SOUTH STATION
EXPANSION

Attachment A

Detailed Project Description

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Preface

The expansion of South Station has been an identified transportation need for decades. An expanded South Station would enhance the multimodal transportation network of Massachusetts, support the Northeast Corridor (NEC), and enable increased Massachusetts Bay Transportation Authority (MBTA) commuter rail service. The value of an expanded South Station has been extensively documented in state and regional transportation plans including, most recently, the Massachusetts Department of Transportation's (MassDOT's) *Massachusetts State Rail Plan* (2010) and *Massachusetts Freight Plan* (2010); the Boston Region Metropolitan Planning Organization's (MPO's) *Paths to a Sustainable Region*, the long-range transportation plan for the metropolitan Boston region (2011); and the MBTA's *Program for Mass Transportation* (2009).

While the vision for an expanded South Station has been well developed, existing constraints with respect to rail support facilities, specifically vehicle layover space, have not been as well documented. Additional vehicle layover space is an element of the South Station Expansion (SSX) project, as increased capacity at the station will require increased capacity for rail vehicle storage. This Environmental Notification Form (ENF) therefore includes, as an attachment, an alternatives analysis documenting existing and future needs associated with rail layover space, as well as the preliminary screening process used to evaluate layover alternatives to support both the existing and an expanded South Station.

1. Project Context

South Station is the terminus of the National Railroad Passenger Corporation's (Amtrak's) NEC service and Amtrak's Lake Shore Limited service from Chicago via Albany. Located in Boston's Financial District, South Station is the sixth busiest station in the national Amtrak system and Boston's busiest multimodal transportation hub. South Station also serves as the terminus for the western and southern lines of the MBTA's commuter rail system, the fifth largest commuter rail system in the nation. South Station provides connections to the MBTA Red Line and to Logan International Airport via the MBTA Silver Line. South Station's bus terminal is a hub for intercity, regional, and local bus service in eastern Massachusetts. Constructed more than 110 years ago and listed in the State and National Registers of Historic Places, South Station is one of the most significant and iconic architectural structures in the City of Boston. Figure 1 in Attachment B shows the SSX project location on USGS maps.

The NEC service is the nation's first and only existing high-speed rail (HSR) service. The NEC rail corridor forms the eastern backbone of the United States passenger rail network, roughly paralleling Interstate 95. It connects Washington, D.C. to Boston, Massachusetts (the main line), and serves major population centers along the East Coast, including Baltimore, New York, Philadelphia, New Haven, and Providence. The NEC branch lines extend to Springfield, Massachusetts; Albany, New York; Harrisburg, Pennsylvania; and Richmond, Virginia. The NEC is the busiest railroad in North America, with more than 2,200 trains operating over some portion of the Washington-New York City-Boston route each day. Amtrak carries 13 million annual passengers on the NEC via its Acela Express and Northeast Regional services. Amtrak's ridership share on the NEC continues to grow and now dominates the air/rail market, with 75 percent of the New York-Washington market and 55 percent of the New York-Boston market. Approximately 1.36 million Amtrak passengers traveled through South Station in 2011. From 2003 to 2011, the number of Amtrak passenger arrivals and departures through the station increased by almost 43 percent. In 2012, there were approximately 80,600 weekday inbound and outbound MBTA south side commuter rail boardings (including South Station and Back Bay station). South Station is also a portal for over 16,000 daily bus terminal passengers, and nearly 28,000 additional weekday subway and bus

transit passengers.

The primary purpose of the SSX project is to improve NEC passenger rail service delivery into and out of Boston so as to accommodate existing services and enable projected growth in HSR and other intercity passenger rail service throughout the Northeast. The SSX project is part of an overall plan to improve intercity and future high-speed passenger rail service in the NEC, as stated in Amtrak's *NEC Master Plan,* its *Vision for High Speed Rail in the Northeast Corridor,* and its 2012 update. Amtrak projects that by 2040, overall NEC ridership will increase by nearly threefold. HSR ridership on the Acela Express will be more than nine times higher by 2040 than the current 3.2 million riders, growing to 29.7 million HSR riders. Furthermore, projections indicate that ridership on MBTA commuter rail lines will grow by at least 28 percent by 2030. Implementation of the SSX project will facilitate a more efficient and attractive passenger rail network for the northeastern United States.

Amtrak's 2030 plans call for increased service between Boston and New York City, from the current 38 daily trains (19 roundtrips) to 48 trains (24 roundtrips), providing hourly Acela Express and near hourly regional services throughout the day. Five additional trains are projected to operate out of Boston over the "inland route" through Worcester to Springfield and New Haven. By 2030, the *NEC Master Plan* assumes a three hour: eight minute (3:08) Acela Express trip time between Boston and New York City, a decrease of approximately 12 percent from 2010 trip times. Both Amtrak's and the MBTA's proposed service expansions include the use of additional train consists (locomotive and coaches).

