Final Article 37 Green Building Report

101 Seaport Boulevard (Parcel L1 at Seaport Square).
February 21, 2014

Contents

Introduction to the Project

SCD L1 Seaport Square LLC, c/o Skanska USA Commercial Development, is pleased to submit the Final Article 37 Green Building Report associated with 101 Seaport (Parcel L1 at Seaport Square). This report is required under Article 37 and is intended to supplement the LEED check list.

101 Seaport is slated to be a 17-story signature office tower that will maximize tenant efficiency and flexibility of use by providing a combination of large and small floor plates and nearly column-free space on the tower floors. The 455,300 square-foot project will feature ground floor retail and office space on floors 2 through 17. Located at the corner of Seaport Boulevard and Boston Wharf Road, across from Boston's District Hall and the future Seaport Square Green, the building will provide tenants with unique brand visibility and accessibility. Additionally, 101 Seaport offers tenants several common spaces to meet and recharge. Harbor Way is a pedestrian retail corridor on the eastside of 101 Seaport featuring green space and seating. The building also offers a roof terrace and a fitness facility.

Sustainability has been an important design priority for 101 Seaport. The exterior façade will feature a floor to floor high-performance glass curtainwall. This glazing system when coupled with the 10-foot interior ceilings will provide tenants with unique opportunities for daylight harvesting and views to the exterior. The building will also feature a variety of sustainable materials, including locally sourced stone and reclaimed wood piles from Boston Harbor. The reclaimed wood piles are aimed to pay homage to adjacent historic Fort Point district.

LEED Project Scope

101 Seaport will be a new construction project on a previously developed site, consisting of the design and construction of a building core and shell with space for retail and commercial office tenants. From conception through construction and future occupancy, the project team has incorporated many aspects of sustainability to ensure the longevity of the project while reducing the overall ecological footprint of the facility. Particular emphasis has been placed on urban connectivity, reduced carbon footprint, reduction of virgin material use, overall energy and water conservation, and occupant well-being, among other concentrations.

The project team is currently targeting a total of 76 out of a possible 110 points in the LEED 2009 Green Building Design and Construction rating system specific to Core and Shell projects. An additional 12 points are undergoing study to determine the project's eligibility and the feasibility of attainment; final inclusion of these strategies will be dependent on the outcome of calculations, material procurement, and project team decisions. The final total of points should place the project safely in the range of Gold certification. Please refer to the project checklist located at the end of this document for specific point allocations.

Sustainable Site LEED Strategy

The project team identified 23 achievable points of the 28 possible points within Sustainable Sites. Additionally, the project team identified 4 feasible credits which require further evaluation to determine if the credits are achievable. The project team will continue to track and evaluate the feasible credits which relate to stormwater treatment and retention, and parking capacity.

The 23 credits within Sustainable Sites are being achieved through a combination of rehabilitating the site and restoring habitat, selecting a site in an amenity-dense urban environment, providing alternative transportation options, maximizing open space (by employing a roof garden and integrating pedestrian-oriented hardscape), and by minimizing the heat island effect of roofing materials.

A point-by-point breakdown is as follows:

SS Prerequisite 1 – Construction Activity Pollution Prevention

The design team developed a Stormwater Pollution Prevention Plan (SWPPP) for the project in compliance with the provisions of the Clean Water Act and its amendments; this compliance acknowledges that operators of large and small construction activities must apply for coverage under the terms of the National Pollutant Discharge Elimination System (NPDES) general permit. The U. S. Environmental Protection Agency (EPA) has issued the Construction General Permit (CGP) to authorize the discharge of stormwater associated with construction activities under the NPDES. The goal of the CGP is to reduce or eliminate stormwater pollution from construction activities by requiring the planning and implementation of a SWPPP to protect the water quality of receiving surface water bodies. The SWPPP identifies potential sources of pollution from the construction site that may affect the quality of storm water discharges, describes practices to be used to reduce such pollutants, and assures compliance with the terms and conditions of the CGP.

Throughout the construction process, the contractor, Skanska USAB, is responsible for maintaining the preventative measures prescribed with the SWPPP, and documenting and correcting any occurrences that are not in compliance. Measures are identified within their SWPPP document, communicated through contractor training and audits, and documented via photos and compliance checklists throughout the life of the project.

An excerpt of the SWPPP, permit #MAR12AK73/74, is provided as an Appendix to this document.

SS Credit 1 – Site Selection

The building meets the requirements for developing on a site suitable for a LEED project. The project is located on previously developed land, and is not located within 100 feet of a wetland, or within 50 feet to a waterway or body of water. Similarly, the location was not previously categorized as prime farmland or parkland, nor is it designated as a habitat for any threatened or endangered species.

SS Credit 2 – Development Density and Community Connectivity

Skanska CDUS chose a densely occupied area with numerous community amenities for their project. Their site was previously developed, is located within one-half a mile radius of several dense residential areas, and is within one-half mile radius of over 10 basic community services. See below for an example of several of these areas.

SS Credit 2 - Development Density and Community Connectivity

Community Services:

1 - The Institute of Contemporary Art
2 - Children's Wharf Park
3 - Boston Children's Museum
4 - Boston Fire Museum
5 - Fort Point Studio School
6 - Interncontinental Boston (hotel)
7 - Boston Tea Party Ship and Museum
8 - Atlantic Beer Garden (restaurant)
9 - Empire Restaurant and Lounge
10 - United States Post Office
11 - MetroLacrosse (children's recreational center)
12 - Rumba Boston (fitness)
13 - RelayRides (car share company)
14 - Salon Mario Russo
15 - Renaissance Boston Waterfront Hotel
16 - Sovereign Bank
17 - Fort Point Arts Community Gallery
18 - Babson Boston (college)
19 - Federal Reserve Bank of Boston
20 - Fitness International

Residential Areas with average density of 10 units per acre:

A - Factory 63 Apartments
B - FP3 Condos
C - 35 Channel Center Condos
D - Louisburg Square South Condos
E - Dockside Place Condominiums
F - Park Lane Seaport Apartments

Project Site

SS Credit 3 – Brownfield Redevelopment

The intent of this credit is to reduce the development pressure on undeveloped land by encouraging development of land that has access to existing infrastructure and services. Brownfield projects remediate damaged land, creating clean, highly developable properties, often with good access to utility and public infrastructure. Focusing development on brownfields restores vacant lands, reconnecting communities ravaged by industrial waste and abandonment.

Our project has established that remediation activities will occur on the site in order to address the current activity and use limitations that exist based on site contamination. Site remediation and documentation efforts are ongoing for the project and will occur throughout the construction process.

SS Credits 4.1 through 4.4 – Alternative Transportation

In an effort to reduce pollution and land development impacts from automobile use, our project has implemented several measures that allows our building's occupants and visitors to use alternative transportation options in lieu of standard, individual transportation via car.

Facilitating access to public transportation not only brings environmental benefits in the form of reduced greenhouse gas emissions and fewer cars on the road, but it can also reduce commuting costs for building occupants and help attract new hires and retain employees. Below is a graphic depicting the public transportation options that are located within one-quarter mile walking distance from our building's main entrance.

For those individuals who prefer to bike to and from our facility, the project team has integrated over 150 secure bicycle racks both inside and outside of the building for use by occupants and visitors. Additionally, for building occupants, showers and changing facilities have been provided within the building.

SS Credit 2 - Alternative Transportation - Public Transportation Access

To encourage the use of alternative-fuel vehicles, the project team integrated electric vehicle charging stations for 10 vehicles in the underground parking area. Further, the project has not exceeded the minimum number of parking spaces allocated by local zoning regulations; this helps to discourage single drivers, and encourage those who carpool, or use other alternative means of transportation.

SS Credit 5.2 – Site Development – Maximize Open Space

SS Credit 5.2 uses Case 1, which requires the amount of open space to exceed the local zoning code by 25%. Based on Article 42E – Fort Point Waterfront Ordinances, the open space requirement for Parcel L1 is 30%. See below for area calculations required to obtain this credit:

Total Project Area:	46,000 SF
Open Space Required by Zoning:	13,800 SF
Open Space Required by LEED	17,250 SF
Open Space Provided by 101 Seaport:	**18,275 SF**
Vegetated Open Space Required by LEED:	4,569 SF
Vegetated Open Space Provided:	**5,316 SF**

The project exceeds the Open Space requirement by 1,025 SF, and Vegetated Open Space Requirement by 747 SF. Since the project earns SS Credit 2 – Development Density and Community Connectivity, the 5th floor Vegetated roof terrace and Pedestrian oriented hardscape areas contribute to credit compliance. The vegetated roof utilized both native and adapted plant species per LEED requirements.

SS Credits 6.1 & 6.2 – Stormwater Design

In an effort to limit disruption of natural hydrology, the project team has implemented measures to reduce impervious cover, increase on-site filtration, eliminate contaminants, and reduce or eliminate pollution from stormwater runoff. For compliance with SS Credit 6.1 – Quantity Control, this project plans to comply with Option 1 Case no. 2 – Design Storms and Sites with existing imperviousness more than 50%. See table below for reference.

Site Runoff: Two-Year, 24-Hour Design Storm:

	Quantity cf/storm
Pre development	10,434
Post development	6,825
Percent reduction *(Must be at least 25%)*	34.59

For compliance with SS Credit 6.2 – Quality Control, this project plans to treat stormwater runoff from 90% of the average annual rainfall through the use of an internal rainwater tank, as well as the installation of a green roof. See table below for reference.

TSS Removal Efficiency:

BMP type/label	BMP Description and/or Location	In Series with BMP Above?	Percent Site Treated by BMP	TSS Removal Efficiency (%)	Source of TSS Removal Efficiency data	Weighted Average TSS Removal Efficiency (%)
Green Roof	Roof	N/A	10	80	State or Local Program (80% default)	8
Rainwater Harvesting Tank	Internal Tank	Yes	90	100	State or Local Program (80% default)	82
Total weighted average TSS removal efficiency (must be at least 80%)						90

SS Credits 7.1 & 7.2 – Heat Island Effect

To reduce heat island effect in the project area, and satisfy the requirements of SS Credit 7.1 for non-roof materials, the project team has placed all parking in the underground levels of the building. Additionally, the small amount of concrete surrounding the building as part of the sidewalk is composed of reflective concrete, with trees added for additional heat island reduction measures.

To further reduce the impact that dark hardscape can have on microclimates and human and wildlife habitats, the building is providing a 12,000 square foot green roof area with vegetation and highly reflective porous pavers providing the walkway and viewing areas. Other roof areas have been designed with a highly reflective TPO roofing material; this measure additionally reduces the cooling load of the facility during warm seasons, thus reducing the overall energy use of the facility.

SS Credit 9 – Tenant Design and Construction Guidelines

With the assistance of the project team, Skanska CDUS developed a set of Green Building Guidelines to help educate their future tenants about the base building sustainable design elements, and ways tenants might enhance the sustainability of their tenant spaces; additionally, the Guidelines provide insight as to which approaches could support efforts to earning certification under LEED-CI for the tenant's own space.

