	0.
250. *	1.	1.	1.	0.	0.	2.	2.	2.	2.	1.	0.	1.	3.	3.	2.	1.	1.	0.	0.	0.
260. *	1.	1.	1.	0.	0.	2.	2.	2.	2.	1.	1.	1.	2.	3.	2.	1.	0.	0.	0.	0.
270. *	1.	1.	1.	0.	0.	2.	2.	2.	2.	2.	1.	1.	2.	3.	2.	1.	0.	0.	0.	0.
280. *	1.	1.	1.	0.	0.	2.	2.	2.	2.	2.	1.	2.	2.	3.	3.	1.	0.	0.	0.	0.
290. *	1.	1.	1.	0.	0.	2.	2.	2.	2.	2.	1.	1.	1.	2.	3.	1.	0.	0.	0.	0.
300. *	0.	1.	1.	0.	0.	2.	2.	2.	2.	2.	1.	1.	2.	3.	3.	1.	0.	0.	0.	1.
310. *	0.	1.	1.	0.	0.	2.	2.	2.	2.	2.	1.	1.	2.	3.	3.	1.	0.	0.	1.	0.
320. *	0.	0.	0.	0.	0.	2.	2.	2.	1.	1.	1.	1.	2.	2.	2.	1.	0.	1.	1.	1.
330. *	0.	0.	0.	0.	0.	1.	2.	2.	1.	1.	1.	1.	2.	2.	2.	1.	0.	1.	1.	1.
340. *	0.	0.	0.	0.	0.	2.	2.	1.	1.	1.	2.	2.	2.	2.	2.	0.	0.	1.	1.	0.
350. *	0.	0.	0.	0.	0.	1.	2.	1.	1.	1.	2.	2.	2.	2.	2.	0.	0.	1.	1.	0.
360. *	0.	0.	0.	0.	0.	1.	1.	2.	1.	1.	2.	2.	2.	2.	2.	0.	0.	1.	1.	0.
MAX *	2.	2.	3.	2.	2.	2.	2.	2.	2.	2.	2.	2.	3.	3.	3.	3.	3.	3.	2.	2.
DEGR. *	170	190	200	170	200	280	290	250	260	300	350	10	240	250	300	70	180	70	90	100

♀ PAGE 7

JOB: Landmark Center RUN: 2018NB

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-360.

WIND ANGLE (DEGR) *	CONCENTRATION (ug/m**3) REC41	REC42	REC43	REC44	REC45
0. *	0.	0.	1.	0.	0.
10. *	0.	0.	1.	0.	0.
20. *	0.	0.	0.	0.	0.
30. *	0.	0.	0.	0.	0.
40. *	0.	0.	0.	0.	0.
50. *	0.	0.	0.	0.	0.
60. *	0.	0.	1.	0.	0.
70. *	0.	0.	2.	1.	1.
80. *	1.	1.	2.	2.	2.
90. *	1.	1.	2.	2.	2.
100. *	0.	1.	2.	2.	1.
110. *	0.	1.	2.	2.	1.
120. *	0.	1.	2.	2.	1.
130. *	1.	1.	2.	2.	2.
140. *	1.	1.	2.	2.	2.

150. *	1.	1.	2.	2.	2.
160. *	1.	1.	2.	2.	2.
170. *	1.	1.	2.	2.	2.
180. *	1.	1.	2.	2.	2.
190. *	1.	1.	2.	2.	2.
200. *	1.	2.	2.	2.	2.
210. *	2.	2.	2.	2.	2.
220. *	2.	2.	3.	3.	3.
230. *	2.	2.	3.	3.	3.
240. *	1.	2.	2.	2.	2.
250. *	1.	1.	2.	2.	2.
260. *	1.	1.	1.	1.	1.
270. *	0.	1.	1.	1.	1.
280. *	0.	1.	1.	1.	1.
290. *	0.	1.	1.	1.	0.
300. *	0.	1.	1.	0.	0.
310. *	0.	1.	1.	0.	0.
320. *	0.	1.	1.	0.	0.
330. *	0.	0.	1.	0.	0.
340. *	0.	0.	1.	0.	0.
350. *	0.	0.	1.	0.	0.
360. *	0.	0.	1.	0.	0.
MAX *	2.	2.	3.	3.	3.
DEGR. *	220	220	220	220	230

THE HIGHEST CONCENTRATION OF 4. ug/m**3 OCCURRED AT RECEPTOR REC18.

♀ CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 95221

JOB: Landmark Center RUN: 2018NB

DATE : 7/22/13
TIME : 14:36:34

The MODE flag has been set to P for calculating PM averages.

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 175. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 ug/m**3

LINK VARIABLES

LINK DESCRIPTION	X1	Y1	X2	Y2	LENGTH (FT)	BRG (DEG)	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)	V/C	QUEUE (VEH)
1. Fen/Brook WB TT	2508.3	3314.8	2586.4	3416.7	128.	37.	AG	0.	100.0	1.0	20.0	0.66	6.5
2. Fen/Brook EB TTTR	2469.9	3221.1	2415.3	3145.8	93.	216.	AG	0.	100.0	1.0	30.0	0.48	4.7
3. Fen/Brook SB L	2487.6	3319.0	2362.9	3437.3	172.	313.	AG	0.	100.0	1.0	10.0	0.83	8.7
4. Fen/Brook SB LTT	2476.2	3307.2	2397.4	3380.1	107.	313.	AG	0.	100.0	1.0	20.0	0.54	5.5
5. Fen/Brook SB R	2463.2	3293.4	2440.4	3315.4	32.	314.	AG	0.	100.0	1.0	10.0	0.16	1.6
6. Park/Brook WB TTR	2701.3	3561.7	2742.4	3616.0	68.	37.	AG	0.	100.0	1.0	30.0	0.42	3.5
7. Park/Brook NWB LLRRR	2745.9	3510.4	3745.0	3896.3	1071.	69.	AG	0.	100.0	1.0	30.0	1.25	54.4
8. Park/Brook NB LTTTR	2715.4	3403.8	2770.2	3333.9	89.	142.	AG	0.	100.0	1.0	40.0	0.55	4.5
9. Park/Brook EB L	2628.6	3435.0	2599.8	3397.7	47.	218.	AG	0.	100.0	1.0	10.0	0.61	2.4
10. Park/Brook EB T	2637.5	3428.1	2557.6	3326.0	130.	218.	AG	0.	100.0	1.0	10.0	0.68	6.6
11. Park/Brook EB RR	2648.5	3416.9	2594.3	3345.2	90.	217.	AG	0.	100.0	1.0	20.0	0.51	4.6
12. River/Park SB	2213.3	3801.8	3580.3	6597.8	3112.	26.	AG	0.	100.0	1.0	10.0	2.01	158.1
13. River/Park SB East	2256.2	3801.2	2279.3	3925.6	127.	11.	AG	0.	100.0	1.0	20.0	0.87	6.4
14. River/Park WB North	2272.8	3765.2	2366.7	3765.6	94.	90.	AG	0.	100.0	1.0	30.0	0.51	4.8
15. River/Park WB South	2270.5	3707.9	2327.4	3732.3	62.	67.	AG	0.	100.0	1.0	20.0	0.33	3.1
16. River/Park NEB	2169.9	3720.6	2157.8	3709.0	17.	226.	AG	0.	100.0	1.0	20.0	0.12	0.9
17. Beacon/Park SB LTT	1962.9	4712.6	1931.1	4812.3	105.	342.	AG	0.	100.0	1.0	20.0	0.49	5.3
18. Beacon/Park WB LTT	2055.3	4691.7	2201.8	4745.7	156.	70.	AG	0.	100.0	1.0	20.0	0.72	7.9
19. Beacon/Park NB LTT	2041.7	4597.4	3065.8	1613.7	3155.	161.	AG	0.	100.0	1.0	20.0	****	160.3
20. Beacon/Park EB LTTT	1966.3	4608.1	1913.8	4584.5	58.	246.	AG	0.	100.0	1.0	30.0	0.29	2.9
21. Beacon/Park EB R	1975.6	4560.5	1953.5	4563.9	22.	279.	AG	0.	100.0	1.0	20.0	0.10	1.1
22. Beacon/Park SB R	1917.2	4688.3	1919.9	4692.5	5.	32.	AG	0.	100.0	1.0	10.0	0.02	0.3
23. Beacon/Park WB R	2019.8	4741.2	2031.4	4737.2	12.	109.	AG	0.	100.0	1.0	10.0	0.06	0.6
24. Beacon/Park NB R	2095.2	4627.5	2086.9	4605.4	24.	201.	AG	0.	100.0	1.0	10.0	0.11	1.2
25. Boyl/Kil SB LTR	3322.0	3753.8	3307.4	3798.9	47.	342.	AG	0.	100.0	1.0	20.0	0.32	2.4
26. Boyl/Kil WB LTTR	3373.3	3738.7	3451.2	3770.2	84.	68.	AG	0.	100.0	1.0	20.0	0.50	4.3
27. Boyl/Kil NB LTR	3365.2	3677.7	3376.9	3648.1	32.	158.	AG	0.	100.0	1.0	10.0	0.21	1.6
28. Boyl/Kil EB LTTR	3320.4	3695.3	3225.5	3660.7	101.	250.	AG	0.	100.0	1.0	20.0	0.60	5.1
29. Fenway/Brook South	2496.9	3278.9	2636.6	3081.1	242.	145.	AG	916.	0.0	1.0	54.0		
30. Fenway/Brook West	2481.8	3262.9	2347.3	3075.6	231.	216.	AG	1881.	0.0	1.0	78.0		
31. Fenway/Brook North	2491.0	3288.6	2373.1	3398.7	161.	313.	AG	1628.	0.0	1.0	66.0		
32. Fenway/Brook East	2497.8	3264.6	2608.7	3389.7	167.	42.	AG	2403.	0.0	1.0	90.0		
33. Park/Brook South	2691.9	3447.3	2838.3	3241.2	253.	145.	AG	958.	0.0	1.0	66.0		
34. Park/Brook West	2672.2	3490.7	2502.8	3273.8	275.	218.	AG	2413.	0.0	1.0	90.0		
35. Park/Brook North	2656.7	3489.7	2496.1	3644.1	223.	314.	AG	1794.	0.0	1.0	66.0		
36. Park/Brook East	2663.3	3490.8	2801.7	3675.1	230.	37.	AG	1249.	0.0	1.0	66.0		
37. Park/Brook SE	2681.0	3470.4	2968.4	3574.9	306.	70.	AG	2358.	0.0	1.0	78.0		
38. River/Park N	2254.7	3768.2	2266.4	3911.9	144.	5.	AG	473.	0.0	1.0	42.0		
39. River/Park SE	2239.1	3675.4	2343.7	3750.1	129.	54.	AG	428.	0.0	1.0	42.0		
40. River/Park NE	2237.1	3772.1	2377.4	3769.2	140.	91.	AG	872.	0.0	1.0	54.0		

NB_PM25_2.out

LINK DESCRIPTION	X1	Y1	X2	Y2	LENGTH (FT)	BRG (DEG)	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)
41. River/Park S	2231.1	3745.1	2210.1	3564.3	182.	187.	AG	901.	0.0	1.0	54.0
42. River/Park SW	2211.1	3765.1	2058.1	3624.4	208.	227.	AG	1420.	0.0	1.0	54.0
43. River/Park NW	2194.0	3770.2	2250.7	3886.0	129.	26.	AG	548.	0.0	1.0	30.0
44. Beacon/Park N	1996.0	4667.5	1894.2	4948.4	299.	340.	AG	1153.	0.0	1.0	78.0

♀

JOB: Landmark Center RUN: 2018NB

DATE : 7/22/13
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LINK VARIABLES

LINK DESCRIPTION	X1	Y1	X2	Y2	LENGTH (FT)	BRG (DEG)	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)	V/C	QUEUE (VEH)
45. Beacon/Park NR	1908.0	4673.8	1956.1	4744.7	86.	34.	AG	15.	0.0	1.0	30.0		
46. Beacon/Park E	1997.8	4657.7	2274.4	4755.8	293.	70.	AG	1621.	0.0	1.0	78.0		
47. Beacon/Park ER	1991.4	4750.8	2112.1	4710.6	127.	108.	AG	33.	0.0	1.0	30.0		
48. Beacon/Park S	2009.1	4646.4	2098.7	4401.0	261.	160.	AG	1732.	0.0	1.0	78.0		
49. Beacon/Park SR	2102.5	4662.0	2076.2	4571.2	95.	196.	AG	71.	0.0	1.0	42.0		
50. Beacon/Park W EB	1995.6	4607.6	1704.2	4488.4	315.	248.	AG	600.	0.0	1.0	66.0		
51. Beacon/Park W EBR	2009.1	4551.2	1907.4	4575.2	104.	283.	AG	134.	0.0	1.0	38.0		
52. Beacon/Park W WB	1989.3	4675.4	1658.3	4556.1	352.	250.	AG	843.	0.0	1.0	78.0		
53. Boyl/Kil N	3344.5	3717.0	3289.1	3876.3	169.	341.	AG	320.	0.0	1.0	54.0		
54. Boyl/Kil E	3348.9	3715.0	3516.2	3780.7	180.	69.	AG	2366.	0.0	1.0	78.0		
55. Boyl/Kil S	3349.9	3702.1	3425.5	3502.1	214.	159.	AG	242.	0.0	1.0	54.0		
56. Boyl/Kil W	3346.0	3717.8	3141.9	3641.3	218.	249.	AG	2392.	0.0	1.0	78.0		

♀

JOB: Landmark Center RUN: 2018NB

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1. Fen/Brook WB TT	100	54	3.0	870	1600	0.04	1	3
2. Fen/Brook EB TTTR	100	54	3.0	947	1600	0.04	1	3
3. Fen/Brook SB L	100	46	3.0	648	1600	0.04	1	3
4. Fen/Brook SB LTT	100	46	3.0	854	1600	0.04	1	3
5. Fen/Brook SB R	100	46	3.0	126	1600	0.04	1	3
6. Park/Brook WB TTR	100	68	3.0	550	1600	0.04	1	3
7. Park/Brook NWB LLRRR	100	75	3.0	1203	1600	0.04	1	3
8. Park/Brook NB LTTTR	100	68	3.0	958	1600	0.04	1	3
9. Park/Brook EB L	100	85	3.0	98	1600	0.04	1	3
10. Park/Brook EB T	100	57	3.0	416	1600	0.04	1	3
11. Park/Brook EB RR	100	32	3.0	1029	1600	0.04	1	3
12. River/Park SB	100	78	3.0	548	1600	0.04	1	3
13. River/Park SB East	100	78	3.0	473	1600	0.04	1	3
14. River/Park WB North	100	59	3.0	875	1600	0.04	1	3
15. River/Park WB South	100	59	3.0	385	1600	0.04	1	3
16. River/Park NEB	100	73	3.0	84	1600	0.04	1	3
17. Beacon/Park SB LTT	110	61	3.0	629	1600	0.04	1	3
18. Beacon/Park WB LTT	110	56	3.0	1020	1600	0.04	1	3
19. Beacon/Park NB LTT	110	103	3.0	609	1600	0.04	1	3
20. Beacon/Park EB LTTT	110	68	3.0	466	1600	0.04	1	3
21. Beacon/Park EB R	110	61	3.0	134	1600	0.04	1	3
22. Beacon/Park SB R	110	61	3.0	15	1600	0.04	1	3
23. Beacon/Park WB R	110	68	3.0	33	1600	0.04	1	3
24. Beacon/Park NB R	110	61	3.0	71	1600	0.04	1	3
25. Boyl/Kil SB LTR	100	71	3.0	244	1600	0.04	1	3
26. Boyl/Kil WB LTTR	100	29	3.0	1060	1600	0.04	1	3
27. Boyl/Kil NB LTR	100	71	3.0	82	1600	0.04	1	3
28. Boyl/Kil EB LTTR	100	29	3.0	1274	1600	0.04	1	3

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. Beacon/Park NE1	1956.0	4921.7	6.0
2. Beacon/Park NE2	1981.6	4851.2	6.0
3. Beacon/Park NE3	2059.7	4754.4	6.0
4. Beacon/Park NE4	2163.5	4768.4	6.0
5. Beacon/Park NE5	2234.2	4793.5	6.0
6. Beacon/Park SE1	2273.6	4703.5	6.0
7. Beacon/Park SE2	2202.9	4678.4	6.0
8. Beacon/Park SE3	2119.1	4608.0	6.0
9. Beacon/Park SE4	2120.2	4485.0	6.0
10. Beacon/Park SE5	2146.8	4412.1	6.0
11. Beacon/Park SW1	2053.4	4382.2	6.0
12. Beacon/Park SW2	2027.7	4452.7	6.0
13. Beacon/Park SW3	1951.6	4535.0	6.0
14. Beacon/Park SW4	1869.5	4509.6	6.0
15. Beacon/Park SW5	1800.1	4481.2	6.0
16. Beacon/Park NW1	1748.7	4640.8	6.0
17. Beacon/Park NW2	1819.3	4666.2	6.0
18. Beacon/Park NW3	1911.4	4723.3	6.0
19. Beacon/Park NW4	1893.8	4805.6	6.0
20. Beacon/Park NW5	1868.3	4876.1	6.0

		X	Y	Z	
21. Riverway/Park NE1	*	2301.3	3957.6	6.0	*
22. Riverway/Park NE2	*	2295.2	3882.8	6.0	*
23. Riverway/Park NE3	*	2289.1	3808.1	6.0	*

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JOB: Landmark Center RUN: 2018NB

DATE : 7/22/13
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RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (FT) X	Y	Z	*
24. Riverway/Park NE4	*	2364.1	3806.5	6.0	*
25. Riverway/Park NE5	*	2439.1	3806.0	6.0	*
26. Riverway/Park SE1	*	2427.5	3594.7	6.0	*
27. Riverway/Park SE2	*	2406.6	3667.7	6.0	*
28. Riverway/Park SE3	*	2309.4	3687.5	6.0	*
29. Riverway/Park SE4	*	2248.8	3576.7	6.0	*
30. Riverway/Park SE5	*	2296.6	3506.9	6.0	*
31. Riverway/Park SW1	*	2170.6	3544.5	6.0	*
32. Riverway/Park SW2	*	2179.2	3619.0	6.0	*
33. Riverway/Park SW3	*	2187.9	3693.5	6.0	*
34. Riverway/Park SW4	*	2132.7	3642.7	6.0	*
35. Riverway/Park SW5	*	2077.5	3592.0	6.0	*
36. Riverway/Park NW1	*	2059.1	3675.6	6.0	*
37. Riverway/Park NW2	*	2114.4	3726.4	6.0	*
38. Riverway/Park NW3	*	2169.6	3777.2	6.0	*
39. Riverway/Park NW4	*	2202.6	3844.5	6.0	*
40. Riverway/Park NW5	*	2235.3	3912.0	6.0	*
41. Boyl/Kil NE1	*	3320.8	3917.2	6.0	*
42. Boyl/Kil NE2	*	3339.3	3844.4	6.0	*
43. Boyl/Kil NE3	*	3364.0	3773.6	6.0	*
44. Boyl/Kil NE4	*	3433.8	3801.0	6.0	*
45. Boyl/Kil NE5	*	3503.6	3828.4	6.0	*
46. Boyl/Kil SE1	*	3537.2	3736.3	6.0	*
47. Boyl/Kil SE2	*	3467.1	3708.8	6.0	*
48. Boyl/Kil SE3	*	3397.3	3681.4	6.0	*
49. Boyl/Kil SE4	*	3423.8	3611.2	6.0	*
50. Boyl/Kil SE5	*	3450.3	3541.1	6.0	*
51. Boyl/Kil SW1	*	3379.9	3518.0	6.0	*
52. Boyl/Kil SW2	*	3353.1	3589.0	6.0	*
53. Boyl/Kil SW3	*	3326.9	3658.3	6.0	*
54. Boyl/Kil SW4	*	3256.7	3632.0	6.0	*
55. Boyl/Kil SW5	*	3186.4	3605.7	6.0	*
56. Boyl/Kil NW1	*	3153.2	3697.9	6.0	*
57. Boyl/Kil NW2	*	3223.4	3724.2	6.0	*
58. Boyl/Kil NW3	*	3293.6	3750.5	6.0	*
59. Boyl/Kil NW4	*	3269.0	3821.4	6.0	*
60. Boyl/Kil NW5	*	3244.5	3891.9	6.0	*

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JOB: Landmark Center RUN: 2018NB

MODEL RESULTS

REMARKS : In search of the angle corresponding to
the maximum concentration, only the first
angle, of the angles with same maximum
concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-360.

