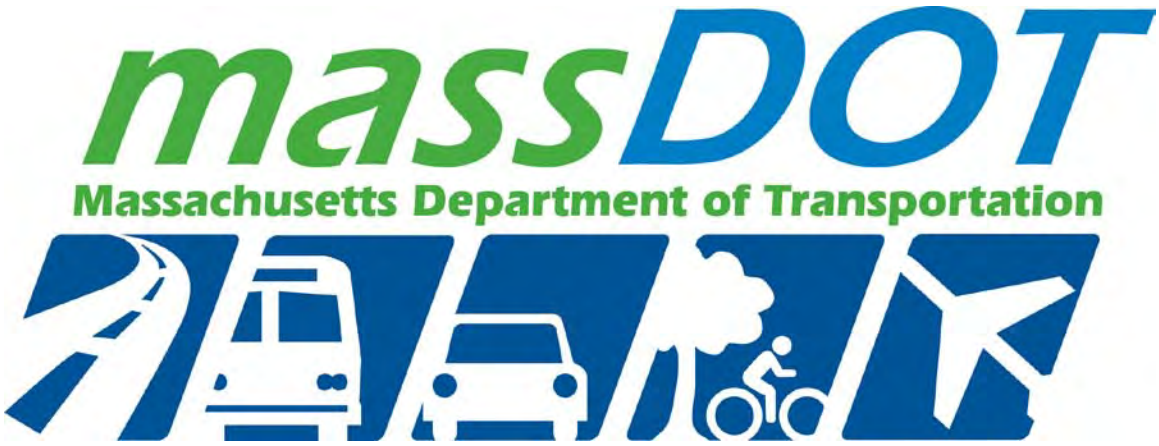

South Station Expansion Project

Scope of Services

March 8, 2012

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BACKGROUND

Boston South Station is the premier passenger rail hub in New England. It serves passengers from the Northeast Corridor (NEC) and beyond, connecting them to local and intercity destinations. It is one of the most significant architectural structures in the City of Boston, and one of its most important transportation assets. South Station offers commuters and travelers not only Amtrak and Massachusetts Bay Transportation Authority (MBTA) Commuter Rail service, but also intercity bus, MBTA rapid transit, and MBTA bus rapid transit services.

At present, South Station operates above its design capacity for efficient train operations and orderly passenger queuing. When it opened to the public in 1899, South Station had 28 tracks; that number is now 13, significantly constraining current and future rail mobility not only within Massachusetts but throughout New England and the NEC. South Station also lacks comfortable, modern facilities for passenger queuing, leaving riders standing in the elements as they wait to board their trains. In addition, South Station lacks sufficient ancillary daytime vehicle storage capacity, constraining operations today and limiting future growth.

Several recent transportation studies and plans[1] have highlighted the existing limitations at South Station and the attendant limitations on the expansion of regional and NEC-wide rail service. In order to realize the cumulative 50% increase in Amtrak high-speed and intercity passenger rail service to Boston called for in the *Northeast Corridor Infrastructure Master Plan* (2010), South Station and its support facilities must be expanded and improved. This project will make possible all of those improvements, to benefit not only Boston and New England but also to improve connectivity to the major destinations of the NEC.

The South Station Expansion project will be managed by the Massachusetts Department of Transportation Office of Transportation Planning (MassDOT Planning), with support from the Massachusetts Bay Transportation Authority (MBTA) and the Massachusetts Port Authority (Massport).

GENERAL OBJECTIVE

The objectives of the South Station Expansion project are multiple, including:

- To perform an Alternatives Analysis to determine how best to expand Boston South Station and create a new vehicle layover facility in order to improve existing rail service

1 Massachusetts Bay Transportation Authority. *New Bedford/Fall River Commuter Rail Extension Supplemental Draft Environmental Impact Report*, July 2000. Vol. IV, pp. 27, F1; Massachusetts Bay Transportation Authority. *Foxborough Commuter Rail Feasibility Study Final Report*, September 2010. pp. 43-46; The NEC Master Plan Working Group. *The Northeast Corridor Infrastructure Master Plan*. May 2010, p. 27.

– local, regional, and intercity – in and out of Boston. The expansion of South Station will include improvements to tracks, platforms, interlockings, passenger facilities, and other attendant infrastructure.

- To plan for the relocation of an existing the U.S. Postal Service General Mail Facility on Dorchester Avenue in Boston in order to create an appropriate adjacent site onto which to expand Boston South Station.

- To plan and design an enhanced passenger environment at South Station through improved streetscape and pedestrian, bicycle, local transit, and vehicular facilities in and around South Station, including the re-opening of Dorchester Avenue for public use.

- To consider opportunities for joint public/private development over an expanded South Station.

Those actions will allow for the realization of the following benefits:

- To improve the performance of existing and future Amtrak service to and from Boston. Today's NEC on-time performance is approximately 85% for Acela Express and 75% for Northeast Regional trains. The 2030 target for on-time performance is 95% for Acela Express and 90% for Northeast Regional. Without expanding South Station and its support facilities, not only will these targets be missed, but on-time performance will deteriorate even further in the future.

- To enable growth in high-speed and other intercity passenger rail service in the northeastern United States, at a time when both the roadway and aviation networks are at or over capacity.

- To support sustainable economic growth and improved quality of life in NEC metropolitan areas, including Boston.

- To support a more attractive and increased MBTA Commuter Rail service, with associated benefits such as increased statewide transportation access, environmental sustainability, and improved personal mobility.

GENERAL DESCRIPTION OF WORK

This project will allow for the completion of all necessary environmental review as well as preliminary engineering (approximately 30% design) required for the successful expansion of Boston South Station and the development of a new layover facility. To effectively expand South Station for present and future passenger rail needs will require not only the physical expansion of the Station and its ancillary infrastructure but also the creation of additional layover capacity, since South Station tracks are currently used for some

equipment layovers. This new facility will allow for rail vehicles – both Amtrak and MBTA – to be stored, effectively expanding the ability of South Station to more efficiently process trains than it does today.

Other work to be done as part of this project[2] includes environmental review and preliminary engineering for the relocation of an existing U.S. Postal Service General Mail Facility currently located adjacent to Boston South Station. Environmental analysis and preliminary engineering tasks necessary for the demolition of the existing U.S. Postal Service General Mail Facility will be included as part of this scope. The successful consultant team for this effort will be required to coordinate with the successful consultant team for the U.S. Postal Service General Mail Facility relocation effort in order to ensure the smooth transfer of data, materials, and ideas.

It is the expectation of MassDOT Planning that the work described in this scope will be done in the context of and with an understanding of the permitted air rights project for the current footprint of South Station (EOEA No. 9131).

The project limits for this project must include:

- All site features within 75 feet around existing South Station and U.S. Postal Service General Mail Facility.
- The length of Dorchester Avenue from Summer Street to Foundry Street, including 50 feet outside the edge of pavement limits.
- Track limits from the South Station terminal building to the west end of the Shawmut Avenue Bridge and the southern end of the West 4th Street Bridge.
- All areas related to track improvements outside the immediate confines of the existing South Station.
- Site features within 75 feet around the site boundaries for each examined layover facility location.
- Track limits extending 250 feet from the site boundaries for each examined layover facility location.
- Any other areas and structures deemed relevant by MassDOT Planning with recommendations from the consultant team.

The work performed in fulfillment of this scope of services should be done in accordance with the sustainability and livability concepts espoused by MassDOT and available at:

http://www.massdot.state.ma.us/main/greendot.aspx.

2 As part of a separate scope and procurement through Massport.

PROJECT ELEMENTS

Major elements of the South Station Expansion project include all necessary environmental review processes (local, state, and federal) and preliminary engineering for the following project components:

- Expansion of Boston South Station
    - Installation of new platforms and new terminal tracks.
    - Re-working of existing interlockings to accommodate new tracks and enable faster, more efficient and reliable train operations.
    - Construction of new passenger facilities, including a potential new headhouse and/or waiting area, to serve the new platforms and tracks and connect them to (1) the existing platforms and tracks and (2) the existing adjacent South Station Bus Terminal.
    - Demolition of the existing U.S. Postal Service General Mail Facility, currently located adjacent to the east side of South Station.