Tenants in our building have a remarkable opportunity to help lead the shift to sustainable building, and in the process define a new kind of workplace. By choosing to locate in a building that at a minimum will achieve LEED Gold certification, tenants can benefit from a high performance building with excellent

indoor air quality and ample daylight and views. These and other elements combine to create a healthy workplace and improve the indoor environment for all occupants and visitors. In addition, our project will set a higher standard with high-performance technologies that use less energy, consume less water, and leave a smaller footprint on the city's resources.

The LEED Guidelines provided to tenants summarize the measures that Skanska is taking in the base building, and are intended to help tenants understand and take full advantage of the high-performance features of the building, and to provide guidance for tenants to reinforce these features in their own workplaces.

Water Efficiency LEED Strategy

For the Water Efficiency category, the project team was able to identify 8 points that are attainable out of the 10 points available. The designers are working together to integrate an efficient landscaping irrigation strategy using collected rainwater for irrigation in place of potable water. Currently, the project team anticipates earning 2 points for this credit, with an additional 2 points possible, pending final strategies.

By collecting and utilizing rainwater in lieu of potable water for some functions, the facility also anticipates earning 2 points for innovative wastewater technologies. Further, the remaining 4 points associated with reducing potable water use by at least 40 percent should be achievable based on the installation of water-saving fixtures in the restrooms and locker facilities.

A point-by-point breakdown is as follows:

WE Prerequisite 1 – Water Use Reduction – 20%

As part of the water use reduction prerequisite, the project team has specified low-flow toilets, urinals, shower heads, and lavatories as part of the overall effort to increase water efficiency within the building and reduce the burden on municipal water supply and wastewater systems. Through the implementation of these water-saving fixtures, the project team was able to meet the requirements of this prerequisite; additional details are available in the section dedicated to WE Credit 3.

WE Credit 1 – Water Efficient Landscaping

The intent of this credit is to limit or eliminate the use of potable water, or other natural surface or subsurface water resources available on or near the project site, for landscape irrigation. Use high efficiency irrigation technology, OR, use captured rain or recycled site water to reduce potable water consumption for irrigation by 50% over conventional means.

Irrigation calculations indicate that there is a 55.5% reduction in potable water demand (9,347 gal) over the baseline case (21,016 gal).

101S-LEED-Calculator_12-3-13.xls
Evapotranspiration Table

ET_0	[in]
July	5.47

Design Case Table

Landscape Type	Area [SF]	Species Factor (K_s)		Density Factor (K_d)		Microclimate Factor (K_{mc})		K_L	ET_L	IE		CE	TPWA [gal]
Greenroof	5,240	Low	0.2	Avg	1.0	Avg	1.0	0.2	1.09	Spray	0.625	0.90	5,145
Mixed	1,150	Avg	0.5	Avg	1.1	Avg	1.0	0.55	3.01	Drip	0.900	0.90	2,156
Trees	1,200	Avg	0.5	Avg	1.0	Avg	1.0	0.50	2.74	Drip	0.900	0.90	2,046

In addition harvested rainwater will be used to supplement the additional water demand fulfilling the credit to reduce potable water by 100% for irrigation.

Seaport water reuse for irrigation

Peak Month of the year	Rainwater collected by month (gal)	Irrigation demand by month (gal)	Toilet flushing demand by month (gal)	After irrigation needs filled, how much water left over for toilets by month (gal)
7 (July)	81,707	9,333	154,799	69,505

<u>WE Credit 2 – Innovative Wastewater Strategies</u>

The intent of this credit is to reduce the amount of potable water used for flush fixtures and to minimize the amount of wastewater conveyed to the municipal system. To this end, the project team has chosen to pursue Option 1, which involves reducing the quantity of potable water used for flush fixtures (water closet and urinals only) by 50%. To aid in achieving or surpassing the credit requirements, the building will utilize both low-flow fixtures and a rainwater reclamation system.

Rainwater piping from the upper level, level 5, and level 2 roof drains will be collected below the roof and will drop down through the building to be collected in a storm water storage tank, to be reused for toilet flushing and other secondary uses. Vortex filters will be provided on the leaders. The storm drain overflow from the tank and the vortex filters will then discharge out of the building and will connect to the storm system on site. The drainage from Harbor Way is provided with a separate retention system and is not being collected to the storm water reclaim tank/system.

Additionally, Boston Water and Sewer Commission (BWSC) is requiring 1-inch of rainfall to be collected to a storm water retention system. Based on approximately 40,000 square feet of roof area, approximately 25,000 gallons are required to be retained. The approach is to utilize the stormwater reclaim system in lieu of the retention system. A 30,000 gallon tank will be provided for the stormwater

reclaim system. The required gallons needed for the reclaim system are based on the following assumptions:

- 36,000 square feet of storm drainage can be collected and piped to the reclaim tank (vortex filters have a 90% efficiency)
- The flushing fixture load is based on an occupant load of 1,840 FTE and 155 Retail customers.

The rainwater reclaim system will take suction from the storage tank, re-pressurize and deliver water to flushing fixtures and other secondary uses. The system will include pumps, filters and ultra-violet sterilization. Based on 10 years of past rainfall data, the annual volume of captured storm water used for sewer conveyance is 840,400 gallons. The table below shows the anticipated savings.

Table. Potable Water Reduction Summary

Annual volume of nonpotable water used for sewage conveyance (kGal)	840.4
Percent reduction of potable water use for sewage conveyance (%)	66

A 50% reduction of potable water use for sewage conveyance is required to document compliance with WE credit 2.

WE Credit 3 – Water Use Reduction

The fixtures specified not only meet the prerequisite requirements of WEp1, but they also meet the water savings outlined in WE Credit 3. Based on the selected fixtures, 41% savings in the reduction of water use in all fixtures can be achieved. The following table shows the baseline and performance annual water usage.

Table. Flush & Flow Fixtures Summary Statistics

Total calculated fixture water use annual volume, baseline case (kGal)	4,142.54
Total calculated fixture water use annual volume, performance case (kGal)	2,459.25
Percent reduction of water use in all fixtures (%)	41

The reduction of water use must be at least 30% for 2 points, at least 35% for 3 points and at least 40% for 4 points.

Energy and Atmosphere LEED Strategy

The project team currently indicates that 20 points out of the total 37 points available for the Energy and Atmosphere category are likely to be achieved. Of those 20 points, 10 are targeted for achievement through the implementation of various energy-saving strategies, as will be documented in the project's energy model. An additional 2 points currently remain as possible, pending final energy model calculations. The remaining 10 points are targeted based on energy-saving methods, such as implementing commissioning and refrigerant management measures above those required by the prerequisites, and through the installation and intended monitoring of both base building and tenant

energy and water use. A final 2 points are reserved as possible, pending purchase of renewable energy certificates supporting the production of off-site renewable energy.

A point-by-point breakdown is as follows:

EA Prerequisite 1 – Fundamental Commissioning of Building Energy Systems

The intent of commissioning is to verify the project's energy-related systems are installed, calibrated and perform according to the Owner's Project Requirements, Basis of Design and Construction Documents.

Benefits of Commissioning include reduced energy use, lower operating costs, reduced contractor callbacks, better building documentation, improved occupant productivity and verification that the systems perform in accordance with the Owner's Project Requirements.

The following commissioning process activities have been completed by the project team:

- Designate an individual as the Commissioning Authority (CxA) to lead, review and oversee the completion of the commissioning process activities.
    - The CxA must have documented commissioning authority experience in at least (2) building projects.
    - The individual serving as the CxA must be independent of the project's design and construction management, through the CxA may be an employee of any firms providing those services. The CxA may be a qualified employee or consultant of the Owner.
    - The CxA must report results, findings and recommendations directly to the Owner.
    - For projects smaller than 50,000 gross square feet, the CxA may be a qualified person on the design or construction teams who has the required experience.
- The Owner has documented the Owner's Project Requirements. The design team has developed a basis of design. The CxA has reviewed these documents for clarify and completeness. The Owner and design team must be responsible for updates to their respective documents.
- Develop and incorporate commissioning requirements into the construction documents, has been completed.
- Develop and implement a Commissioning Plan.
- Verify the installation and performance of the systems to be commissioned.
- Complete a Summary Commissioning Report.

The Commissioning Process Activities will be completed for the following energy-related systems, at a minimum:

- Heating, Ventilating, Air Conditioning and Refrigeration (HVAC&R) systems (mechanical and passive) with associated controls
- Lighting and daylighting controls
- Domestic hot water systems
- Renewable energy systems (wind, solar, etc.)

EA Prerequisite 2 – Minimum Energy Performance

The project team has developed an approach to reducing the environmental and economic impacts associated with excessive energy use by establishing a minimum level of energy efficiency for our building. First, the design was established by meeting the mandatory requirements of ASHRAE 90.1-2007 for all major components, including the envelope, HVAC, lighting, and domestic hot water systems. Additionally, the team was able to demonstrate a minimum of 10% savings for our project as compared with a baseline case meeting the minimum requirements of ASHRAE 90.1. To further comply with the prerequisite requirements, the team has completed the following items associated with establishing overall energy savings:

- Compliance with the mandatory provisions (Sections 5.4, 6.4, 7.4, 8.4, 9.4 and 10.4) in Standard 90.1-2007 (with errata but without addenda)
- Inclusion of all the energy costs within and associated with the building project
- Comparison against a baseline building that complies with Appendix G of Standard 90.1-2007 (with errata but without addenda)

Additional details are available in the section dedicated to EA Credit 1.