WIND * CONCENTRATION
ANGLE * (ug/m**3)

(DEGR)*	REC1	REC2	REC3	REC4	REC5	REC6	REC7	REC8	REC9	REC10	REC11	REC12	REC13	REC14	REC15	REC16	REC17	REC18	REC19	REC20
0. *	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.	2.	1.	1.	0.	0.	0.	0.	0.	0.	0.
10. *	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.	1.	1.	1.	1.	1.	0.	0.	1.	0.	0.
20. *	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.	1.	2.	1.	1.	1.	0.	0.	1.	0.	0.
30. *	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.	1.	1.	1.	1.	1.	0.	0.	1.	0.	0.
40. *	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.	1.	1.	1.	1.	1.	0.	0.	1.	0.	0.
50. *	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.	1.	1.	1.	1.	0.	0.	1.	0.	0.
60. *	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.	1.	1.	1.	1.	0.	0.	1.	0.	0.
70. *	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.	1.	1.	1.	0.	0.	1.	1.	1.	0.
80. *	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.	1.	1.	1.	1.	0.
90. *	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.	1.	1.	1.		

(DEGR)*	REC1	REC2	REC3	REC4	REC5	REC6	REC7	REC8	REC9	REC10	REC11	REC12	REC13	REC14	REC15	REC16	REC17	REC18	REC19	REC20
																			1.	0.
100. *	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.	1.	1.	1.	1.	1.
110. *	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.	1.	1.	1.	1.	1.
120. *	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.	1.	1.	1.	1.	1.
130. *	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.	1.	1.	1.	1.	1.
140. *	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.	1.	1.	1.	1.	1.
150. *	0.	1.	1.	1.	1.	0.	0.	0.	0.	0.	1.	1.	0.	0.	0.	1.	1.	1.	1.	1.
160. *	1.	1.	1.	1.	1.	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.	1.	1.	1.	1.	1.
170. *	1.	1.	1.	1.	1.	0.	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.	0.	1.	1.	0.
180. *	1.	1.	1.	1.	1.	0.	0.	1.	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
190. *	1.	1.	1.	1.	1.	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
200. *	1.	1.	1.	1.	1.	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
210. *	1.	1.	1.	2.	1.	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
220. *	1.	1.	1.	1.	1.	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
230. *	0.	1.	1.	1.	1.	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
240. *	0.	1.	1.	1.	1.	1.	1.	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
250. *	0.	0.	1.	1.	1.	1.	1.	1.	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
260. *	0.	0.	0.	0.	0.	1.	1.	1.	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
270. *	0.	0.	0.	0.	0.	1.	1.	1.	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
280. *	0.	0.	0.	0.	0.	1.	1.	1.	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
290. *	0.	0.	0.	0.	0.	1.	1.	1.	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
300. *	0.	0.	0.	0.	0.	1.	1.	1.	2.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
310. *	0.	0.	0.	0.	0.	1.	1.	1.	2.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
320. *	0.	0.	0.	0.	0.	1.	1.	1.	2.	2.	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
330. *	0.	0.	0.	0.	0.	1.	1.	1.	1.	1.	1.	0.	1.	0.	0.	0.	0.	0.	0.	0.
340. *	0.	0.	0.	0.	0.	1.	1.	1.	1.	1.	1.	1.	1.	0.	0.	0.	0.	0.	0.	0.
350. *	0.	0.	0.	0.	0.	0.	1.	1.	1.	1.	1.	1.	1.	0.	0.	0.	0.	0.	0.	0.
360. *	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.	2.	1.	1.	0.	0.	0.	0.	0.	0.	0.
MAX *	1.	1.	1.	2.	1.	1.	1.	1.	2.	2.	2.	2.	1.	1.	1.	1.	1.	1.	1.	1.
DEGR. *	170	180	170	210	230	260	260	270	310	320	0	20	50	40	50	100	110	150	140	150

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JOB: Landmark Center RUN: 2018NB

MODEL RESULTS

REMARKS : In search of the angle corresponding to
the maximum concentration, only the first
angle, of the angles with same maximum
concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-360.

WIND * CONCENTRATION
ANGLE * (ug/m**3)

(DEGR)*	REC21	REC22	REC23	REC24	REC25	REC26	REC27	REC28	REC29	REC30	REC31	REC32	REC33	REC34	REC35	REC36	REC37	REC38	REC39	REC40
0. *	0.	1.	1.	0.	0.	0.	0.	2.	1.	1.	0.	1.	1.	1.	1.	0.	0.	0.	0.	1.
10. *	0.	0.	1.	0.	0.	0.	0.	2.	1.	1.	1.	1.	1.	1.	1.	0.	0.	0.	0.	0.
20. *	0.	0.	1.	0.	0.	0.	0.	1.	1.	0.	1.	1.	2.	1.	1.	0.	0.	0.	0.	1.
30. *	0.	0.	1.	0.	0.	0.	0.	1.	0.	0.	1.	1.	1.	1.	1.	0.	0.	1.	1.	1.

40. *	0.	0.	1.	0.	0.	0.	0.	1.	0.	0.	1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
50. *	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.	1.	1.	1.	1.	1.	1.	1.	1.	1.
60. *	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.	1.	1.	1.	1.	1.	1.	1.	1.
70. *	0.	0.	0.	0.	0.	1.	0.	0.	0.	1.	0.	0.	1.	1.	0.	1.	1.	1.	1.	1.
80. *	0.	0.	0.	0.	0.	1.	0.	0.	1.	1.	1.	1.	1.	0.	0.	1.	1.	1.	1.	1.
90. *	0.	0.	1.	0.	0.	1.	1.	1.	1.	1.	1.	1.	1.	1.	1.	1.	2.	1.	1.	1.
100. *	0.	0.	1.	0.	0.	1.	1.	1.	1.	1.	1.	1.	1.	1.	1.	2.	2.	2.	1.	1.
110. *	0.	0.	2.	0.	0.	1.	1.	1.	1.	1.	1.	1.	1.	1.	1.	1.	1.	2.	2.	1.
120. *	0.	0.	2.	0.	0.	1.	1.	1.	1.	1.	1.	1.	1.	1.	0.	1.	2.	2.	2.	2.
130. *	0.	1.	2.	1.	0.	1.	1.	1.	1.	1.	1.	1.	1.	1.	0.	1.	1.	1.	2.	2.
140. *	0.	1.	2.	1.	1.	1.	1.	1.	1.	1.	0.	1.	1.	1.	0.	1.	1.	2.	2.	2.
150. *	0.	2.	2.	1.	1.	1.	1.	1.	1.	1.	0.	1.	1.	0.	0.	1.	1.	2.	2.	2.
160. *	1.	2.	2.	1.	1.	1.	1.	1.	0.	0.	0.	0.	1.	0.	0.	1.	1.	1.	1.	2.
170. *	1.	2.	2.	1.	1.	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.	1.	1.	1.
180. *	1.	2.	1.	1.	1.	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.	1.	1.	1.
190. *	1.	2.	1.	1.	0.	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.	1.	1.	1.
200. *	2.	2.	1.	1.	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.	1.	0.	1.
210. *	2.	2.	1.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.
220. *	2.	2.	1.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
230. *	1.	2.	1.	2.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
240. *	1.	2.	1.	1.	1.	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
250. *	1.	2.	1.	1.	1.	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
260. *	1.	2.	1.	1.	1.	0.	1.	1.	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
270. *	1.	2.	1.	1.	1.	1.	1.	1.	0.	0.	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.
280. *	1.	2.	1.	1.	1.	1.	1.	1.	0.	0.	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.
290. *	1.	2.	1.	1.	0.	1.	1.	1.	1.	0.	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.
300. *	1.	2.	1.	1.	0.	1.	1.	1.	1.	0.	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.
310. *	1.	2.	1.	1.	0.	1.	1.	1.	1.	0.	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.
320. *	1.	2.	1.	1.	0.	1.	1.	1.	1.	0.	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.
330. *	1.	2.	1.	1.	0.	1.	1.	1.	1.	0.	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.
340. *	1.	2.	2.	0.	0.	1.	1.	2.	1.	0.	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.
350. *	1.	2.	2.	0.	0.	0.	0.	2.	1.	0.	0.	1.	1.	1.	0.	0.	0.	0.	0.	1.
360. *	0.	1.	1.	0.	0.	0.	0.	2.	1.	1.	0.	1.	1.	1.	1.	0.	0.	0.	0.	1.
MAX *	2.	2.	2.	2.	1.	1.	1.	2.	1.	1.	1.	1.	2.	1.	1.	2.	2.	2.	2.	2.
DEGR. *	200	160	150	230	250	170	310	350	0	140	20	20	20	30	30	100	100	110	120	160

♀

JOB: Landmark Center RUN: 2018NB PAGE 7

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-360.

WIND * CONCENTRATION
ANGLE * (ug/m**3)

(DEGR)*	REC41	REC42	REC43	REC44	REC45	REC46	REC47	REC48	REC49	REC50	REC51	REC52	REC53	REC54	REC55	REC56	REC57	REC58	REC59	REC60
0. *	0.	0.	0.	0.	0.	0.	1.	1.	1.	0.	1.	1.	2.	1.	1.	0.	0.	0.	0.	0.
10. *	0.	0.	0.	0.	0.	0.	1.	2.	1.	0.	1.	1.	2.	2.	1.	0.	0.	0.	0.	0.
20. *	0.	0.	0.	0.	0.	0.	1.	2.	1.	0.	1.	1.	2.	2.	2.	0.	0.	0.	0.	0.
30. *	0.	0.	0.	0.	0.	0.	1.	2.	0.	0.	0.	1.	2.	2.	2.	0.	0.	0.	0.	0.
40. *	0.	0.	0.	0.	0.	0.	1.	2.	0.	0.	0.	1.	2.	2.	2.	0.	0.	0.	0.	0.
50. *	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.	0.	0.	2.	2.	2.	0.	0.	1.	0.	0.
60. *	0.	0.	1.	0.	0.	0.	1.	1.	0.	0.	0.	0.	1.	1.	2.	1.	1.	1.	0.	0.
70. *	0.	0.	1.	1.	1.	0.	0.	0.	0.	0.	0.	0.	1.	1.	1.	2.	2.	2.	0.	0.
80. *	0.	0.	2.	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	2.	2.	2.	0.	0.
90. *	0.	0.	2.	2.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	2.	2.	2.	1.	0.
100. *	0.	0.	2.	2.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	2.	2.	2.	1.	0.
110. *	0.	1.	2.	2.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	2.	2.	2.	1.	0.
120. *	0.	1.	2.	2.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	2.	2.	2.	1.	1.
130. *	0.	1.	2.	2.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	2.	2.	2.	1.	1.
140. *	0.	1.	2.	2.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	2.	2.	2.	1.	1.
150. *	1.	1.	2.	2.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	2.	2.	2.	1.	1.
160. *	1.	1.	2.	2.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	2.	2.	2.	1.	1.
170. *	1.	1.	2.	2.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	2.	2.	2.	1.	1.
180. *	1.	1.	2.	2.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.	2.	2.	1.	1.
190. *	1.	1.	2.	2.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.	2.	2.	1.	0.
200. *	1.	1.	2.	2.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.	2.	2.	1.	0.
210. *	1.	1.	2.	2.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.	2.	2.	1.	0.
220. *	1.	1.	2.	2.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.	2.	2.	1.	1.
230. *	1.	1.	3.	3.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	2.	2.	2.	1.	1.
240. *	0.	1.	3.	2.	3.	0.	1.	1.	0.	0.	0.	0.	1.	1.	1.	2.	2.	2.	1.	1.
250. *	0.	1.	2.	2.	2.	1.	1.	1.	0.	0.	0.	0.	1.	1.	1.	1.	2.	2.	1.	0.
260. *	0.	0.	1.	1.	1.	2.	2.	2.	1.	0.	0.	0.	2.	2.	1.	1.	1.	1.	0.	0.
270. *	0.	0.	0.	0.	0.	2.	2.	2.	1.	1.	1.	1.	2.	2.	1.	0.	0.	0.	0.	0.
280. *	0.	0.	0.	0.	0.	2.	2.	2.	1.	1.	0.	1.	2.	2.	1.	0.	0.	0.	0.	0.
290. *	0.	0.	0.	0.	0.	1.	2.	2.	1.	1.	0.	1.	2.	2.	1.	0.	0.	0.	0.	0.
300. *	0.	0.	0.	0.	0.	1.	2.	2.	1.	1.	0.	1.	2.	2.	1.	0.	0.	0.	0.	0.
310. *	0.	0.	0.	0.	0.	1.	2.	2.	1.	1.	0.	1.	2.	2.	1.	0.	0.	0.	0.	0.
320. *	0.	0.	0.	0.	0.	1.	1.	2.	1.	1.	1.	1.	1.	1.	1.	0.	0.	0.	0.	0.
330. *	0.	0.	0.	0.	0.	1.	2.	2.	1.	1.	1.	1.	2.	2.	1.	0.	0.	0.	0.	0.
340. *	0.	0.	0.	0.	0.	1.	2.	2.	1.	1.	1.	1.	2.	2.	1.	0.	0.	0.	0.	0.
350. *	0.	0.	0.	0.	0.	1.	1.	1.	1.	1.	1.	1.	2.	2.	1.	0.	0.	0.	0.	0.
360. *	0.	0.	0.	0.	0.	0.	1.	1.	1.	0.	1.	1.	2.	1.	1.	0.	0.	0.	0.	0.
MAX *	1.	1.	3.	3.	3.	2.	2.	2.	1.	1.	1.	1.	2.	2.	2.	2.	2.	2.	1.	1.
DEGR. *	180	210	230	230	240	270	270	260	330	290	0	350	270	30	50	90	90	90	120	140

THE HIGHEST CONCENTRATION OF 3. ug/m**3 OCCURRED AT RECEPTOR REC43.

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♀                       CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 95221                          PAGE  1

      JOB: LANDMARKCENTER                                          RUN: 2018_NB_CO_3

      DATE :  7/22/13
      TIME : 14:33:58

         The MODE flag has been set to P for calculating PM averages.

       SITE & METEOROLOGICAL VARIABLES
       -------------------------------
       VS =   0.0 CM/S       VD =   0.0 CM/S       Z0 = 175. CM
        U =  1.0 M/S         CLAS =   4  (D)     ATIM =  60. MINUTES     MIXH =  1000. M   AMB =  0.0 ug/m**3

       LINK VARIABLES
       --------------
         LINK DESCRIPTION     *         LINK COORDINATES (FT)          *    LENGTH  BRG TYPE   VPH    EF      H   W
V/C QUEUE
                              *   X1        Y1        X2        Y2     *     (FT)  (DEG)            (G/MI)  (FT) (FT)
   (VEH)
------------------------*----------------------------------------*-----------------------------------------------------
----
       1. Brook/Full EB L     *   3074.7    4018.5    3064.6    4005.3 *      17.   217. AG      0. 100.0   1.0 10.0
0.09   0.8
       2. Brook/Full EB TR    *   3083.6    4012.0    3036.0    3948.7 *      79.   217. AG      0. 100.0   1.0 10.0
0.44   4.0
       3. Brook/Full NB LTR   *   3121.3    4022.6    3148.7    4007.9 *      31.   118. AG      0. 100.0   1.0 10.0
0.17   1.6
       4. Brook/Full WB LTR   *   3127.2    4100.9    3163.9    4149.2 *      61.    37. AG      0. 100.0   1.0 20.0
0.31   3.1
       5. Brook/Full SB LT    *   3068.3    4050.9    3030.2    4078.9 *      47.   306. AG      0. 100.0   1.0 10.0
0.29   2.4
       6. Brook/Full SB R     *   3061.2    4041.4    3026.2    4066.5 *      43.   306. AG      0. 100.0   1.0 10.0
0.23   2.2
       7. Brook/Full N        *   3091.9    4045.7    2925.8    4161.5 *     203.   305. AG    431.   0.0   1.0 54.0
       8. Brook/Full E        *   3091.9    4045.7    3246.2    4230.8 *     241.    40. AG    989.   0.0   1.0 54.0
       9. Brook/Full S        *   3100.3    4031.3    3190.0    3977.6 *     105.   121. AG    341.   0.0   1.0 42.0
      10. Brook/Full W        *   3091.9    4048.0    2946.1    3847.4 *     248.   216. AG   1213.   0.0   1.0 54.0
♀                                                                                                                  PAGE  2
      JOB: LANDMARKCENTER                                          RUN: 2018_NB_CO_3

      DATE :  7/22/13
      TIME : 14:33:58

       1. Brook/Full EB L     *     100       33       3.0        92       1600       0.04      1        3
       2. Brook/Full EB TR    *     100       33       3.0       439       1600       0.04      1        3
       3. Brook/Full NB LTR   *     100       33       3.0       172       1600       0.04      1        3
       4. Brook/Full WB LTR   *     100       43       3.0       517       1600       0.04      1        3
       5. Brook/Full SB LT    *     100       67       3.0       129       1600       0.04      1        3
       6. Brook/Full SB R     *     100       57       3.0       138       1600       0.04      1        3

       RECEPTOR LOCATIONS
       ------------------
                              *         COORDINATES (FT)          *
         RECEPTOR             *      X          Y          Z      *
     -------------------------*-----------------------------------*
      1. Brook/Full NE1       *      2962.2     4181.2       6.0   *
      2. Brook/Full NE2       *      3023.7     4138.3       6.0   *
      3. Brook/Full NE3       *      3085.3     4095.4       6.0   *
      4. Brook/Full NE4       *      3133.3     4153.0       6.0   *
      5. Brook/Full NE5       *      3188.7     4204.0       6.0   *
      6. Brook/Full SE1       *      3235.0     4159.5       6.0   *
      7. Brook/Full SE2       *      3187.0     4101.9       6.0   *
      8. Brook/Full SE3       *      3130.3     4049.5       6.0   *
      9. Brook/Full SE4       *      3203.3     4005.7       6.0   *
     10. Brook/Full SE5       *      3267.6     3967.2       6.0   *
     11. Brook/Full SW1       *      3228.3     3918.5       6.0   *
     12. Brook/Full SW2       *      3163.9     3957.1       6.0   *
     13. Brook/Full SW3       *      3099.6     3995.6       6.0   *
     14. Brook/Full SW4       *      3055.5     3934.9       6.0   *
     15. Brook/Full SW5       *      3011.4     3874.3       6.0   *
     16. Brook/Full NW1       *      2950.5     3916.4       6.0   *
     17. Brook/Full NW2       *      2994.6     3977.0       6.0   *
     18. Brook/Full NW3       *      3038.7     4037.7       6.0   *
     19. Brook/Full NW4       *      2977.2     4080.6       6.0   *
     20. Brook/Full NW5       *      2915.6     4123.5       6.0   *
♀                                                                                                                  PAGE  3
      JOB: LANDMARKCENTER                                          RUN: 2018_NB_CO_3

       MODEL RESULTS
       -------------

       REMARKS : In search of the angle corresponding to
                 the maximum concentration, only the first
                 angle, of the angles with same maximum
                 concentrations, is indicated as maximum.

 WIND ANGLE RANGE:   0.-360.