- Development of a rail vehicle layover facility
    - To be located within four track miles of South Station.
    - To provide needed rail vehicle storage for the MBTA Commuter Rail system, so as to make available rail vehicle storage capacity to Amtrak at the existing Southampton Street Yard (Boston).

- Pedestrian, Bicycle, Public Transit, and Vehicular Access Improvements
    - Reconstruction of Dorchester Avenue and an extension of the Boston Harborwalk to create better multi-modal connections along the eastern edge of South Station.
    - The use of architecture and urban design to integrate an expanded South Station into the surrounding urban landscape, emphasizing the importance of harmonizing any new development with the surrounding historic resources.

In addition, this project also includes the following efforts, which are neither environmental review nor preliminary engineering but are intrinsically related to both and to the future expansion of South Station:

- Execution of an operational analysis for rail activities at an expanded South Station and a new vehicle layover facility.
- Execution of travel demand forecasting for all relevant modes and alternatives, to be done in conjunction with the Central Transportation Planning Staff.
- Conceptual design necessary to ensure that the expanded South Station – while first and foremost a transportation facility – is designed and constructed in a manner that maximizes the potential for development of adjacent land and

airspace, with particular emphasis on the importance of siting foundational infrastructure – as has been done in the past at South Station – to support potential future overbuild.

The planning and design work described here is to be done in such a way that no final plan for the expansion of South Station precludes future improvements to the station area, including the potential for underground connections to North Station or other transit facilities within the Boston area.

PROJECT MANAGEMENT

As mentioned above, MassDOT Planning will assume lead Project Management responsibilities for the successful execution of this project. It will work in close consultation with Massport and a technical team retained by Massport, which will manage the project tasks associated with the relocation of the U.S. Postal Service General Mail Facility[3]. The consultant team selected for this work will be subject to all of the standard contracting and management procedures in place at MassDOT and Massport.

MassDOT Planning will work with the selected consultant team to prepare a detailed project work plan itemizing the work tasks necessary for completing the scope of work. The project work plan will include information on the project team organization, team decision-making, roles and responsibilities and interaction with the Federal Railroad Administration (FRA), the lead federal agency for this project. The work plan will also include communication standards, invoicing and progress reporting methods and procedures, and the final scope of work. In addition, the work plan will include the project schedule and a detailed budget. The project work plan will be submitted to the FRA.

3 As part of a separate scope and procurement through Massport.

ASSUMPTIONS

- Third-party financial agreements and administrative costs (i.e. MBTA, MBCR, Amtrak, CSX, CTPS, etc.) for design review and other items will be directly contracted with MassDOT.
- MBTA Railroad Operations Department will be involved in the development of the project.
- The number of civic engagement meetings and other events will not exceed the number identified in Task SSX-3.
- Structural analysis of existing conditions will be based on visual inspections, available reports, etc.
- Investigation of soil properties directly under existing structures (U.S. Postal Service facilities, cold storage facilities, etc.) will be limited to that observed by existing documentation. Additional borings may be required after demolition.
- Data for operations (existing and proposed) will be provided by the operating railroads.
- The project will not be preparing an updated Harbor Master Plan.
- The following permits will not be obtained during as part of the project:

    - Article 80 as relates to any potential future overbuild development at an expanded South Station
    - Public Improvement Commission (PIC)
    - Order of Conditions (wetland permit)
    - Building Permit

TASKS

Task SSX.1 Project Management and Administration

Objectives:

- To monitor, organize, and control assignments, work effort, submission of deliverables, task schedules, and spending for all project tasks, under direction from MassDOT Planning.

- To ensure that all work performed is of a high quality, is delivered on time and on or under budget, and is responsive to the needs and requests of MassDOT Planning.

- To work collaboratively and cooperatively with MassDOT Planning, the MBTA, Massport, the Central Transportation Planning Staff, Amtrak, and any other project stakeholders to successfully complete all aspects of the project.

- To work collaboratively and cooperatively with the consultant team responsible for the other element of the overall South Station Expansion project – the relocation of the US Postal Service General Mail Facility – to help advance the full South Station Expansion initiative. This collaboration may include meetings, multi-team workshops, the sharing of information, and other items as needed.

- To ensure dedication of sufficient staff to all elements of cost monitoring and reporting.

Tasks:

1.1 Project Procedure Manual

- Prepare a project procedures manual that defines project goals, assigns project responsibilities, provides project contacts, details the scope of services, defines the project schedule, and incorporates an overall project work plan (see page 8). The project procedures manual will support the development of a required project work plan, to be submitted to the Federal Railroad Administration.

1.2 Project Management Meetings

- As requested by MassDOT Planning, prepare for and conduct weekly project management meetings with MassDOT, MBTA, and Massport staff (as appropriate); consultants; sub-consultants; and other relevant parties.
- Develop and maintain a dynamic issues/action items log for tracking actions, information transfers, issue resolution, and decisions required for the execution of the project.
    - To include a scope change management procedure to track changes in scope and associated project schedule and budget implications.

1.3 Project Schedule

- Develop and maintain a comprehensive project schedule that identifies realistic projected durations and timeframes for each project milestone and deliverable. The schedule will be a dynamic document and it will be the responsibility of the consultant team to update it frequently.
- Track project progress against the schedule and submit to MassDOT Planning as part of the monthly progress report.

1.4 Cost Monitoring and Reporting

- Track budgets against project progress using assessments of progress based on actual costs, estimates to complete outstanding activities, and schedule progress.
- Identify early any necessary changes in scope or anticipated under-runs or over-runs and identify any potential change requests.
- Present cost monitoring results as part of a monthly progress report.
- Supply sufficient dedicated staff to adequately address cost monitoring and reporting.

1.5 Progress Reports and Invoices

- In keeping with MassDOT invoicing requirements, submit a monthly invoice and progress report to MassDOT Planning. Progress report will include monthly updates on all sub-tasks.
- Provide progress schedule and budget reporting using the earned value method (EVM) to match FRA reporting requirements.

1.6 Quality Assurance/Quality Control

- Develop a project-specific Quality Assurance/Quality Control manual for submission to MassDOT Planning for approval.
- Use the approved manual for all deliverables and materials submitted to MassDOT Planning by the consultant team.

1.7 Success/Risk Management

- Create and maintain a success management program to collaboratively identify programmatic risks, strategies to mitigate those risks, and ways to develop a constituency of support – both internal and external – for the project.
- Conduct quarterly risk assessments and adjust the success plan accordingly.

Deliverables:

- Project procedures manual
- Project work plan – Federal Railroad Administration
- Issues/action items log
- Weekly meeting materials – agendas and minutes
- Project schedule (dynamic)
- Project budget (dynamic)
- Project Invoices and progress reports

- Quality Assurance/Quality Control manual
- Success/risk management plan and updates

Task SSX.2 Document Management

Objectives:

- To monitor, organize, and control all project-related documents.

- To ensure timely delivery or release as requested by MassDOT of all documents and work product related to the project.

Tasks:

2.1 Document Management

- Manage, track, and archive all documents generated as part of the development of the project. Documents to be managed include but will not be limited to project schedules, project budgets, diagrams, drawings, plans, specifications, any written text associated with the project, materials from the civic engagement process, requests for information, change requests, and all written project correspondence.
- At the conclusion of the contract, or at any time as directed by MassDOT, provide to MassDOT or any entity selected by MassDOT any or all documents and work products created under the project contract. As requested, supply MassDOT with electronic copies of all documentation.

Deliverables:

- Document management process
- All final and draft project documents

Task SSX.3 Civic Engagement

Objectives:

- To provide an interactive, collaborative and credible public process that uses creative and innovative techniques to effectively disseminate information to the public in a manner that is clearly understood and ensures high-quality feedback. The civic engagement process will be authentic and progressive. Civic engagement will help to inform final design decisions.

- To work closely with elected officials, the general public, and other major stakeholders to successfully advance the project.

- To continually coordinate with the City of Boston and its appropriate agencies and departments.

- To solicit input from local residents and businesses, government agencies, and interest groups.

- To provide the consultant team with public ideas and recommendations that can inform the successful development of the project.

- To ensure that all aspects of the civic engagement process are compliant with US DOT's Title VI regulations.

- To provide access accommodations and alternative formats for project materials and meetings.