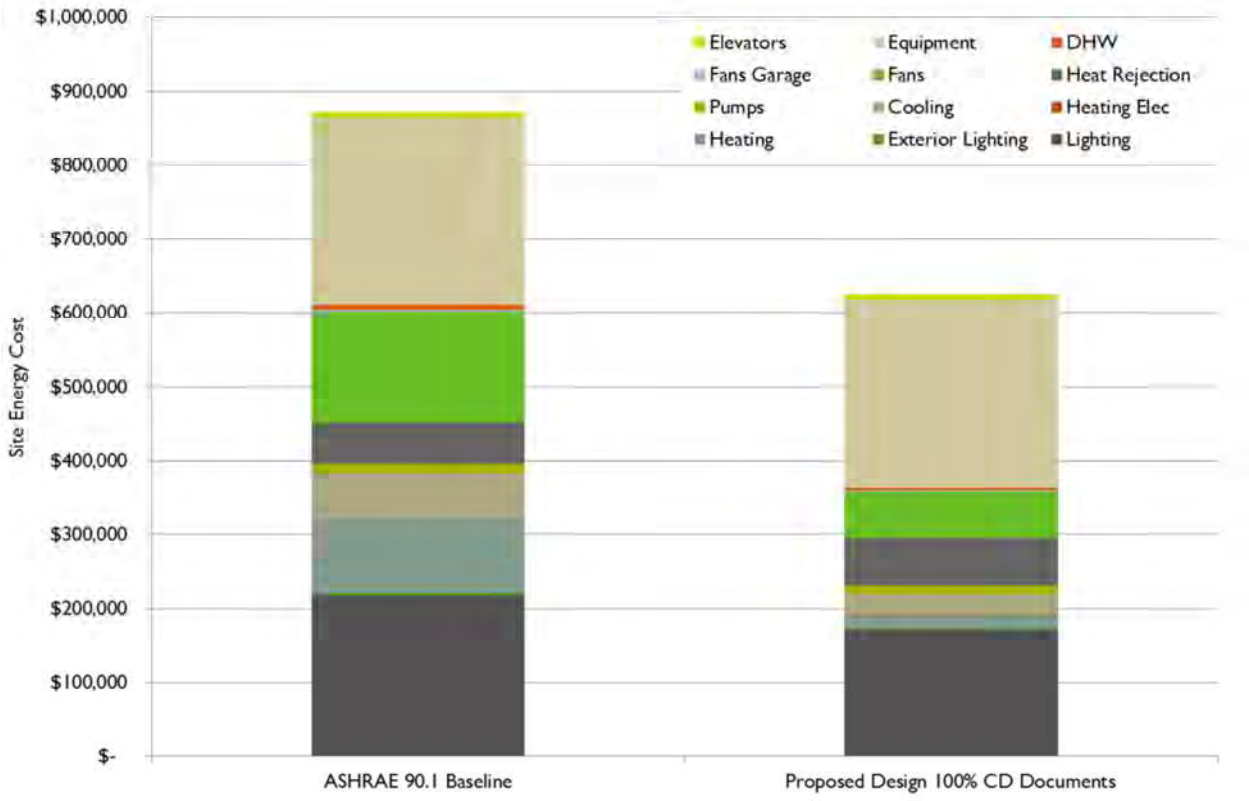
EA Prerequisite 3 – Fundamental Refrigerant Management

In an effort to meet the prerequisite requirements, and reduce stratospheric ozone pollution, our project team has chosen equipment that has zero use of chlorofluorocarbon (CFC)-based refrigerants in the base building heating, ventilating, air conditioning and refrigeration (HVAC&R) systems.

EA Credit 1 – Optimize Energy Performance

A whole building energy simulation was carried out using IES VE software to optimize energy performance for the project. Using the performance rating method in ASHRAE 90.1 2007 appendix G overall site energy cost savings was compared to the baseline model. The resultant cost savings equates to 28.5%. The breakdown of energy cost is shown below.

Major energy savings contributions include: lighting power reductions, the use of high efficiency chillers and boilers, a fanwall and heat recovery at the air handling units, the use of chilled beams as the primary conditioning source, and an optimized triple glazed envelope.



EA Credit 3 – Enhanced Commissioning

While EA Prerequisite 1 -Fundamental Commissioning of Building Energy Systems is a Pre-Requisite (requirement), two credits can be obtained with selecting Enhanced Commissioning which begins the commissioning process early into the design process and executes additional activities after system performance verification is completed. To obtain this credit, there is a need to implement, or have a contract in place to implement the following additional commissioning process activities.

- Prior to the start of the construction documents phase, designate an independent commissioning authority (CxA) to lead, review, and oversee the completion of all commissioning process activities.
    - The CxA must have documented commissioning authority experience in at least 2 building projects.
    - The individual serving as a CxA:
        - Must be independent of the work of design and construction.
        - Must not be an employee of the design firm, though he or she may be contracted through them.
        - Must not be an employee of, or contracted through, a contractor or construction manager holding construction contracts.
        - May be a qualified employee or consultant of the Owner.
    - The CxA must report results, findings and recommendations directly to the Owner.

- The CxA has conducted (1) Commissioning Design Review of the Owner's Project Requirements, Basis of Design, and Design Documents prior to the mid-construction documents phase and back-checked the review comments in the subsequent design submission.
- The CxA will review contractor submittals applicable to systems being commissioned for compliance with the Owner's Project Requirements and Basis of Design. This review will be concurrent with the review of the Architect or Engineer of Record and submitted to the design team and the Owner.
- The CxA or other project team members will develop a systems manual that provides future operating staff the information needed to understand and optimally operate the commissioned systems.
- The CxA or other project team members will verify that the requirements for training operating personnel and building occupants have been completed.
- The CxA must be involved in reviewing the operation of the building with operations and maintenance (O&M) staff and occupants within 10 months after substantial completion. A plan for resolving outstanding commissioning-related issues will be included.

EA Credit 4 – Enhanced Refrigerant Management

EA Credit 4 involves reducing the environmental impact of refrigerants in HVAC&R equipment, and relates to all space conditioning and large-scale refrigeration systems in project buildings. It deals with two environmental impacts of concern: depletion of the ozone layer, and greenhouse gas emissions. This credit goes a step further than EA Prerequisite 3, which only sets the thresholds for ozone-depleting compounds. To further support the mission of EA Prerequisite 3, the project team has chosen equipment that complies with the requirements of EA Credit 4, which are to:

- Minimize refrigerant environmental impact by avoiding refrigerants entirely or using systems that reduce their harmful impacts;
- Not install or retain fire suppression systems with CFCs, HCFCs or halons.

Through the above efforts, the building will be able to reduce ozone depletion and support early compliance with the Montreal Protocol while minimizing direct contributions to climate change.

EA Credits 5.1 and 5.2 – Measurement & Verification

Measurement and Verification of system performance will be carried out by WSP during post occupancy of Seaport Square Parcel L1 to aid the project in meeting its anticipated energy savings targets. Building energy meters and BMS points have been designated for all major endues. Despite detailed design, construction, controls implementation, and commissioning, many new buildings use 2 to 3 times the energy modeled during the design. Part of this is caused by higher, non-regulated, equipment energy usage by the tenant that is difficult to accurately estimate during design, but a good portion is typically attributed to HVAC and lighting systems consuming much more energy than they were designed to use.

The Measurement and Verification Plan is based on the International Performance Measurement and Verification Protocol (IPMVP) Option D, Whole Building Calibrated Simulation, and Savings Estimation

approach. Option D is utilized because, as this is a new building, there is no energy use data to create the baseline year. This M&V plan documents the implementation of Option D as outlined in the IPMVP.

EA Credit 6 – Green Power

To encourage the development and use of grid-source, renewable energy technologies on a net zero pollution basis, Skanska CDUS is gathering estimates from renewable energy certificate (REC) providers that are Green-e Energy certified. The project plans to engage in at least a 2-year renewable energy contract to provide at least 35% of the building's electricity from renewable sources, as defined by the Center for Resource Solutions' Green-e Energy product certification requirements. The energy information used to determine a core and shell project's electricity is defined as the electricity usage of the core and shell square footage, as defined by the Building Owners and Managers Association (BOMA) Standards, but not less than 15% of the building total gross square footage.

The project team has collected three separate estimates to date, and will determine the ultimate provider based on final energy model results, and revised estimate results based on costs accurate for the time of estimation.

Materials and Resources LEED Strategy

Out of a possible 13 points in the Materials and Resources category, the design and construction teams are working to attain 3 points, with another 2 points possible, through the specific selection of building materials and products touting a high amount of recycled content that were additionally extracted/harvested and manufactured within 500 miles of the project site. Further, wherever possible and cost-effective, the new wood permanently installed in the project shall be FSC certified for an additional 1 point.

An additional 2 points are being targeted as achievable through the diversion of construction waste from landfills. The construction team is working with the waste management provider for the project to collect single-stream waste on-site, which will then be transported and sorted for diversion to various recycling, repurposing, and reuse facilities in the surrounding areas.

A point-by-point breakdown is as follows:

MR Prerequisite 1 – Storage and Collection of Recyclables

To facilitate the reduction of waste generated by building occupants that is hauled to and disposed of in landfills, and to meet the requirements of this prerequisite, our building provides a recycling program for the building occupants which utilizes single-stream collections including glass, paper, cardboard, metals, and plastics. These items will be collected from the tenants and taken to the collection area in the loading dock. The building will utilize a large compactor dedicated to recycling items; the waste haulers will take the collected items back to an off-site facility for sorting.

MR Credit 2 – Construction Waste Management

This credit focuses on diverting waste from landfills by finding multiple alternatives for end uses of the waste, namely recycling, reuse on site, donation for reuse on another site, or resale. There are two different approaches to recycling construction and demolition (C&D) waste: Separating materials at the source (onsite), or comingling them and sending them to an off-site waste sorting facility. Our project will comingle its collected waste to be sorted off-site. The project has an overall waste diversion goal of 95%, and is striving to earn the exemplary point for this credit, both as a LEED goal and as a Skanska CDUS goal.

The project team will conduct a pre-job waste management conference at the site for all key waste management personnel to assure appropriate methods and procedures are in place to meet the goals of the waste management plan. All workers, subcontractors and suppliers will be trained on proper waste management procedures through pre-job orientations. The Waste Management Plan (WMP) will be distributed to those required. Waste management goals and project status will be reviewed regularly at each safety meeting and at weekly subcontractor meetings. All recycling containers will be clearly labeled and lists of acceptable/unacceptable materials will be posted throughout the site.

Daily inspection of containers, communication of goals and current status, and identification of future opportunities to reduce materials that cannot be recycled, will ensure the project meets its goals of diverting over 95% of all waste stream.

A copy of the project's Construction Waste Management Plan is provided as an Appendix to this document.

MR Credit 4 – Recycled Content

The purpose of MR Credit 4 is to increase demand for building products that incorporate recycled content materials, thereby reducing impacts resulting from extraction and processing of virgin materials. To accomplish this, the project team has specified the use of materials with recycled content such that the sum of postconsumer recycled content plus 1/2 of the pre-consumer content constitutes at least 20%, based on cost, of the total value of the materials in the project. The project is striving to achieve the 30% mark and the exemplary point associated with this credit.

In order to ensure that the project exceeds goals on the percent of recycled content, the team works with the estimating department to highlight the materials that will cost the most on the project (outside of any mechanical, electrical or plumbing components). Those identified as being the 10-20 most costly items are then evaluated for recycled content value. If any specified items in that group are not contributing as much as another product could, it is discussed with the design team and an alternative may be priced. In this way, if further research or material changes need to occur, there is time to do so before key construction milestones.

MR Credit 5 – Regional Materials

MR Credit 5 requires a project to increase demand for building materials and products that are extracted and manufactured within the region, thereby supporting the use of indigenous resources and reducing the environmental impacts resulting from transportation. To earn both points available, the project must use building materials or products that have been extracted, harvested or recovered, as well as manufactured, within a specified distance of the project site for a minimum of 20%, based on cost, of the total materials value.

To attempt the accomplishment of both points, the project team will specify the use of building materials or products that have been extracted, harvested or recovered, as well as manufactured, within 500 miles of the project site for a minimum of 20%, based on cost, of the total materials value.

As indicated above with Recycled Content, in order to ensure that the project exceeds goals on the percent of regional material content, the team works with the estimating department to highlight the materials that will cost the most on the project (outside of any mechanical, electrical or plumbing components). Those identified as being the 10-20 most costly items are then evaluated for regional material content value. If any specified items in that group are not contributing as much as another product could, it is discussed with the design team and an alternative may be priced. In this way, if further research or material changes need to occur, there is time to do so before key construction milestones.