South Station currently has less than half the original track capacity that was available when the station first opened in 1899, but it continues to operate as the most heavily used passenger rail facility in New England. All thirteen tracks are fully utilized by Amtrak and the MBTA. As a result, South Station is experiencing increasing congestion and declining service reliability. Further, there is not sufficient vehicle layover space to meet existing and future South Station operational requirements. Layover facilities are used to store, service, inspect and maintain trains when they are not in service. Without additional layover space, existing operations and future Amtrak and MBTA service expansions and other planned improvements will be seriously constrained.

State, regional, and local development plans highlight the importance of the SSX project in enhancing the multimodal transportation network in Massachusetts, supporting a more attractive and increased MBTA commuter rail service, and supporting economic development in Boston. The MBTA's *Program for Mass Transportation* calls for additional tracks at South Station to address peak-period track capacity demands due to recent and ongoing expansion of its south side commuter rail system. The *Massachusetts State Rail Plan* identifies the NEC as a top priority for passenger rail in the state and the SSX project as a priority rail project to improve service to southern communities along the MBTA commuter rail lines. The SSX project is consistent with the most recent regional economic development plan, *MetroFuture: Making a Greater Boston Region,* and *Paths to a Sustainable Region*, the long-range transportation plan for the metropolitan Boston region. The SSX project also is consistent with the planning policies and goals of neighborhood development plans, including *The Fort Point District 100 Acres Master Plan* and the *Fort Point Channel Watersheet Activation Plan.*

2. Project Site

The South Station site occupies approximately 49 acres located near Chinatown, the Fort Point Channel, and the Seaport-Innovation District/South Boston Waterfront. The site includes the following: South Station Rail/Transit Terminal and South Station Bus Terminal, approximately 16 acres; and the U.S. Postal Service (USPS) General Mail Facility/South Postal Annex site of approximately 16 acres,

including that portion of Dorchester Avenue fronting the site. Of the remaining 17 acres, approximately 14 acres consist primarily of track, and three acres consist of a small park, Harborwalk area, and a portion of the Fort Point Channel located at the southern end of the site. The South Station site extends to include the historic headhouse to the north, located at the intersection of Atlantic Avenue and Summer Street. The site extends along a portion of the NEC Main Line to the west, extending past Cove Interlocking. The site extends along a portion of the MBTA's Fairmount Line/Old Colony Railroad to the south, extending just past Broadway Interlocking.

The SSX project includes the construction of layover facilities at one or more sites. The three sites currently under consideration for new and/or expanded layover facilities are the Boston Transportation Department (BTD)-owned Tow Lot, Beacon Park Yard, and Readville - Yard 2. The BTD Tow Lot site is located along Frontage Road in Boston, approximately 1 track-mile from South Station. The Beacon Park Yard site is located along Cambridge Street in the Allston section of Boston, approximately 4 track-miles from South Station. The Readville - Yard 2 site is located off Wolcott Court in the Hyde Park section of Boston, approximately 9 track-miles from South Station.

Figure 2 in Attachment B presents the SSX project site boundaries and major transportation facilities in the vicinity of the SSX project elements. Figures 3, 4, 5, and 6 present existing site resources, environmental constraints, and the historic shoreline.

The SSX project meets Massachusetts Environmental Policy Act (MEPA) thresholds for the preparation of an Environmental Impact Report (EIR). MassDOT will address the project's direct and indirect impacts, including construction period impacts, as well as the project's infrastructure requirements.

3. Project Alternatives

MassDOT has not currently identified a preferred alternative for the SSX project. MassDOT will include an alternatives analysis in the Draft EIR, in which alternatives for the primary elements of the SSX project will be evaluated, including: expansion of the South Station terminal facilities onto the adjacent USPS facility site, provision for joint/private development opportunities adjacent to and over an expanded South Station, and construction of layover facilities. The SSX project alternatives are categorized as South Station Terminal - Joint/Private Development Alternatives and Layover Facility Site Alternatives.

Although demolition of the USPS facility after it is vacated is part of the SSX project, the relocation of the USPS facility is not part of the SSX project and will not be included in the alternatives analysis. The USPS will determine the future location(s) to which its operations will be relocated, and the facility relocation will be subject to its own environmental review as required by state and federal regulations.

3.1. South Station Terminal – Joint/Private Development Alternatives

There are four South Station Terminal - Joint/Private Development alternatives:

- No Build Alternative
- Alternative 1 – Transportation Improvements Only
- Alternative 2 – Joint/Private Development Minimum Build
- Alternative 3 – Joint/Private Development Maximum Build

Figure 7 in Attachment B presents schematic drawings of the South Station Terminal - Joint/Private Development alternatives. The Build alternatives primarily are distinguished by the degree to which

private development would or would not be accommodated. Alternative 1 would not provide for potential private development at South Station. Alternatives 2 and 3 represent the lower and upper bounds of potential private development at South Station. To the extent that the environmental impacts of the future private development are not addressed in the evaluation of the SSX project, additional MEPA filings may be necessary. Additionally, future private development will require filings with the City of Boston pursuant to Article 80 of the Boston Zoning Code.

All Build alternatives would include construction of additional layover facilities at one or more sites to service South Station operations.