Tasks:

3.1 Project Coordination/Interagency Meetings

- Develop a project civic engagement plan for the project
- Participate in bi-weekly or other project meetings as needed for project understanding and civic engagement outreach
- Schedule stakeholder outreach event(s)
- Participate in weekly meetings
- Support MassDOT Planning in organizing and holding meetings/briefings with interagency and internal project stakeholders.

3.2 Project Website

- Support MassDOT Planning by providing web content for a MassDOT-designed and maintained project website (www.mass.gov/southstationexpansion).
- Monitor the website closely and use it as a tool for managing the public outreach process.
- Ensure that materials prepared for the website are developed in accordance with Section 508 of the Rehabilitation Act, which requires that electronic information be made accessible to people with disabilities.

3.3 Project Mailing List

- Work collaboratively with MassDOT Planning to develop and maintain a project mailing list to be used to distribute all public information about the project.
- Maintain the project database in Access or another format, with a focus on emails
- Utilize the project database to notice events, updates, and meetings
- Under direction from MassDOT Planning, send regular update e-mail messages to the project mailing list.

3.4 Project Branding Materials and Fact Sheets

- With direction from MassDOT Planning, prepare a project logo.
- With direction from MassDOT Planning, prepare project 'branding' materials designed to provide the public with contact and other information about the project.
- Design and produce project Fact Sheets.

3.5 Alternative Languages, Alternative Formats, Interpretation and Access Accommodations

- As directed, prepare project materials in alternative languages and formats.

- As directed, provide material, technology and staff at public meetings for interpretation and other access accommodations.
- Ensure that all aspects of the civic engagement effort are compliant with US DOT's Title VI regulations, and other state and agency recommendations, as directed by MassDOT.

3.6 Public Meetings and Other Events

- Support MassDOT Planning in holding public information meetings during the duration of the project. The consultant team shall consider, at a minimum, the following types and numbers of meetings:

    - Tours (5)
    - Public information meetings (15)
    - Neighborhood meetings (30)
    - Public design workshops (5)
    - Public hearings associated with the environmental review process (4)
    - Miscellaneous meetings with interested parties (20)

Deliverables:

- Project mailing list (database)
- Project website content
- Project branding materials, Fact Sheets and project displays or booths as requested.
- Project materials in alternative languages and formats, as needed
- Comprehensive meeting logistics and support (all groups, meetings, and events), notices, staffing, summaries, and facilitation, as needed
- Stakeholder outreach plan with an outline of events keyed to deliverables
- Stakeholder outreach notices/schedule of events

Task SSX.4 Federal Funding Support

Objectives:

- Assure ongoing compliance and eligibility with terms of the current federal funding for this project.

- Prepare submittals and documentation to assist MassDOT with the management of the High-Speed and Intercity Passenger Rail funding provided by the FRA to support this project.

Tasks:

4.1 Federal Funding Support

- Prepare necessary submittal materials for the FRA High-Speed and Intercity Passenger Rail program.

Deliverables:

- Federal funding submittal materials, including required quarterly reports.

Task SSX.5 Vehicle Layover Needs Assessment and Program

Objectives:

- To gather information on existing conditions and status of MBTA and Amtrak vehicle support facilities in the area of South Station.
- To evaluate the need for expanded layover facilities for Amtrak and the MBTA.
- To gather new information and conduct fresh field surveys as needed to supplement or update existing site information.
- To develop a program for a new vehicle storage facility within four track miles of South Station.

Tasks:

5.1 Catalogue Existing Facilities

- Catalogue and review status and capabilities of existing facilities utilized for vehicle support for Amtrak and the MBTA in the area of South Station.
- Prepare an existing consist movement count for existing layover facilities.

5.2 Needs Assessment

- Prepare an assessment of the need for a new layover facility near South Station.
- Review all plans, proposals, and visioning documents related to the future volume of Amtrak and MBTA trains utilizing South Station, vis-à-vis the need for a new layover facility, with a focus on completed service plans to feed analysis.

5.3 Proposed Program for New Facility

- Develop a proposed program, including all needed infrastructure and operational capabilities, for a new layover facility.

Deliverables:

- Catalogue of existing area vehicle support facilities; include site capabilities, systems and daily movements.
- Needs assessment for a new layover facility.
- Proposed program for new layover facility.

Task SSX.6 Layover Facility Alternatives Analysis

Objectives:

- To evaluate multiple sites for potential use as a new layover facility.
- Through civic engagement and a rigorous alternatives analysis process, determine the preferred location for a new layover facility.

Tasks:

6.1 Catalogue potential alternative sites

- Survey sites within four track miles of South Station that conform to the developed program
- Identify more than two potential locations
- Record site characteristics of each potential location, including:
    - Distance from South Station and availability of needed right-of-way
    - Land area
    - Zoning
    - Environmental conditions
    - Historical resources
    - Proximity to residential neighborhoods
    - Current ownership and usage; including preliminary title review
    - Potential challenges
    - Estimated land assessed values
    - Proposed acquisition process if required
    - Opportunities for operational efficiencies and improvements to the overall network of MBTA and Amtrak vehicle storage

6.2 Layover Site Access

- Develop conceptual roadway and intersection layouts for each alternative that is considered as follows:
    - Conceptual roadway and intersection layout
    - Identification of existing infrastructure constraints
    - Identification of right of way / property access issues
    - Assist with order of magnitude construction cost estimate for roadway elements
    - General coordination with project team
- Develop up to two roadway layout concepts per layover facility alternative.

6.3 Evaluation Criteria

- Develop a set of evaluation criteria for each potential alternative

6.4 Alternatives Analysis Report

- Develop an alternative analysis report
- Make recommendation for preferred alternative
    - Include all considered alternatives and site program

Deliverables:

- Alternatives analysis technical report (including identification of a preferred alternative)

Task SSX.7 South Station Existing Conditions Analysis

Objectives:

- To gather information on existing conditions and site status of the entirety of the current South Station facility as well as the current USPS General Mail Facility.

- To conduct field surveys (including borings, as needed) to gather information not already compiled or no longer current.

  The project area must include:
  - Site features within 75 feet around existing South Station and U.S. Postal Service General Mail Facility.
  - Dorchester Avenue, including 50 feet outside the edge of pavement limits, from Summer Street to Foundry Street.
  - Track limits from South Station terminal building to the west end of Shawmut Avenue Bridge and southern end of the West 4th Street Bridge.
  - All areas related to track improvements outside the immediate confines of existing South Station.
  - A study area that captures all potential vehicular, bicycle and pedestrian traffic impacts associated with the re-opening of Dorchester Avenue as well as the relocation of the USPS General Mail Facility itself.
  - Any other areas and structures deemed relevant by MassDOT Planning with recommendations from the consultant team.

Tasks:

7.1 Control Survey

- Prepare and include base control surveys by using the following:
  - Most recent existing survey compilation from proposed South Station overbuild project.
  - New/compiled survey of property lines and ownership.
  - New survey within the limits of the project as necessary.

7.2 Major Utility Survey

- Prepare base utility surveys for the entire existing project area.

7.3 Subsurface Geologic/Seismic Exploration

- Prepare geologic/seismic exploration surveys for the entire existing project locus.

7.4 Soils

- Prepare soil surveys and borings for entire existing project area.
- Review and document the status of frozen soils existing within the project area (under the existing tracks and possibly in other areas).

7.5 Site/Field Reviews

- Prepare a site/field review of the existing location inventory, including but not limited to: systems, mechanical, electrical, plumbing, safety and security within South Station and the U.S. Postal Service General Mail Facility.
- Ensure coordination with MassDOT Highway Division regarding any issues related to underground structures in the area.

7.6 Existing Vehicular Traffic

- In conjunction with the work to be done to relocate the U.S. Postal Service General Mail Facility, develop an intersection-based vehicular, bicycle and pedestrian traffic model of existing conditions using Synchro SimTraffic software. In light of the potential scale of new retail land use on the development overbuild site, it may be necessary to include Saturday peak as well as weekday AM and PM peak analysis scenarios. Ensure that bounds are well coordinated with the existing conditions examination of the future USPS General Mail Facility site. At a minimum, this model should include intersections in the following areas around South Station:

    - Summer Street from Hawley Street to D Street
    - Atlantic Avenue from Kneeland Street to Old Northern Avenue
    - Kneeland Street from Atlantic Avenue to Harrison Street
    - Essex Street from Atlantic Avenue to Tremont Street
    - Dorchester Avenue from Congress Street to West 4th Street
    - Congress Street from Purchase Street to D Street
    - Access ramps to the South Station bus terminal and parking garage
    - On- and off-ramps from I-90/I-93 Interchange to Kneeland and Lincoln Streets, to be coordinated – as appropriate – with planning work underway for MassDOT development parcels 26a, 26b, and 27 in the vicinity of South Station.