MR Credit 6 – Certified Wood

This credit awards points for dedicating 50% or more of your total new wood budget to wood-based products or materials that are FSC certified. In an attempt to encourage environmentally responsible forest management, the project team has specified the use of a minimum of 50% (based on cost), striving for 100% of wood-based materials and products that are certified in accordance with the Forest Stewardship Council's principles and criteria, for wood building components.

Wood products that could potentially contain new or pre-consumer content are identified well before construction. These will likely include a small amount of roof blocking, some fire-rated plywood, wainscoting and other veneers, and MDF used as substrate. All of these are specified as FSC. Subcontractors are then provided information on what documentation must be submitted as proof, including an invoice indicating the material type, FSC content, and chain of custody number.

Indoor Environmental Quality LEED Strategy

The project team anticipates earning 10 out of a possible 12 points related to the implementation of indoor air quality measures. These measures include (but are not limited to): monitoring outdoor air delivery to interior spaces to counter high concentrations of indoor air pollutants; increasing ventilation rates to spaces throughout the building; managing indoor air quality during construction for the construction team as well as future occupants; and, specifying, selecting, and installing materials that

contain low amounts of volatile organic compounds (VOCs), including those related to adhesives, sealants, paints, coatings, and flooring systems, as well as confirming that there are no composite wood products containing added urea formaldehyde.

A point-by-point breakdown is as follows:

EQ Prerequisite 1 – Minimum Indoor Air Quality Performance

This prerequisite establishes a baseline for providing a minimum amount of outdoor air to buildings in order to maintain good indoor air quality and keep occupants comfortable and healthy. Overall, the intent is to establish minimum indoor air quality (IAQ) performance to enhance indoor air quality in buildings, thus contributing to the comfort and well-being of the occupants. As a mechanically ventilated building, our project has been designed using the ventilation rate procedure as defined by ASHRAE 62.1-2007.

The project is design to comply with the intent of this credit by meeting minimum requirements of ASHRAE 62-2007 Table 6-1 "Minimum Ventilation Rate in Breathing Zone". The required ventilation for the project meets or exceeds the amount of ventilation air required by the standard in all cases. The ventilation rate calculation documentation for each air handling unit was completed via the VRP Compliance Calculator as follows:

Table IEQp1-1. Mechanical Ventilation AHU Summary - VRP Compliance Calculator

System Name and Number	Required Outdoor Air Intake Flow (Vot)	Required Outdoor Air Intake Flow to Meet IEQc2 (Optional)	Design Outdoor Air Intake Flow (cfm)
ERU-1	16,441	21,373	45,000
ERU-2	15,782	20,517	45,000
Compliance with IEQ Prerequisite 1			Y
Compliance with IEQ Credit 2			Y

EQ Prerequisite 2 – Environmental Tobacco Smoke (ETS) Control

To meet the requirements of this prerequisite, our project has prohibited on-property smoking within 25 feet (8 meters) of entries, outdoor air intakes and operable windows, including in the green roof area. We have also provided appropriate signage to prohibit smoking on the entire property.

EQ Credit 1 – Outdoor Air Delivery Monitoring

Outdoor air delivery monitoring ensures that the ventilation system provides enough fresh air to occupants. This credit requires carbon dioxide (CO2) and outdoor airflow monitors that signal when fresh air is needed according to minimum set points defined by ASHRAE 62.1-2007 as a way to provide capacity for ventilation system monitoring to help sustain occupant comfort and well-being. Additionally, our project must configure all monitoring equipment to generate an alarm when the

airflow values or carbon dioxide (CO2) levels vary by 10% or more from the design values via either a building automation system alarm to the building operator or a visual or audible alert to the building occupants. In order to earn the point associated with this credit, the project team has met all requirements by installing permanent monitoring systems to ensure that ventilation systems maintain design minimum requirements. In this project, the outside air energy recovery unit instrumentation and sequence of operation require the DDC system to initiate an alarm for a unit describing the alarm if the outdoor airflow monitoring station detects outdoor airflows less than 10% below the design minimum rate.

EQ Credit 2 – Increased Ventilation

Building on the requirements of EQ Prerequisite 1 – Minimum Indoor Air Quality Performance, this credit calls for exceeding by 30% the minimum outside air requirements set by ASHRAE 62.1-2007. This credit applies only to occupied spaces of the building unlike EQp1, which applies to all the rooms as per by ASHRAE 62.1. Increased ventilation helps reduce concentrations of carbon dioxide produced by occupants, and pollutants produced by off-gassing of construction materials and furnishings. By addressing these problems, increased ventilation can help mitigate occupant health problems.

Our project is pursuing this credit as a way to provide additional outdoor air ventilation to improve indoor air quality (IAQ) for improved occupant comfort, well-being and productivity.

Refer to Table IEQp1-1 Mechanical Ventilation AHU Summary – VRP Compliance Calculator under IEQp1 narrative for the ventilation rate calculation documentation.

EQ Credits 3 – Construction IAQ Management Plan – During Construction

In order to reduce indoor air quality (IAQ) problems resulting from construction or renovation and promote the comfort and well-being of construction workers and building occupants, the project team has specified the requirement of an IAQ management plan for the construction and preoccupancy phases of the building. The requirements of the IAQ plan are as follows:

- During construction, meet or exceed the recommended control measures of the Sheet Metal and Air Conditioning National Contractors Association (SMACNA) IAQ Guidelines For Occupied Buildings Under Construction, 2nd Edition 2007, ANSI/ SMACNA 008-2008 (Chapter 3)
- Protect stored on-site and installed absorptive materials from moisture damage
- If permanently installed air handlers are used during construction, filtration media must be used at each return air grille that meets the criteria given in the Reference Guide. Replace all filtration media immediately prior to occupancy

The SMACNA guidelines cover the following general areas: HVAC protection, Source Control, Pathway Interruption, Housekeeping, and Scheduling. Also, in addition to the SMACNA requirements, our project requires the construction team to protect absorptive material from moisture. This includes any absorptive materials, like drywall, carpet, and ceiling tiles. The team is required to take pictures of the protective measures throughout the construction process for documentation.

The Indoor Air Quality Plan for the project is provided as an Appendix to this document. The content of the plan and what is required of the subcontractors is communicated two ways: via attachment to their contract, as well as content within the orientation training that is required for each subcontractor employee. Daily inspections are conducted to ensure compliance with the Plan.

EQ Credits 4.1 through 4.4 – Low-Emitting Materials

To reduce the quantity of indoor air contaminants that are odorous, irritating and/or harmful to the comfort and well-being of installers and occupants, the project team has striven to specify interior building materials to reduce the quantity of indoor air contaminants. Using low-VOC products is not only beneficial to occupants, but can improve air quality and the health of construction workers who are constantly exposed to construction pollution. Low- or no-VOC (volatile organic compound) adhesives, sealants, paints, and coatings will be tracked and verified throughout the construction phase. These products must comply with South Coast Air Quality Management District (SCAQMD) Rule #1168.

Additionally, resilient flooring, rubber flooring, and prefinished wood flooring all must be FloorScore or Greenguard Children and Schools certified. Further, composite wood products and laminating adhesives can have no added urea-formaldehyde (UF) resins. Composite wood and agrifiber products are defined as particleboard, medium density fiberboard (MDF), plywood, wheatboard, strawboard, panel substrates and door cores. The UR rule applies to the manufacturing of all composite materials and laminating adhesives used on the project (and installed within the weather barrier), whereas the requirements for low-VOC content are only applicable to those materials that are applied on-site.

The keys to ensuring compliance with these credits are to communicate the requirements to subcontractors and then to conduct inspections of materials brought onsite. Communication is done through signage, such as a VOC poster which is also provided as an attachment to contracts, and as a section of the orientation training that is required for each subcontractor employee. Daily inspections are conducted by the construction staff and if any products are identified as not having been approved by the appropriate design or construction personnel, the subcontractor is required to remove the material, potentially having to also clean and re-prep an area, and is liable for all costs related to not following protocol. The VOC poster has been provided as an Appendix to this document.

EQ Credit 5 – Indoor Chemical and Pollutant Source Control

EQ Credit 5 requires compliance with a varied group of items that cumulatively help keep pollutants out of the indoor air. These requirements include self-closing doors on janitors' closets, MERV 13 filtration on mechanical equipment, and entryway trackoff systems. The project team has designed entryways and indoor cleaning and maintenance areas to have isolated exhaust systems for contaminants; the spaces will maintain physical isolation from the rest of the regularly occupied areas of the building. Further, entries will have permanent architectural systems such as grills or grates to prevent occupant-borne contaminants from entering the building; alternatively, regularly maintained walk-off mats may be used in lieu of permanently installed grates. The specific measures that the project team has addressed in order to earn the point associated with this credit are:

- Permanent entryway walk-off systems at least 10 feet long at all regularly used, exterior-to-interior entrances and entrances from covered parking garages
- Designated exhaust of all hazardous gas and chemical use areas
- An exhaust rate of 0.5 CFM/SF with no air recirculation, in hazardous gas and chemical use areas
- Self-closing doors on all spaces outlined above
- Deck-to-deck partitions or hard-lid ceilings on all spaces outlined above
- MERV 13 filtration for each ventilation system serving regularly occupied spaces with outdoor air

In this project, the air handling units and energy recovery units are equipped with electronically enhanced MERV-15 final filters. Refer to sheets M-502 and M-503 for filter schedules and locations. All janitor closets are sufficiently exhausted to create negative pressure with respect to adjacent spaces when the doors to the room are closed at a minimum of 0.5 CFM/SF.

EQ Credits 7 – Thermal Comfort – Design

The intent of EQ Credit 7 is to provide a comfortable thermal environment that promotes occupant productivity and well-being. This credit requires that HVAC designs meet the requirements of ASHRAE Standard 55-2004, which deals with thermal comfort of building occupants. Specifically, ASHRAE 55 requires project teams to address air temperature, radiant temperature, humidity, and air speed. Additionally, our Core and Shell project has planned for the base building mechanical systems to allow for the tenant fit-out to meet the requirements of ASHRAE-55.

This project was designed to meet the requirements of ASHRAE Standard 55-2004. Thermal comfort will be maintained throughout the building by recirculating air handling units (AHUs) with chilled and hot water coils and chilled beams at the zone levels with local thermostats. Mechanical ventilation is provided to the recirculated air handling systems via 100% outside air energy recovery units (ERUs). Each AHU/ERU system has the capability of operating at up to 50% outside air in the primary air delivered to the chilled beams. Relative humidity is maintained primarily by the chilled water coils in the AHUs and ERUs. The centrally supplied tempered, de-humidified and filtered mechanical ventilation air provides a continuous airflow rate to each space.

The systems sizes were calculated by using Trace 700 software which identifies local environmental conditions, envelope thermal properties, occupancy, lighting, and receptacle loads, and system types.

ASHRAE Standard 55-2004 states that there are six primary factors that must be addressed when defining conditions for thermal comfort. The following is how the factors were addressed:

1. Metabolic Rate: From ASHRAE Standard 55-2004 Appendix A (Activity Levels) for office workers the metabolic rate is expected to vary as follows:
   - Met units 1.0 to 1.4.