 WIND  * CONCENTRATION
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 ANGLE *      (ug/m**3)
 (DEGR)* REC1  REC2  REC3  REC4  REC5  REC6  REC7  REC8  REC9  REC10 REC11 REC12 REC13 REC14 REC15 REC16 REC17 REC18
REC19 REC20

------*--------------------------------------------------------------------------------------------------------------
-------
   0.  *    0.    0.    0.    0.    0.    0.    0.    1.    0.    0.    0.    0.    1.    1.    1.    0.    0.    0.
0.   0.
  10.  *    0.    0.    0.    0.    0.    0.    0.    1.    0.    0.    0.    0.    1.    1.    1.    0.    0.    0.
0.   0.
  20.  *    0.    0.    0.    0.    0.    0.    0.    1.    0.    0.    0.    0.    1.    1.    1.    0.    0.    0.
0.   0.
  30.  *    0.    0.    0.    0.    0.    0.    0.    1.    0.    0.    0.    0.    1.    1.    1.    0.    0.    0.
0.   0.
  40.  *    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.
0.   0.
  50.  *    0.    0.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.    1.
0.   0.
  60.  *    0.    0.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.    1.
0.   0.
  70.  *    0.    0.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.    1.
0.   0.
  80.  *    0.    0.    1.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.    1.
0.   0.
  90.  *    0.    0.    1.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.    1.
0.   0.
 100.  *    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.
0.   0.
 110.  *    0.    0.    0.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.
1.   0.
 120.  *    0.    0.    0.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.
0.   0.
 130.  *    0.    0.    0.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.
0.   0.
 140.  *    0.    0.    0.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.
0.   0.
 150.  *    0.    0.    1.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.
0.   0.
 160.  *    0.    0.    1.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.
0.   0.
 170.  *    0.    1.    1.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.
0.   0.
 180.  *    0.    0.    1.    1.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.
0.   0.
 190.  *    0.    0.    1.    1.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.
0.   0.
 200.  *    0.    0.    1.    1.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.
0.   0.
 210.  *    0.    0.    1.    1.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.
0.   0.
 220.  *    0.    0.    1.    0.    1.    0.    1.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.
0.   0.
 230.  *    0.    0.    0.    0.    0.    1.    1.    1.    0.    0.    0.    0.    1.    0.    0.    0.    0.    0.
0.   0.
 240.  *    0.    0.    0.    0.    0.    1.    1.    1.    0.    0.    0.    0.    1.    1.    0.    0.    0.    0.
0.   0.
 250.  *    0.    0.    0.    0.    0.    1.    1.    1.    0.    0.    0.    0.    1.    1.    0.    0.    0.    0.
0.   0.
 260.  *    0.    0.    0.    0.    0.    1.    1.    1.    0.    0.    0.    0.    1.    1.    0.    0.    0.    0.
0.   0.
 270.  *    0.    0.    0.    0.    0.    0.    1.    1.    0.    0.    0.    0.    1.    1.    0.    0.    0.    0.
0.   0.
 280.  *    0.    0.    0.    0.    0.    0.    1.    1.    1.    0.    0.    0.    1.    0.    0.    0.    0.    0.
0.   0.
 290.  *    0.    0.    0.    0.    0.    0.    0.    1.    0.    0.    0.    0.    1.    0.    0.    0.    0.    0.
0.   0.
 300.  *    0.    0.    0.    0.    0.    0.    1.    1.    0.    0.    0.    0.    1.    0.    0.    0.    0.    0.
0.   0.
 310.  *    0.    0.    0.    0.    0.    0.    0.    1.    0.    0.    0.    0.    1.    0.    0.    0.    0.    0.
0.   0.
 320.  *    0.    0.    0.    0.    0.    0.    0.    1.    0.    0.    0.    0.    1.    1.    0.    0.    0.    0.
0.   0.
 330.  *    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.    1.    0.    0.    0.    0.
0.   0.
 340.  *    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.    1.    0.    0.    0.
0.   0.
 350.  *    0.    0.    0.    0.    0.    0.    0.    1.    0.    0.    0.    0.    1.    1.    1.    0.    0.    0.
0.   0.
 360.  *    0.    0.    0.    0.    0.    0.    0.    1.    0.    0.    0.    0.    1.    1.    1.    0.    0.    0.
0.   0.

------*--------------------------------------------------------------------------------------------------------------
-------
 MAX   *    0.    1.    1.    1.    1.    1.    1.    1.    1.    0.    0.    1.    1.    1.    1.    1.    1.    1.
1.   0.
 DEGR. *  140   170   200   180   200   240   240   230   280   290   310   330   330     0    10    60    60    50
110   90

 THE HIGHEST CONCENTRATION OF      1. ug/m**3 OCCURRED AT RECEPTOR REC18.
```

2018 Build
Microscale Output Files
(Particulate Matter 2.5 (PM2.5))

```
♀                      CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 95221                        PAGE  1

      JOB: Landmark Center                                          RUN: 2018NB

      DATE :  7/22/13
      TIME : 14:34:56

         The MODE flag has been set to P for calculating PM averages.

       SITE & METEOROLOGICAL VARIABLES
       -------------------------------
       VS =   0.0 CM/S       VD =   0.0 CM/S       Z0 = 175. CM
        U =  1.0 M/S         CLAS =   4  (D)     ATIM =  60. MINUTES     MIXH =  1000. M   AMB =  0.0 ug/m**3

       LINK VARIABLES
       --------------
         LINK DESCRIPTION     *         LINK COORDINATES (FT)          *    LENGTH  BRG TYPE   VPH    EF      H   W
V/C QUEUE
                              *   X1        Y1        X2        Y2     *     (FT)  (DEG)            (G/MI)  (FT) (FT)
   (VEH)

------------------------*--------------------------------------*--------------------------------------------------
----
       1. Fen/Brook WB TT     *   2508.3    3314.8    2585.7    3415.8 *     127.    37. AG      0. 100.0   1.0 20.0
0.66   6.5
       2. Fen/Brook EB TTTR   *   2469.9    3221.1    2414.6    3144.9 *      94.   216. AG      0. 100.0   1.0 30.0
0.49   4.8
       3. Fen/Brook SB L      *   2487.6    3319.0    2363.3    3436.9 *     171.   313. AG      0. 100.0   1.0 10.0
0.83   8.7
       4. Fen/Brook SB LTT    *   2476.2    3307.2    2395.5    3381.8 *     110.   313. AG      0. 100.0   1.0 20.0
0.56   5.6
       5. Fen/Brook SB R      *   2463.2    3293.4    2439.4    3316.5 *      33.   314. AG      0. 100.0   1.0 10.0
0.17   1.7
       6. Park/Brook WB TTR   *   2701.3    3561.7    2751.4    3627.8 *      83.    37. AG      0. 100.0   1.0 30.0
0.52   4.2
       7. Park/Brook NWB LLRRR*   2745.9    3510.4    3745.0    3896.3 *    1071.    69. AG      0. 100.0   1.0 30.0
1.25  54.4
       8. Park/Brook NB LTTTR *   2715.4    3403.8    2772.3    3331.3 *      92.   142. AG      0. 100.0   1.0 40.0
0.57   4.7
       9. Park/Brook EB L     *   2628.6    3435.0    2596.0    3392.8 *      53.   218. AG      0. 100.0   1.0 10.0
0.67   2.7
      10. Park/Brook EB T     *   2637.5    3428.1    2557.0    3325.2 *     131.   218. AG      0. 100.0   1.0 10.0
0.69   6.6
      11. Park/Brook EB RR    *   2648.5    3416.9    2594.3    3345.2 *      90.   217. AG      0. 100.0   1.0 20.0
0.51   4.6
      12. River/Park SB       *   2213.3    3801.8    3580.3    6597.8 *    3112.    26. AG      0. 100.0   1.0 10.0
2.01 158.1
      13. River/Park SB East  *   2256.2    3801.2    2279.3    3925.6 *     127.    11. AG      0. 100.0   1.0 20.0
0.87   6.4
      14. River/Park WB North *   2272.8    3765.2    2365.1    3765.6 *      92.    90. AG      0. 100.0   1.0 30.0
0.50   4.7
      15. River/Park WB South *   2270.5    3707.9    2337.8    3736.7 *      73.    67. AG      0. 100.0   1.0 20.0
0.39   3.7
      16. River/Park NEB      *   2169.9    3720.6    2153.5    3704.8 *      23.   226. AG      0. 100.0   1.0 20.0
0.16   1.2
      17. Beacon/Park SB LTT  *   1962.9    4712.6    1930.9    4813.0 *     105.   342. AG      0. 100.0   1.0 20.0
0.49   5.4
      18. Beacon/Park WB LTT  *   2055.3    4691.7    2200.7    4745.3 *     155.    70. AG      0. 100.0   1.0 20.0
0.71   7.9
      19. Beacon/Park NB LTT  *   2041.7    4597.4    3032.8    1710.0 *    3053.   161. AG      0. 100.0   1.0 20.0
**** 155.1
      20. Beacon/Park EB LTTT *   1966.3    4608.1    1913.4    4584.3 *      58.   246. AG      0. 100.0   1.0 30.0
0.29   2.9
      21. Beacon/Park EB R    *   1975.6    4560.5    1953.5    4563.9 *      22.   279. AG      0. 100.0   1.0 20.0
0.10   1.1
      22. Beacon/Park SB R    *   1917.2    4688.3    1919.9    4692.5 *       5.    32. AG      0. 100.0   1.0 10.0
0.02   0.3
      23. Beacon/Park WB R    *   2019.8    4741.2    2032.4    4736.8 *      13.   109. AG      0. 100.0   1.0 10.0
0.07   0.7
      24. Beacon/Park NB R    *   2095.2    4627.5    2086.9    4605.4 *      24.   201. AG      0. 100.0   1.0 10.0
0.11   1.2
      25. Boyl/Kil SB LTR     *   3322.0    3753.8    3306.1    3803.0 *      52.   342. AG      0. 100.0   1.0 20.0
0.35   2.6
      26. Boyl/Kil WB LTTR    *   3373.3    3738.7    3453.9    3771.3 *      87.    68. AG      0. 100.0   1.0 20.0
0.52   4.4
      27. Boyl/Kil NB LTR     *   3365.2    3677.7    3376.9    3648.1 *      32.   158. AG      0. 100.0   1.0 10.0
0.21   1.6
      28. Boyl/Kil EB LTTR    *   3320.4    3695.3    3225.5    3660.7 *     101.   250. AG      0. 100.0   1.0 20.0
0.60   5.1
      29. Fenway/Brook South  *   2496.9    3278.9    2636.6    3081.1 *     242.   145. AG    936.   0.0   1.0 54.0
      30. Fenway/Brook West   *   2481.8    3262.9    2347.3    3075.6 *     231.   216. AG   1965.   0.0   1.0 78.0
      31. Fenway/Brook North  *   2491.0    3288.6    2373.1    3398.7 *     161.   313. AG   1653.   0.0   1.0 66.0
      32. Fenway/Brook East   *   2497.8    3264.6    2608.7    3389.7 *     167.    42. AG   2407.   0.0   1.0 90.0
      33. Park/Brook South    *   2691.9    3447.3    2838.3    3241.2 *     253.   145. AG    992.   0.0   1.0 66.0
      34. Park/Brook West     *   2672.2    3490.7    2502.8    3273.8 *     275.   218. AG   2418.   0.0   1.0 90.0
      35. Park/Brook North    *   2656.7    3489.7    2496.1    3644.1 *     223.   314. AG   1821.   0.0   1.0 66.0
      36. Park/Brook East     *   2663.3    3490.8    2801.7    3675.1 *     230.    37. AG   1249.   0.0   1.0 66.0
      37. Park/Brook SE       *   2681.0    3470.4    2968.4    3574.9 *     306.    70. AG   2358.   0.0   1.0 78.0
      38. River/Park N        *   2254.7    3768.2    2266.4    3911.9 *     144.     5. AG    473.   0.0   1.0 42.0
      39. River/Park SE       *   2239.1    3675.4    2343.7    3750.1 *     129.    54. AG    454.   0.0   1.0 42.0
      40. River/Park NE       *   2237.1    3772.1    2377.4    3769.2 *     140.    91. AG    858.   0.0   1.0 54.0
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      41. River/Park S        *   2231.1    3745.1    2210.1    3564.3 *     182.   187. AG    927.   0.0   1.0 54.0
      42. River/Park SW       *   2211.1    3765.1    2058.1    3624.4 *     208.   227. AG   1520.   0.0   1.0 54.0
      43. River/Park NW       *   2194.0    3770.2    2250.7    3886.0 *     129.    26. AG    548.   0.0   1.0 30.0
      44. Beacon/Park N       *   1996.0    4667.5    1894.2    4948.4 *     299.   340. AG   1143.   0.0   1.0 78.0
♀                                                                                                          PAGE  2
      JOB: Landmark Center                                          RUN: 2018NB

      DATE :  7/22/13
      TIME : 14:34:56

       LINK VARIABLES
       --------------
         LINK DESCRIPTION     *         LINK COORDINATES (FT)          *    LENGTH  BRG TYPE   VPH    EF      H   W
V/C QUEUE
                              *   X1        Y1        X2        Y2     *     (FT)  (DEG)            (G/MI)  (FT) (FT)
   (VEH)

------------------------*--------------------------------------*--------------------------------------------------
----
      45. Beacon/Park NR      *   1908.0    4673.8    1956.1    4744.7 *      86.    34. AG     15.   0.0   1.0 30.0
      46. Beacon/Park E       *   1997.8    4657.7    2274.4    4755.8 *     293.    70. AG   1622.   0.0   1.0 78.0
      47. Beacon/Park ER      *   1991.4    4750.8    2112.1    4710.6 *     127.   108. AG     36.   0.0   1.0 30.0
      48. Beacon/Park S       *   2009.1    4646.4    2098.7    4401.0 *     261.   160. AG   1714.   0.0   1.0 78.0
      49. Beacon/Park SR      *   2102.5    4662.0    2076.2    4571.2 *      95.   196. AG     71.   0.0   1.0 42.0
      50. Beacon/Park W EB    *   1995.6    4607.6    1704.2    4488.4 *     315.   248. AG    603.   0.0   1.0 66.0
      51. Beacon/Park W EBR   *   2009.1    4551.2    1907.4    4575.2 *     104.   283. AG    134.   0.0   1.0 38.0
      52. Beacon/Park W WB    *   1989.3    4675.4    1658.3    4556.1 *     352.   250. AG    833.   0.0   1.0 78.0
      53. Boyl/Kil N          *   3344.5    3717.0    3289.1    3876.3 *     169.   341. AG    379.   0.0   1.0 54.0
      54. Boyl/Kil E          *   3348.9    3715.0    3516.2    3780.7 *     180.    69. AG   2426.   0.0   1.0 78.0
      55. Boyl/Kil S          *   3349.9    3702.1    3425.5    3502.1 *     214.   159. AG    241.   0.0   1.0 54.0
      56. Boyl/Kil W          *   3346.0    3717.8    3141.9    3641.3 *     218.   249. AG   2392.   0.0   1.0 78.0
♀                                                                                                          PAGE  3
      JOB: Landmark Center                                          RUN: 2018NB

      DATE :  7/22/13
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       1. Fen/Brook WB TT     *     100       54       3.0       863       1600       0.04      1        3
       2. Fen/Brook EB TTTR   *     100       54       3.0       959       1600       0.04      1        3
       3. Fen/Brook SB L      *     100       46       3.0       647       1600       0.04      1        3
       4. Fen/Brook SB LTT    *     100       46       3.0       874       1600       0.04      1        3
       5. Fen/Brook SB R      *     100       46       3.0       132       1600       0.04      1        3
       6. Park/Brook WB TTR   *     100       68       3.0       669       1600       0.04      1        3
       7. Park/Brook NWB LLRRR*     100       75       3.0      1203       1600       0.04      1        3
       8. Park/Brook NB LTTTR *     100       68       3.0       992       1600       0.04      1        3
       9. Park/Brook EB L     *     100       85       3.0       107       1600       0.04      1        3
      10. Park/Brook EB T     *     100       57       3.0       419       1600       0.04      1        3
      11. Park/Brook EB RR    *     100       32       3.0      1029       1600       0.04      1        3
      12. River/Park SB       *     100       78       3.0       548       1600       0.04      1        3
      13. River/Park SB East  *     100       78       3.0       473       1600       0.04      1        3
      14. River/Park WB North *     100       59       3.0       858       1600       0.04      1        3
      15. River/Park WB South *     100       59       3.0       454       1600       0.04      1        3
      16. River/Park NEB      *     100       73       3.0       114       1600       0.04      1        3
      17. Beacon/Park SB LTT  *     110       61       3.0       632       1600       0.04      1        3
      18. Beacon/Park WB LTT  *     110       56       3.0      1012       1600       0.04      1        3
      19. Beacon/Park NB LTT  *     110      103       3.0       591       1600       0.04      1        3
      20. Beacon/Park EB LTTT *     110       68       3.0       469       1600       0.04      1        3
      21. Beacon/Park EB R    *     110       61       3.0       134       1600       0.04      1        3
      22. Beacon/Park SB R    *     110       61       3.0        15       1600       0.04      1        3
      23. Beacon/Park WB R    *     110       68       3.0        36       1600       0.04      1        3
      24. Beacon/Park NB R    *     110       61       3.0        71       1600       0.04      1        3
      25. Boyl/Kil SB LTR     *     100       71       3.0       267       1600       0.04      1        3
      26. Boyl/Kil WB LTTR    *     100       29       3.0      1096       1600       0.04      1        3
      27. Boyl/Kil NB LTR     *     100       71       3.0        82       1600       0.04      1        3
      28. Boyl/Kil EB LTTR    *     100       29       3.0      1274       1600       0.04      1        3