3.1.1. No Build Alternative

The No Build Alternative represents a future baseline condition against which the Build alternatives will be compared. With the No Build Alternative, the South Station complex, including the headhouse, track operations, and the USPS General Mail Facility, would remain as they currently exist. Dorchester Avenue would remain predominantly in private use by the USPS, with public access provided over a short length along Fort Point Channel.

With the No Build Alternative, there would be no private development at the South Station complex beyond the development previously approved by the Massachusetts Executive Office of Energy and Environmental Affairs (EEA): the South Station Air Rights project. The South Station Air Rights project was approved by the Secretary of EEA in 2006 (EEA Number 3205/9131) as an approximate 1.765 million square foot mixed-use development to be located directly above the railroad tracks at the South Station headhouse. The South Station Air Rights project also includes a horizontally expanded bus terminal of approximately 70,000 square feet, pedestrian connections from the train station concourse and platforms to the expanded bus terminal, and a 3-level parking garage with 775 spaces located above the bus terminal.

3.1.2. Alternative 1 – Transportation Improvements Only

Alternative 1 would include the previously-approved private development described in the No Build Alternative. In addition, South Station would be expanded onto the adjacent 16-acre USPS property. MassDOT would acquire and demolish the USPS General Mail Facility/South Postal Annex. The existing South Station terminal, consisting of a 69,000-square foot transit concourse and 126,000 square feet of office space, would be expanded by approximately 215,000 square feet, for a total terminal size of approximately 410,000 square feet, consisting of an expanded passenger concourse and passenger support services. Capacity improvements would include construction of up to seven new tracks and platforms and extension of some existing platforms, for a total of up to 20 tracks. Cove, Broadway and Tower 1 Interlockings at the terminal approach would be reconstructed. With Alternative 1 – Transportation Improvements Only, South Station expansion and development would be in accordance with Chapter 91 standards for non-water-dependent infrastructure facilities and city zoning requirements. With Alternative 1, no provision would be made for future private development as part of the SSX project.

Dorchester Avenue, which runs parallel to the Fort Point Channel, would be restored for public and station access. The USPS owns in fee that portion of Dorchester Avenue which extends from the southern line of Summer Street to a line on the southern shore of Fort Point Channel adjacent to the Gillette property. The majority of Dorchester Avenue at the site is used exclusively by the USPS in support of USPS operations. Extending from the southern line of Summer Street, the MBTA maintains a permanent easement for pedestrians and vehicles over approximately 200 feet, and generally unrestricted

public access is provided over approximately 400 feet for customer use of USPS facilities. Restoration of Dorchester Avenue would reconnect Dorchester Avenue to Summer Street as a public way. It would include landscaping and improved pedestrian and cycling connections and facilities (adjacent sidewalks, crosswalks, and bike lanes). Restoration also would include construction of a long-awaited extension of the Harborwalk along reopened Dorchester Avenue. Figure 8 in Attachment B presents potential cross-sections for the restoration of Dorchester Avenue and extension of the Harborwalk. Figure 9 presents existing Dorchester Avenue and Harborwalk photographs in the vicinity of South Station.

Alternative 1 also would include construction of additional layover facilities at one or more sites.

3.1.3. Alternative 2 – Joint/Private Development Minimum Build

Alternative 2 would include Alternative 1, as well as provisions for future private development by incorporating appropriate structural foundations into the overall station and track design.

With Alternative 2, the potential for future private development at the South Station complex would comply with existing state and local regulations.[1] Future private development would occur in conformance with the existing Chapter 91 regulations as well as with the Fort Point Downtown Municipal Harbor Planning Area requirements and the Massachusetts Coastal Zone Management Program.

Preliminary assessments indicate that future private development with this alternative could include approximately 850,000 square feet of mixed-use development consisting of office, retail, residential, and hotel uses, with building heights ranging up to approximately 12 stories. Development could include approximately 470 parking spaces, not including public/private shared parking opportunities.

Alternative 2 also would include construction of additional layover facilities at one or more sites.

3.1.4. Alternative 3 – Joint/Private Development Maximum Build

Alternative 3 would include Alternative 1. It would also provide for future private development by incorporating appropriate structural foundations into the overall station and track design.

With Alternative 3, the maximum potential for future private development at the South Station complex would be limited by the Federal Aviation Administration's (FAA's) maximum building height limits, pursuant to the Terminal Instrument Procedures (TERPS) regulations applicable to Boston Logan International Airport. Accordingly, building heights would be limited to approximately 290 feet. Alternative 3 would require an amendment to the Municipal Harbor Plan, modifying applicable Chapter 91 regulations. No development would likely occur over the secondary headhouse and portions of track interlocking.