2. Clothing Insulation (Icl): From ASHRAE Standard 55-2004 Table B1 for office workers, the Clothing Insulation is expected to vary as follows:

- Trousers range 0.57 to 1.01, No. 1 thru 8.
- Skirts/dresses range 0.54 to 1.10, No. 7 thru 11

3. Air temperature: The system is designed for an indoor summer temperature of 75F +/- 2F and a winter temperature of 70F +/- 2F. These design points fall within the shaded area on the psychrometric chart shown in ASHRAE 55-2004 Figure 5.2.1.1.

4. Radiant Temperature: The interior surfaces will be approximately the same as the design temperature. The exterior surfaces, with an average amount of glass, will not pose an excessive burden on the cooling and heating systems.

5. Air Speed: The average air speed in the occupied zone has been designed for approximately 50 FPM in the cooling mode and even less in the heating mode.

6. Humidity: The summer maximum expected relative humidity is approximately 60%.

Equipment selection and systems design were based on the climatic conditions determined by ASHRAE Fundamental Handbook:

Heating Degrees (winter: dry bulb) 9 F
Cooling Degrees (summer: dry bulb/wet bulb) 88/73F.

EQ Credit 8.2 – Daylight and Views – Views

EQ Credit 8.2 intends to provide building occupants a connection to the outdoors through the introduction of daylight and views into the regularly occupied areas of the building. As a Core and Shell project, the project team has incorporated a feasible tenant layout per the default occupancy that was used in the analysis of this credit. The typical plan allowed the team to achieve a direct line of sight to the outdoor environment; the integration of the curtain wall allowed for over 90% of the building's occupants to have a direct line of sight.

Innovation and Design LEED Strategy

The project team has established numerous strategies for acquiring the points associated with both exemplary performance of some of the credits in other categories, as well as innovative ways to address sustainability not covered by existing credits in the Core and Shell rating system. The final strategies chosen for implementation will be determined based on final calculations and decisions from the project team, and will include a combination of approaches to earn all 6 points offered in this category.

The exemplary strategies may include (pending final calculation numbers and final construction phase results): minimum of 30 percent recycled content in building materials; minimum of 30 percent of the building products are regional materials; 95 percent of the new wood permanently installed in the project is FSC certified; or, 95 percent of the construction waste is diverted from landfills. Similarly, the innovative strategies implemented may include: a green education campaign for occupants and visitors; a green housekeeping policy for base building services; commissioning of the building envelope; monitoring based commissioning for the building's internal systems; or, enhanced acoustical

performance as related to exterior noise control. Additionally, the project will earn 1 of the 6 points through the inclusion of a LEED Accredited Professional on the core project team.

Regional Priority Credits LEED Strategy

The 4 points available in this category are contingent upon meeting certain thresholds for credits in other categories, as determined by the USGBC. Out of 6 possibilities considered especially significant for the project location (based on zip code), the project has targeted 4 options for the Regional Priority category related to the following strategies: quantity control of stormwater management; non-roof heat island effect mitigation; roof related heat island effect mitigation, and brownfield redevelopment.

The 4 points in this category are automatically awarded pending award of the original credits to which they are linked.

LEED Core and Shell Project Checklist

The project's LEED checklist is shown below. Please note that points located in the "?" column have not been finalized at this point in the project.

LEED 2009 for Core and Shell Development — 101 Seaport Boulevard
Project Checklist — 2.11.14

Y	?	N			
23	4	1	**Sustainable Sites**	**Possible Points:**	**28**
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
2			Credit 4.2	Alternative Transportation—Bicycle Storage and Changing Rooms	2
3			Credit 4.3	Alternative Transportation—Low-Emitting and Fuel-Efficient Vehicles	3
	2		Credit 4.4	Alternative Transportation—Parking Capacity	2
1			Credit 5.1	Site Development—Protect or Restore Habitat	1
1			Credit 5.2	Site Development—Maximize Open Space	1
	1		Credit 6.1	Stormwater Design—Quantity Control	1
	1		Credit 6.2	Stormwater Design—Quality Control	1
1			Credit 7.1	Heat Island Effect—Non-roof	1
1			Credit 7.2	Heat Island Effect—Roof	1
		1	Credit 8	Light Pollution Reduction	1
1			Credit 9	Tenant Design and Construction Guidelines	1
8	2		**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
4			Credit 3	Water Use Reduction	2 to 4
20	4	13	**Energy and Atmosphere**	**Possible Points:**	**37**
Y			Prereq 1	Fundamental Commissioning of Building Energy Systems	
Y			Prereq 2	Minimum Energy Performance	
Y			Prereq 3	Fundamental Refrigerant Management	
10	2	9	Credit 1	Optimize Energy Performance	3 to 21
		4	Credit 2	On-Site Renewable Energy	4
2			Credit 3	Enhanced Commissioning	2
2			Credit 4	Enhanced Refrigerant Management	2
3			Credit 5.1	Measurement and Verification—Base Building	3
3			Credit 5.2	Measurement and Verification—Tenant Submetering	3
	2		Credit 6	Green Power	2

Y	?	N			
5	2	6	**Materials and Resources**	**Possible Points:**	**13**
Y			Prereq 1	Storage and Collection of Recyclables	
		5	Credit 1	Building Reuse—Maintain Existing Walls, Floors, and Roof	1 to 5
2			Credit 2	Construction Waste Management	1 to 2
		1	Credit 3	Materials Reuse	1
1	1		Credit 4	Recycled Content	1 to 2
1	1		Credit 5	Regional Materials	1 to 2
1			Credit 6	Certified Wood	1
10		2	**Indoor Environmental Quality**	**Possible Points:**	**12**
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	Construction IAQ Management Plan—During Construction	1
1			Credit 4.1	Low-Emitting Materials—Adhesives and Sealants	1
1			Credit 4.2	Low-Emitting Materials—Paints and Coatings	1
1			Credit 4.3	Low-Emitting Materials—Flooring Systems	1
1			Credit 4.4	Low-Emitting Materials—Composite Wood and Agrifiber Products	1
1			Credit 5	Indoor Chemical and Pollutant Source Control	1
		1	Credit 6	Controllability of Systems—Thermal Comfort	1
1			Credit 7	Thermal Comfort—Design	1
		1	Credit 8.1	Daylight and Views—Daylight	1
1			Credit 8.2	Daylight and Views—Views	1
6			**Innovation and Design Process**	**Possible Points:**	**6**
1			Credit 1.1	Innovation in Design: Specific Title	1
1			Credit 1.2	Innovation in Design: Specific Title	1
1			Credit 1.3	Innovation in Design: Specific Title	1
1			Credit 1.4	Innovation in Design: Specific Title	1
1			Credit 1.5	Innovation in Design: Specific Title	1
1			Credit 2	LEED Accredited Professional	1
4			**Regional Priority Credits**	**Possible Points:**	**4**
1			Credit 1.1	Regional Priority: Specific Credit	1
1			Credit 1.2	Regional Priority: Specific Credit	1
1			Credit 1.3	Regional Priority: Specific Credit	1
1			Credit 1.4	Regional Priority: Specific Credit	1
76	12	22	**Total**	**Possible Points:**	**110**

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

Appendices

Storm Water Pollution Prevention Plan (SWPPP)

SS prereq 1

DRAFT STORMWATER POLLUTION PREVENTION PLAN

(SWPPP)

FOR

Parcel L1 at Seaport Square

Boston, Massachusetts

NPDES Permit #'s MAR12AK73

MAR12AK74

Draft Stormwater Pollution Prevention Plan

For:

Parcel L1 at Seaport Square
Boston, Massachusetts

Operator(s):

Construction Manager:
Skanska USA Building, Inc.
Contact: Robert Bellavia
253 Summer Street
Boston, MA 02210

Owner:
SCD L1 Seaport Square LLC
253 Summer Street
Boston, MA 02210
Contact: Shawn Hurley

Stormwater Manager and SWPPP Contact(s):

Contact: Shawn Hurley
Robert Bellavia

SWPPP Preparation Date:

May 28, 2013

Estimated Project Dates:

Start of Construction: 07/13
Completion of Construction: 10/15

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1.3 CONTACT INFORMATION/ RESPONSIBLE PARTIES

Operator(s)

Construction Manager:
Skanska USA Building, Inc.
253 Summer Street
Boston, MA 02210
Contact: Robert Bellavia
(617) 574-1400

Owner:
SCD L1 Seaport Square LLC
253 Summer Street
Boston, MA 02210
Contact: Shawn Hurley
617-574-1400

Project Manager(s) or Site Supervisor(s):

Skanska USA Building, Inc.
Contact: Robert Bellavia
253 Summer Street
Boston, MA 02210

Stormwater Manager and SWPPP Contact(s):

Shawn Hurley, Robert Bellavia

This SWPPP Was Prepared By:

Bradford Staples, Senior Project Designer
John Schmid, PE, Executive Project Manager (Engineer of Record)
Nitsch Engineering
2 Center Plaza
Boston, MA 02108
T: 617 338-0063 F: 617 338-6472
email@nitscheng.com

Sub(s) Construction Manager:
Site Supervisor(s) to provide a list of Sub-Construction Manager(s) that will be on-site.

Emergency 24 hour contact:

Robert Bellavia

1.4 CONSTRUCTION AND OPERATORS' COOPERATIVE AGREEMENT

This cooperative agreement describes stormwater responsibility for **the Owner, Construction Manager,** and **Site Contractor** regarding the proposed SCD L1 Seaport Square LLC project in Boston, MA. The operators below agree to abide by the following conditions throughout the duration of the construction project, effective the dates of signatures. This project is subject to the EPA's NPDES General Permit for Stormwater Discharge from Construction Activities (Construction General Permit or CGP). The goal of this permit is to prevent the discharge of pollutants associated with construction activity from entering the storm drain system or surface waters. Nitsch Engineering has developed a SWPPP for **the Owner** and the SWPPP has been reviewed by **the Owner, Construction Manager**, and **Site Contractor.** The SWPPP is available for review on-site.

The **Site Contractor** will have control of the site and erosion and sediment control measures from July 2013 until October 2015. The Owner is scheduled to take control of the site and SWPPP responsibilities in October 2015 (end of construction).

The Owner's (SCD L1 Seaport Square LLC) Responsibilities:

1. **Owner or Owner's Representative** will be responsible for general oversight of the project including review of the SWPPP and any amendments, inspection reports, and corrective actions.
2. **Owner or Owner's Representative** will participate, when possible, on self-inspection conducted by the **Construction Manager and Site Contractor.**
3. **Owner or Owner's Representative** will participate in weekly meetings when available to discuss CGP compliance issues.
4. **Owner or Owner's Representative** shall submit a Notice of Termination once the site is stabilized per the CGP.