       RECEPTOR LOCATIONS
       ------------------
                              *       COORDINATES (FT)        *
         RECEPTOR             *     X          Y          Z   *
     -------------------------*-------------------------------*
      1. Fen/Brook NE1        *     2376.5     3444.0      6.0  *
      2. Fen/Brook NE2        *     2429.7     3391.0      6.0  *
      3. Fen/Brook NE3        *     2484.5     3339.8      6.0  *
      4. Fen/Brook NE4        *     2530.7     3398.9      6.0  *
      5. Fen/Brook NE5        *     2576.8     3458.0      6.0  *
      6. Fen/Brook SE1        *     2660.2     3364.9      6.0  *
      7. Fen/Brook SE2        *     2609.6     3308.8      6.0  *
      8. Fen/Brook SE3        *     2560.7     3252.7      6.0  *
      9. Fen/Brook SE4        *     2604.0     3191.4      6.0  *
     10. Fen/Brook SE5        *     2647.3     3130.2      6.0  *
     11. Fen/Brook SW1        *     2588.7     3084.8      6.0  *
     12. Fen/Brook SW2        *     2545.5     3146.0      6.0  *
     13. Fen/Brook SW3        *     2502.2     3207.3      6.0  *
     14. Fen/Brook SW4        *     2458.5     3146.4      6.0  *
     15. Fen/Brook SW5        *     2414.7     3085.4      6.0  *
     16. Fen/Brook NW1        *     2353.5     3168.3      6.0  *
     17. Fen/Brook NW2        *     2397.3     3229.2      6.0  *
     18. Fen/Brook NW3        *     2441.0     3290.1      6.0  *
     19. Fen/Brook NW4        *     2386.2     3341.3      6.0  *
     20. Fen/Brook NW5        *     2331.4     3392.5      6.0  *
```

RECEPTOR	X	Y	Z
21. Park/Brook NE1	2546.7	3655.1	6.0
22. Park/Brook NE2	2600.8	3603.1	6.0
23. Park/Brook NE3	2654.8	3551.1	6.0

JOB: Landmark Center RUN: 2018NB

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RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
24. Park/Brook NE4	2699.9	3611.1	6.0
25. Park/Brook NE5	2744.9	3671.1	6.0
26. Park/Brook SE1	2889.0	3493.9	6.0
27. Park/Brook SE2	2818.1	3468.1	6.0
28. Park/Brook SE3	2747.7	3442.5	6.0
29. Park/Brook SE4	2791.4	3381.5	6.0
30. Park/Brook SE5	2834.8	3320.3	6.0
31. Park/Brook SW1	2758.8	3278.8	6.0
32. Park/Brook SW2	2715.4	3340.0	6.0
33. Park/Brook SW3	2672.0	3401.1	6.0
34. Park/Brook SW4	2625.8	3342.0	6.0
35. Park/Brook SW5	2579.6	3282.9	6.0
36. Park/Brook NW1	2506.3	3367.7	6.0
37. Park/Brook NW2	2552.4	3426.8	6.0
38. Park/Brook NW3	2598.6	3485.9	6.0
39. Park/Brook NW4	2544.6	3537.9	6.0
40. Park/Brook NW5	2490.5	3589.9	6.0
41. Park/Brook E1	2853.5	3672.4	6.0
42. Park/Brook E2	2811.9	3617.1	6.0
43. Park/Brook E3	2763.4	3552.5	6.0
44. Park/Brook E4	2838.4	3579.8	6.0
45. Park/Brook E5	2904.4	3603.8	6.0

JOB: Landmark Center RUN: 2018NB

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-360.

WIND ANGLE (DEGR) * CONCENTRATION (ug/m**3)

WIND ANGLE (DEGR)	REC1	REC2	REC3	REC4	REC5	REC6	REC7	REC8	REC9	REC10	REC11	REC12	REC13	REC14	REC15	REC16	REC17	REC18	REC19	REC20
0.	0.	1.	1.	0.	1.	1.	2.	3.	1.	1.	1.	3.	3.	2.	2.	0.	1.	2.	1.	0.
10.	0.	1.	1.	0.	1.	2.	2.	3.	1.	1.	1.	2.	4.	2.	2.	0.	1.	2.	1.	0.
20.	0.	1.	0.	0.	1.	2.	2.	2.	1.	1.	1.	2.	4.	3.	2.	1.	1.	2.	1.	0.
30.	0.	1.	1.	1.	1.	2.	2.	2.	1.	0.	1.	2.	3.	2.	2.	1.	1.	2.	2.	0.
40.	0.	1.	1.	1.	1.	2.	1.	2.	1.	1.	1.	1.	3.	2.	2.	2.	2.	3.	2.	0.
50.	0.	1.	2.	2.	2.	2.	1.	1.	1.	0.	1.	1.	2.	2.	1.	3.	3.	4.	2.	0.
60.	1.	1.	3.	2.	2.	2.	1.	1.	0.	0.	1.	1.	2.	1.	1.	3.	3.	4.	2.	1.
70.	1.	2.	3.	3.	2.	1.	1.	0.	0.	0.	0.	1.	1.	1.	0.	2.	2.	4.	3.	2.
80.	1.	2.	3.	2.	2.	1.	0.	0.	0.	0.	0.	0.	1.	0.	0.	2.	2.	3.	3.	2.
90.	1.	2.	2.	2.	2.	1.	0.	0.	0.	0.	0.	0.	1.	0.	0.	1.	2.	3.	3.	2.
100.	1.	2.	2.	2.	2.	1.	0.	0.	0.	0.	0.	1.	1.	0.	0.	1.	2.	2.	3.	2.
110.	1.	2.	2.	2.	1.	1.	0.	0.	0.	0.	0.	1.	1.	0.	0.	1.	1.	2.	2.	2.
120.	1.	2.	2.	2.	2.	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.	1.	2.	2.	2.	2.
130.	2.	2.	3.	2.	2.	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.	1.	2.	2.	2.	2.
140.	2.	3.	3.	2.	2.	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.	1.	1.	2.	1.	1.
150.	2.	3.	3.	2.	2.	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.	1.	1.	2.	1.	1.
160.	2.	3.	4.	2.	2.	0.	0.	1.	0.	0.	0.	2.	1.	0.	0.	1.	1.	2.	1.	1.

WIND ANGLE (DEGR)	REC1	REC2	REC3	REC4	REC5	REC6	REC7	REC8	REC9	REC10	REC11	REC12	REC13	REC14	REC15	REC16	REC17	REC18	REC19	REC20
170.	1.	2.	4.	3.	2.	0.	0.	1.	1.	0.	1.	2.	0.	0.	0.	1.	1.	1.	1.	0.
180.	1.	2.	4.	3.	2.	0.	0.	1.	1.	0.	1.	2.	0.	0.	0.	1.	1.	1.	1.	0.
190.	0.	2.	3.	3.	2.	0.	0.	1.	1.	0.	1.	1.	0.	0.	0.	1.	1.	1.	0.	0.
200.	0.	1.	3.	2.	3.	0.	0.	1.	1.	1.	1.	1.	0.	0.	0.	0.	1.	1.	0.	0.
210.	0.	1.	3.	2.	2.	1.	1.	1.	1.	1.	0.	1.	0.	0.	0.	0.	0.	1.	0.	0.
220.	0.	1.	2.	2.	1.	1.	1.	1.	1.	1.	0.	1.	1.	0.	0.	0.	0.	0.	0.	0.
230.	0.	1.	2.	1.	1.	2.	2.	1.	1.	1.	0.	1.	1.	1.	0.	0.	0.	0.	0.	0.
240.	0.	1.	2.	1.	1.	2.	2.	2.	1.	1.	0.	1.	1.	1.	0.	0.	0.	0.	0.	0.
250.	0.	1.	2.	1.	0.	2.	2.	2.	1.	1.	0.	1.	1.	1.	0.	0.	0.	0.	0.	0.
260.	0.	1.	2.	1.	0.	2.	2.	2.	1.	1.	1.	1.	1.	1.	0.	0.	0.	0.	0.	0.
270.	0.	1.	2.	0.	0.	2.	3.	2.	1.	1.	1.	1.	1.	1.	1.	0.	0.	0.	0.	0.
280.	0.	1.	2.	0.	0.	2.	2.	2.	1.	1.	1.	1.	1.	1.	1.	0.	0.	0.	0.	0.
290.	0.	1.	2.	0.	0.	2.	2.	2.	2.	1.	1.	1.	1.	1.	1.	0.	0.	0.	0.	0.
300.	0.	1.	2.	0.	0.	2.	2.	3.	2.	1.	1.	2.	1.	1.	1.	0.	0.	0.	0.	0.
310.	0.	1.	2.	0.	0.	2.	2.	3.	2.	1.	1.	2.	1.	1.	1.	0.	0.	1.	0.	0.
320.	0.	1.	2.	0.	0.	2.	2.	3.	2.	2.	2.	2.	1.	1.	1.	0.	0.	1.	1.	0.
330.	0.	1.	2.	0.	0.	2.	2.	2.	2.	1.	2.	3.	2.	2.	1.	0.	0.	1.	1.	0.
340.	0.	1.	1.	0.	0.	1.	2.	2.	2.	1.	2.	3.	2.	2.	1.	0.	0.	2.	1.	0.
350.	1.	1.	1.	0.	0.	2.	2.	2.	2.	1.	2.	3.	3.	2.	1.	0.	0.	2.	1.	0.
360.	0.	1.	1.	0.	1.	1.	2.	3.	1.	1.	1.	3.	3.	2.	2.	0.	1.	2.	1.	0.
MAX	2.	3.	4.	3.	3.	2.	3.	3.	2.	2.	2.	3.	4.	3.	2.	3.	3.	4.	3.	2.
DEGR.	150	150	170	190	200	250	270	310	310	320	330	340	20	20	20	50	60	60	70	100

JOB: Landmark Center RUN: 2018NB

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-360.

WIND ANGLE (DEGR) * CONCENTRATION (ug/m**3)

WIND ANGLE (DEGR)	REC21	REC22	REC23	REC24	REC25	REC26	REC27	REC28	REC29	REC30	REC31	REC32	REC33	REC34	REC35	REC36	REC37	REC38	REC39	REC40
0.	0.	0.	0.	0.	0.	1.	1.	2.	1.	1.	2.	2.	2.	2.	2.	0.	0.	1.	1.	0.
10.	0.	0.	0.	0.	0.	1.	2.	2.	1.	1.	2.	2.	2.	2.	3.	0.	0.	1.	1.	0.
20.	0.	0.	0.	0.	0.	1.	2.	2.	1.	0.	1.	2.	2.	2.	2.	0.	0.	1.	1.	1.
30.	0.	0.	0.	0.	0.	2.	2.	2.	1.	0.	1.	2.	2.	2.	2.	1.	1.	1.	1.	1.
40.	0.	0.	1.	0.	0.	2.	2.	2.	1.	0.	1.	2.	2.	2.	2.	1.	1.	1.	1.	1.
50.	0.	0.	1.	0.	0.	1.	2.	2.	1.	0.	1.	2.	2.	1.	1.	2.	2.	2.	1.	1.
60.	0.	0.	1.	1.	0.	1.	2.	2.	0.	0.	1.	2.	2.	1.	1.	3.	2.	2.	1.	1.
70.	0.	0.	2.	1.	0.	1.	1.	1.	0.	0.	0.	1.	2.	1.	1.	3.	2.	3.	2.	1.
80.	0.	1.	2.	2.	1.	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.	3.	2.	3.	2.	2.
90.	1.	1.	2.	2.	1.	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.	3.	2.	2.	2.	2.
100.	1.	1.	2.	2.	1.	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.	2.	2.	2.	2.	2.
110.	1.	1.	2.	2.	1.	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.	2.	2.	2.		

																			2.	2.
120. *	1.	1.	1.	2.	1.	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.	2.	2.	2.	2.	2.
130. *	1.	1.	1.	2.	1.	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.	2.	2.	2.	1.	1.
140. *	1.	1.	2.	2.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	2.	2.	1.	1.	1.
150. *	2.	2.	2.	2.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	2.	2.	1.	1.	1.
160. *	2.	2.	2.	2.	1.	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.	3.	2.	2.	1.	1.
170. *	2.	2.	2.	2.	2.	0.	0.	1.	1.	0.	0.	0.	0.	0.	1.	3.	3.	2.	1.	1.
180. *	2.	2.	2.	2.	2.	0.	0.	1.	1.	0.	0.	0.	0.	0.	1.	3.	3.	2.	2.	1.
190. *	2.	2.	2.	2.	2.	0.	0.	1.	1.	0.	0.	0.	0.	0.	1.	3.	3.	2.	1.	1.
200. *	1.	2.	3.	2.	2.	0.	0.	1.	1.	0.	0.	0.	0.	1.	1.	2.	3.	2.	1.	1.
210. *	1.	1.	3.	2.	2.	0.	1.	1.	1.	0.	0.	0.	1.	1.	1.	2.	2.	2.	1.	0.
220. *	1.	1.	2.	1.	1.	1.	1.	1.	1.	1.	0.	0.	2.	2.	1.	2.	1.	1.	0.	0.
230. *	1.	1.	1.	1.	1.	1.	1.	2.	1.	1.	0.	0.	2.	2.	2.	1.	1.	1.	0.	0.
240. *	1.	1.	1.	1.	0.	1.	2.	2.	2.	1.	0.	1.	3.	3.	2.	1.	1.	0.	0.	0.
250. *	1.	1.	1.	0.	0.	2.	2.	2.	2.	1.	0.	1.	3.	3.	2.	1.	1.	0.	0.	0.
260. *	1.	1.	1.	0.	0.	2.	2.	2.	2.	1.	1.	1.	2.	3.	2.	1.	0.	0.	0.	0.
270. *	1.	1.	1.	0.	0.	2.	2.	2.	2.	2.	1.	1.	2.	3.	2.	1.	0.	0.	0.	0.
280. *	1.	1.	1.	0.	0.	2.	2.	2.	2.	2.	1.	2.	2.	3.	3.	1.	0.	0.	0.	0.
290. *	1.	1.	1.	0.	0.	2.	2.	2.	2.	2.	1.	1.	1.	2.	3.	1.	0.	0.	0.	0.
300. *	0.	1.	1.	0.	0.	2.	2.	2.	2.	2.	1.	1.	2.	3.	3.	1.	0.	0.	0.	1.
310. *	0.	0.	1.	0.	0.	2.	2.	2.	2.	2.	1.	1.	2.	3.	3.	1.	0.	0.	1.	0.
320. *	0.	0.	0.	0.	0.	2.	2.	2.	1.	1.	1.	1.	2.	2.	2.	1.	0.	1.	1.	1.
330. *	0.	0.	0.	0.	0.	1.	2.	2.	1.	1.	1.	1.	2.	3.	2.	1.	0.	1.	1.	1.
340. *	0.	0.	0.	0.	0.	2.	2.	1.	1.	1.	2.	2.	2.	2.	2.	0.	0.	1.	1.	0.
350. *	0.	0.	0.	0.	0.	1.	2.	2.	1.	1.	2.	2.	2.	2.	2.	0.	0.	1.	1.	0.
360. *	0.	0.	0.	0.	0.	1.	1.	2.	1.	1.	2.	2.	2.	2.	2.	0.	0.	1.	1.	0.
MAX *	2.	2.	3.	2.	2.	2.	2.	2.	2.	2.	2.	2.	3.	3.	3.	3.	3.	3.	2.	2.
DEGR. *	180	180	200	170	200	280	290	250	260	310	350	10	240	260	300	70	180	80	90	100

♀ PAGE 7

JOB: Landmark Center RUN: 2018NB

MODEL RESULTS

REMARKS : In search of the angle corresponding to
the maximum concentration, only the first
angle, of the angles with same maximum
concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-360.

WIND ANGLE (DEGR) *	CONCENTRATION (ug/m**3) REC41	REC42	REC43	REC44	REC45
0. *	0.	0.	1.	0.	0.
10. *	0.	0.	1.	0.	0.
20. *	0.	0.	0.	0.	0.
30. *	0.	0.	0.	0.	0.
40. *	0.	0.	0.	0.	0.
50. *	0.	0.	0.	0.	0.
60. *	0.	0.	1.	0.	0.
70. *	0.	0.	2.	1.	1.
80. *	1.	1.	2.	2.	2.
90. *	1.	1.	2.	2.	2.
100. *	0.	1.	2.	2.	1.
110. *	0.	1.	2.	2.	1.
120. *	0.	1.	2.	2.	1.
130. *	1.	1.	2.	2.	2.
140. *	1.	1.	2.	2.	2.
150. *	1.	1.	2.	2.	2.
160. *	1.	1.	2.	2.	2.
170. *	1.	1.	2.	2.	2.
180. *	1.	1.	2.	2.	2.
190. *	1.	1.	2.	2.	2.
200. *	1.	2.	2.	2.	2.
210. *	2.	2.	2.	2.	2.
220. *	2.	2.	3.	3.	3.
230. *	2.	2.	3.	3.	3.
240. *	1.	2.	2.	2.	2.
250. *	1.	1.	2.	2.	2.
260. *	1.	1.	1.	1.	1.
270. *	1.	1.	1.	1.	1.
280. *	0.	1.	1.	1.	1.
290. *	0.	1.	1.	1.	0.
300. *	0.	1.	1.	0.	0.
310. *	0.	1.	1.	0.	0.
320. *	0.	1.	1.	0.	0.
330. *	0.	0.	1.	0.	0.
340. *	0.	0.	1.	0.	0.
350. *	0.	0.	1.	0.	0.
360. *	0.	0.	1.	0.	0.
MAX *	2.	2.	3.	3.	3.
DEGR. *	220	220	220	220	230

THE HIGHEST CONCENTRATION OF 4. ug/m**3 OCCURRED AT RECEPTOR REC18.

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♀                    CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 95221                        PAGE  1

      JOB: Landmark Center                                      RUN: 2018NB

      DATE :  7/22/13
      TIME : 14:35: 2

         The MODE flag has been set to P for calculating PM averages.

       SITE & METEOROLOGICAL VARIABLES
       -------------------------------
       VS =   0.0 CM/S       VD =   0.0 CM/S       Z0 = 175. CM
        U =  1.0 M/S         CLAS =   4  (D)     ATIM =  60. MINUTES     MIXH =  1000. M   AMB =  0.0 ug/m**3

       LINK VARIABLES
       --------------
         LINK DESCRIPTION     *         LINK COORDINATES (FT)          *    LENGTH  BRG TYPE   VPH    EF      H   W
V/C QUEUE
                              *   X1        Y1        X2        Y2     *     (FT)  (DEG)            (G/MI)  (FT) (FT)
   (VEH)

------------------------*----------------------------------------*-----------------------------------------------------
----
       1. Fen/Brook WB TT     *   2508.3    3314.8    2585.7    3415.8 *     127.    37. AG      0. 100.0   1.0 20.0
0.66   6.5
       2. Fen/Brook EB TTTR   *   2469.9    3221.1    2414.6    3144.9 *      94.   216. AG      0. 100.0   1.0 30.0
0.49   4.8
       3. Fen/Brook SB L      *   2487.6    3319.0    2363.3    3436.9 *     171.   313. AG      0. 100.0   1.0 10.0
0.83   8.7
       4. Fen/Brook SB LTT    *   2476.2    3307.2    2395.5    3381.8 *     110.   313. AG      0. 100.0   1.0 20.0
0.56   5.6
       5. Fen/Brook SB R      *   2463.2    3293.4    2439.4    3316.5 *      33.   314. AG      0. 100.0   1.0 10.0
0.17   1.7
       6. Park/Brook WB TTR   *   2701.3    3561.7    2751.4    3627.8 *      83.    37. AG      0. 100.0   1.0 30.0
0.52   4.2
       7. Park/Brook NWB LLRRR*   2745.9    3510.4    3745.0    3896.3 *    1071.    69. AG      0. 100.0   1.0 30.0
1.25  54.4
       8. Park/Brook NB LTTTR *   2715.4    3403.8    2772.3    3331.3 *      92.   142. AG      0. 100.0   1.0 40.0
0.57   4.7
       9. Park/Brook EB L     *   2628.6    3435.0    2596.0    3392.8 *      53.   218. AG      0. 100.0   1.0 10.0
0.67   2.7
      10. Park/Brook EB T     *   2637.5    3428.1    2557.0    3325.2 *     131.   218. AG      0. 100.0   1.0 10.0
0.69   6.6
      11. Park/Brook EB RR    *   2648.5    3416.9    2594.3    3345.2 *      90.   217. AG      0. 100.0   1.0 20.0
0.51   4.6
      12. River/Park SB       *   2213.3    3801.8    3580.3    6597.8 *    3112.    26. AG      0. 100.0   1.0 10.0
2.01 158.1
      13. River/Park SB East  *   2256.2    3801.2    2279.3    3925.6 *     127.    11. AG      0. 100.0   1.0 20.0
0.87   6.4
      14. River/Park WB North *   2272.8    3765.2    2365.1    3765.6 *      92.    90. AG      0. 100.0   1.0 30.0
0.50   4.7
      15. River/Park WB South *   2270.5    3707.9    2337.8    3736.7 *      73.    67. AG      0. 100.0   1.0 20.0
0.39   3.7
      16. River/Park NEB      *   2169.9    3720.6    2153.5    3704.8 *      23.   226. AG      0. 100.0   1.0 20.0
0.16   1.2
      17. Beacon/Park SB LTT  *   1962.9    4712.6    1930.9    4813.0 *     105.   342. AG      0. 100.0   1.0 20.0
0.49   5.4
      18. Beacon/Park WB LTT  *   2055.3    4691.7    2200.7    4745.3 *     155.    70. AG      0. 100.0   1.0 20.0
0.71   7.9
      19. Beacon/Park NB LTT  *   2041.7    4597.4    3032.8    1710.0 *    3053.   161. AG      0. 100.0   1.0 20.0
**** 155.1
      20. Beacon/Park EB LTTT *   1966.3    4608.1    1913.4    4584.3 *      58.   246. AG      0. 100.0   1.0 30.0
0.29   2.9
      21. Beacon/Park EB R    *   1975.6    4560.5    1953.5    4563.9 *      22.   279. AG      0. 100.0   1.0 20.0
0.10   1.1
      22. Beacon/Park SB R    *   1917.2    4688.3    1919.9    4692.5 *       5.    32. AG      0. 100.0   1.0 10.0
0.02   0.3
      23. Beacon/Park WB R    *   2019.8    4741.2    2032.4    4736.8 *      13.   109. AG      0. 100.0   1.0 10.0
0.07   0.7
      24. Beacon/Park NB R    *   2095.2    4627.5    2086.9    4605.4 *      24.   201. AG      0. 100.0   1.0 10.0
0.11   1.2
      25. Boyl/Kil SB LTR     *   3322.0    3753.8    3306.1    3803.0 *      52.   342. AG      0. 100.0   1.0 20.0
0.35   2.6
      26. Boyl/Kil WB LTTR    *   3373.3    3738.7    3453.9    3771.3 *      87.    68. AG      0. 100.0   1.0 20.0
0.52   4.4
      27. Boyl/Kil NB LTR     *   3365.2    3677.7    3376.9    3648.1 *      32.   158. AG      0. 100.0   1.0 10.0
0.21   1.6
      28. Boyl/Kil EB LTTR    *   3320.4    3695.3    3225.5    3660.7 *     101.   250. AG      0. 100.0   1.0 20.0
0.60   5.1
      29. Fenway/Brook South  *   2496.9    3278.9    2636.6    3081.1 *     242.   145. AG    936.    0.0   1.0 54.0
      30. Fenway/Brook West   *   2481.8    3262.9    2347.3    3075.6 *     231.   216. AG   1965.    0.0   1.0 78.0
      31. Fenway/Brook North  *   2491.0    3288.6    2373.1    3398.7 *     161.   313. AG   1653.    0.0   1.0 66.0
      32. Fenway/Brook East   *   2497.8    3264.6    2608.7    3389.7 *     167.    42. AG   2407.    0.0   1.0 90.0
      33. Park/Brook South    *   2691.9    3447.3    2838.3    3241.2 *     253.   145. AG    992.    0.0   1.0 66.0
      34. Park/Brook West     *   2672.2    3490.7    2502.8    3273.8 *     275.   218. AG   2418.    0.0   1.0 90.0
      35. Park/Brook North    *   2656.7    3489.7    2496.1    3644.1 *     223.   314. AG   1821.    0.0   1.0 66.0
      36. Park/Brook East     *   2663.3    3490.8    2801.7    3675.1 *     230.    37. AG   1249.    0.0   1.0 66.0
      37. Park/Brook SE       *   2681.0    3470.4    2968.4    3574.9 *     306.    70. AG   2358.    0.0   1.0 78.0
      38. River/Park N        *   2254.7    3768.2    2266.4    3911.9 *     144.     5. AG    473.    0.0   1.0 42.0
      39. River/Park SE       *   2239.1    3675.4    2343.7    3750.1 *     129.    54. AG    454.    0.0   1.0 42.0
      40. River/Park NE       *   2237.1    3772.1    2377.4    3769.2 *     140.    91. AG    858.    0.0   1.0 54.0
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      41. River/Park S        *   2231.1    3745.1    2210.1    3564.3 *     182.   187. AG    927.    0.0   1.0 54.0
      42. River/Park SW       *   2211.1    3765.1    2058.1    3624.4 *     208.   227. AG   1520.    0.0   1.0 54.0
      43. River/Park NW       *   2194.0    3770.2    2250.7    3886.0 *     129.    26. AG    548.    0.0   1.0 30.0
      44. Beacon/Park N       *   1996.0    4667.5    1894.2    4948.4 *     299.   340. AG   1143.    0.0   1.0 78.0
♀                                                                                                              PAGE  2
      JOB: Landmark Center                                      RUN: 2018NB

      DATE :  7/22/13
      TIME : 14:35: 2

       LINK VARIABLES
       --------------
         LINK DESCRIPTION     *         LINK COORDINATES (FT)          *    LENGTH  BRG TYPE   VPH    EF      H   W
V/C QUEUE
                              *   X1        Y1        X2        Y2     *     (FT)  (DEG)            (G/MI)  (FT) (FT)
   (VEH)

------------------------*----------------------------------------*-----------------------------------------------------
----
      45. Beacon/Park NR      *   1908.0    4673.8    1956.1    4744.7 *      86.    34. AG     15.    0.0   1.0 30.0
      46. Beacon/Park E       *   1997.8    4657.7    2274.4    4755.8 *     293.    70. AG   1622.    0.0   1.0 78.0
      47. Beacon/Park ER      *   1991.4    4750.8    2112.1    4710.6 *     127.   108. AG     36.    0.0   1.0 30.0
      48. Beacon/Park S       *   2009.1    4646.4    2098.7    4401.0 *     261.   160. AG   1714.    0.0   1.0 78.0
      49. Beacon/Park SR      *   2102.5    4662.0    2076.2    4571.2 *      95.   196. AG     71.    0.0   1.0 42.0
      50. Beacon/Park W EB    *   1995.6    4607.6    1704.2    4488.4 *     315.   248. AG    603.    0.0   1.0 66.0
      51. Beacon/Park W EBR   *   2009.1    4551.2    1907.4    4575.2 *     104.   283. AG    134.    0.0   1.0 38.0
      52. Beacon/Park W WB    *   1989.3    4675.4    1658.3    4556.1 *     352.   250. AG    833.    0.0   1.0 78.0
      53. Boyl/Kil N          *   3344.5    3717.0    3289.1    3876.3 *     169.   341. AG    379.    0.0   1.0 54.0
      54. Boyl/Kil E          *   3348.9    3715.0    3516.2    3780.7 *     180.    69. AG   2426.    0.0   1.0 78.0
      55. Boyl/Kil S          *   3349.9    3702.1    3425.5    3502.1 *     214.   159. AG    241.    0.0   1.0 54.0
      56. Boyl/Kil W          *   3346.0    3717.8    3141.9    3641.3 *     218.   249. AG   2392.    0.0   1.0 78.0
♀                                                                                                              PAGE  3
      JOB: Landmark Center                                      RUN: 2018NB

      DATE :  7/22/13
      TIME : 14:35: 2

       1. Fen/Brook WB TT     *     100       54       3.0       863       1600       0.04       1        3
       2. Fen/Brook EB TTTR   *     100       54       3.0       959       1600       0.04       1        3
       3. Fen/Brook SB L      *     100       46       3.0       647       1600       0.04       1        3
       4. Fen/Brook SB LTT    *     100       46       3.0       874       1600       0.04       1        3
       5. Fen/Brook SB R      *     100       46       3.0       132       1600       0.04       1        3
       6. Park/Brook WB TTR   *     100       68       3.0       669       1600       0.04       1        3
       7. Park/Brook NWB LLRRR*     100       75       3.0      1203       1600       0.04       1        3
       8. Park/Brook NB LTTTR *     100       68       3.0       992       1600       0.04       1        3
       9. Park/Brook EB L     *     100       85       3.0       107       1600       0.04       1        3
      10. Park/Brook EB T     *     100       57       3.0       419       1600       0.04       1        3
      11. Park/Brook EB RR    *     100       32       3.0      1029       1600       0.04       1        3
      12. River/Park SB       *     100       78       3.0       548       1600       0.04       1        3
      13. River/Park SB East  *     100       78       3.0       473       1600       0.04       1        3
      14. River/Park WB North *     100       59       3.0       858       1600       0.04       1        3
      15. River/Park WB South *     100       59       3.0       454       1600       0.04       1        3
      16. River/Park NEB      *     100       73       3.0       114       1600       0.04       1        3
      17. Beacon/Park SB LTT  *     110       61       3.0       632       1600       0.04       1        3
      18. Beacon/Park WB LTT  *     110       56       3.0      1012       1600       0.04       1        3
      19. Beacon/Park NB LTT  *     110      103       3.0       591       1600       0.04       1        3
      20. Beacon/Park EB LTTT *     110       68       3.0       469       1600       0.04       1        3
      21. Beacon/Park EB R    *     110       61       3.0       134       1600       0.04       1        3
      22. Beacon/Park SB R    *     110       61       3.0        15       1600       0.04       1        3
      23. Beacon/Park WB R    *     110       68       3.0        36       1600       0.04       1        3
      24. Beacon/Park NB R    *     110       61       3.0        71       1600       0.04       1        3
      25. Boyl/Kil SB LTR     *     100       71       3.0       267       1600       0.04       1        3
      26. Boyl/Kil WB LTTR    *     100       29       3.0      1096       1600       0.04       1        3
      27. Boyl/Kil NB LTR     *     100       71       3.0        82       1600       0.04       1        3
      28. Boyl/Kil EB LTTR    *     100       29       3.0      1274       1600       0.04       1        3

       RECEPTOR LOCATIONS
       ------------------
                              *          COORDINATES (FT)          *
         RECEPTOR             *      X          Y           Z      *
     -------------------------*------------------------------------*
      1. Beacon/Park NE1      *      1956.0     4921.7       6.0   *
      2. Beacon/Park NE2      *      1981.6     4851.2       6.0   *
      3. Beacon/Park NE3      *      2059.7     4754.4       6.0   *
      4. Beacon/Park NE4      *      2163.5     4768.4       6.0   *
      5. Beacon/Park NE5      *      2234.2     4793.5       6.0   *
      6. Beacon/Park SE1      *      2273.6     4703.5       6.0   *
      7. Beacon/Park SE2      *      2202.9     4678.4       6.0   *
      8. Beacon/Park SE3      *      2119.1     4608.0       6.0   *
      9. Beacon/Park SE4      *      2120.2     4485.0       6.0   *
     10. Beacon/Park SE5      *      2146.8     4412.1       6.0   *
     11. Beacon/Park SW1      *      2053.4     4382.2       6.0   *
     12. Beacon/Park SW2      *      2027.7     4452.7       6.0   *
     13. Beacon/Park SW3      *      1951.6     4535.0       6.0   *
     14. Beacon/Park SW4      *      1869.5     4509.6       6.0   *
     15. Beacon/Park SW5      *      1800.1     4481.2       6.0   *
     16. Beacon/Park NW1      *      1748.7     4640.8       6.0   *
     17. Beacon/Park NW2      *      1819.3     4666.2       6.0   *
     18. Beacon/Park NW3      *      1911.4     4723.3       6.0   *
     19. Beacon/Park NW4      *      1893.8     4805.6       6.0   *
     20. Beacon/Park NW5      *      1868.3     4876.1       6.0   *
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21. Riverway/Park NE1	*	2301.3	3957.6	6.0	*
22. Riverway/Park NE2	*	2295.2	3882.8	6.0	*
23. Riverway/Park NE3	*	2289.1	3808.1	6.0	*

JOB: Landmark Center RUN: 2018NB

DATE : 7/22/13
TIME : 14:35: 2

RECEPTOR LOCATIONS

RECEPTOR	*	X	Y	Z	*
		COORDINATES (FT)			
24. Riverway/Park NE4	*	2364.1	3806.5	6.0	*
25. Riverway/Park NE5	*	2439.1	3806.0	6.0	*
26. Riverway/Park SE1	*	2427.5	3594.7	6.0	*
27. Riverway/Park SE2	*	2406.6	3667.7	6.0	*
28. Riverway/Park SE3	*	2309.4	3687.5	6.0	*
29. Riverway/Park SE4	*	2248.8	3576.7	6.0	*
30. Riverway/Park SE5	*	2296.6	3506.9	6.0	*
31. Riverway/Park SW1	*	2170.6	3544.5	6.0	*
32. Riverway/Park SW2	*	2179.2	3619.0	6.0	*
33. Riverway/Park SW3	*	2187.9	3693.5	6.0	*
34. Riverway/Park SW4	*	2132.7	3642.7	6.0	*
35. Riverway/Park SW5	*	2077.5	3592.0	6.0	*
36. Riverway/Park NW1	*	2059.1	3675.6	6.0	*
37. Riverway/Park NW2	*	2114.4	3726.4	6.0	*
38. Riverway/Park NW3	*	2169.6	3777.2	6.0	*
39. Riverway/Park NW4	*	2202.6	3844.5	6.0	*
40. Riverway/Park NW5	*	2235.3	3912.0	6.0	*
41. Boyl/Kil NE1	*	3320.8	3917.2	6.0	*
42. Boyl/Kil NE2	*	3339.3	3844.4	6.0	*
43. Boyl/Kil NE3	*	3364.0	3773.6	6.0	*
44. Boyl/Kil NE4	*	3433.8	3801.0	6.0	*
45. Boyl/Kil NE5	*	3503.6	3828.4	6.0	*
46. Boyl/Kil SE1	*	3537.2	3736.3	6.0	*
47. Boyl/Kil SE2	*	3467.1	3708.8	6.0	*
48. Boyl/Kil SE3	*	3397.3	3681.4	6.0	*
49. Boyl/Kil SE4	*	3423.8	3611.2	6.0	*
50. Boyl/Kil SE5	*	3450.3	3541.1	6.0	*
51. Boyl/Kil SW1	*	3379.9	3518.0	6.0	*
52. Boyl/Kil SW2	*	3353.1	3589.0	6.0	*
53. Boyl/Kil SW3	*	3326.9	3658.3	6.0	*
54. Boyl/Kil SW4	*	3256.7	3632.0	6.0	*
55. Boyl/Kil SW5	*	3186.4	3605.7	6.0	*
56. Boyl/Kil NW1	*	3153.2	3697.9	6.0	*
57. Boyl/Kil NW2	*	3223.4	3724.2	6.0	*
58. Boyl/Kil NW3	*	3293.6	3750.5	6.0	*
59. Boyl/Kil NW4	*	3269.0	3821.4	6.0	*
60. Boyl/Kil NW5	*	3244.5	3891.9	6.0	*

JOB: Landmark Center RUN: 2018NB

MODEL RESULTS

REMARKS : In search of the angle corresponding to
the maximum concentration, only the first
angle, of the angles with same maximum
concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-360.

WIND * CONCENTRATION
ANGLE * (ug/m**3)

(DEGR)*	REC1	REC2	REC3	REC4	REC5	REC6	REC7	REC8	REC9	REC10	REC11	REC12	REC13	REC14	REC15	REC16	REC17	REC18	REC19	REC20
0. *	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.	2.	1.	1.	0.	0.	0.	0.	0.	0.	0.
10. *	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.	1.	1.	1.	1.	1.	0.	0.	1.	0.	0.
20. *	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.	1.	2.	1.	1.	1.	0.	0.	1.	0.	0.
30. *	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.	1.	1.	1.	1.	1.	0.	0.	1.	0.	0.
40. *	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.	1.	1.	1.	1.	1.	0.	0.	1.	0.	0.
50. *	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.	1.	1.	1.	1.	0.	0.	1.	0.	0.
60. *	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.	1.	1.	1.	1.	0.	0.	1.	0.	0.
70. *	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.	1.	1.	1.	0.	0.	1.	1.	1.	0.
80. *	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.	1.	1.	1.	1.	0.
90. *	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.	1.	1.	1.	1.	0.

BD_PM25_2.out

(DEGR)*	REC1	REC2	REC3	REC4	REC5	REC6	REC7	REC8	REC9	REC10	REC11	REC12	REC13	REC14	REC15	REC16	REC17	REC18	REC19	REC20
100. *	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.	1.	1.	1.	1.	1.
110. *	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.	1.	1.	1.	1.	1.
120. *	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.	1.	1.	1.	1.	1.
130. *	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.	1.	1.	1.	1.	1.
140. *	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.	1.	1.	1.	1.	1.
150. *	0.	1.	1.	1.	1.	0.	0.	0.	0.	0.	1.	1.	0.	0.	0.	1.	1.	1.	1.	1.
160. *	1.	1.	1.	1.	1.	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.	1.	1.	1.
170. *	1.	1.	1.	1.	1.	0.	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.	0.	1.	1.	0.
180. *	1.	1.	1.	1.	1.	0.	0.	1.	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
190. *	1.	1.	1.	1.	1.	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
200. *	1.	1.	1.	1.	1.	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
210. *	1.	1.	1.	2.	1.	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
220. *	1.	1.	1.	1.	1.	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
230. *	0.	1.	1.	1.	1.	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
240. *	0.	1.	1.	1.	1.	1.	1.	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
250. *	0.	0.	1.	1.	1.	1.	1.	1.	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
260. *	0.	0.	0.	0.	0.	1.	1.	1.	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
270. *	0.	0.	0.	0.	0.	1.	1.	1.	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
280. *	0.	0.	0.	0.	0.	1.	1.	1.	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
290. *	0.	0.	0.	0.	0.	1.	1.	1.	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
300. *	0.	0.	0.	0.	0.	1.	1.	1.	2.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
310. *	0.	0.	0.	0.	0.	1.	1.	1.	2.	2.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
320. *	0.	0.	0.	0.	0.	1.	1.	1.	2.	2.	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
330. *	0.	0.	0.	0.	0.	1.	1.	1.	1.	1.	1.	0.	1.	0.	0.	0.	0.	0.	0.	0.
340. *	0.	0.	0.	0.	0.	1.	1.	1.	1.	1.	1.	1.	1.	0.	0.	0.	0.	0.	0.	0.
350. *	0.	0.	0.	0.	0.	0.	1.	1.	1.	1.	1.	1.	1.	0.	0.	0.	0.	0.	0.	0.
360. *	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.	2.	1.	1.	0.	0.	0.	0.	0.	0.	0.
MAX *	1.	1.	1.	2.	1.	1.	1.	1.	2.	2.	2.	2.	1.	1.	1.	1.	1.	1.	1.	1.
DEGR. *	170	180	170	210	220	260	270	270	310	320	0	20	0	40	50	100	110	150	140	150

JOB: Landmark Center RUN: 2018NB

MODEL RESULTS

REMARKS : In search of the angle corresponding to
the maximum concentration, only the first
angle, of the angles with same maximum
concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-360.

WIND * CONCENTRATION
ANGLE * (ug/m**3)

(DEGR)*	REC21	REC22	REC23	REC24	REC25	REC26	REC27	REC28	REC29	REC30	REC31	REC32	REC33	REC34	REC35	REC36	REC37	REC38	REC39	REC40
0. *	0.	1.	1.	0.	0.	0.	0.	2.	1.	1.	0.	1.	1.	1.	1.	0.	0.	0.	0.	1.
10. *	0.	0.	1.	0.	0.	0.	0.	2.	1.	1.	1.	1.	1.	1.	1.	0.	0.	0.	0.	0.
20. *	0.	0.	1.	0.	0.	0.	0.	1.	1.	0.	1.	1.	2.	1.	1.	0.	0.	0.	0.	1.
30. *	0.	0.	1.	0.	0.	0.	0.	1.	1.	0.	1.	1.	1.	1.	1.	0.	0.	1.	1.	1.