- Recent traffic counts and model networks are available for much of this area already, and can be used for this effort. As needed, existing information may require updating, and some additional information may need to be collected. Traffic counts should include bicycle and pedestrian turning movements Prepare an existing conditions report using standard model outputs, including Level of Service and assessment of bicycle facilities and the pedestrian environment.

7.7 Existing Public Transit

- Prepare an overview of all public transit services that currently operate in and around the South Station area, including service levels, ridership, and remaining peak period capacities. As much as possible, make use of existing data for this effort.

7.8 Existing Structural Analysis/Inspection

- Conduct a structural analysis and visual inspection of existing features within the study area, including:
    - The sea wall along Dorchester Avenue
    - South Station headhouse structure
    - Track infrastructure, including turnouts and switches
    - Existing platforms
    - South Station bus terminal

- Any other relevant infrastructure, including infrastructure associated with the U.S. Postal Service General Mail Facility

Deliverables:

- Comprehensive survey plans and reports, as applicable, for the entirety of the site, including surveys of soils, geological/seismic, major utilities, base, limit of work, and property lines and ownership.
- Memorandum detailing the structural integrity of identified structures.
- Vehicular, bicycle and pedestrian traffic counts for the area roadways adjacent to project area.
- Existing conditions vehicular traffic model networks.
- Existing conditions vehicular, bicycle and pedestrian traffic report.
- Existing conditions public transit report.
- Other relevant materials.

Task SSX.8 Layover Facility Existing Conditions Analysis

Objectives:

- To gather information on the existing conditions at the preferred location for the new layover facility selected as part of Task SSX.6.

- To conduct field surveys, including borings, to gather information not already compiled or no longer up-to-date, including vehicular, bicycle and pedestrian traffic counts.

  Project locus must include:
  - Site features within 75 feet around site boundaries
  - Track limits extending 250 feet from site boundaries

Tasks:

8.1 Control Survey

- Prepare base control surveys by using the following:
  - New survey within the limits of the project.
  - New/compiled survey of property lines and ownership.

8.2 Major Utility Survey

- Prepare base utility surveys for the entire existing project area.

8.3 Subsurface Geologic/Seismic Exploration

- Prepare geologic/seismic exploration surveys for the entire existing project area.

8.4 Soils

- Prepare soil surveys and borings for entire existing project area.

8.5 Site/Field Reviews

- Prepare a site/field review of the existing location inventory, including but not limited to, systems, mechanical, electrical, plumbing, safety and security within project area (if available and necessary).

8.6 Existing Traffic

- Prepare an existing vehicular, bicycle and pedestrian traffic count for adjacent existing roadways.
- Build an intersection-based traffic model for existing conditions.
- Following the collection of existing data, and in conjunction with MassDOT, additional 12-hour intersection counts may be deemed necessary, as well as the updating of existing data.
- Prepare an existing conditions report using standard model outputs, including Level of Service.

8.7 Existing Structural Analysis/Inspection

- Conduct a structural analysis and visual inspection of existing features, including:
    - Existing track infrastructure, including turnouts and switches
    - Existing buildings (if applicable)
    - Any other relevant infrastructure

Deliverables:

- Comprehensive survey plans and reports, as applicable, for the entirety of the site, including surveys of soils, geological/seismic, major utilities, base, limit of work, and property lines and ownership.
- Memorandum detailing the structural integrity of identified structures.
- Vehicular, bicycle and pedestrian traffic counts for the area roadways adjacent to project area.
- Existing conditions vehicular traffic model networks.
- Existing conditions vehicular, bicycle and pedestrian traffic report.
- Existing conditions public transit report.
- Other relevant materials.

Task SSX.9 Railroad Service Planning and Operational Analysis

Objectives:

- To determine the service plans for use in the South Station Expansion project.
- To perform an operational analysis of the proposed expansion of South Station.
- To conduct an operational analysis on proposed layover facility alternatives.
- To perform a simulation of the proposed expansion of South Station.
- To perform a simulation of proposed layover facility alternatives.

Tasks:

9.1 Determine Service Plans for Analysis

- Using plans previously developed by the MBTA and Amtrak, determine the potential future operational conditions of South Station, as directed by MassDOT.
- Develop current South Station service plans – to use as a base case that all subsequent phasing plans will be based off of at MassDOT, MBTA and Amtrak direction – which incorporate work completed in previous corridor analyses.
- Develop final South Station service plans that demonstrate the proposed rail infrastructure will support long range users of South Station service plans for Amtrak, the FRA and the MBTA.
- Using base case operational plan of South Station, determine that each proposed infrastructure phase can support current levels of service.

9.2 Station Operations

- Conduct an operational analysis and simulation of South Station's operations. This will encompass an area from Readville on both the Dorchester and North East Corridor (NEC) to and including, Beacon Park Yard on the Framingham Branch and the Old Colony branches as far as the South Hampton yard area. This area will be required to properly determine future layover facility requirements and operations.
- Using this base case operations analysis and work provided under the South Station service plan Task determine how best to support operations through the various stages of South Station expansion (during and post-construction). For each phase considered for the expansion of South Station (see Section SSX.11), develop and analyze operational changes that maybe needed for each phase. This could include new temporary schedules and a final schedule based upon each plan phase of the work for both the MBTA and Amtrak operations. Develop and refine operational concept for each phase of deployment and identify final operating plan.
- The final operational plan will identify the following attributes:
    - Vehicle run times
    - Service frequencies
    - Daily and annual vehicle hours of service
    - Operational capacity requirements (including costs)
    - Infrastructure needs to support the operating plans (including costs)
    - Potential vehicle conflict points
    - Operational feasibility
    - New schedules for each MBTA service on the south side
    - Suggested changes where applicable to future Amtrak high-speed schedules
    - Daily and annual vehicle hours of service
    - Equipment utilization plan to assure compliance with Federal maintenance requirements
    - Operational impacts on future transportation system and potential future capital projects

- Using South Station service plans and operational Analyses performed for South Station and its main line approaches coordinate non-revenue movements into the proposed layover facilities into the complete functional operations and service plan.

9.3 Layover Facility Operations

- Conduct an operational analysis of non-revenue movements intertwined with revenue movements to determine that the proposed rail infrastructure will support the proposed future operations of the terminal, layover facilities and approaching main line operations and simulation. Using direction and guidance from MassDOT, MBTA and Amtrak identify the locations and the possible number of tracks and configurations within the proposed layover facilities.
- For each phase of the expansion project develop and analyze non-revenue movements operational concepts. Reassess the operational concepts in concert with ridership projections to optimize service reliability and ridership potential. Develop a refined operational concept for each alternative.
- Identify the following attributes:
    - Operational capacity requirements at each of the proposed sites.
    - Identify rail and systems infrastructure needs to support future and phased operating plans.
    - Identify potential vehicle conflict points and assist in determining the proposed remedies.
    - With all operating plans determined use randomized operating failures to determine how robust the operating plans are and if additional facilities are required make recommendations as to probably future rail and system improvements needed long range.
- Coordinate assumptions for operational analysis with those being used to analyze potential alternatives for the expansion of South Station.

Deliverables:

- South Station service plans existing and final future
- Operations Analysis Report of South Station and all main line operations approaching South Station from Readville into the terminal area
- Provide operational report on proposed layover facilities
- Provide future and phased train schedules for all south side operations
- Future long range operational needs to support robust plan
- Vehicle usage and maintenance schedule

Task SSX.10 Preparation and Analysis of Ridership Forecasts

Objectives:

- To comprehensively support the Central Transportation Planning Staff (CTPS) and Amtrak in their preparation of ridership forecasts and accompanying materials.

- To analyze the ridership forecasts received from CTPS and Amtrak in order to determine the appropriate design of passenger elements and connected facilities.