The Construction Manager's (Skanska USA Building, Inc.) Responsibilities:

1. **Construction Manager** will maintain the SWPPP documentation and will conduct and document the self-inspections required under the CGP, on a weekly basis, and within 24 hours of the end of a storm event of 0.25" or greater in all areas of the site covered by this SWPPP.
2. **Construction Manager** will provide copies of the inspection reports to the Owner within 24-hours following each inspection. Incidents of non-compliance will be immediately brought to the attention of the Owner and/or their representative.
3. **Construction Manager** shall be responsible for maintaining compliance with applicable sections of the SWPPP, including installation of erosion and sediment controls, and all requirements in the CGP. Any BMP changes that would trigger the need for a SWPPP modification shall be communicated to the Owner and/or their representative.
4. **Construction Manager** will maintain erosion and sediment control BMPs in all areas of the site under its day-to-day control.
5. **Construction Manager** will provide adequately designated concrete washout areas throughout the construction project and will be responsible for proper disposal of the concrete, mortar, or grout collected there.
6. **Construction Manager** will be responsible for maintaining the cleanliness of the public streets in the vicinity of the project and the stormwater inlet protection

BMPs throughout the construction project. Construction Manager will conduct street sweeping as necessary. Construction Manager will also inspect and replace storm drain inlet protection BMPs as necessary.

7. **Construction Manager** shall not store erodible or hazardous materials on any roadway.
8. **Construction Manager** shall hold weekly meetings to discuss CGP compliance issues.
9. **Construction Manager** shall be responsible for daily turbidity testing as described in this SWPPP document in section 3.3.
10. **Construction Manager** shall submit a Notice of Termination once the site work they are responsible for is stabilized per the CGP.

The Site Contractor's Responsibilities:

1. **Site Contractor** will maintain the SWPPP documentation and will conduct and document the self-inspections required under the CGP, on a weekly basis, and within 24-hours of the end of a storm event of 0.25" or greater in all areas of the site covered by this SWPPP.
2. **Site Contractor** will provide copies of the inspection reports to Owner within 24 hours following each inspection. Incidents of non-compliance will be immediately brought to the attention of the Construction Manager.
3. **Site Contractor** shall be responsible for maintaining compliance with applicable sections of the SWPPP, including installation of erosion and sediment controls, and all requirements in the CGP. Any BMP changes that would trigger the need for a SWPPP modification shall be communicated to the Owner.
4. **Site Contractor** will maintain erosion and sediment control BMPs in all areas of the site under its day-to-day control.
5. **Site Contractor** will provide adequately designated concrete washout areas throughout the construction project and will be responsible for proper disposal of the concrete, mortar, or grout collected there.
6. **Site Contractor** will be responsible for maintaining the cleanliness of the public streets in the vicinity of the project and the stormwater inlet protection BMPs throughout the construction project. Site Contractor will conduct street sweeping as necessary. Site Contractor will also inspect and replace storm drain inlet protection BMPs as necessary.
7. **Site Contractor** shall not store erodible or hazardous materials on any roadway
8. **Site Contractor** shall hold weekly meetings to discuss CGP compliance issues.
9. **Site Contractor** shall include documentation attached to this SWPPP that the required personnel were trained in accordance with Staff Training Requirements of the 2012 CGP.

Joint Responsibilities:

1. Each operator shall file a Notice of Intent (NOI) to be covered by the Construction General Permit before beginning the construction project, and permit coverage will be maintained throughout the project.
2. Operators shall not file a Notice of Termination (NOT) until all disturbed areas of the site under its day-to-day control have been effectively stabilized with permanent erosion controls that satisfy the final stabilization requirement in the CGP.

3. Operators will maintain a clean site. Trash and debris will be picked up and disposed of properly by the end of each day.
4. Each operator is responsible for advising employees and subs for the **Construction Manager** and **Site Contractor** working on this project of the requirements described in the CGP and applicable SWPPP. Emphasis should be placed on ensuring that employees and subs for the **Construction Manager** and **Site Contractor** do not damage Best Management Practices (BMPs) and do not introduce pollutants into the storm drain system.

OWNER:

Operator Name	Signature	Title	Date
SHANN HURLEY OWNER		MANAGER	8.29.13

CONSTRUCTION MANAGER:

Operator Name	Signature	Title	Date
Robert Bellavia	Robert Bellavia	SR. SUPERINTENDENT OB	9/1/2013

SITE CONTRACTOR:

Operator Name	Signature	Title	Date
Peter Burch		Project Manager	9/4/13

1.5 NATURE AND SEQUENCE OF CONSTRUCTION ACTIVITY

This SWPPP has been prepared for the SCD L1 Seaport Square LLC project. The project site is located in Boston, Massachusetts. A USGS Locus Plan is included in Appendix A.

The proposed project will include the demolition of a paved parking lot and the construction of an eighteen story building with the associated loading areas and building utilities.

What is the function of the construction activity?

☐ Residential ☐ Commercial ☐ Industrial ☐ Road Construction

☐ Linear Utility ☒ Other (please specify): Retail, Office

Estimated Project Start Date: 07/2013

Estimated Project Completion Date: 10/2015

1.6 SOILS, TOPOGRAPHY, DRAINAGE PATTERN & VEGETATION

Soil type(s):

Based on the Natural Resources Conservation Service (NRCS) Suffolk County Soil Survey (1991), the site of the SCD L1 Seaport Square LLC Project is an Urban Land.

Topography/Drainage Pattern:

The site of the SCD L1 Seaport Square LLC project is made up primarily of paved areas. The site is generally crowned and sloped toward catch basins located in Boston Wharf Road. These catch basins are connected to the Boston Water and Sewer Commission's closed street drainage system.

Vegetation:

N/A

1.7 CONSTRUCTION SITE ESTIMATES

Approximately 1.82 acres of the 1.82 acre site will be permanently altered by the proposed project.

Project Information:

The following are estimates of the construction site:

Construction Site Area to be disturbed	1.82 acres
Total Project Area	1.82 acres
Percentage impervious area before construction	100 %
Runoff coefficient before construction (C Factor)	0.95
Percentage impervious area after construction	80%
Runoff coefficient after construction	0.90

1.8 RECEIVING WATERS

The existing site discharges into a closed drainage system which discharges into Boston Harbor.

Description of receiving waters:	Boston Harbor and Charles River
Description of storm sewer systems:	Closed Drainage System

Description of impaired waters or waters subject to TMDLs: None

1.9 SITE FEATURES AND SENSITIVE AREAS TO BE PROTECTED

None.

1.10 POTENTIAL SOURCES OF POLLUTION

Potential sources of sediment to stormwater runoff:

- Stockpiles and construction staging
- Clearing and grubbing operations
- Grading and site excavation
- Topsoil stripping
- Landscape operations
- Soil tracking offsite from construction vehicles
- Runoff from unstabilized areas
- Construction debris

Potential pollutants and sources, other than sediment, to stormwater runoff:

- Combined Staging Area – fueling activities, equipment maintenance, sanitary facilities, and hazardous waste storage
- Materials Storage Area – building materials, solvents, adhesives, paving materials, paints, aggregates, trash, etc.
- Construction Activity-paving, curb installation, concrete pouring, and building construction

The **Contractor** shall coordinate staging areas with the **Owner.** The location of all staging areas will be determined for each phase of construction and shown on plans produced by The Contractor.

For potential construction site pollutants see Table 1.

Table 1: Potential Site Pollutants

MATERIALS/ CHEMICAL	PHYSICAL DESCRIPTION	STORMWATER POLLUTANTS	LOCATION
Pesticides (insecticides, fungicides, herbicides, rodenticides)	Various colored to colorless liquid powder, pellets, or grains	Chlorinated hydrocarbons, organophosphates, carbonates, arsenic	Herbicides used for noxious weed control
Fertilizers	Liquid of solid grains	Nitrogen, phosphorous	Newly seeded areas
Plaster	White granules or powder	Calcium sulphate, calcium carbonate, sulfuric acid	Building construction
Cleaning Solvents	Colorless, blue, or yellow green liquid	Perchloroethylene, methylene chloride, trichloroethylene, petroleum distillates	No equipment cleaning allowed in project limits
Asphalt	Black solid	Oil, petroleum distillates	Streets and parking lots
Concrete	White solid/grey liquid	Limestone, sand pH, chromium	Curb and gutter, sidewalk, building construction
Glue, Adhesives	White or yellow liquid	Polymers, epoxies	Building construction
Paints	Various colored liquid	Metal oxides, Stoddard solvent, talc, calcium carbonate, arsenic	Building construction
Curing compounds	Creamy white liquid	Naphtha	Curb and gutter, building construction
Wood preservatives	Clear amber or dark brown liquid	Stoddard solvent, petroleum distillates, arsenic, copper, chromium	Timber pads, bracing, building construction
Hydraulic Oils/fluids	Brown oily petroleum hydrocarbon	Mineral oil	Leaks/broken hoses from equipment
Gasoline	Colorless, pale brown or pink petroleum hydrocarbon	Benzene, ethyl benzene, toluene, xylene, MTBE	Secondary containment/staging area
Diesel Fuel	Clear, blue-green to yellow liquid	Petroleum distillate, oil & grease, naphthalene, xylenes	Secondary containment/staging area
Kerosene	Pale yellow liquid petroleum hydrocarbon	Coal oil, petroleum distillates	Secondary containment/staging area
Antifreeze/coolant	Clear green/yellow liquid	Ethylene glycol, propylene glycol, heavy metals (copper, lead, zinc)	Leaks or broken hoses from equipment
Sanitary toilets	Various colored liquid	Bacteria, parasites, and viruses	Staging area

1.11 ENDANGERED SPECIES CERTIFICATION

Are endangered or threatened species and critical habitats on or near the project area?

☐ Yes ☒ No

Describe how this determination was made:

NHESP's 2008 Priority Habitat & Estimated Habitat Online

1.12 HISTORIC PRESERVATION

Are there any historic sites on or near the construction site?