```
  40.  *    0.    0.    1.    0.    0.    0.    0.    1.    0.    0.    1.    1.    1.    1.    1.    1.    1.    1.
1.   1.
  50.  *    0.    0.    0.    0.    0.    0.    0.    1.    0.    0.    0.    1.    1.    1.    1.    1.    1.    1.
1.   1.
  60.  *    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.    1.    1.    1.    1.    1.
1.   1.
  70.  *    0.    0.    0.    0.    0.    1.    0.    0.    0.    1.    0.    1.    1.    1.    0.    1.    1.    1.
1.   1.
  80.  *    0.    0.    0.    0.    0.    1.    0.    0.    1.    1.    1.    1.    1.    1.    0.    1.    1.    1.
1.   1.
  90.  *    0.    0.    1.    0.    0.    1.    1.    1.    1.    1.    1.    1.    1.    1.    1.    1.    2.    1.
1.   1.
 100.  *    0.    0.    1.    0.    0.    1.    1.    1.    1.    1.    1.    1.    1.    1.    1.    2.    2.    2.
1.   1.
 110.  *    0.    0.    2.    0.    0.    1.    1.    1.    1.    1.    1.    1.    1.    1.    1.    1.    2.    2.
2.   1.
 120.  *    0.    0.    2.    0.    0.    1.    1.    1.    1.    1.    1.    1.    1.    1.    0.    1.    2.    2.
2.   2.
 130.  *    0.    1.    2.    1.    0.    1.    1.    1.    1.    1.    1.    1.    1.    1.    0.    1.    2.    1.
2.   2.
 140.  *    0.    1.    2.    1.    1.    1.    1.    1.    1.    1.    0.    1.    1.    1.    0.    1.    2.    2.
2.   2.
 150.  *    0.    2.    2.    1.    1.    1.    1.    1.    1.    1.    0.    1.    1.    0.    0.    1.    1.    2.
2.   2.
 160.  *    1.    2.    2.    1.    1.    1.    1.    1.    0.    0.    0.    0.    1.    0.    0.    1.    1.    1.
1.   2.
 170.  *    1.    2.    2.    1.    1.    1.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.
1.   1.
 180.  *    1.    2.    1.    1.    1.    1.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.
1.   1.
 190.  *    1.    2.    1.    1.    0.    1.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.
1.   1.
 200.  *    2.    2.    1.    1.    0.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.
1.   1.
 210.  *    2.    2.    1.    2.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    1.
0.   0.
 220.  *    2.    2.    1.    2.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.
0.   0.
 230.  *    1.    2.    1.    2.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.
0.   0.
 240.  *    1.    2.    1.    2.    1.    0.    0.    0.    0.    0.    0.    0.    1.    0.    0.    0.    0.    0.
0.   0.
 250.  *    1.    2.    1.    1.    1.    0.    0.    0.    0.    0.    0.    0.    1.    0.    0.    0.    0.    0.
0.   0.
 260.  *    1.    2.    1.    1.    1.    0.    1.    1.    0.    0.    0.    0.    1.    1.    0.    0.    0.    0.
0.   0.
 270.  *    1.    2.    1.    1.    1.    1.    1.    1.    0.    0.    0.    0.    1.    1.    0.    0.    0.    0.
0.   0.
 280.  *    1.    2.    1.    1.    1.    1.    1.    1.    0.    0.    0.    0.    1.    1.    0.    0.    0.    0.
0.   0.
 290.  *    1.    2.    1.    1.    0.    1.    1.    1.    1.    0.    0.    0.    1.    1.    0.    0.    0.    0.
0.   0.
 300.  *    1.    2.    1.    1.    0.    1.    1.    1.    1.    0.    0.    0.    1.    1.    0.    0.    0.    0.
0.   0.
 310.  *    1.    2.    1.    1.    0.    1.    1.    1.    1.    0.    0.    0.    1.    1.    0.    0.    0.    0.
0.   0.
 320.  *    1.    2.    1.    1.    0.    1.    1.    1.    1.    0.    0.    0.    1.    1.    0.    0.    0.    0.
0.   0.
 330.  *    1.    2.    1.    1.    0.    1.    1.    1.    1.    0.    0.    0.    1.    1.    0.    0.    0.    0.
0.   0.
 340.  *    1.    2.    2.    0.    0.    1.    1.    2.    1.    0.    0.    0.    1.    1.    0.    0.    0.    0.
0.   0.
 350.  *    1.    2.    2.    0.    0.    0.    0.    2.    1.    0.    0.    1.    1.    1.    1.    0.    0.    0.
0.   1.
 360.  *    0.    1.    1.    0.    0.    0.    0.    2.    1.    1.    0.    1.    1.    1.    1.    0.    0.    0.
0.   1.