Preliminary assessments indicate that future private development could include approximately 2.5 million square feet of mixed-use development consisting of office, retail, residential and hotel uses, with building heights up to approximately 26 stories. Development could include approximately 1,370 parking spaces,

[1] Applicable State regulations include Massachusetts General Law (MGL) Chapter 91, Sections 1 through 63, and its implementing regulations, 310 Code of Massachusetts Regulations (CMR) 9.00. Applicable local regulations include the Boston Zoning Code, pursuant to Article 27, *Interim Planning Overlay District*, as extended through February 16, 2001; Article 40, *South Station Economic Development Area*, as amended through June 29, 2006; and Article 80, *Development Review and Approval*, as amended through January 10, 2007.

not including public/private shared parking opportunities.

Alternative 3 also would include construction of additional layover facilities at one or more sites.

3.2. Layover Facility Site Alternatives

3.2.1. Layover Facility Needs

Layover yards are critical to rail operations because they provide a location to stage train consists (locomotive and coaches) during off-peak periods, thereby keeping unused trains off active tracks in order to minimize congestion at stations. Amtrak and the MBTA currently use four layover yards to support South Station operations: Amtrak's Southampton Street Yard, Amtrak's Front Yard, the MBTA's South Side Service and Inspection Facility, and the MBTA's Readville - Yard 2. Figure 2 in Attachment B provides the location of the existing Amtrak and MBTA layover yards.

Southampton Street Yard supports all existing Amtrak operations in metropolitan Boston. The layover capacity for the MBTA's south side commuter rail service area is inadequate under existing conditions; there is a shortfall of three consists. This shortfall results in tight scheduling of revenue and non-revenue trains inbound to and outbound from the South Station terminal. In addition to trains that use one of the four layover areas, due to the combination of track and layover capacity constraints and current operating practices, Amtrak and the MBTA are forced to store trains in the South Station terminal while waiting for slots at the existing south side layover facilities. The use of the platform tracks as a layover site increases congestion at the terminal and creates operational conflicts, especially during morning and evening peak periods. This situation is exacerbated in inclement weather, when trains run behind schedule, when equipment needs to be changed out, or when other issues such as equipment failures occur.

As previously indicated, both Amtrak and the MBTA anticipate substantial future growth in passenger rail service. In its long-term vision for the NEC, Amtrak projects a nearly threefold increase in NEC ridership associated with HSR and intercity service. In *The Amtrak Vision for the Northeast Corridor – 2012 Update Report,* Amtrak projects the use of additional consists associated with its Next-Generation High-Speed Rail Program (NextGen HSR) projects to be completed from 2020 to 2040. Amtrak also has stated plans to potentially expand Southampton Street Yard to accommodate its future overnight layover needs. Additional equipment and layover capacity will be needed to support other new regional rail services using South Station as a terminal facility, including revival of the Massachusetts Inland Route connecting Boston, Framingham, Worcester, and Springfield. By 2025, due to planned Amtrak and MBTA service expansions and increased MBTA ridership demand, it is estimated that the MBTA shortfall in layover capacity will be six train consists. By 2040, due to planned ridership growth and reduction of layover capacity at some facilities due to increased MBTA consist lengths, it is estimated that the MBTA shortfall in layover capacity will be 19 train consists. Specific details of Amtrak's 2040 layover needs and service and inspection requirements (including track length and support facilities) are not yet known, but it is assumed that Amtrak will need layover space beyond what is currently available.

With anticipated increased service demands for both Amtrak and the MBTA, the lack of layover capacity will become a major constraint and limit the planned growth in rail service at South Station. To meet these needs, it is critical that layover yards provide sufficient capacity to accommodate future service increases and fleet expansions. This will allow for optimal efficiency and flexibility at South Station for revenue operations. The expansion of South Station, along with additional layover capacity, will reduce operating capacity constraints that currently impact on-time performance for service into the station. The

MBTA's midday layover needs could complement Amtrak's overnight layover needs, allowing joint usage of future layover facilities.

While both Amtrak and the MBTA are constrained in their ability to store their current fleet of vehicles, MassDOT is also keenly aware of the growing opportunity to provide rail service using different types of vehicle technologies. As part of analyzing layover needs related to the SSX project, MassDOT will consider the layover and servicing needs of vehicle types beyond those in the current MBTA fleet.

3.2.2. Summary of Layover Facility Alternatives Analysis

The identification and evaluation of layover alternatives involved a multi-step process, the first of which was to quantify the layover space needed for both Amtrak and the MBTA today and in the future, projected to the year 2040. Shortfalls in capacity were determined by comparing future needs to the capacity of the existing layover facilities used by South Station trains. In consultation with project stakeholders, the MBTA, Amtrak, and City of Boston representatives, appropriate criteria to identify and evaluate candidate locations were then developed. Working with project stakeholders, and utilizing the evaluation criteria, candidate sites were identified for consideration and review, and assessed for their ability to support South Station needs and operations. Based on this effort, 28 sites were identified that could potentially meet the project's goal and objectives, such as accessibility to an existing MBTA line, compatible land use, appropriate size, and proximity to South Station.