☐ Yes ☒ No

SECTION 2: EROSION AND SEDIMENT CONTROL BMPS

2.1 MINIMIZE DISTURBED AREA AND PROTECT NATURAL FEATURES AND SOIL

The area of construction activity will be enclosed with chain link fence, wind screen, and silt fence. A minimum of 50-foot undisturbed natural buffer shall be provided and maintained between earth disturbance activities and surface waters. Construction gates will be constructed. The gate locations will be determined. Sediment tracked offsite must be removed by the end of the same workday. All soil stockpiles are to be located away from existing catch basin structures and shall be protected from contact with onsite stormwater runoff using temporary perimeter sediment barriers. Soil stockpiles shall also be provided with cover (a tarp) or appropriate temporary stabilization to avoid direct contact with precipitation and to minimize sediment discharge. The following shall be done onsite:

- Site Construction
- Secure site with temporary chain link fence, silt fence, and wind screen
- Site mobilization
- Install stone filter berms at all site entrances
- Remove and stockpile existing site fixtures to be re-used.
- Remove and dispose existing site fixtures to be demolished.
- Strip and stockpile existing loam
- Strip and stockpile existing soil
- Provide temporary site stabilization

2.2 CONTROL STORMWATER FLOWING ONTO AND THROUGH THE PROJECT

- BMP Description: Silt Fence/Straw bales
- Installation Schedule: Start of construction
- Maintenance and Inspection: Weekly & after storm events greater than 1/4"
- Responsible Staff: **Construction Manager** and **Site Contractor**

- BMP Description: Super Silt Fence
- Installation Schedule: Start of construction
- Maintenance and Inspection: Weekly & after storm events greater than 1/4"
- Responsible Staff: **Construction Manager** and **Site Contractor**

- BMP Description: Sediment Trap
- Installation Schedule: Start of dewatering activities
- Maintenance and Inspection: Weekly & after storm events greater than 1/4"

- Responsible Staff: **Construction Manager** and **Site Contractor**
- BMP Description: Check Dams
- Installation Schedule: Start of construction
- Maintenance and Inspection: Weekly & after storm events greater than 1/4"
- Responsible Staff: **Construction Manager** and **Site Contractor**

- BMP Description: Diversion Dikes
- Installation Schedule: Start of construction
- Maintenance and Inspection: Weekly & after storm events greater than 1/4"
- Responsible Staff: **Construction Manager** and **Site Contractor**

2.3 STABILIZE SOILS

Onsite native topsoil shall be preserved, unless infeasible. All excavated soil will be stockpiled in the designated areas onsite. Soil stabilization measures shall be initiated immediately when earth-disturbing activities have permanently or temporarily ceased on any portion of the site. Earth-disturbing activities are considered temporarily ceased when work will not resume for a period of 14 or more calendar days. Stabilization activities shall be completed within 14 calendar days after the initiation of soil stabilization measures. This deadline is reduced to 7 calendar days for sites that discharge to sensitive waters. It shall be stabilized with temporary seeding and mulching or a tarp to prevent blowing dust and siltation into the storm drain system. Hay bales or a silt fence may be placed around the perimeter of stockpiles to contain sediments. Disturbance of slopes 15% or greater shall be minimized. Steep slopes will be stabilized against erosion by the use of a temporary vegetative cover. Stabilized portions of a site shall be inspected at least one per month. In landscaped areas or areas where infiltration practices will be installed, soil compaction shall be minimized. This includes restricting vehicle and equipment use and conditioning soil to support vegetative growth. When utilizing sediment basins, use outlet structures that withdraw water from the surface of the basins.

- BMP Description: Contractor's seed mix
  ☐ Permanent ☒ Temporary
- Installation Schedule: Start of earthwork activities
- Maintenance and Inspection: Weekly & after storm events greater than 1/4"
- Responsible Staff: **Construction Manager** and **Site Contractor**

- BMP Description: Hydro Seeding
  ☐ Permanent ☒ Temporary
- Installation Schedule: Start of earthwork activities

- Maintenance and Inspection: Weekly & after storm events greater than 1/4"
- Responsible Staff: **Construction Manager** and **Site Contractor**

- BMP Description: Straw or Mulch
  ☐ Permanent ☒ Temporary
- Installation Schedule: Start of earthwork activities
- Maintenance and Inspection: Weekly & after storm events greater than 1/4"
- Responsible Staff: **Construction Manager** and **Site Contractor**

- BMP Description: Soil Stabilization Mats
  ☐ Permanent ☒ Temporary
- Installation Schedule: Start of earthwork activities
- Maintenance and Inspection: Weekly & after storm events greater than 1/4"
- Responsible Staff: **Construction Manager** and **Site Contractor**

- BMP Description: Annual Rye Seed Mix
  ☐ Permanent ☒ Temporary
- Installation Schedule: Start of earthwork activities
- Maintenance and Inspection: Weekly & after storm events greater than 1/4"
- Responsible Staff: **Construction Manager** and **Site Contractor**

2.4 PROTECT SLOPES

- BMP Description: Straw or Mulch
- Installation Schedule: Start of earthwork activities
- Maintenance and Inspection: Weekly & after storm events greater than 1/4"
- Responsible Staff: **Construction Manager** and **Site Contractor**

- BMP Description: Contractor's seed mix
- Installation Schedule: Start of earthwork activities
- Maintenance and Inspection: Weekly & after storm events greater than 1/4"
- Responsible Staff: **Construction Manager** and **Site Contractor**

- BMP Description: Hydro Seeding
- Installation Schedule: Start of earthwork activities
- Maintenance and Inspection: Weekly & after storm events greater than 1/4"
- Responsible Staff: **Construction Manager** and **Site Contractor**

- BMP Description: Soil Stabilization Mats
- Installation Schedule: Start of earthwork activities
- Maintenance and Inspection: Weekly & after storm events greater than 1/4"
- Responsible Staff: **Construction Manager** and **Site Contractor**

- BMP Description: Rip-Rap

  ☐ Permanent ☒ Temporary
- Installation Schedule: Start of earthwork activities
- Maintenance and Inspection: Weekly & after storm events greater than 1/4"
- Responsible Staff: **Construction Manager** and **Site Contractor**

2.5 PROTECT STORM DRAIN INLETS

- BMP Description: Straw Bale Catch Basin Inlet Protection
- Installation Schedule: Start of construction
- Maintenance and Inspection: Weekly & after 1/4" storm events
- Responsible Staff: **Construction Manager** and **Site Contractor**

- BMP Description: Silt Sacks
- Installation Schedule: Start of construction
- Maintenance and Inspection: Weekly & after 1/4" storm events
- Responsible Staff: **Construction Manager** and **Site Contractor**

2.6 ESTABLISH PERIMETER CONTROLS AND SEDIMENT BARRIERS

- BMP Description: Silt fence
- Installation Schedule: Start of construction/as needed
- Maintenance and Inspection: Weekly & after 1/4" storm events
- Responsible Staff: **Construction Manager** and **Site Contractor**

- BMP Description: Super Silt fence
- Installation Schedule: Start of construction/as needed
- Maintenance and Inspection: Weekly & after 1/4" storm events
- Responsible Staff: **Construction Manager** and **Site Contractor**

- BMP Description: Construction Fence
- Installation Schedule: Start of construction
- Maintenance and Inspection: Weekly
- Responsible Staff: **Construction Manager** and **Site Contractor**

2.7 RETAIN SEDIMENT ON-SITE AND CONTROL DEWATERING PRACTICES:

- BMP Description: Sediment Trap
  ☐ Permanent ☒ Temporary
- Installation Schedule: Start of de-watering activities
- Maintenance and Inspection: Weekly & after 1/4" storm events
- Responsible Staff: **Construction Manager** and **Site Contractor**

- BMP Description: Stone filter berm
  ☐ Permanent ☒ Temporary
- Installation Schedule: Start of construction
- Maintenance and Inspection: Weekly & after storm events greater than 1/4"
- Responsible Staff: **Construction Manager** and **Site Contractor**

- BMP Description: Designated truck washing area
  ☐ Permanent ☒ Temporary
- Installation Schedule: Start of construction
- Maintenance and Inspection: Weekly & after storm events greater than 1/4"
- Responsible Staff: **Construction Manager** and **Site Contractor**

2.8 ESTABLISH STABILIZED CONSTRUCTION EXITS

- BMP Description: Wheel Wash station and Gravel
- Installation Schedule: Start of construction
- Maintenance and Inspection: Daily
- Responsible Staff: **Construction Manager** and **Site Contractor**

2.9 ADDITIONAL BMPS

- BMP Description: Street Sweeping
- Installation Schedule: Start of construction
- Maintenance and Inspection: Weekly or as needed
- Responsible Staff **Construction Manager** and **Site Contractor**

SKANSKA

101 SEAPORT

General Waste Management Planning

Waste Management Goals

To save resources and strengthen our communities and the environment, the 101 Seaport project team will divert construction and demolition debris from landfill disposal by meeting the project's LEED performance goal of recycling 95% of the project's construction and demolition waste.
The 101 Seaport project will be referred to as 'the project' throughout this plan.

Waste Management Personnel

Full time Waste Management - TBA
LEED Coordinator – Myrrh Caplan

Communication Plan

The project team will conduct a pre-job waste management conference at the site for all key waste management personnel to assure appropriate methods and procedures are in place to meet the goals of the waste management plan. All workers, subcontractors and suppliers will be trained on proper waste management procedures through pre-job orientations. The Waste Management Plan (WMP) will be distributed to those required. Waste management goals and project status will be reviewed regularly at each safety meeting and at weekly subcontractor meetings. All recycling containers will be clearly labeled and lists of acceptable/unacceptable materials will be posted throughout the site.

Waste Reduction Work Plan

The project team will work with all suppliers and subcontractors to implement practices that minimize project waste. At each subcontractor's pre-job meeting, Skanska will emphasize the importance of minimizing waste, in addition to soliciting ideas from the subcontractors as to methods they could use to help us meet our waste management goals.
The project will utilize several options to meet our goal of diverting 95% of waste from a landfill or incinerator.
Demolition and construction debris will be recycled, reused, salvaged or donated when possible. Additionally, the Skanska construction office will implement practices to reduce and recycle the office waste generated, such as recycling office paper and toner cartridges.

Recycled Materials:

Definition: Materials recovered from the project demolition or construction that will have subsequent processing in preparation for reuse.

Disposed Materials:

Definition: Materials from demolition or construction, which are unable to be salvaged or recycled, that are routed to a landfill or incinerator.

Recycling Separation Area:

A designated waste and recycling separation area will be provided by Skanska.

Handling and transportation procedures:

All hauling and disposal must comply with regulations per authorities having jurisdiction.

Hazardous Waste Disposal:

Hazardous waste shall be separated, stored and disposed of offsite in a legal manner according to local, state and federal regulations.

Construction and Demolition Waste Tracking:

Skanska will provide the following information in Monthly Waste Reduction Progress Reports, which will include:

- Material category
  Generation point of waste (if known)
- Total quantity of waste, in tons
- Quantity of waste salvaged, actual in tons
- Quantity of waste recycled, actual in tons
- Total quantity of waste recovered (salvaged plus recycled) in tons
- Total quantity of waste recovered (salvaged plus recycled) as a percentage of total waste

Skanska will also provide the following, if applicable:

- Records of Sales: Indicate receipt and acceptance of salvageable waste sold to individuals and organizations. Indicating whether organization is tax exempt.
- Recycling and Processing Facility Records: Indicate receipt and acceptance of recyclable waste by recycling and processing facilities licensed to accept them. Include manifests, weight tickets, receipts and invoices.
- Landfill and Incinerator Disposal Records: Indicate receipt and acceptance of waste by landfills and incinerator facilities licensed to accept them. Include manifests, weight tickets, receipts and invoices.

Construction Phase Waste Management Plan

Scope

Skanska will be the primary responsible party for managing the construction phase waste management plan. Skanska will provide construction waste and recycling dumpsters on site for use by all subcontractors.

Waste Identification

At the bottom of the page is a list of potential debris to be generated from the construction phase of the project. Estimated quantities for each type of material are also included.