Tasks:

10.1 Support Ridership Forecasts

- Develop and deliver necessary material to CTPS and Amtrak for use in developing ridership forecasts for MBTA and Amtrak services to and from South Station. Material will include detail on service plans determined in SSX.9.
- Evaluate results of ridership forecasts, including analysis of connecting services, including commuter rail, inter-city rail, bus, rapid transit, automobile, bicycle and walk trips.
- Work continuously with CTPS and Amtrak to update forecasts, as necessary.

Deliverables:

- Support materials for CTPS and Amtrak ridership forecasts

Task SSX.11 South Station Preliminary Engineering

➢ **Track Section**

Objectives:

- To prepare design of up to four conceptual design alternatives in order to expand South Station to include additional platforms, tracks, passenger amenities, and necessary rail infrastructure.

- To prepare preliminary engineering level (30%) design plans to expand South Station based on the selected conceptual design alternative.

- To include passenger circulation areas and connections to all existing South Station facilities in designs.

Tasks:

11.1 Track Layout/Engineering

- Prepare a reasonable range of alternative layouts.
- Create track stick diagrams and preliminary engineering designs, plans and specifications.
- Investigate improvements to Tower I, Cove, and Broadway Interlockings, as applicable.
- Rework existing crossovers and universals from the West 4th Street and Shawmut Avenue Bridges to South Station.
- Consider the potential for future overbuild development and the need for appropriate foundational infrastructure.

11.2 Architectural

- Prepare preliminary architectural plans for the South Station catenary and signage.

11.3 Track and Station Structures

- Prepare preliminary plans for South Station platforms, catenary structures over tracks and other structures over or around the proposed tracks.

  High Level Platform Design

  (It is assumed that there are a total of five new platforms and each platform is approximately 900 feet in length.)

  1. Prepare and confirm design criteria to be utilized.
  2. Coordinate and review geotechnical studies and foundation recommendations.
  3. Evaluate the construction type of the existing platform for adequacy of using it for the new platforms and compare cost and constructability of precast concrete versus cast in place concrete types for the high-level platform and recommend preferred structure type.
  4. Develop 30% design for high-level platform layout and section in conjunction with foundation types recommended by the Geotechnical Engineer.
  5. Prepare 30% plans, quantity and cost estimates.

  Catenary Support Foundations

  1. Coordinate with Station Architect and Track Engineer for the layout of the catenary supports.
  2. Coordinate with Geotechnical Engineer in determining the soil-structure interaction design parameters for the foundations.
  3. Develop 30% design considering staged construction and final track layout.
  4. Prepare 30% plans, quantity and cost estimates.

11.4 Track Systems

- Prepare designs for train control/signaling systems, including but not limited to:
  - Wayside signal
  - Cab signaling systems
  - Dispatching controls for Amtrak
  - MBTA Operations Control Center connections
  - Positive Train Control

- Prepare designs for communication systems, including but not limited to:
  - Fiber optics
  - Telephone service
  - Supervisory control and data acquisition (SCADA) components
  - Passenger information systems and public address systems
  - Security cameras

- Fire detection alarms
- Cable systems
- Security and intrusion detection alarms

- Prepare designs for traction power and distribution systems, including but not limited to:

  - Existing power study
  - Proposed design for new substations
  - Tie breaker equipment
  - Power distribution

- Prepare designs for electrical systems, including but not limited to:

  - Existing electrical study and proposed design for lighting
  - Alternative emergency power supply requirements
  - Existing emergency generators in South Station
  - Switch heaters
  - Head-end power

11.5 Safety and Security

- Propose a safety and security program for construction and site operation.
- Prepare a preliminary hazard analysis.
- Prepare a threat and vulnerability analysis.
- Prepare a preliminary safety and security design criteria manual.
- Create a list of preliminary safety and security performance requirements.
- Coordinate as necessary with appropriate authorities, including MBTA, Amtrak, and City of Boston Police.

11.6 Mechanical and Electrical Plans

- Prepare preliminary plans for station ventilation (including venting from locomotives, as needed), communication signage, and elevators/escalators.

11.7 Site/Civil Plans

- Preliminary design plans will be developed for the areas around the perimeter of South Station for improvements to pedestrian, bicycle, public transit, and vehicular access improvements along Atlantic Avenue, Summer Street and Dorchester Avenue. Reconstruction and reopening of Dorchester Avenue between Foundry Street and Summer Street and the extension of the Harbor Walk will be evaluated and designed for improved multi-modal connections along the eastern edge of South Station.

- Site/Civil plans will be developed for the following key intersections:

  - Kneeland Street/Atlantic Avenue

- Beach Street /Atlantic Avenue
- Essex Street/Atlantic Avenue
- Atlantic Avenue/Summer Street
- Summer Street/Dorchester Avenue

- Development of preliminary (30%) design plans for Dorchester Avenue between Foundry Street and Summer Street and for the demolition and proposed joint development area. Specific subtasks include:
  - Develop horizontal and vertical (plan and profile) roadway geometry.
  - Identify project limits of work, proposed construction materials and conceptual details.
  - Develop typical roadway sections.
  - Evaluate existing drainage, evaluate proposed stormwater management options and prepare a preliminary mitigation design as part of the drainage design plans.
  - Develop roadway drainage system layout or identify reuse of existing drainage system in close coordination with sustainable design practice and storm water management objectives.
  - Identify impacts to existing right of way.
  - Coordinate with project team on vehicle drop-off and pick-up areas, taxi stands, bus stop locations, bicycle access and other access improvements for South Station.
  - Prepare demolition plan for the Post Office Building.
  - Coordinate with utility, landscape, streetscape and urban design elements.
  - Develop pedestrian improvements and extension of Harbor Walk.
  - Develop pavement design for Dorchester Avenue.
  - Coordinate and provide engineering support and advice for proposed head-house locations, walkways, concourses, landscape, streetscape, access, drainage and curbside amenities and how they impact phasing/staging.
  - Develop preliminary (30%) design phasing/staging plans for Dorchester Avenue between Foundry Street and Summer Street to facilitate construction of proposed roadway, sidewalk and landscape improvements while maintaining pedestrian, bicycle and vehicular access.
  - Prepare preliminary (30%) design plans for rehabilitation of the Dorchester Avenue Seawall as determined through visual inspections and review of available inspection and rating reports.

- Included with the preliminary engineering design plans will be proposed improvements to roadways and intersection around the perimeter of South Station, as appropriate. Evaluate and identify potential pedestrian and bicycle access improvements, in close

coordination with the City of Boston, for Atlantic Avenue and Summer Street. Traffic signals along these perimeter roadways will also be evaluated.

11.8 Emergency Egress Evaluation

- Prepare a pedestrian egress evaluation for the period during construction and post-construction.

11.9 Passenger Circulation

- Ensure that track and platform designs are sized appropriately to handle the passenger loads and circulation needs within South Station.
- Complete an analysis based on FTA Guidelines for facility capacity and TCRP 100.

11.10 Vehicular Access

- Prepare a vehicular access plan for service and emergency access within an expanded South Station.

Deliverables –Track Section:

- South Station track diagrams
- South Station track structure plans
- South Station track system plans
- South Station safety and security plans
- South Station mechanical plans
- South Station site/civil plans
- South Station egress evaluation report
- South Station passenger circulation capacity report
- South Station vehicular access plan
- South Station alternative track layouts

➢ **Passenger Amenity Section**

Objectives:

- To create and prepare preliminary engineering plans and reports necessary for the proposed headhouse, platforms, walkways, concourses, and other passenger areas and amenities.
- To analyze the potential for revenue generating uses in the proposed headhouse and how best to site and design those, taking into consideration existing contractual arrangements for passenger amenities in the South Station head house and bus station.

Tasks:

11.11 Program for passenger amenities

- Review existing amenities in bus station and headhouse, including retail concepts, revenues, revenues to the Commonwealth, property conditions, and existing agreements.
- Review agreements, such as for air rights development, which may impact the current passenger amenities.

- Develop options that address amenities in the 1.) new headhouse/concourse only, 2.) new headhouse/concourse and existing headhouse, 3.) new headhouse/concourse, existing headhouse and bus station.
- Analyze the options from the perspectives of design, economic viability, and potential revenue generation for MassDOT.