The 28 sites were then assessed using a two-tiered screening process. The first tier screening evaluated the ability of each site to meet the overarching transportation and program objectives for the project using criteria such as ease of land acquisition, effect on operations, and ability to integrate the site into the existing rail and roadway networks. Of the 28 candidate sites, ten locations met these criteria and were advanced to the second tier evaluation. The second tier screening process involved developing conceptual designs, developing preliminary operating plans, and identifying infrastructure requirements for each of the remaining candidate sites. Of the ten candidate sites from the Tier 1 screening, three locations were identified as having the ability to best meet the needs of the SSX project and will be analyzed further in the Draft EIR.

Initial conceptual designs determined that no single remaining alternative has the physical space needed to singularly fulfill the entire layover need in the year 2040. Additionally, this analysis determined that from an operational perspective, due to the track configuration at South Station, it may be advantageous for the layover needs to be met by more than one site location. Thus, the next phase of the layover assessment, to be included in the Draft EIR, will include evaluating combinations of the three sites to test their ability to integrate with the existing four layover facilities serving South Station. This phase will involve refining the concept plan for each site and developing rail operations plans to determine the alternative that will best meet the needs of the SSX project.

3.2.3. Layover Facility Sites Advanced for Further Evaluation

The following three sites passed the initial project screenings:

- **BTD Tow Lot Site.** The BTD Tow Lot site, which currently includes facilities for the Boston Department of Public Works (DPW), is located on the MBTA's Fairmount Line. The approximate 11-acre site is located approximately 1 track-mile from South Station.

- **Beacon Park Yard Site.** The Beacon Park Yard site is located between the I-90 Massachusetts Turnpike Allston Toll Plaza and the MBTA's Framingham/Worcester Line. The approximate 22-acre site is located approximately 4 track-miles from South Station.

- **Readville - Yard 2 Site.** The Readville - Yard 2 site, located on the MBTA's Fairmount Line, is an existing rail facility owned by the MBTA. The approximate 17-acre site is located approximately 9 track-miles from South Station.

The three layover sites were determined to best meet the SSX project's goal and objectives when measured against operational needs, property requirements, potential environmental impacts, consistency with local planning, and capital improvements. Attachment C contains the Layover Facility Alternatives Analysis Report which documents the assessment of existing and future layover capacity needs for South Station, and identifies and evaluates potential layover sites to accommodate future growth.

4. Project Impact Assessment and Environmental Review

4.1. Alternatives Analysis

MassDOT will evaluate build alternatives for the primary elements of the SSX project, including: expansion of the South Station terminal facilities onto the adjacent USPS facility site, provision for joint/private development opportunities adjacent to and over an expanded South Station, and alternative sites for the construction of new or expanded layover facilities. The No Build Alternative represents the baseline condition against which the Build alternatives will be compared.

4.1.1. South Station Terminal – Joint/Private Development Alternatives

MassDOT will address direct and indirect impacts, including construction period impacts, as well as infrastructure requirements associated with each of the build alternatives. More detailed features and dimensions of the South Station site will be developed for evaluation of the alternatives in the Draft EIR. MassDOT will propose mitigation measures to offset potential environmental impacts of the preferred alternative.

4.1.2. Layover Facility Site Alternatives

All of the South Station Terminal-Joint/Private Development Build alternatives would include construction of additional layover facilities at one or more sites to support South Station operations. MassDOT will further evaluate the three layover facility site alternatives which passed the initial project screenings: the BTD Tow Lot, Beacon Park Yard, and Readville - Yard 2. Different combinations of the three alternatives that could meet the existing and future layover facility needs for the South Station expansion will be examined. This phase of review and analysis will include development of refined conceptual plans; a phasing plan that addresses sequencing and timing of the three sites based on operational need; conceptual operating plans; capital, operations and maintenance cost estimates; and further evaluation of potential environmental impacts. Results of the analysis will be coordinated with the City of Boston, project stakeholders, and the public to identify a preferred alternative to advance to preliminary engineering and project development.

4.2. Noise and Vibration Analysis

MassDOT will conduct a construction noise and vibration analysis. The analysis will be performed in accordance with the Federal Transit Administration (FTA) guidance manual. A noise and vibration monitoring program will be conducted to establish the existing ambient background noise levels within the South Station project area and to determine the existing vibration levels from the train operations at South Station and the layover facility sites. These data will be used to develop the project criteria noise limits using the FTA guidelines.

To estimate impacts during operations, noise modeling and vibration modeling will be performed using FTA noise and vibration prediction models. Noise and vibration levels under the future (design year) build alternatives will be compared with the FTA noise criteria. If the project noise and vibration levels exceed the FTA and other applicable criteria, the feasibility of abatement measures listed in the FTA guidelines will be evaluated for mitigating impacts at noise- and vibration-sensitive receptors.

If construction noise impacts are predicted to occur, noise mitigation measures will be recommended, and evaluated, as appropriate. The potential for damage from vibratory or impact devices will be assessed as part of the construction assessment. While vibration criteria are generally used to assess annoyance from transit sources at the exterior facade of receptors, ground-borne noise or the rumbling sound due to vibrating room surfaces is typically assessed indoors. Ground-borne noise indoors will be assessed.