------*-----------------------------------------------------------------------------------------------------------
-------
 MAX   *    2.    2.    2.    2.    1.    1.    1.    2.    1.    1.    1.    1.    2.    1.    1.    2.    2.    2.
2.   2.
 DEGR. *  200   170   140   230   250   170   320   350     0    80    20    20    20    30    30   100   100   110
120   160
```

♀ PAGE 7

JOB: Landmark Center RUN: 2018NB

MODEL RESULTS

```
REMARKS : In search of the angle corresponding to
          the maximum concentration, only the first
          angle, of the angles with same maximum
          concentrations, is indicated as maximum.

 WIND ANGLE RANGE:   0.-360.

 WIND  * CONCENTRATION
 ANGLE *      (ug/m**3)
 (DEGR)* REC41 REC42 REC43 REC44 REC45 REC46 REC47 REC48 REC49 REC50 REC51 REC52 REC53 REC54 REC55 REC56 REC57 REC58
REC59 REC60
```



```
------*-----------------------------------------------------------------------------------------------------------
-------
   0.  *    0.    0.    0.    0.    0.    0.    1.    2.    1.    1.    1.    1.    2.    1.    1.    0.    0.    0.
0.   0.
  10.  *    0.    0.    0.    0.    0.    0.    1.    2.    1.    0.    1.    1.    2.    2.    1.    0.    0.    0.
0.   0.
  20.  *    0.    0.    0.    0.    0.    0.    1.    2.    1.    0.    1.    1.    2.    2.    2.    0.    0.    0.
0.   0.
  30.  *    0.    0.    0.    0.    0.    0.    1.    2.    0.    0.    0.    1.    2.    2.    2.    0.    0.    0.
0.   0.
  40.  *    0.    0.    0.    0.    0.    0.    1.    2.    0.    0.    0.    1.    2.    2.    2.    0.    0.    1.
0.   0.
  50.  *    0.    0.    0.    0.    0.    0.    1.    1.    0.    0.    0.    0.    2.    2.    2.    0.    0.    1.
0.   0.
  60.  *    0.    0.    1.    0.    0.    0.    1.    1.    0.    0.    0.    0.    1.    1.    2.    1.    1.    1.
0.   0.
  70.  *    0.    0.    1.    1.    1.    0.    0.    0.    0.    0.    0.    0.    1.    1.    1.    2.    2.    2.
0.   0.
  80.  *    0.    0.    2.    1.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    2.    2.    2.
0.   0.
  90.  *    0.    0.    2.    2.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    2.    2.    2.
1.   0.
 100.  *    0.    0.    2.    2.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    2.    2.    2.
1.   0.
 110.  *    0.    1.    2.    2.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    2.    2.    2.
1.   0.
 120.  *    0.    1.    2.    2.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    2.    2.    2.
1.   1.
 130.  *    0.    1.    2.    2.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    2.    2.    2.
1.   1.
 140.  *    1.    1.    2.    2.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    2.    2.    2.
1.   1.
 150.  *    1.    1.    2.    2.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    2.    2.    2.
1.   1.
 160.  *    1.    1.    2.    2.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    2.    2.    2.
1.   1.
 170.  *    1.    1.    2.    2.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    2.    2.    2.
1.   1.
 180.  *    1.    1.    2.    2.    1.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    2.    2.
1.   1.
 190.  *    1.    1.    2.    2.    2.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    2.    2.
1.   0.
 200.  *    1.    1.    2.    2.    2.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    2.    2.
1.   0.
 210.  *    1.    1.    2.    2.    2.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    1.    2.    2.
1.   0.
 220.  *    1.    1.    3.    2.    2.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    2.    2.    2.
1.   1.
 230.  *    1.    1.    3.    3.    3.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    2.    2.    2.
1.   1.
 240.  *    0.    1.    3.    3.    3.    0.    1.    1.    0.    0.    0.    0.    1.    1.    1.    2.    2.    2.
1.   1.
 250.  *    0.    1.    2.    2.    2.    1.    1.    1.    0.    0.    0.    0.    1.    1.    1.    1.    2.    2.
1.   0.
 260.  *    0.    0.    1.    1.    1.    2.    2.    2.    1.    0.    0.    0.    2.    2.    1.    1.    1.    1.
0.   0.
 270.  *    0.    0.    1.    0.    0.    2.    2.    2.    1.    1.    1.    1.    2.    2.    1.    0.    0.    0.
0.   0.
 280.  *    0.    0.    0.    0.    0.    2.    2.    2.    1.    1.    0.    1.    2.    2.    1.    0.    0.    0.
0.   0.
 290.  *    0.    0.    0.    0.    0.    2.    2.    2.    1.    1.    0.    1.    2.    2.    1.    0.    0.    0.
0.   0.
 300.  *    0.    0.    0.    0.    0.    1.    2.    2.    1.    1.    0.    1.    2.    2.    1.    0.    0.    0.
0.   0.
 310.  *    0.    0.    0.    0.    0.    1.    2.    2.    1.    1.    0.    1.    2.    2.    1.    0.    0.    0.
0.   0.
 320.  *    0.    0.    0.    0.    0.    1.    1.    2.    1.    1.    1.    1.    1.    1.    1.    0.    0.    0.
0.   0.
 330.  *    0.    0.    0.    0.    0.    1.    2.    2.    1.    1.    1.    1.    2.    2.    1.    0.    0.    0.
0.   0.
 340.  *    0.    0.    0.    0.    0.    1.    2.    2.    1.    1.    1.    1.    2.    2.    1.    0.    0.    0.
0.   0.
 350.  *    0.    0.    0.    0.    0.    1.    1.    2.    1.    1.    1.    1.    2.    2.    1.    0.    0.    0.
0.   0.
 360.  *    0.    0.    0.    0.    0.    0.    1.    2.    1.    1.    1.    1.    2.    1.    1.    0.    0.    0.
0.   0.

------*-----------------------------------------------------------------------------------------------------------
-------
 MAX   *    1.    1.    3.    3.    3.    2.    2.    2.    1.    1.    1.    1.    2.    2.    2.    2.    2.    2.
1.   1.
 DEGR. *  170   210   230   230   230   270   270   260   330   290     0   350   270    40    50    90    90    90
120   140