Recycling Construction Waste

The below **five** materials are targeted for diversion:

1. **Packaging** - 100% of the following uncontaminated packaging materials will be recycled: polystyrene packaging, cardboard, boxes, plastic sheet and film, paper, wood crates, plastic pails.
2. **Metals** – All metal waste that is unable to be re-used shall be collected and placed in the metal recycling dumpster.
3. **Wood Materials** – The majority of wood waste will be contaminated with form oil or concrete residue. Contaminated wood material will be placed in the wood recycling dumpster. The specifications suggest that wood wastes be chipped or ground into sawdust. If the project determines that the chipped wood or sawdust can be reused on site, then it will grind/chip the wood; however, if the quantities are determined to be minimal or cannot be reused on site, then the wood waste will be placed in the wood recycling dumpster.
4. **Gypsum Board** – If quantities require so, then a gypsum recycling dumpster will be located on site. The specifications suggest that grinding scraps of clean gypsum for use as an inorganic soil amendment. The landscaping subcontractor will determine if the ground gypsum is useful on site.
5. **Concrete** – All waste concrete will be fully dried on site and then removed by the recycling facility to be crushed and repurposed as fill, used as aggregate in concrete, or spread as a gravel substitute for another location.

Dumpsters
The following dumpsters will be available on site for use by all workers:

- Cardboard recycling
- Metal recycling
- Wood recycling
- Gypsum Board (if necessary)
- Concrete (washout pans to be used to allow drying)
- Garbage (non-recyclable material)

Additional dumpsters will be provided if warranted. Dumpsters will be clearly marked for content. The main construction office will also have bins for recycled paper, plastic, glass and tin.

Monthly Recycling Progress Report – Actual
Our waste management plan and the amount of construction waste debris diverted from landfills and the amounts of actual recycled material will be tracked by the waste management company that will be award this project and a monthly report similar to the one below one will be submitted to obtain the required points under the LEED category of Materials & Resources (MRc5).

The excavated soil and land-clearing debris will be excluded from calculations. Alternative daily cover (ADC) will be excluded from diverted waste calculations but included in total construction waste calculations.

101 Seaport

Construction Indoor Air Quality Management Plan

GENERAL

Construction Indoor Air Quality Goals

Skanska will strive to maintain a high standard of indoor air quality during the construction process by working together with all parties that may have a potential impact on the indoor air quality during construction of the 101 Seaport project. The 101 Seaport project will be referred to as 'the project' throughout this plan.

Green Building Concerns as sited by the LEED Reference Guide

Building construction processes invariably include activities that contaminate the building during construction. Often, these activities result in residual building contamination that continues to impact indoor air quality over the lifetime of the building. HVAC systems are especially prone to contamination from particulate matter generated during construction activities. This particulate matter can include dust, volatile organic components (VOCs), microorganisms, and other contaminants that remain in HVAC systems for years. Building occupants may experience reduced productivity and adverse health effects as a result.

Indoor Air Quality Management Personnel

Indoor Air Quality (IAQ) Coordinator	Bethany King, Skanska
IAQ Advisor	Myrrh Caplan, Skanska

Communication Plan

During the appropriate stages of the Project, the IAQ coordinator will communicate all IAQ control measures to all project personnel during the morning stretch and flex session to assure that everyone understands the importance of the goals of the IAQ Management Plan. The

project team will also conduct a pre-job meeting with key IAQ subcontractors, such as the mechanical subcontractor.

Indoor Air Quality Control Measures

The project team will implement the following IAQ control measures during construction, as recommended in the SMACNA IAQ Guidelines for Occupied Building Under Construction, Second Edition (2007) IAQ management practices.

- **HVAC protection**
- **Reduce emissions**
- **Interrupt contamination pathways**
- **Intensify housekeeping**
- **Scheduling**
- **Moisture prevention**

HVAC Protection

GOAL: To protect HVAC during construction and to cleanup contaminated components after construction is complete.

CONTROL MEASURES:

- Isolate the return side from the surrounding environment whenever possible. For instance, if the HVAC system is operating in an area of the building that is dirty and dusty, then the returns in that area will be protected with plastic.
- If the HVAC system needs to be operated during construction, it will be fitted with temporary filters that can be replaced with clean media prior to substantial completion. The temporary filters will have a MERV value of 8, F5 or greater.
- The mechanical room will not be used to store construction or waste materials.
- The project team does not anticipate excessive build-up of dust or debris under the diffusers as this is new construction; however the mechanical IAQ coordinator will inspect the equipment prior to substantial completion.

Reduce Emissions (Source Control)

GOAL: To reduce emissions by controlling pollutants at their source.

CONTROL MEASURES:

- The project specifications have specified low-emitting materials for adhesives, sealants, paints and carpet as per the LEED Indoor Environmental Quality Credit 4.
- Product submittals and applications will be checked by the General Contractor.

- In situations where products are specified that do contain excess VOCs or where other chemical, dust or odor emitters are present, the team will employ tactics such as duct sealing, natural ventilation (if available) and negative air machines.
- Even with low-emitting products, practices will be implemented to limit exposure through covering and sealing of containers/products.
- The project team will recommend that the final clean subcontractor use cleaning supplies with low VOCs.

Interrupt Contamination Pathways

GOAL: To prevent contamination of clean spaces.

CONTROL MEASURES: (NOTE: These control measures are most primarily applicable to renovation projects; however, there may be some instances where the controls measures will apply.)

- If applicable, barriers may be erected to protect clean areas from neighbouring contaminated areas. Pressure differentials may also be used to protect clean areas.
- Relocate pollutant sources from mechanical intakes (i.e. keep roofing material away from HVAC intakes).
- Special care will be taken to protect mechanical rooms with air handling equipment.
- Depending on the climate, the project will ventilate using 100% outside air, fans and hoses to exhaust contaminated air directly to the outside during installation of VOC emitting materials.
- If necessary, the project team will construct cutting rooms to contain airborne particles from cutting operations (i.e. sheetrock).

Housekeeping

GOAL: Institute cleaning activities concentrating on HVAC and building spaces to remove contaminants from the building prior to occupancy.

CONTROL MEASURES:

- Suppressing dust with wetting agents or sweeping compounds.
- Increasing the cleaning frequency for dust.
- Switching to a more efficient dust collection method (e.g. a damp rag, wet mop, or vacuum equipped with a high efficiency particulate filter or wet scrubber will discharge less material than conventional vacuuming, sweeping or dusting).
- Ensuring that all surfaces (including higher ledges, behind furniture, and inside mechanical equipment) are kept clean.)
- Removing spills or excess applications of solvent-containing products as soon as possible.
- Remove accumulated water and keeping work areas as dry as possible.
- Protect porous materials such as insulation from exposure to moisture.

- Building material should be protected from weather and store in a cleaned area prior to unpacking for installation. Ceiling tile and carpet typically will not be installed until the building is acclimatised, to avoid the absorption of moist air into the material.
- All coils, air filters, and fans should be cleaned before performing testing and balancing procedures and before conducting baseline air quality tests.
- Depending on the climate and construction stage, outside air and fans will be used to maintain a healthy indoor airflow.

Scheduling

GOAL: Sequence construction activities so that materials are kept dry and those that absorb contaminants are installed after other materials have had the opportunity to off-gas contaminants.

CONTROL MEASURES:

- Complete applications of wet and odorous materials such as:
    - Paint
    - Sealants
    - Coatings
- Before installing “sink” materials such as:
    - Ceiling tiles
    - Carpets
    - Fabric covered furnishings
- Final (touch up) painting will most likely occur after the ceiling tiles and carpets have been installed. Low VOC paints will be used so this will cause minimal IAQ concerns.
- Materials directly exposed to moisture through precipitation, plumbing leaks or condensation from the HVAC system are susceptible to microbial contamination. Any material that has been wet will be thoroughly examined for contamination.
- Conduct a baseline IAQ testing, after construction ends and prior to occupancy, using testing protocols consistent with the US EPA Compendium of Methods for the Determination of Air Pollutants in Indoor Air and as detailed in the USGBC Reference Guide, EQ Credit 3.2.
- MERV 8 filters shall be used during construction if HVAC is operating then MERV 13 filters are used for the flush. After the flush, new MERV 13 filters will be installed.

Submittals

The following items will be submitted to the architect prior to final occupancy:

- LEED letter template, signed by the General Contractor declaring that this Construction IAQ Management Plan has been implemented for the project**.** (Primary Responsible Party = General Contractor)

- A list of each air filter used if the mechanical air system was operating during construction (MERV of 8) and the final filtration install at the end of construction (MERV

of 13). Each air filter shall include the MERV value, manufacturer name and model number (Primary Responsible Party = Mechanical Subcontractor)

- A brief description of the five (5) design approaches that were used during building construction, as noted above and photodocumentation (18 photos – 6 taken at 3 different times) to support the implementation of these approaches. (Primary Responsible Party = General Contractor)

Questions/Comments

All questions and comments regarding this plan should be forwarded to Myrrh Caplan, 1-908-723-2516.

VOC Poster:

VOC LIMITS

ASK BEFORE INSTALLING ANY CHEMICAL!

	Application	Category	Max g/L
Architectural	Indoor carpet	Adhesive	50
	Carpet pad	Adhesive	50
	Wood flooring	Adhesive	100
	Rubber floor	Adhesive	60
	Subfloor	Adhesive	50
	Ceramic tile	Adhesive	65
	VCT & Asphalt	Adhesive	50
	Drywall & Panel	Adhesive	50
	Cove base	Adhesive	50
	Multipurpose construction	Adhesive	70
	Structural glazing	Adhesive	100
Substrate	Metal to metal	n/a	30
	Plastic foams	n/a	50
	Porous material (no wood)	n/a	50
	Wood	n/a	30
	Fiberglass	n/a	80
Sealant Primers	Arch, nonporous	Primer	250
	Arch, porous	Primer	775
	Other	Primer	750
Specialty	PVC	Welding	510
	CPVC	Welding	490
	ABS	Welding	325
	Plastic cement	Welding	250
	Adhesive primer for plastic	Primer	550
	Contact	Adhesive	80
	Special purpose contact	Adhesive	250
	Structural wood member	Adhesive	140
	Sheet applied rubber lining	n/a	850
	Top & Trim	Adhesive	250

	Application	Category	Max g/L
Sealants	Architectural	Sealant	250
	Nonmembrane roof	Sealant	300
	Roadway	Sealant	250
	Single-ply roof membrane	Sealant	450
	Other	Sealant	420
Aerosols	General purpose mist	Adhesive	65%
	General purpose spray	Adhesive	55%
	Special aerosol (all types)	Adhesive	70%
Paints	Flat	Paint	50
	Non-Flat	Paint	150
	Anti-corrosive/Anti-rust	Paint	250
Coatings	Clear wood varnish	Finish	350
	Clear wood lacquer	Finish	550
	Floor	Coating	100
	Waterproofing	Sealer	250
	Sanding	Sealer	275
	All others	Sealer	200
	Clear shellac	Sealer	730
	Pigmented shellac	Sealer	550
	Stain	Stain	250

Contacts:		
Safety Director	Kimberly Sullivan	617-574-1529
Superintendent	Robert Bellavia	857-998-3541
Project Manager	Bethany King	617-351-3326
LEED Coord	Myrrh Caplan	908-723-2516

END OF DOCUMENT