4.3. Wind and Shadow Impact Assessment

MassDOT will evaluate potential impacts to the public realm from wind and shadow associated with the two joint/private development alternatives (Alternative 2 [zoning compliant] and Alternative 3). Alternatives 2 and 3 will consider a range of building envelopes adjacent to and over the expanded South Station potentially reaching up to 290 feet. To assess any potential ground level impacts to the pedestrian environment from this additional height, MassDOT will provide a quantitative wind analysis, including wind tunnel testing. The quantitative analysis also will consider potential wind impacts to new and existing open spaces, a Harborwalk extension along the Fort Point Channel, and other potential public realm impacts.

In its shadow study, MassDOT will compare shadow impacts from the two future joint/private development alternatives (Alternatives 2 and 3) with existing shadow conditions. The analysis will compare the shadow conditions of all three scenarios, hourly from 9:00 am to 5:00 pm for the "shoulder seasons" represented by October 23rd.

4.4. Public Benefit Review

MassDOT will provide a request for a Public Benefit Review and Determination. The request for a Public Benefit Review and Determination will include a discussion of the following: purpose and effect of the SSX project; impact of the SSX project on abutters and the surrounding community; enhancement to the property; benefits to the public trust rights in tidelands; community activities on the South Station site; environmental protection and preservation; and public health, safety, and general welfare.

4.5. Coastal Consistency Assessment

The SSX project will require Federal Consistency Certification because of the federal funding through the Federal Railroad Administration (FRA). Chapter 91 requires consistency with the Massachusetts Office of Coastal Zone Management's (MassCZM's) policies and principles for projects requiring a new or

amended Chapter 91 Waterways License (310 CMR 9.54). An assessment of the SSX project's consistency with MassCZM policies will be included in the Draft EIR.

4.6. Transportation Analysis

MassDOT will conduct a transportation analysis, consisting of a detailed traffic and parking analysis of the project alternatives. The transportation analysis will examine existing travel patterns and future 2040 No Build and Build alternative transportation conditions. Travel demand forecasting performed by the Central Transportation Planning Staff will be developed for 2040 and used to assess transportation and traffic impacts, using a traffic model (SYNCHRO network) to analyze weekday a.m. and p.m. peak hours and Saturday midday traffic. The transportation analysis will include collection of existing data on transportation modes, including vehicular (including taxicabs), public/private transit (rail and bus), pedestrians, bicyclists, as well as crash data. The transportation analysis will incorporate Amtrak-generated forecasts of intercity passenger rail ridership. Transit ridership and service data will be collected, and information on private development will be collected from the BRA for use in developing forecasts. The traffic analysis will include a parking generation assessment for the proposed joint/private development alternatives (both Alternative 2 -Minimum Build and Alternative 3 - Maximum Build).

MassDOT will discuss the need for state permits at the South Station site and the alternative layover facility sites. MassDOT also will address the role of the SSX project with respect to area-wide Transportation Management Associations and the provision of Transportation Demand Management services in the South Station area.

4.7. Greenhouse Gas Emissions Analysis

MassDOT will assess the SSX project's role in complying with the Revised MEPA Greenhouse Gas (GHG) Emissions Policy and Protocol (May 5, 2010). MassDOT will coordinate with the Massachusetts Department of Energy Resources on a proposed approach to addressing GHG emissions. MassDOT will describe and evaluate measures to avoid, minimize or mitigate GHG emissions, including direct emissions from diesel trains and on-road sources, and indirect emissions due to electricity use and other energy related uses. MassDOT also will assess the role of the SSX project relative to advancing the Massachusetts Clean Energy and Climate Plan for 2020, which targets the transportation sector with a 7.6 percent decrease in the 1990 GHG emissions by 2020.

4.8. Air Quality Analysis

MassDOT will perform an air quality analysis. A regional emissions inventory will be prepared for criteria pollutants (volatile organic compounds [VOCs], oxides of nitrogen [NO_x], carbon monoxide [CO], sulfur oxides [SO_x] and particulate matter [PM_{10}/$PM_{2.5}$]). The emissions inventories will include daily and annual emissions from the diesel locomotives and motor vehicles on roadways in the air quality study area for the existing and design year for the No Build and Build alternatives.

A localized microscale assessment will include a CO hotspot or intersection analysis (using the U.S. Environmental Protection Agency's [U.S. EPA's] CAL3QHC model) for South Station and the layover facility sites. The worst-case one-hour CO concentrations and eight-hour concentrations will be estimated.

It is assumed that the South Station project is of "local air quality concern," and a particulate matter (PM) quantitative hotspot analysis is needed. If data are available, MassDOT will conduct a quantitative PM

hotspot analysis following U.S. EPA's December 2010 guidelines. For the quantification, the analysis will focus only on the emissions from the diesel trains and the motor vehicles in the air quality study area. If data are unavailable or if consensus with the Massachusetts Department of Environmental Protection (MassDEP) cannot be reached on the analysis area or the methodology, MassDOT will conduct a qualitative analysis following joint Federal Highway Administration's (FHWA's) and U.S. EPA's previous guidance dated March 2006. Additionally, MassDOT will conduct a screening analysis of NO_2 using dispersion modeling.