 THE HIGHEST CONCENTRATION OF      3. ug/m**3 OCCURRED AT RECEPTOR REC43.
```

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 95221

JOB: LANDMARKCENTER RUN: 2018_BD_CO_3

DATE : 7/22/13
TIME : 14:33:27

The MODE flag has been set to P for calculating PM averages.

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 175. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 ug/m**3

LINK VARIABLES

LINK DESCRIPTION	X1	Y1	X2	Y2	LENGTH (FT)	BRG (DEG)	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)	V/C	QUEUE (VEH)
1. Brook/Full EB L	3074.7	4018.5	3063.2	4003.4	19.	217.	AG	0.	100.0	1.0	10.0	0.11	1.0
2. Brook/Full EB TR	3083.6	4012.0	3036.0	3948.7	79.	217.	AG	0.	100.0	1.0	10.0	0.44	4.0
3. Brook/Full NB LTR	3121.3	4022.6	3159.5	4002.1	43.	118.	AG	0.	100.0	1.0	10.0	0.24	2.2
4. Brook/Full WB LTR	3127.2	4100.9	3164.8	4150.3	62.	37.	AG	0.	100.0	1.0	20.0	0.32	3.2
5. Brook/Full SB LT	3068.3	4050.9	3017.3	4088.5	63.	306.	AG	0.	100.0	1.0	10.0	0.39	3.2
6. Brook/Full SB R	3061.2	4041.4	3029.5	4064.1	39.	306.	AG	0.	100.0	1.0	10.0	0.21	2.0
7. Brook/Full N	3091.9	4045.7	2925.8	4161.5	203.	305.	AG	554.	0.0	1.0	54.0		
8. Brook/Full E	3091.9	4045.7	3246.2	4230.8	241.	40.	AG	997.	0.0	1.0	54.0		
9. Brook/Full S	3100.3	4031.3	3190.0	3977.6	105.	121.	AG	456.	0.0	1.0	42.0		
10. Brook/Full W	3091.9	4048.0	2946.1	3847.4	248.	216.	AG	1213.	0.0	1.0	54.0		

JOB: LANDMARKCENTER RUN: 2018_BD_CO_3

DATE : 7/22/13
TIME : 14:33:27

1. Brook/Full EB L	100	33	3.0	105	1600	0.04	1	3
2. Brook/Full EB TR	100	33	3.0	439	1600	0.04	1	3
3. Brook/Full NB LTR	100	33	3.0	240	1600	0.04	1	3
4. Brook/Full WB LTR	100	43	3.0	528	1600	0.04	1	3
5. Brook/Full SB LT	100	67	3.0	173	1600	0.04	1	3
6. Brook/Full SB R	100	57	3.0	125	1600	0.04	1	3

RECEPTOR LOCATIONS

RECEPTOR	X (FT)	Y (FT)	Z (FT)
1. Brook/Full NE1	2962.2	4181.2	6.0
2. Brook/Full NE2	3023.7	4138.3	6.0
3. Brook/Full NE3	3085.3	4095.4	6.0
4. Brook/Full NE4	3133.3	4153.0	6.0
5. Brook/Full NE5	3188.7	4204.0	6.0
6. Brook/Full SE1	3235.0	4159.5	6.0
7. Brook/Full SE2	3187.0	4101.9	6.0
8. Brook/Full SE3	3130.3	4049.5	6.0
9. Brook/Full SE4	3203.3	4005.7	6.0
10. Brook/Full SE5	3267.6	3967.2	6.0
11. Brook/Full SW1	3228.3	3918.5	6.0
12. Brook/Full SW2	3163.9	3957.1	6.0
13. Brook/Full SW3	3099.6	3995.6	6.0
14. Brook/Full SW4	3055.5	3934.9	6.0
15. Brook/Full SW5	3011.4	3874.3	6.0
16. Brook/Full NW1	2950.5	3916.4	6.0
17. Brook/Full NW2	2994.6	3977.0	6.0
18. Brook/Full NW3	3038.7	4037.7	6.0
19. Brook/Full NW4	2977.2	4080.6	6.0
20. Brook/Full NW5	2915.6	4123.5	6.0

JOB: LANDMARKCENTER RUN: 2018_BD_CO_3

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-360.

WIND * CONCENTRATION

ANGLE (DEGR)	REC1	REC2	REC3	REC4	REC5	REC6	REC7	REC8	REC9	REC10	REC11	REC12	REC13	REC14	REC15	REC16	REC17	REC18	REC19	REC20
	(ug/m**3)																			
0.	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.	1.	1.	1.	0.	0.	0.	0.	0.
10.	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.	1.	1.	1.	0.	0.	0.	0.	0.
20.	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.	1.	1.	1.	0.	0.	0.	0.	0.
30.	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.	1.	1.	1.	0.	0.	0.	0.	0.
40.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.	1.	1.	0.	0.
50.	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.	1.	1.	0.	0.
60.	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.	1.	1.	0.	0.
70.	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.	1.	1.	0.	0.
80.	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.	1.	1.	1.	0.
90.	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.	1.	1.	1.	0.
100.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.	1.	0.
110.	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.	1.	0.
120.	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
130.	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
140.	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
150.	0.	1.	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
160.	0.	1.	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.
170.	0.	1.	1.	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.
180.	0.	1.	1.	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.
190.	0.	0.	1.	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.
200.	0.	0.	1.	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.
210.	0.	0.	1.	1.	1.	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
220.	0.	0.	1.	0.	1.	0.	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
230.	0.	0.	0.	0.	0.	1.	1.	1.	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
240.	0.	0.	0.	0.	0.	1.	1.	1.	0.	0.	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.
250.	0.	0.	0.	0.	0.	1.	1.	1.	0.	0.	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.
260.	0.	0.	0.	0.	0.	1.	1.	1.	0.	0.	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.
270.	0.	0.	0.	0.	0.	1.	1.	1.	0.	0.	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.
280.	0.	0.	0.	0.	0.	0.	1.	1.	1.	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
290.	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
300.	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
310.	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.
320.	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.
330.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.	1.	1.	0.	0.	0.	0.	0.	0.
340.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.	1.	1.	0.	0.	0.	0.	0.
350.	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.	1.	1.	1.	0.	0.	0.	0.	0.
360.	0.	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.	1.	1.	1.	0.	0.	0.	0.	0.
MAX	0.	1.	1.	1.	1.	1.	1.	1.	1.	0.	0.	1.	1.	1.	1.	1.	1.	1.	1.	0.
DEGR.	140	170	200	180	210	240	240	220	280	290	300	330	20	0	10	50	50	70	110	90

THE HIGHEST CONCENTRATION OF 1. ug/m**3 OCCURRED AT RECEPTOR REC18.

Microscale Results

11615 Landmark Center, Boston

Background Concentrations*		Background Concentration	Persistence Factor
Carbon Monoxide (CO)	1-Hour	3.0	
	8-Hour	2.1	0.7
Particulate Matter 10 (PM10)	24-Hour	39.3	0.4
Particulate Matter 25 (PM2.5)	24-Hour	20.7	0.4
	Annual	9.2	0.08

* Based on New England Air Quality Monitoring Reports 2009-2011

Intersection	Receptor Number/Description	Receptors		CO									PM10						PM2.5								
				1-Hour Raw			1-Hour Total			8-Hour Total			1-Hour Raw			24-Hour Total			1-Hour Raw			24-Hour Total			Annual Total		
				Existing	No Build	Build	Existing	No Build	Build	Existing	No Build	Build	Existing	No Build	Build	Existing	No Build	Build	Existing	No Build	Build	Existing	No Build	Build	Existing	No Build	Build
Beacon Street at		NE	1	0.9	0.8	0.8	3.9	3.8	3.8	2.7	2.7	2.7	3	2	2	40.5	40.1	40.1	1	1	1	21.1	21.1	21.1	9.3	9.3	9.3
Park Drive		NE	2	0.8	0.8	0.8	3.8	3.8	3.8	2.7	2.7	2.7	3	3	3	40.5	40.5	40.5	1	1	1	21.1	21.1	21.1	9.3	9.3	9.3
	1	NE	3	1.4	1.1	1.1	4.4	4.1	4.1	3.1	2.9	2.9	3	3	3	40.5	40.5	40.5	2	1	1	21.5	21.1	21.1	9.4	9.3	9.3
	Ruggles Baptist Church	NE	4	1.4	1	1	4.4	4	4	3.1	2.8	2.8	4	3	3	40.9	40.5	40.5	2	2	2	21.5	21.5	21.5	9.4	9.4	9.4
		NE	5	1.3	0.9	0.9	4.3	3.9	3.9	3.0	2.7	2.7	4	3	3	40.9	40.5	40.5	2	1	1	21.5	21.1	21.1	9.4	9.3	9.3
		SE	1	1.1	0.8	0.8	4.1	3.8	3.8	2.9	2.7	2.7	3	3	3	40.5	40.5	40.5	2	1	1	21.5	21.1	21.1	9.4	9.3	9.3
		SE	2	1	0.8	0.8	4	3.8	3.8	2.8	2.7	2.7	3	2	2	40.5	40.1	40.1	2	1	1	21.5	21.1	21.1	9.4	9.3	9.3
	2	SE	3	1.1	0.8	0.8	4.1	3.8	3.8	2.9	2.7	2.7	3	2	2	40.5	40.1	40.1	2	1	1	21.5	21.1	21.1	9.4	9.3	9.3
	Residences	SE	4	1.4	1.2	1.2	4.4	4.2	4.2	3.1	2.9	2.9	4	3	3	40.9	40.5	40.5	2	2	2	21.5	21.5	21.5	9.4	9.4	9.4
		SE	5	1.3	1.3	1.3	4.3	4.3	4.3	3.0	3.0	3.0	4	3	3	40.9	40.5	40.5	2	2	2	21.5	21.5	21.5	9.4	9.4	9.4
		SW	1	1.2	1	1	4.2	4	4	2.9	2.8	2.8	4	3	3	40.9	40.5	40.5	2	2	2	21.5	21.5	21.5	9.4	9.4	9.4
		SW	2	1.3	1	1	4.3	4	4	3.0	2.8	2.8	4	3	3	40.9	40.5	40.5	2	2	2	21.5	21.5	21.5	9.4	9.4	9.4
	3	SW	3	1.2	1	1	4.2	4	4	2.9	2.8	2.8	3	3	3	40.5	40.5	40.5	2	1	1	21.5	21.1	21.1	9.4	9.3	9.3
	Residences	SW	4	0.9	0.8	0.8	3.9	3.8	3.8	2.7	2.7	2.7	3	2	2	40.5	40.1	40.1	2	1	1	21.5	21.1	21.1	9.4	9.3	9.3
		SW	5	0.8	0.6	0.6	3.8	3.6	3.6	2.7	2.5	2.5	2	2	2	40.1	40.1	40.1	1	1	1	21.1	21.1	21.1	9.3	9.3	9.3
		NW	1	0.7	0.7	0.7	3.7	3.7	3.7	2.6	2.6	2.6	2	2	2	40.1	40.1	40.1	1	1	1	21.1	21.1	21.1	9.3	9.3	9.3
		NW	2	0.9	0.9	0.9	3.9	3.9	3.9	2.7	2.7	2.7	2	2	2	40.1	40.1	40.1	1	1	1	21.1	21.1	21.1	9.3	9.3	9.3
	4	NW	3	1.1	0.8	0.8	4.1	3.8	3.8	2.9	2.7	2.7	3	3	3	40.5	40.5	40.5	2	1	1	21.5	21.1	21.1	9.4	9.3	9.3
	Office	NW	4	1.1	1	1	4.1	4	4	2.9	2.8	2.8	4	3	3	40.9	40.5	40.5	2	1	1	21.5	21.1	21.1	9.4	9.3	9.3
		NW	5	1.1	0.9	0.9	4.1	3.9	3.9	2.9	2.7	2.7	3	3	3	40.5	40.5	40.5	2	1	1	21.5	21.1	21.1	9.4	9.3	9.3
Park Drive at		NE	1	1.1	1.6	1.6	4.1	4.6	4.6	2.9	3.2	3.2	3	3	3	40.5	40.5	40.5	2	2	2	21.5	21.5	21.5	9.4	9.4	9.4
Riverway (Westbound)		NE	2	2.5	2.5	2.5	5.5	5.5	5.5	3.9	3.9	3.9	5	5	5	41.3	41.3	41.3	3	2	2	21.9	21.5	21.5	9.4	9.4	9.4
	5	NE	3	2	2	2.1	5	5	5.1	3.5	3.5	3.6	5	5	5	41.3	41.3	41.3	3	2	2	21.9	21.5	21.5	9.4	9.4	9.4
	Open Space	NE	4	1.4	1.5	1.6	4.4	4.5	4.6	3.1	3.2	3.2	3	4	4	40.5	40.9	40.9	2	2	2	21.5	21.5	21.5	9.4	9.4	9.4
		NE	5	0.9	0.8	0.8	3.9	3.8	3.8	2.7	2.7	2.7	2	2	2	40.1	40.1	40.1	1	1	1	21.1	21.1	21.1	9.3	9.3	9.3
		SE	1	1.2	1.1	1.1	4.2	4.1	4.1	2.9	2.9	2.9	3	3	3	40.5	40.5	40.5	2	1	1	21.5	21.1	21.1	9.4	9.3	9.3
		SE	2	1.2	1.1	1.1	4.2	4.1	4.1	2.9	2.9	2.9	3	2	3	40.5	40.1	40.5	1	1	1	21.1	21.1	21.1	9.3	9.3	9.3
	6	SE	3	1.7	1.7	1.7	4.7	4.7	4.7	3.3	3.3	3.3	4	4	4	40.9	40.9	40.9	2	2	2	21.5	21.5	21.5	9.4	9.4	9.4
	Open Space	SE	4	0.8	0.9	1	3.8	3.9	4	2.7	2.7	2.8	2	2	2	40.1	40.1	40.1	1	1	1	21.1	21.1	21.1	9.3	9.3	9.3
		SE	5	1.1	0.9	1.1	4.1	3.9	4.1	2.9	2.7	2.9	3	2	2	40.5	40.1	40.1	2	1	1	21.5	21.1	21.1	9.4	9.3	9.3
		SW	1	0.7	0.7	0.7	3.7	3.7	3.7	2.6	2.6	2.6	2	2	2	40.1	40.1	40.1	1	1	1	21.1	21.1	21.1	9.3	9.3	9.3
		SW	2	0.8	0.8	0.9	3.8	3.8	3.9	2.7	2.7	2.7	3	2	2	40.5	40.1	40.1	1	1	1	21.1	21.1	21.1	9.3	9.3	9.3
	7	SW	3	1.2	1.1	1.1	4.2	4.1	4.1	2.9	2.9	2.9	3	3	3	40.5	40.5	40.5	2	2	2	21.5	21.5	21.5	9.4	9.4	9.4
	Open Space	SW	4	0.7	1	1	3.7	4	4	2.6	2.8	2.8	3	3	3	40.5	40.5	40.5	2	1	1	21.5	21.1	21.1	9.4	9.3	9.3
		SW	5	0.7	0.7	0.7	3.7	3.7	3.7	2.6	2.6	2.6	2	2	3	40.1	40.1	40.5	1	1	1	21.1	21.1	21.1	9.3	9.3	9.3
		NW	1	0.9	0.9	0.9	3.9	3.9	3.9	2.7	2.7	2.7	3	3	3	40.5	40.5	40.5	2	2	2	21.5	21.5	21.5	9.4	9.4	9.4
		NW	2	1	1.2	1.3	4	4.2	4.3	2.8	2.9	3.0	3	4	4	40.5	40.9	40.9	2	2	2	21.5	21.5	21.5	9.4	9.4	9.4
	8	NW	3	1.1	1.2	1.2	4.1	4.2	4.2	2.9	2.9	2.9	4	4	4	40.9	40.9	40.9	2	2	2	21.5	21.5	21.5	9.4	9.4	9.4
	Open Space	NW	4	1.4	1.5	1.5	4.4	4.5	4.5	3.1	3.2	3.2	4	4	4	40.9	40.9	40.9	2	2	2	21.5	21.5	21.5	9.4	9.4	9.4
		NW	5	1.5	1.9	1.9	4.5	4.9	4.9	3.2	3.4	3.4	4	5	5	40.9	41.3	41.3	2	2	2	21.5	21.5	21.5	9.4	9.4	9.4

11615 Landmark Center, Boston

Background Concentrations*		Background Concentration	Persistence Factor
Carbon Monoxide (CO)	1-Hour	3.0	
	8-Hour	2.1	0.7
Particulate Matter 10 (PM10)	24-Hour	39.3	0.4
Particulate Matter 25 (PM2.5)	24-Hour	20.7	0.4
	Annual	9.2	0.08

* Based on New England Air Quality Monitoring Reports 2009-2011

Intersection	Receptor Number/Description	Receptors		CO									PM10						PM2.5								
				1-Hour Raw			1-Hour Total			8-Hour Total			1-Hour Raw			24-Hour Total			1-Hour Raw			24-Hour Total			Annual Total		
				Existing	No Build	Build	Existing	No Build	Build	Existing	No Build	Build	Existing	No Build	Build	Existing	No Build	Build	Existing	No Build	Build	Existing	No Build	Build	Existing	No Build	Build
Brookline Avenue at		NE	1	2.1	1.7	1.7	5.1	4.7	4.7	3.6	3.3	3.3	5	4	4	41.3	40.9	40.9	3	2	2	21.9	21.5	21.5	9.4	9.4	9.4
Riverway and Fenway		NE	2	2.6	2.3	2.3	5.6	5.3	5.3	3.9	3.7	3.7	6	6	6	41.7	41.7	41.7	4	3	3	22.3	21.9	21.9	9.5	9.4	9.4
	9	NE	3	3.2	3	2.9	6.2	6	5.9	4.3	4.2	4.1	8	8	8	42.5	42.5	42.5	4	4	4	22.3	22.3	22.3	9.5	9.5	9.5
	Open Space	NE	4	2.1	1.9	1.9	5.1	4.9	4.9	3.6	3.4	3.4	6	6	6	41.7	41.7	41.7	3	3	3	21.9	21.9	21.9	9.4	9.4	9.4
		NE	5	1.9	1.8	1.8	4.9	4.8	4.8	3.4	3.4	3.4	6	6	6	41.7	41.7	41.7	3	3	3	21.9	21.9	21.9	9.4	9.4	9.4
		SE	1	1.7	1.5	1.5	4.7	4.5	4.5	3.3	3.2	3.2	5	5	5	41.3	41.3	41.3	3	2	2	21.9	21.5	21.5	9.4	9.4	9.4
		SE	2	3.2	2.8	2.9	6.2	5.8	5.9	4.3	4.1	4.1	6	5	5	41.7	41.3	41.3	3	3	3	21.9	21.9	21.9	9.4	9.4	9.4
	10	SE	3	2.9	2.6	2.7	5.9	5.6	5.7	4.1	3.9	4.0	7	6	6	42.1	41.7	41.7	4	3	3	22.3	21.9	21.9	9.5	9.4	9.4
	Emmanuel College	SE	4	2	1.8	1.8	5	4.8	4.8	3.5	3.4	3.4	4	4	4	40.9	40.9	40.9	2	2	2	21.5	21.5	21.5	9.4	9.4	9.4
		SE	5	1.8	1.5	1.6	4.8	4.5	4.6	3.4	3.2	3.2	4	3	3	40.9	40.5	40.5	2	2	2	21.5	21.5	21.5	9.4	9.4	9.4
		S	1	1.6	1.8	1.8	4.6	4.8	4.8	3.2	3.4	3.4	5	5	5	41.3	41.3	41.3	3	3	3	21.9	21.9	21.9	9.4	9.4	9.4
		S	2	1.8	1.8	1.8	4.8	4.8	4.8	3.4	3.4	3.4	6	6	6	41.7	41.7	41.7	3	3	3	21.9	21.9	21.9	9.4	9.4	9.4
	11	S	3	3	2.8	2.9	6	5.8	5.9	4.2	4.1	4.1	9	9	9	42.9	42.9	42.9	5	4	4	22.7	22.3	22.3	9.6	9.5	9.5
	Residences	S	4	2.2	2.1	2.1	5.2	5.1	5.1	3.6	3.6	3.6	6	6	6	41.7	41.7	41.7	3	3	3	21.9	21.9	21.9	9.4	9.4	9.4
		S	5	1.8	1.5	1.5	4.8	4.5	4.5	3.4	3.2	3.2	5	4	4	41.3	40.9	40.9	3	2	2	21.9	21.5	21.5	9.4	9.4	9.4
		SW	1	1.7	1.5	1.5	4.7	4.5	4.5	3.3	3.2	3.2	4	4	4	40.9	40.9	40.9	2	2	2	21.5	21.5	21.5	9.4	9.4	9.4
		SW	2	3.2	2.8	2.9	6.2	5.8	5.9	4.3	4.1	4.1	8	7	7	42.5	42.1	42.1	4	3	3	22.3	21.9	21.9	9.5	9.4	9.4
	12	SW	3	2.9	2.6	2.7	5.9	5.6	5.7	4.1	3.9	4.0	8	7	8	42.5	42.1	42.5	4	4	4	22.3	22.3	22.3	9.5	9.5	9.5
	110 Riverway Residences	SW	4	2	1.8	1.8	5	4.8	4.8	3.5	3.4	3.4	6	5	5	41.7	41.3	41.3	3	3	3	21.9	21.9	21.9	9.4	9.4	9.4
		SW	5	1.8	1.5	1.6	4.8	4.5	4.6	3.4	3.2	3.2	5	5	5	41.3	41.3	41.3	3	2	2	21.9	21.5	21.5	9.4	9.4	9.4
		NW	1	1.6	1.8	1.8	4.6	4.8	4.8	3.2	3.4	3.4	5	5	5	41.3	41.3	41.3	3	3	3	21.9	21.9	21.9	9.4	9.4	9.4
		NW	2	1.8	1.8	1.8	4.8	4.8	4.8	3.4	3.4	3.4	6	6	6	41.7	41.7	41.7	3	3	3	21.9	21.9	21.9	9.4	9.4	9.4
	13	NW	3	3	2.8	2.9	6	5.8	5.9	4.2	4.1	4.1	9	9	9	42.9	42.9	42.9	5	4	4	22.7	22.3	22.3	9.6	9.5	9.5
	Open Space	NW	4	2.2	2.1	2.1	5.2	5.1	5.1	3.6	3.6	3.6	6	6	6	41.7	41.7	41.7	3	3	3	21.9	21.9	21.9	9.4	9.4	9.4
		NW	5	1.8	1.5	1.5	4.8	4.5	4.5	3.4	3.2	3.2	5	4	4	41.3	40.9	40.9	3	2	2	21.9	21.5	21.5	9.4	9.4	9.4
Brookline Avenue at		NE	1	1.1	1	1.1	4.1	4	4.1	2.9	2.8	2.9	4	4	4	40.9	40.9	40.9	2	2	2	21.5	21.5	21.5	9.4	9.4	9.4
Boylston Street/		NE	2	1.3	1.2	1.2	4.3	4.2	4.2	3.0	2.9	2.9	5	4	4	41.3	40.9	40.9	2	2	2	21.5	21.5	21.5	9.4	9.4	9.4
Park Drive	14	NE	3	1.8	1.7	1.7	4.8	4.7	4.7	3.4	3.3	3.3	6	6	6	41.7	41.7	41.7	3	3	3	21.9	21.9	21.9	9.4	9.4	9.4
	D'Angelo Sandwich Shop	NE	4	2.1	2.1	2.1	5.1	5.1	5.1	3.6	3.6	3.6	5	5	5	41.3	41.3	41.3	2	2	2	21.5	21.5	21.5	9.4	9.4	9.4
		NE	5	1.8	2.2	2.2	4.8	5.2	5.2	3.4	3.6	3.6	5	4	4	41.3	40.9	40.9	2	2	2	21.5	21.5	21.5	9.4	9.4	9.4
		SE	1	1.4	1.5	1.5	4.4	4.5	4.5	3.1	3.2	3.2	5	5	5	41.3	41.3	41.3	2	2	2	21.5	21.5	21.5	9.4	9.4	9.4
		SE	2	1.3	1.3	1.4	4.3	4.3	4.4	3.0	3.0	3.1	4	4	4	40.9	40.9	40.9	2	2	2	21.5	21.5	21.5	9.4	9.4	9.4
	15	SE	3	1.5	1.4	1.4	4.5	4.4	4.4	3.2	3.1	3.1	5	4	4	41.3	40.9	40.9	3	2	2	21.9	21.5	21.5	9.4	9.4	9.4
	Gulf Gas Station	SE	4	1.9	1.7	1.7	4.9	4.7	4.7	3.4	3.3	3.3	5	5	5	41.3	41.3	41.3	3	2	2	21.9	21.5	21.5	9.4	9.4	9.4
		SE	5	1.5	1.3	1.3	4.5	4.3	4.3	3.2	3.0	3.0	4	4	4	40.9	40.9	40.9	2	2	2	21.5	21.5	21.5	9.4	9.4	9.4
		S	1	1.6	1.4	1.5	4.6	4.4	4.5	3.2	3.1	3.2	4	4	4	40.9	40.9	40.9	3	2	2	21.9	21.5	21.5	9.4	9.4	9.4
		S	2	1.9	1.7	1.7	4.9	4.7	4.7	3.4	3.3	3.3	5	4	4	41.3	40.9	40.9	2	2	2	21.5	21.5	21.5	9.4	9.4	9.4
	16	S	3	2	1.8	1.8	5	4.8	4.8	3.5	3.4	3.4	6	6	6	41.7	41.7	41.7	3	3	3	21.9	21.9	21.9	9.4	9.4	9.4
	Open Space	S	4	1.9	2	2	4.9	5	5	3.4	3.5	3.5	6	6	6	41.7	41.7	41.7	3	3	3	21.9	21.9	21.9	9.4	9.4	9.4
		S	5	1.9	1.9	1.9	4.9	4.9	4.9	3.4	3.4	3.4	6	6	6	41.7	41.7	41.7	4	3	3	22.3	21.9	21.9	9.5	9.4	9.4
		SW	1	2.1	2.1	2.1	5.1	5.1	5.1	3.6	3.6	3.6	6	6	6	41.7	41.7	41.7	4	3	3	22.3	21.9	21.9	9.5	9.4	9.4
		SW	2	2.1	1.9	1.9	5.1	4.9	4.9	3.6	3.4	3.4	6	6	6	41.7	41.7	41.7	3	3	3	21.9	21.9	21.9	9.4	9.4	9.4
	17	SW	3	1.7	1.8	1.8	4.7	4.8	4.8	3.3	3.4	3.4	5	6	6	41.3	41.7	41.7	3	3	3	21.9	21.9	21.9	9.4	9.4	9.4