11.12 Architectural Plans - Headhouse, Platforms, Walkways, and Concourses

- Prepare preliminary architectural plans relative to the proposed new headhouse area and concourses that include:

    - Program development
    - Elevations
    - Floor plans
    - Roof plans
    - Vertical access plans
    - Building sections
    - Typical wall sections
    - Details
    - Renderings

- Prepare multiple alternatives for extending the existing South Station pedestrian concourse to the expanded South Station and the reopened Dorchester Avenue.
- Prepare multiple alternatives for connecting the existing MBTA bus facility to the expanded South Station and reopened Dorchester Avenue.
- Ensure that design alternatives are sensitive to and compatible with the historic South Station headhouse and other surrounding historic resources. Coordinate with the Boston Landmarks Commission (BLC) and the Massachusetts Historical Commission (MHC).

11.13 Site/Civil Plans - Headhouse, Platforms, Walkways, and Concourses

- Provide civil/roadway engineering and engineering support services for the Passenger Amenity Section of the scope of work.
- Coordinate with project team to provide general engineering support and advice for proposed head-house locations, walkways, concourses, landscape, streetscape, access, drainage and curbside amenities.
- Provide engineering support for identification of environmental impacts.
- Evaluate existing drainage, evaluate proposed stormwater management options and prepare a preliminary mitigation design as part of the drainage design plans.
- Develop preliminary engineering plans for the following:
    - Demolition plan (if necessary)
    - Site layout and grading plans
    - Drainage design and stormwater mitigation design
    - Construction details
    - Landscape and streetscaping plans

- Erosion and sedimentation control

- Coordinate and provide engineering support and advice for proposed head-house locations, walkways, concourses, landscape, streetscape, access, drainage and curbside amenities and how they impact phasing/staging.

11.14 Mechanical/Electrical/Plumbing (M/E/P)

- Prepare a set of preliminary mechanical, electrical, and plumbing plans for the new headhouse facilities that include:

  - Elevator/stair/escalator sizing
  - M/E/P equipment
  - Layout
  - Details

11.15 Building Structural

- Prepare preliminary structural plans with:

  - Foundations
  - Pedestrian concourse
  - Changes to service access road
  - Braced frame elevations
  - Wall sections
  - Elevator/escalator/stair/ramp systems
  - Details

11.16 Leadership in Energy & Environmental Design (LEED)

- Prepare a report on the LEED certifications and criteria to be met by the construction.
- Prepare planning and engineering documents in a fashion that will allow for the designs to meet LEED Plus criteria, as determined by MassDOT.
- As possible, include GreenDOT goals in the execution of this work.

11.17 Passenger Circulation

- Ensure that track and platform designs are sized appropriately to handle the passenger loads and circulation needs within South Station.
- Complete an analysis based on FTA Guidelines for facility capacity and TCRP 100.

11.18 Adjacent Transit Facility Operations and Capacity

- Conduct an operational analysis of the MBTA bus lines adjacent to South Station, based on existing operational and ridership data available from various sources, considering the future impact of an expansion of South Station.
- Conduct an operational analysis of the MBTA Red and Silver Lines, based on existing operational and ridership data available from various sources, considering the future impact of an expansion of South Station.

- Conduct an operational analysis of intercity bus connections, based on existing operational and ridership data available from various sources, considering the future impact of an expansion of South Station.
- Integrate information related to the potential overbuild concepts to simulate future conditions on affected transit facilities.

11.19 Logan International Airport Passenger Information

- Conduct an analysis to determine what type of Logan Airport passenger information could be integrated into South Station Expansion designs.
- Consider expanded connections between South Station and Logan Airport through technology.
- Coordinate with Massport to include Logan Airport passenger information into designs of an expanded South Station, as directed.

11.20 Vehicular/Pedestrian/Bicycle Access Plans

- Prepare preliminary engineering plans for the following:
    - A reopened Dorchester Avenue.
    - An extension of the Boston Harbor Walk along reopened Dorchester Avenue.
    - Vehicle drop-off/pick-up area(s) for expanded South Station (taxi, private automobile, limousine, etc).
    - Potential changes to MBTA bus stops adjacent to South Station
    - Evaluation of bus rerouting and stops in order to serve reopened Dorchester Avenue.
    - Traffic signals in the area of expanded South Station
    - Improved pedestrian and cycling connections and facilities (including adjacent sidewalks, crosswalks and bike lanes) throughout roadways adjacent to the project site.
    - Consider the potential for a 'bicycle sharing' facility at an expanded South Station.

Deliverables – Passenger Amenity Section:

- Preliminary site/civil plans for the headhouse, platforms, walkways, concourses, Dorchester Avenue, pedestrian and bicycle improvements and service road changes
- Preliminary Architectural plans for headhouse and appurtenances
- Preliminary M/E/P plans for headhouse and appurtenances
- Preliminary Structural plans for headhouse, platforms, walkways, concourses, Dorchester Avenue, pedestrian improvements and service road changes
- Preliminary report outlining steps taken to obtain LEED certification
- South Station passenger circulation capacity report
- Adjacent transit facility capacity report
- Vehicular, bicycle and pedestrian access plan(s)

- **Joint Development Section**

Objectives:

- To create and prepare preliminary planning and analytical reports necessary to ensure that the expanded South Station is designed and constructed in a manner that maximizes the potential for development of adjacent land and airspace over the station.

- To conceive the future of an expanded South Station that includes not only new tracks and necessary rail infrastructure but also a new overbuild development.

- To coordinate with the existing permitted air rights projects for the South Station site.

Tasks:

11.21 Develop the Joint Development Program

- Establish MassDOT's objectives regarding real estate/joint development.
- Explore up to 6 precedents for innovative approaches and lessons learned.
- Perform due diligence/ research current real estate within the study area [See Task 7]
    - Ownership / preliminary title review
    - Land & structures
    - Current capital obligations
    - Leases & other encumbrances
    - Management, maintenance & operating agreements
    - Order/oversee appraisals (additional service)
    - Brokerage agreements (USPS property)
    - Environmental issues
    - Planning and zoning (including Ch. 91)
    - Stakeholders
- Base the joint development program and concepts on an expansive definition of joint development to include all air rights and study area parcels. Explore opportunities to leverage private sector participation in the development of the overall South Station complex. Address the principles of livable and sustainable communities and the objective to provide for greater choices for transportation users through the integration of transportation, housing and commercial development decisions.
- Coordinate with City of Boston planning initiatives and existing, permitted air rights development projects and identify areas for joint development and redevelopment including air rights and adjacent land.
- Identify areas within the new or expanded headhouse/concourse and areas currently leased to others (such as the retail and commercial space in the existing headhouse) for potential joint development. Evaluate the status of current leases and contracts to not diminish the value of existing contracts.
- Review market conditions and address market realities (capital and real estate markets)
- Define initial program and options
    - Identify a program of passenger amenities and identify which of them could be created and managed via joint development
    - Identify options for a joint development program of new construction

  - Identify options for integrating existing joint development (head house retail and office space and bus station retail) into the overall joint development program
  - Define envelope for transportation facilities and operations and for real estate development
  - Coordinate with Boston's planning initiatives and consider relationship to public spaces, public programs such as waterfront plans
- Organize a developers' roundtable to elicit input on the options from the real estate industry (assume 2 meetings).

11.22 Architectural Plans

- Prepare three preliminary concept plans that include:

  - Program development
  - Conceptual elevations
  - Conceptual renderings pertinent to any future overbuild of the expanded South Station site.

- Ensure that engineering plans for an expanded South Station include careful analysis of the foundational needs and structures for any future overbuild opportunities.
- Include coordination with any pertinent height restrictions related to the Federal Aviation Administration.
- Ensure design and engineering plans account for existing permitted air rights for South Station. Aid in MassDOT's coordination with current real estate development teams.
- Ensure that design alternatives are sensitive to and compatible with the historic South Station headhouse and other surrounding historic resources. Coordinate with the BLC and the MHC.

11.23 Site/Civil Plans

- Prepare preliminary plans for:
  - Overbuild foundations
  - Conceptual column schedules for the overbuild location and preliminary column schedules for the headhouse.
  - Ventilation of emissions from idling locomotives, if necessary.