4.9. Solid and Hazardous Waste Assessment

MassDOT has initiated a Phase I Environmental Site Assessment (ESA) to identify any recognized environmental conditions associated with the SSX project, including South Station, the existing USPS facility site, and the alternative layover facility sites. The Phase I ESA considers above-ground contamination sources (associated with the buildings, particularly the USPS facility to be demolished) and below-ground contamination sources (associated with on-site soils and subsurface conditions). It includes a review of existing data and an on-site inspection and sampling. If any recognized environmental conditions are identified, recommendations for further evaluations and testing may be warranted as part of a Phase II ESA. Additionally, MassDOT will address the need for state permits related to solid and hazardous waste at the South Station site and/or the alternative layover facility sites.

4.10. Historical and Archaeological Review

MassDOT will consult with the Massachusetts Historical Commission (MHC) and other interested parties, such as the Boston Landmarks Commission, to assess potential impacts to significant historic resources in accordance with Massachusetts General Law (MGL) Chapter 9, Sections 26-27C (950 CMR 71.00) and Section 106 of the National Historic Preservation Act of 1966 (36 CFR Part 800). MassDOT and FRA will consult with MHC to develop Areas of Potential Effect (APEs) for the South Station site and the three alternative layover facility sites, consisting of an APE for historic resources and an APE for archaeological resources. The APE will be based on the area for potential construction-period effects, such as direct physical impacts and indirect impacts including ground-borne vibrations. The APE also will consider potential visual or contextual effects.

MassDOT will conduct a reconnaissance level architectural resources survey of the entire project site and architectural APE. Within the APE, architectural resources that have not been previously evaluated for State and National Register (S/NR) eligibility, but which appear to meet the S/NR criteria of eligibility or are over 50 years of age will be identified. For those resources, Massachusetts Historic Structure Inventory Forms and S/NR eligibility recommendations will be prepared. Determinations of eligibility from the State Historic Preservation Officer (SHPO) will be sought as part of this analysis. The Phase I Archaeological Reconnaissance Survey will include a review of existing conditions and historical data, to provide a formal archaeological sensitivity assessment of the project APE. Data collected will include the locations and State/National Register eligibility status of known archaeological sites within a one mile radius of the project APE on file at the MHC. Based on the Phase I survey, the need for Phase IB (and, if necessary, Phase II) intensive archaeological survey will be determined.

Pending the completion of Phase IB and II identification and evaluation studies, as needed, if it is determined that the SSX project may result in adverse effects to significant historic architectural resources and significant archaeological resources, then a Memorandum of Agreement (MOA) will be prepared outlining measures to eliminate, minimize or mitigate adverse project impacts.

4.11. Environmental Justice Review

The Environmental Justice review of the SSX project will be conducted based on federal and state guidance. MassDOT will identify locations of Environmental Justice populations, and will assess the impacts upon those populations. Potential impacts will be evaluated for the No Build and Build alternatives. The effects of the alternatives on Environmental Justice populations will be evaluated relative to their overall effects, to determine whether the impacts on Environmental Justice populations would be disproportionate and adverse.

5. Project Mitigation Measures

MassDOT will propose mitigation measures to offset potential environmental impacts of the preferred alternative. At this preliminary stage of analysis, MassDOT has identified the following measures to address potential construction and operations impacts. As alternatives are evaluated in the Draft EIR and design is advanced, MassDOT will continue to identify mitigation measures to address impacts.

5.1. Maximize Sustainable Development

The SSX project is consistent with the Commonwealth of Massachusetts' Sustainable Development Principles, as promulgated by the Executive Office of Housing and Economic Development (EOHED), and MassDOT's GreenDOT Implementation Plan with respect to sustainable infrastructure and site design and development, and building design, construction, and operation. The SSX project supports EOHED's Sustainable Development Principles, particularly the following: concentrate development and mix use; provide transportation choice; increase job and business opportunities; and plan regionally. The SSX project also supports MassDOT's GreenDOT Implementation Plan which builds upon the EOHED Sustainable Development Principles, as well as the MassDOT stewardship goal: "*Operate the transportation system in a manner that embraces our stewardship of the Commonwealth's natural, cultural, and historic resources*." In general, the Plan has three primary objectives: reduce greenhouse gas emissions; promote healthy transportation options of walking, bicycling, and public transit; and support smart growth development.

The GreenDOT Implementation Plan sets broad, achievable goals to decrease resource use, minimize ecological impacts, and improve public health related to MassDOT planning, developing, and operating processes. MassDOT will use this Plan as a guide to ensure that these objectives are a constant priority throughout the life of the SSX project. As identified in the ENF, design and construction of the SSX project will advance many of GreenDOT's goals to decrease resource use, minimize ecological impacts, and improve public health outcomes.