	Open Space	SW	4	1.1	1.4	1.4	4.1	4.4	4.4	2.9	3.1	3.1	4	4	4	40.9	40.9	40.9	2	2	2	21.5	21.5	21.5	9.4	9.4	9.4
		SW	5	1	1.1	1.1	4	4.1	4.1	2.8	2.9	2.9	4	4	4	40.9	40.9	40.9	2	2	2	21.5	21.5	21.5	9.4	9.4	9.4
		NW	1	1.3	1.2	1.2	4.3	4.2	4.2	3.0	2.9	2.9	4	4	4	40.9	40.9	40.9	2	2	2	21.5	21.5	21.5	9.4	9.4	9.4
		NW	2	1.4	1.2	1.3	4.4	4.2	4.3	3.1	2.9	3.0	5	4	4	41.3	40.9	40.9	2	2	2	21.5	21.5	21.5	9.4	9.4	9.4
	18	NW	3	1.7	1.7	1.8	4.7	4.7	4.8	3.3	3.3	3.4	6	6	6	41.7	41.7	41.7	3	3	3	21.9	21.9	21.9	9.4	9.4	9.4
	Parking Lot/Landmark Center	NW	4	1.7	1.7	1.7	4.7	4.7	4.7	3.3	3.3	3.3	6	6	6	41.7	41.7	41.7	3	3	3	21.9	21.9	21.9	9.4	9.4	9.4
		NW	5	1.4	1.5	1.6	4.4	4.5	4.6	3.1	3.2	3.2	6	6	6	41.7	41.7	41.7	3	3	3	21.9	21.9	21.9	9.4	9.4	9.4

11615 Landmark Center, Boston

Background Concentrations*		Background Concentration	Persistence Factor
Carbon Monoxide (CO)	1-Hour	3.0	
	8-Hour	2.1	0.7
Particulate Matter 10 (PM10)	24-Hour	39.3	0.4
Particulate Matter 25 (PM2.5)	24-Hour	20.7	0.4
	Annual	9.2	0.08

* Based on New England Air Quality Monitoring Reports 2009-2011

Intersection	Receptor Number/Description	Receptors		CO									PM10						PM2.5								
				1-Hour Raw			1-Hour Total			8-Hour Total			1-Hour Raw			24-Hour Total			1-Hour Raw			24-Hour Total			Annual Total		
				Existing	No Build	Build	Existing	No Build	Build	Existing	No Build	Build	Existing	No Build	Build	Existing	No Build	Build	Existing	No Build	Build	Existing	No Build	Build	Existing	No Build	Build
Boylston Street at		NE	1	0.5	0.7	0.7	3.5	3.7	3.7	2.5	2.6	2.6	2	2	2	40.1	40.1	40.1	1	1	1	21.1	21.1	21.1	9.3	9.3	9.3
Fullerton Street/		NE	2	0.7	1.1	1.1	3.7	4.1	4.1	2.6	2.9	2.9	2	3	3	40.1	40.5	40.5	1	1	1	21.1	21.1	21.1	9.3	9.3	9.3
Kilmarnock Street	19	NE	3	1.1	2.4	2.4	4.1	5.4	5.4	2.9	3.8	3.8	4	6	6	40.9	41.7	41.7	2	3	3	21.5	21.9	21.9	9.4	9.4	9.4
	Marshalls Farmstand	NE	4	1	2.3	2.3	4	5.3	5.3	2.8	3.7	3.7	4	6	6	40.9	41.7	41.7	2	3	3	21.5	21.9	21.9	9.4	9.4	9.4
		NE	5	1	2.3	2.3	4	5.3	5.3	2.8	3.7	3.7	4	6	6	40.9	41.7	41.7	2	3	3	21.5	21.9	21.9	9.4	9.4	9.4
		SE	1	1	1.6	1.6	4	4.6	4.6	2.8	3.2	3.2	4	4	4	40.9	40.9	40.9	2	2	2	21.5	21.5	21.5	9.4	9.4	9.4
		SE	2	1	1.5	1.5	4	4.5	4.5	2.8	3.2	3.2	4	4	4	40.9	40.9	40.9	2	2	2	21.5	21.5	21.5	9.4	9.4	9.4
	20	SE	3	1	1.5	1.5	4	4.5	4.5	2.8	3.2	3.2	4	4	4	40.9	40.9	40.9	2	2	2	21.5	21.5	21.5	9.4	9.4	9.4
	Burger King	SE	4	0.6	0.8	0.8	3.6	3.8	3.8	2.5	2.7	2.7	2	2	2	40.1	40.1	40.1	1	1	1	21.1	21.1	21.1	9.3	9.3	9.3
		SE	5	0.4	0.6	0.6	3.4	3.6	3.6	2.4	2.5	2.5	1	2	2	39.7	40.1	40.1	1	1	1	21.1	21.1	21.1	9.3	9.3	9.3
		SW	1	0.4	0.6	0.6	3.4	3.6	3.6	2.4	2.5	2.5	1	2	2	39.7	40.1	40.1	1	1	1	21.1	21.1	21.1	9.3	9.3	9.3
		SW	2	0.6	0.8	0.8	3.6	3.8	3.8	2.5	2.7	2.7	2	2	2	40.1	40.1	40.1	1	1	1	21.1	21.1	21.1	9.3	9.3	9.3
	21	SW	3	0.9	1.5	1.5	3.9	4.5	4.5	2.7	3.2	3.2	3	4	4	40.5	40.9	40.9	2	2	2	21.5	21.5	21.5	9.4	9.4	9.4
	Shaws	SW	4	1.1	1.4	1.4	4.1	4.4	4.4	2.9	3.1	3.1	3	4	4	40.5	40.9	40.9	2	2	2	21.5	21.5	21.5	9.4	9.4	9.4
		SW	5	0.9	1.4	1.4	3.9	4.4	4.4	2.7	3.1	3.1	3	4	4	40.5	40.9	40.9	2	2	2	21.5	21.5	21.5	9.4	9.4	9.4
		NW	1	0.8	1.9	1.9	3.8	4.9	4.9	2.7	3.4	3.4	3	5	5	40.5	41.3	41.3	2	2	2	21.5	21.5	21.5	9.4	9.4	9.4
		NW	2	0.8	1.8	1.8	3.8	4.8	4.8	2.7	3.4	3.4	3	5	5	40.5	41.3	41.3	2	2	2	21.5	21.5	21.5	9.4	9.4	9.4
	22	NW	3	1	2	2.1	4	5	5.1	2.8	3.5	3.6	3	5	5	40.5	41.3	41.3	2	2	2	21.5	21.5	21.5	9.4	9.4	9.4
	Burtons Grill	NW	4	0.7	1	1.1	3.7	4	4.1	2.6	2.8	2.9	2	2	3	40.1	40.1	40.5	1	1	1	21.1	21.1	21.1	9.3	9.3	9.3
		NW	5	0.5	0.7	0.7	3.5	3.7	3.7	2.5	2.6	2.6	2	2	2	40.1	40.1	40.1	1	1	1	21.1	21.1	21.1	9.3	9.3	9.3
Brookline Aveneue at		NE	1	0.2	0.2	0.3	3.2	3.2	3.3	2.2	2.2	2.3	1	1	1	39.7	39.7	39.7	0	0	0	20.7	20.7	20.7	9.2	9.2	9.2
Fullerton Street/		NE	2	0.4	0.4	0.4	3.4	3.4	3.4	2.4	2.4	2.4	1	1	2	39.7	39.7	40.1	1	1	1	21.1	21.1	21.1	9.3	9.3	9.3
Kilmarnock Street	23	NE	3	0.6	0.6	0.6	3.6	3.6	3.6	2.5	2.5	2.5	2	2	2	40.1	40.1	40.1	1	1	1	21.1	21.1	21.1	9.3	9.3	9.3
	Harvard Vanguard	NE	4	0.5	0.6	0.6	3.5	3.6	3.6	2.5	2.5	2.5	2	2	2	40.1	40.1	40.1	1	1	1	21.1	21.1	21.1	9.3	9.3	9.3
		NE	5	0.5	0.6	0.6	3.5	3.6	3.6	2.5	2.5	2.5	2	2	2	40.1	40.1	40.1	1	1	1	21.1	21.1	21.1	9.3	9.3	9.3
		SE	1	0.5	0.5	0.5	3.5	3.5	3.5	2.5	2.5	2.5	2	2	2	40.1	40.1	40.1	1	1	1	21.1	21.1	21.1	9.3	9.3	9.3
		SE	2	0.4	0.5	0.5	3.4	3.5	3.5	2.4	2.5	2.5	2	2	2	40.1	40.1	40.1	1	1	1	21.1	21.1	21.1	9.3	9.3	9.3
	24	SE	3	0.6	0.6	0.6	3.6	3.6	3.6	2.5	2.5	2.5	2	2	2	40.1	40.1	40.1	1	1	1	21.1	21.1	21.1	9.3	9.3	9.3
	Bus Station/Il Giardino Café	SE	4	0.4	0.4	0.4	3.4	3.4	3.4	2.4	2.4	2.4	1	1	1	39.7	39.7	39.7	1	1	1	21.1	21.1	21.1	9.3	9.3	9.3
		SE	5	0.1	0.1	0.2	3.1	3.1	3.2	2.2	2.2	2.2	1	1	1	39.7	39.7	39.7	0	0	0	20.7	20.7	20.7	9.2	9.2	9.2
		SW	1	0.1	0.1	0.2	3.1	3.1	3.2	2.2	2.2	2.2	1	1	1	39.7	39.7	39.7	0	0	0	20.7	20.7	20.7	9.2	9.2	9.2
		SW	2	0.4	0.4	0.4	3.4	3.4	3.4	2.4	2.4	2.4	1	1	1	39.7	39.7	39.7	1	1	1	21.1	21.1	21.1	9.3	9.3	9.3
	25	SW	3	0.6	0.6	0.6	3.6	3.6	3.6	2.5	2.5	2.5	2	2	2	40.1	40.1	40.1	1	1	1	21.1	21.1	21.1	9.3	9.3	9.3
	Chipotle	SW	4	0.5	0.5	0.5	3.5	3.5	3.5	2.5	2.5	2.5	2	2	2	40.1	40.1	40.1	1	1	1	21.1	21.1	21.1	9.3	9.3	9.3
		SW	5	0.4	0.4	0.4	3.4	3.4	3.4	2.4	2.4	2.4	2	2	2	40.1	40.1	40.1	1	1	1	21.1	21.1	21.1	9.3	9.3	9.3
		NW	1	0.4	0.4	0.4	3.4	3.4	3.4	2.4	2.4	2.4	2	2	2	40.1	40.1	40.1	1	1	1	21.1	21.1	21.1	9.3	9.3	9.3
		NW	2	0.4	0.4	0.4	3.4	3.4	3.4	2.4	2.4	2.4	2	2	2	40.1	40.1	40.1	1	1	1	21.1	21.1	21.1	9.3	9.3	9.3
	26	NW	3	0.8	0.8	0.8	3.8	3.8	3.8	2.7	2.7	2.7	2	2	2	40.1	40.1	40.1	1	1	1	21.1	21.1	21.1	9.3	9.3	9.3
	Blick Art Materials	NW	4	0.4	0.5	0.4	3.4	3.5	3.4	2.4	2.5	2.4	1	1	1	39.7	39.7	39.7	1	1	1	21.1	21.1	21.1	9.3	9.3	9.3
		NW	5	0.2	0.2	0.3	3.2	3.2	3.3	2.2	2.2	2.3	1	1	1	39.7	39.7	39.7	0	0	0	20.7	20.7	20.7	9.2	9.2	9.2

Appendix F
Noise Supporting Documentation

- Noise Monitoring Data
- Mechanical Equipment Sound Level Calculations

Noise Monitoring Data

Summary	
Filename	VHB.004
Serial Number	2555
Model	Model 831
Firmware Version	2.201
User	QVT
Location	Aberdeen Street
Job Description	Landmark Center Redevelopment
Note	
Measurement Description	
Start	2013/06/27 0:37:57
Stop	2013/06/27 0:49:19
Duration	0:11:21.8
Run Time	0:11:21.8
Pause	0:00:00.0
Pre Calibration	2013/06/26 23:33:16
Post Calibration	None
Calibration Deviation	---

Results		
LAeq	54.2	dB
LAS1.00	56.2	dB
LAS5.00	54.8	dB
LAS10.00	54.4	dB
LAS50.00	54.0	dB
LAS70.00	53.9	dB
LAS90.00	53.7	dB

Summary	
Filename	VHB.005
Serial Number	2555
Model	Model 831
Firmware Version	2.201
User	QVT
Location	Peterborough Street
Job Description	Landmark Center Redevelopment
Note	
Measurement Description	
Start	2013/06/27 0:55:39
Stop	2013/06/27 1:15:13
Duration	0:19:33.5
Run Time	0:19:33.5
Pause	0:00:00.0
Pre Calibration	2013/06/26 23:33:16
Post Calibration	None
Calibration Deviation	---
Results	
LAeq	57.9 dB
LAS1.00	70.7 dB
LAS5.00	57.7 dB
LAS10.00	55.9 dB
LAS50.00	52.9 dB
LAS70.00	52.3 dB
LAS90.00	51.7 dB

Summary	
Filename	12020800.LD0
Serial Number	2555
Model	831
Firmware Version	2.000
User	Q. Tat/T. Wholley
Location	110 Riverway
Job Description	
Note	
Measurement Description	
Start	2012/02/08 0:07:49
Stop	2012/02/08 0:20:25
Duration	0:12:36.8
Run Time	0:12:36.8
Pause	0:00:00.0
Results	
LAeq	60.2 dB
Statistics	
LAF5.00	66.3 dB
LAF10.00	63.2 dB
LAF30.00	57.0 dB
LAF50.00	55.1 dB
LAF70.00	53.3 dB
LAF90.00	51.2 dB

Mechanical Equipment Sound Level Calculations

Resultant Noise Levels at Receptor Locations [dBA]

	REC1	REC2	REC3	REC4	REC5	REC6	REC7
Description	R1 - Trilogy	R2 - The Point	R3 - Riverway	R4 - Medfield St	R5 - Aberdeen St	R6 - Harvard Vanguard	R7 - Brookline Ave
Noise Monitoring Data [dBA]	**52**	**52**	**51**	**54**	**54**	**52**	**51**
Noise Source [dBA]	49.2	49.7	39.3	42.4	48.0	47.9	34.3
Calculated Noise Level [dBA]	**54**	**54**	**51**	**54**	**55**	**53**	**51**
Difference	2	2	0	0	1	2	0

Monitoring Data - Ambient Sound Levels (dBA)

Station		MD1	MD2	MD3
Description		M1 - Aberdeen	M2 - Peterborough	M3 - Riverway
Existing Sound Levels	L90	53.7	51.7	51.2

Receptor Descriptions

	REC1	REC2	REC3	REC4	REC5	REC6	REC7
Description	R1 - Trilogy	R2 - The Point	R3 - Riverway	R4 - Medfield St	R5 - Aberdeen St	R6 - Harvard Vanguard	R7 - Brookline Ave
Nearest Reference [#]	2	2	3	1	1	2	3

Noise Source Descriptions

		NS1	NS2	NS3	NS4
	Noise Source Descriptions	Retail	Res A	Res B	Res C
Noise Sources					
	Source Description	Evapco 500 ton cooling tower	Evapco 500 ton cooling tower	Evapco 500 ton cooling tower	Evapco 500 ton cooling tower
	Noise Level [dBA]	61	61	61	61
	Reference distance [ft]	50	50	50	50
	# units [#]	1	1	1	1
	Required Attenuation [-dBA]				
		61	61	61	61
Unit 2	Source Description	CAT 1000 kW Generator	CAT 1000 kW Generator	CAT 1000 kW Generator	CAT 1000 kW Generator
	Noise Level [dBA]	95	95	95	95
	Reference distance [ft]	49	49	49	49
	# units [#]	1	1	1	1
	Required Attenuation [-dBA]	-33	-33	-33	-33
		62	62	62	62
Unit 3	Source Description	Carrier 25 ton RTU HVAC	Carrier 25 ton RTU HVAC	Carrier 25 ton RTU HVAC	Carrier 25 ton RTU HVAC
	Noise Level [dBA]	51	51	51	51
	Reference distance [ft]	50	50	50	50
	# units [#]	4	4	4	4
	Required Attenuation [-dBA]				
	Total Noise Source Sound Level [dBA]	**65**	**65**	**65**	**65**
	Reference distance [ft]	**50**	**50**	**50**	**50**

Ground Type Between Receptors and Noise Sources

		REC1	REC2	REC3	REC4	REC5	REC6	REC7
		R1 - Trilogy	R2 - The Point	R3 - Riverway	R4 - Medfield St	R5 - Aberdeen St	R6 - Harvard Vanguard	R7 - Brookline Ave
NS1	Retail	H	H	H	H	H	H	H
NS2	Res A	H	H	H	H	H	H	H
NS3	Res B	H	H	H	H	H	H	H
NS4	Res C	H	H	H	H	H	H	H

Distances from RECEPTOR TO NOISE SOURCE (in feet)

		REC1	REC2	REC3	REC4	REC5	REC6	REC7
		R1 - Trilogy	R2 - The Point	R3 - Riverway	R4 - Medfield St	R5 - Aberdeen St	R6 - Harvard Vanguard	R7 - Brookline Ave
NS1	Retail	460	470	940	720	370	280	1110
NS2	Res A	735	695	950	435	150	515	1340
NS3	Res B	475	540	1040	770	375	195	1030
NS4	Res C	350	435	1000	875	500	195	990

Receptor Level Attenuation

		REC1	REC2	REC3	REC4	REC5	REC6	REC7
		R1 - Trilogy	R2 - The Point	R3 - Riverway	R4 - Medfield St	R5 - Aberdeen St	R6 - Harvard Vanguard	R7 - Brookline Ave
NS1	Retail			-10	-10	-5	-10	-10
NS2	Res A			-5	-5	-10	-5	-10
NS3	Res B	-5		-5	-10	-10	-10	-10
NS4	Res C	-5	-5	-5	-10	-10	-10	-10

Noise Propogation Calculator

		REC1	REC2	REC3	REC4	REC5	REC6	REC7
		R1 - Trilogy	R2 - The Point	R3 - Riverway	R4 - Medfield St	R5 - Aberdeen St	R6 - Harvard Vanguard	R7 - Brookline Ave
NS1	Retail	46	46	30	32	43	40	28
NS2	Res A	42	42	34	41	45	40	26
NS3	Res B	40	44	34	31	38	43	29
NS4	Res C	43	41	34	30	35	43	29
	TOTAL	**49**	**50**	**39**	**42**	**48**	**48**	**34**

Appendix F
Noise Supporting Documentation

- Noise Monitoring Data
- Mechanical Equipment Sound Level Calculations

Noise Monitoring Data

Summary

Filename	VHB.004
Serial Number	2555
Model	Model 831
Firmware Version	2.201
User	QVT
Location	Aberdeen Street
Job Description	Landmark Center Redevelopment
Note	
Measurement Description	
Start	2013/06/27 0:37:57
Stop	2013/06/27 0:49:19
Duration	0:11:21.8
Run Time	0:11:21.8
Pause	0:00:00.0
Pre Calibration	2013/06/26 23:33:16
Post Calibration	None
Calibration Deviation	---

Results

LAeq	54.2	dB
LAS1.00	56.2	dB
LAS5.00	54.8	dB
LAS10.00	54.4	dB
LAS50.00	54.0	dB
LAS70.00	53.9	dB
LAS90.00	53.7	dB

Summary	
Filename	VHB.005
Serial Number	2555
Model	Model 831
Firmware Version	2.201
User	QVT
Location	Peterborough Street
Job Description	Landmark Center Redevelopment
Note	
Measurement Description	
Start	2013/06/27 0:55:39
Stop	2013/06/27 1:15:13
Duration	0:19:33.5
Run Time	0:19:33.5
Pause	0:00:00.0
Pre Calibration	2013/06/26 23:33:16
Post Calibration	None
Calibration Deviation	---

Results		
LAeq	57.9	dB
LAS1.00	70.7	dB
LAS5.00	57.7	dB
LAS10.00	55.9	dB
LAS50.00	52.9	dB
LAS70.00	52.3	dB
LAS90.00	51.7	dB

Summary	
Filename	12020800.LD0
Serial Number	2555
Model	831
Firmware Version	2.000
User	Q. Tat/T. Wholley
Location	110 Riverway
Job Description	
Note	
Measurement Description	
Start	2012/02/08 0:07:49
Stop	2012/02/08 0:20:25
Duration	0:12:36.8
Run Time	0:12:36.8
Pause	0:00:00.0

Results		
LAeq	60.2	dB

Statistics		
LAF5.00	66.3	dB
LAF10.00	63.2	dB
LAF30.00	57.0	dB
LAF50.00	55.1	dB
LAF70.00	53.3	dB
LAF90.00	51.2	dB

Mechanical Equipment Sound Level Calculations

Resultant Noise Levels at Receptor Locations [dBA]

	REC1	REC2	REC3	REC4	REC5	REC6	REC7
Description	R1 - Trilogy	R2 - The Point	R3 - Riverway	R4 - Medfield St	R5 - Aberdeen St	R6 - Harvard Vanguard	R7 - Brookline Ave
Noise Monitoring Data [dBA]	**52**	**52**	**51**	**54**	**54**	**52**	**51**
Noise Source [dBA]	49.2	49.7	39.3	42.4	48.0	47.9	34.3
Calculated Noise Level [dBA]	**54**	**54**	**51**	**54**	**55**	**53**	**51**
Difference	2	2	0	0	1	2	0

Monitoring Data - Ambient Sound Levels (dBA)

Station		MD1	MD2	MD3
Description		M1 - Aberdeen	M2 - Peterborough	M3 - Riverway
Existing Sound Levels	L90	53.7	51.7	51.2

Receptor Descriptions

	REC1	REC2	REC3	REC4	REC5	REC6	REC7
Description	R1 - Trilogy	R2 - The Point	R3 - Riverway	R4 - Medfield St	R5 - Aberdeen St	R6 - Harvard Vanguard	R7 - Brookline Ave
Nearest Reference [#]	2	2	3	1	1	2	3

Noise Source Descriptions

		NS1	NS2	NS3	NS4
	Noise Source Descriptions	Retail	Res A	Res B	Res C
Noise Sources					
	Source Description	Evapco 500 ton cooling tower	Evapco 500 ton cooling tower	Evapco 500 ton cooling tower	Evapco 500 ton cooling tower
	Noise Level [dBA]	61	61	61	61
	Reference distance [ft]	50	50	50	50
	# units [#]	1	1	1	1
	Required Attenuation [-dBA]				
		61	61	61	61
Unit 2	Source Description	CAT 1000 kW Generator	CAT 1000 kW Generator	CAT 1000 kW Generator	CAT 1000 kW Generator
	Noise Level [dBA]	95	95	95	95
	Reference distance [ft]	49	49	49	49
	# units [#]	1	1	1	1
	Required Attenuation [-dBA]	-33	-33	-33	-33
		62	62	62	62
Unit 3	Source Description	Carrier 25 ton RTU HVAC	Carrier 25 ton RTU HVAC	Carrier 25 ton RTU HVAC	Carrier 25 ton RTU HVAC
	Noise Level [dBA]	51	51	51	51
	Reference distance [ft]	50	50	50	50
	# units [#]	4	4	4	4
	Required Attenuation [-dBA]				
	Total Noise Source Sound Level [dBA]	**65**	**65**	**65**	**65**
	Reference distance [ft]	**50**	**50**	**50**	**50**

Ground Type Between Receptors and Noise Sources

		REC1	REC2	REC3	REC4	REC5	REC6	REC7
		R1 - Trilogy	R2 - The Point	R3 - Riverway	R4 - Medfield St	R5 - Aberdeen St	R6 - Harvard Vanguard	R7 - Brookline Ave
NS1	Retail	H	H	H	H	H	H	H
NS2	Res A	H	H	H	H	H	H	H
NS3	Res B	H	H	H	H	H	H	H
NS4	Res C	H	H	H	H	H	H	H

Distances from RECEPTOR TO NOISE SOURCE (in feet)

		REC1	REC2	REC3	REC4	REC5	REC6	REC7
		R1 - Trilogy	R2 - The Point	R3 - Riverway	R4 - Medfield St	R5 - Aberdeen St	R6 - Harvard Vanguard	R7 - Brookline Ave
NS1	Retail	460	470	940	720	370	280	1110
NS2	Res A	735	695	950	435	150	515	1340
NS3	Res B	475	540	1040	770	375	195	1030
NS4	Res C	350	435	1000	875	500	195	990

Receptor Level Attenuation

		REC1	REC2	REC3	REC4	REC5	REC6	REC7
		R1 - Trilogy	R2 - The Point	R3 - Riverway	R4 - Medfield St	R5 - Aberdeen St	R6 - Harvard Vanguard	R7 - Brookline Ave
NS1	Retail			-10	-10	-5	-10	-10
NS2	Res A			-5	-5	-10	-5	-10
NS3	Res B	-5		-5	-10	-10	-10	-10
NS4	Res C	-5	-5	-5	-10	-10	-10	-10

Noise Propogation Calculator

		REC1	REC2	REC3	REC4	REC5	REC6	REC7
		R1 - Trilogy	R2 - The Point	R3 - Riverway	R4 - Medfield St	R5 - Aberdeen St	R6 - Harvard Vanguard	R7 - Brookline Ave
NS1	Retail	46	46	30	32	43	40	28
NS2	Res A	42	42	34	41	45	40	26
NS3	Res B	40	44	34	31	38	43	29
NS4	Res C	43	41	34	30	35	43	29
	TOTAL	**49**	**50**	**39**	**42**	**48**	**48**	**34**

Appendix G
Site Utility Plan

FULLERTON STREET
FULLERTON STREET
BROOKLINE AVENUE
BROOKLINE AVENUE
PARK DRIVE
PARK DRIVE
PARK DRIVE
BOYLSTON STREET
BOOK 21249, PAGE 192
40 0 20 40 80 160
GRAPHIC SCALE
Legend
WATER – BWSC
DRAIN – BWSC
SEWER – BWSC
CABLE TV
ELECTRIC
GAS
TELECOMMUNICATION