11.24 Economic Feasibility Plans

- Provide strategic guidance to MassDOT on the potential for future overbuild opportunities.
- Develop an economic feasibility study of potential future overbuild.
- Evaluate a range of potential development approaches, including the granting of developing rights and various ownership structures (i.e. leasing of air rights, sale in fee of any excess land, etc.).
- Identify roles and responsibilities for the development process at the federal, state, municipal, and neighborhood levels.

11.25 Transportation Impacts

- Develop a conceptual multimodal access plan for future overbuild development integrated with an expanded South Station and a reopened Dorchester Avenue.
    - Identify access locations to the future overbuild, including customer access via auto, transit, walk and bike modes, as well as service functions access.
    - Propose new connections with the existing transportation network (i.e. extend existing South Station vehicular ramp).
    - Define likely parking supply/ratios for future development. Maximize shared parking opportunities.
    - Coordinate transportation needs and impacts of future South Station overbuild with other surrounding planned projects.
    - Conduct a vehicular traffic analysis of the cumulative impacts of an expanded South Station, a potential future South Station overbuild, and other surrounding planned projects. Propose reasonable improvements to the vehicular transportation network as appropriate.
    - Evaluate potential impacts to, and improvements for, pedestrians and bicycles.
    - Identify potential Travel Demand Management (TDM) strategies.
    - Conduct a public transit capacity analysis to ensure that the demand from any potential South Station overbuild, combined with other surrounding planned projects, can be accommodated by the existing public transit network. Propose reasonable improvements to the public transit network as appropriate.

11.26 Joint Development Strategies

- Provide strategic guidance to MassDOT on the potential for future joint development opportunities. The strategic guidance will address the following:
    - Air rights opportunities as described above.
    - Recommendations for addressing existing leases to ensure better integration with the overall South Station program.
    - Branding recommendations on how to best design/market the space for passenger amenities and highest revenue, as well as overall branding for real estate at South Station.
- Evaluate a range of potential development approaches, including the granting of developing rights and various ownership structures (i.e. leasing of air rights, sale in fee of any excess land, etc.). The evaluation will address:
    - Projected financial returns and their timing for each option. Some development approaches may impact the availability of grants and other financing sources.
    - Institutional appetite for various approaches based on past joint development experiences in the Commonwealth.

- Identify roles and responsibilities for the development and management process at the federal, state, municipal, and neighborhood levels. Options for management of development process and ongoing management of real estate and transportation will address:
    - Allocation of risk and associated investments and returns
    - Valuation
    - Capital and operating expenses
    - Security
    - Coordination amongst parties
    - Public space and public programming

Deliverables – Overbuild Section

- Draft and Final Memoranda of Objectives and Innovative Precedents/"Lessons Learned"
- Draft and Final Reports on Existing Facilities addressing current context and outstanding issues to be resolved to clear the path for development and operation of new facilities, and defining opportunities and constraints re existing infrastructure, property rights, stakeholders, etc. This should include consideration of Parcels 26a, 26b, and 27.
- Draft Report on Joint Development Options
    - Market conditions report as influences the development program
    - Architectural options with renderings and elevations
    - Engineering analysis
    - Cost estimates
    - Review of the economic analyses for each option
    - Report on input from Developer/Investor Roundtable and other stakeholder meetings
    - Recommendation of a preferred option for additional planning and inclusion in the EA/EIR
- Conceptual architectural plans for future overbuild
- Preliminary site/civil plans for future overbuild
- Economic feasibility study for future overbuild
- Transportation impacts of future overbuild
- Draft and Final Joint Development Strategy Report

Task SSX.12 Layover Facility Preliminary Engineering

Objectives:

- To prepare preliminary engineering plans detailing proposed improvements for the selected alternative

Tasks:

12.1 Track Layout/Engineering

- Prepare track stick diagrams and preliminary engineering drawings for two proposed layover track layouts.
- Investigate improvements to adjacent interlockings as applicable.
- Rework existing crossovers and universals to enable access into the layover facility.

12.2 Architectural

- Prepare preliminary architectural plans for on-site support structures, catenary, and signage, as applicable.
- Prepare preliminary architectural plans for any on-site support buildings and their surrounding site components, including access and landscaping/buffering needs.

12.3 Structures

- Prepare preliminary plans for catenary structures over tracks and other structures over or around the proposed tracks.
- Prepare preliminary plans for support buildings, including M/E/P as applicable.

12.4 Track Systems

- Prepare train control/signaling systems including but not limited to:
    - Wayside signals
    - Cab signaling systems
    - Operations Control Center central control monitors for MBTA and train supervision controls.
    - Positive Train Control
    - Others, as needed

- Prepare communication systems including but not limited to:
    - Fiber optics
    - Telephone service
    - Supervisory control and data acquisition (SCADA) components
    - Security cameras
    - Fire detection alarms
    - Cable systems
    - Security/intrusion detection alarms.

- Prepare traction power and distribution systems including but not limited to:
    - Existing power study (in conjunction with South Station study)
    - Proposed design for substations
    - Tie breaker equipment
    - Power distribution

- Prepare electrical systems including but not limited to:

- Existing electrical study and proposed design for lighting
- Alternative emergency power supply requirements
- Head-end power
- Switch heaters

12.5 Mechanical and Electrical Plans

- Prepare preliminary plans for on-site support structure ventilation, communication signage, and elevators/escalators.

12.6 Site/Civil Plans

- Prepare site/civil plans for the following aspects:

    - Demolition plans of existing structures, if necessary
    - Track demolition
    - Drainage/utility
    - Grading
    - Details
    - Landscape
    - Erosion and sedimentation control

- Development of horizontal and vertical (plan and profile) roadway geometry for roadways into and within the layover facility location.
- Identify project limits of work, proposed construction materials and conceptual details.
- Develop typical roadway sections.
- Develop roadway drainage system layout or identify reuse of existing drainage system in close coordination with sustainable design practice and storm water management objectives.
- Identify impacts to existing right of way.
- Coordinate with utility, landscape and streetscape design elements.
- Develop pavement design for access roadway into layover facility.

Deliverables:

- Layover Facility track diagrams
- Layover Facility track structure plans
- Layover Facility track system plans
- Layover Facility mechanical plans
- Layover Facility site/civil plans

Task SSX.13 Environmental Review

Objectives:

- To comprehensively identify and document all required environmental approvals at the local, state, and federal levels.

- To use the alternatives analysis methodology to determine the alternative with the least environmental impact that also meets the goals of the project.

- To prepare, review, and analyze environmental data from existing and proposed conditions for all considered alternatives.

- To identify appropriate mitigation approaches to address any projected negative environmental impacts.

- To develop, as necessary, the environmental documents to seek the necessary environmental approvals at the local, state, and federal levels as described herein.

Tasks:

13.1 Strategy

- Comprehensively identify and document all required environmental approvals at the local, state, and federal levels.
- Based on review and discussion with MassDOT, MBTA, FRA, MEPA Unit, and others, of optional approaches to environmental review and their procedural variants, prepare a strategy memo for MassDOT on a recommended approach to environmental approvals. The strategy will include consideration of the work to be done for all elements of the project, including relocating the U.S. Postal Service General Mail Facility, expanding South Station, and development of a new layover facility. This work will be guided by input from FRA and the MEPA Unit.
- Identify, review, and document past environmental reviews performed for South Station and the surrounding area, or for the location of the layover facility, including certificates, decisions, variances, etc.
- Participate in environmental scoping session(s) with the appropriate government agencies to determine the best approach(es) to environmental review for this project.

13.2 Wetlands

- Existing Conditions
    - Identify limits of wetland resources associated with the project area (including the Fort Point Channel) through field survey and existing mapping.
    - Categorize wetland resources by type, as identified by local, state, and federal regulations.
    - Develop plans showing the surveyed limits of wetland resource areas.
- Environmental Consequences
    - Identify potential impacts to wetland resources from the South Station Expansion project.
- Mitigation
    - Describe proposed actions to mitigate impacts to wetland resources, if required.

- Regulatory Requirements
    - Discuss how the proposed project would comply with the U.S. Clean Water Act and the Massachusetts Wetlands Protection Act and other identified regulatory programs, as applicable.
    - Present a discussion of the wetland considerations noted above in a technical memorandum and in the MEPA and NEPA documents.