The GreenDOT Implementation Plan exemplifies the goals set forth in other sustainable infrastructure guidance, including The Institute for Sustainable Infrastructure's *Envision Sustainable Infrastructure Rating System* and *The Greenroad's Rating System*. These manuals consist of sustainability best practices in infrastructure planning, design, and construction, and allow users to rate projects based on a scorecard system similar to the United States Green Building Council's (USGBC's) Leadership in Energy and Environmental Design (LEED) rating system. There is considerable overlap between the LEED rating system and the sustainable infrastructure rating systems, which allows MassDOT to develop a sustainability approach that will foster consistent sustainable development between transportation infrastructure and future building infrastructure.

The City of Boston Environment Department has issued guidelines for high performance buildings and sustainable development. MassDOT will use these guidelines as a resource for minimizing the environmental impacts of the SSX project.

5.2. Identify Best Management Practices for Stormwater Management

SSX project activities at the South Station site will be located within the 100-foot buffer zone of the coastal bank (Fort Point Channel seawall). MassDOT will address the extent and duration (permanent vs. temporary) of impacts to the buffer zone, including the results of a site survey conducted to determine the extent of the base flood elevation in the vicinity of South Station and potential impacts by the project.

MassDOT will comply with MassDEP's Stormwater Management Regulations. MassDOT will discuss the applicability of the performance standards of the Massachusetts Stormwater Handbook (February 2008), including the standard for redevelopment of previously-developed sites. MassDOT will identify mitigation strategies such as Best Management Practices (BMPs) for short-term construction and long-term project impacts. The analysis will take into consideration the stormwater BMPs designed for each project element. The analysis will evaluate and compare storm-event peak flow rates to existing conditions. The proposed increase in impervious cover will be calculated, and potential pollutant sources will be identified to the extent possible. If impacts to protected wetlands or floodplains resources are anticipated, mitigation strategies such as avoidance, minimization, and potential compensation will be identified, along with potential BMPs.

As indicated in Attachment F, the project will obtain a National Pollutant Discharge Elimination System (NPDES) General Permit for Discharges from Construction Sites. MassDOT will use the City of Boston Department of Environment's Guidelines for Construction as a resource for minimizing environmental impacts of the SSX project.

In addition to identifying project BMPs, MassDOT will consider climate change adaptation strategies and other potential analyses from applicable sources, such as those recommended in The Boston Harbor Association's recent publication, *Preparing for the Rising Tide.* MassDOT will evaluate the potential to incorporate strategies addressing water supply, drainage, and wastewater management in the design and construction of the SSX project. Example strategies include assessing how future flooding potential will affect South Station, especially in view of Federal Emergency Management Agency's (FEMA's) update of the Suffolk County flood insurance study; identifying critical building elevations that indicate levels at which floods could cause damage; and evaluating ways to make South Station more flood-resistant or flood-resilient.

5.3. Incorporate Recycling within Demolition Plans

The SSX project will generate solid waste during demolition of the USPS facility. It is anticipated that the development of the layover facilities also will generate solid waste due to demolition of existing facilities. MassDOT will develop demolition plans for the USPS facility and other facilities as needed. The demolition plans will be incorporated within the project construction management plans. Construction management will be conducted following City of Boston Environment Department guidelines to the extent possible.

The demolition plans will include alternatives for recycling materials. Demolition debris will be segregated and recycled to the extent possible. Asphalt, brick and concrete will be processed and used for

fill. Metal will be separated and recycled for scrap. MassDOT will discuss recycling goals for solid waste generated during the SSX project in the Draft EIR.

5.4. Address Chapter 91 Policies for Water-Dependent and Non-Water-Dependent Uses

A Chapter 91 License will be required for the South Station site for work within filled tidelands. As alternatives are evaluated in the Draft EIR and design is advanced, MassDOT will present relevant acreage of the project site allocated for non-water-dependent use (transportation improvements, joint/private development) and water-dependent use (Harborwalk extension), including the location of uses within buildings on tidelands, facilities dedicated for public use, and building heights. MassDOT's discussion of the SSX project relative to Chapter 91 requirements will include assessment of conservation of capacity for water-dependent use; shoreline utilization requirements, activation of Commonwealth Tidelands for public use; and standards for non-water-dependent infrastructure facilities.

A portion of the South Station site is located within the Fort Point Downtown Waterfront Municipal Harbor Planning Area, for which Phase 1 and Phase 2 Municipal Harbor Plans (MHPs) have been approved (March 8, 2004). The MHPs establish the planning area boundaries and outline planning principles for the Fort Point Downtown Waterfront Municipal Harbor Planning Area. Through a Municipal Harbor Plan amendment, the regulatory standards may be amended, provided the substitute provisions are consistent with the mandate of Chapter 91 to protect and preserve the rights of Commonwealth residents to the tidelands. The substitute provisions also would provide equivalent public benefits to those that would be gained through the standard provisions, known as off-setting provisions. With Build Alternative 3, the SSX project would require an amendment of the Fort Point Downtown Waterfront MHP to provide flexibility from Chapter 91 standards preliminarily related to building height, open space, ground floor uses, and setback from the shoreline.