13.3 Waterways

- Existing Conditions
    - Identify the limits of areas at each site within Chapter 91 jurisdiction using aerial photography and existing mapping [MassGIS and the Department of Environmental Protection (DEP) presumed jurisdictional maps for the City of Boston].
    - Identify water-related interests of the public, as outlined in the Waterways Regulations at 310 CMR 9.55.
    - Review DEP Files to obtain all previous licenses and permits for the site(s), and will document historic waterlines, the limit of the pier and bulkhead line, and other data necessary for the Chapter 91 analysis.
- Environmental Consequences
    - Identify potential work within tidelands subject to The Massachusetts Public Waterfront Act (Chapter 91) from the proposed project.
- Mitigation
    - Describe proposed actions to mitigate impacts to public water-related interests, if required.
- Regulatory Requirements
    - Describe how the proposed project would comply with The Massachusetts Public Waterfront Act (Chapter 91) and, in particular, standards for non-water-dependent infrastructure facilities. Future development on air rights above and adjacent to South Station is exempt from Chapter 91 licensing under Section 85, Chapter 235 of the Acts of 2000. Present a discussion of the applicability of Chapter 91 to the South Station Expansion and to the potential layover sites in the MEPA and NEPA documents.

13.4 Water Quality

- Existing Conditions
    - Determine the existing surface water classification of any resources at the project site (including the Fort Point Channel near South Station, the potential layover facility sites, and the existing U.S. Postal Service General Mail Facility) based on the Massachusetts Surface Water Quality Standards (310 CMR 4.00).
    - Describe existing on-site storm water infrastructure and connections to the City of Boston and Massachusetts Water Resource Authority infrastructure.

- Environmental Consequences
    - Evaluate potential impacts of surface water discharge (quality and quantity) from the proposed project to surface and groundwater resources.
    - Calculate changes in impervious surface, sources of pollutants, and runoff rates.
    - Document all conceptual and preliminary designs such that all stormwater management facilities would be constructed in accordance with the Massachusetts Stormwater Policy Standards.
    - Explore temporary (construction-period) impacts to water quality from expansion alternatives.
- Mitigation
    - Identify measures to mitigate potential short-term (construction period) and long-term impacts to surface or groundwater quality (potential de-watering during construction) from the South Station Expansion project, in accordance with the Massachusetts Stormwater Policy Standards.
    - Describe proposed actions to mitigate impacts (additional stormwater flows and potential alterations) to City of Boston and Massachusetts Water Resource Authority infrastructure, if required.
    - Include additional stormwater management measures proposed to improve existing conditions, as required by Stormwater Management Standard 7 for redevelopment projects.
    - Describe proposed pollution prevention measures and sedimentation and erosion controls during construction.
- Regulatory Requirements
    - Discuss how the proposed project would comply with the National Pollutant Discharge Elimination System permit for the City of Boston, Massachusetts Surface Water Quality Standards, Massachusetts Stormwater Management Standards, and the City of Boston Sewer Regulations and other associated permits and requirements.
    - Discuss compliance with the NPDES Construction General Permit.
    - Include proposed stormwater management measures to meet water quality standards.

13.5 Contaminated Soils or Groundwater

- Existing Conditions
    - Conduct Phase I Environmental Site Assessments to assess the potential for oil and hazardous materials (OHM) from historical or current activities at the site.
    - Identify Recognized Environmental Conditions (RECs) that could present an environmental liability.
    - Conduct a hazardous materials survey of all project locations (including the existing U.S. Postal Service General Mail Facility, South Station and

potential layover facility sits), if possible. MassDOT to obtain permission to enter all sites.
    - Based on the findings of the Phase I Environmental Site Assessments, develop scopes of work for MassDOT approval for Phase II Subsurface Investigations. Conduct further evaluation of subsurface contamination as Phase II Subsurface Investigations.
- Environmental Consequences
    - Confirm the presence of OHM, if present.
    - Identify potential effects of construction on existing areas of environmental contamination, if any.
    - Identify conditions that may pose a significant risk to human health, safety, public welfare, or the environment.
- Mitigation
    - Identify specific response actions that are required to be in compliance with the Massachusetts Contingency Plan (MCP) within areas of identified soil or groundwater contamination.
- Regulatory Requirements
    - Discuss compliance with the MCP with regard to the identification and evaluation of contaminated soils and groundwater discovered at the site.
    - Comply with the Massachusetts Hazardous Waste Regulations regarding the storage, collection, transport, treatment, disposal, use, reuse, and recycling of hazardous waste found on the property and during construction.

13.6 Hazardous Building Materials

- Existing Conditions
    - Review existing documentation provided by MassDOT related to hazardous building materials. This information will be used to identify the potential presence of suspect asbestos-containing materials (ACM) and hazardous materials located within the buildings to be demolished for the SSX and layover facility.
    - To the extent that hazardous building materials are identified at the USPS property and/or at buildings that will be acquired for the new layover facility, develop scopes of work for MassDOT approval for building inspection and sampling. Once approved, the inspections and sampling will be undertaken.
    - Conduct a visual inspection of the buildings to identify the presence, location, and quantity of suspect ACM. Samples will be collected of suspect ACM and will be shipped under chain of custody to a Massachusetts Division of Occupational Safety certified laboratory and analyzed via Polarized Light Microscopy with Dispersion Staining (PLM/DS).
    - Survey and inventory regulated or hazardous materials, including but not limited to PCB-containing light ballasts, PCB-containing caulk, mercury thermostat switches, fluorescent light bulbs, refrigerants, lead-

based paint, chemical spill/contamination problems, chemical waste products, etc.

- Environmental Consequences
  - Identify potential effects of construction on existing areas of environmental contamination, if any.
  - Identify conditions that may pose a significant risk to human health, safety, public welfare, or the environment.
- Mitigation
  - Identify specific response actions that are required to be in compliance with the Massachusetts Contingency Plan (MCP).
- Regulatory Requirements
  - Discuss compliance with the MCP with regard to the identification and evaluation of contaminated soils and groundwater discovered at the site.
  - Comply with the Massachusetts Hazardous Waste Regulations regarding the storage, collection, transport, treatment, disposal, use, reuse, and recycling of hazardous waste found on the property and during construction.

13.7 Historic and Archaeological Resources

- Existing Conditions
  - Assist MassDOT in establishing an Area of Potential Effect (APE).
  - Review and obtain existing cultural and historic resource information including Massachusetts Historical Commission, Inventory of Historic and Archaeological Assets of the Commonwealth forms, State Register of Historic Places, National Register of Historic Places, and MHC archeological files to identify known or potential archaeological resources within site.
  - Identify and map previously designated and inventoried cultural and historic resources and field verify.
  - Include an evaluation for National Register eligibility of resources not previously identified.
  - Obtain a State Archeologist permit from MHC.
  - Coordinate with the BLC.
  - Undertake limited fieldwork testing to determine the presence of archeological resources.
  - Document and map any resources.
- Environmental Consequences
  - Determine the nature and extent of potential impacts within areas that have a moderate to high likelihood of containing archaeological resources.
  - Evaluate impacts to cultural and historic resources, taking into consideration direct construction impacts, vibration impacts, and changes in setting that adversely affect resources.
- Mitigation

- Describe proposed mitigation measures for impacts to archeological resources.
- Describe proposed mitigation measures for impacts to cultural and historic resources.
- As necessary, draft a Programmatic Agreement to handle any additional cultural, historic, or archeological resources.

- Regulatory Requirements
  - Comply with Section 106 of the Historic Preservation Act (36 CMR 800), Section 4F of the Department of Transportation Act of 1966 (now codified in 23 U.S.C. 138 and 49 U.S.C. 303), and MGL Chapter 254 (950 CMR 71) with the MHC.
  - Consult with MHC regarding the preparation of the State Archeologist permit application.

13.8 Local Regulations

- Identify all pertinent local regulations, including those that pertain to land use, zoning, and utilities, that may influence the South Station Expansion project. As appropriate, incorporate consideration of those regulations into the environmental review process.

13.9 Transportation

- Existing Conditions
  - Using the analyses developed previously and working with the City of Boston, identify the appropriate study area around all project sites (including the South Station site, potential layover facility sites, and the site of the existing U.S. Postal Service General Mail Facility) to include in the vehicular, bicycle and pedestrian traffic analysis for the environmental review. This will include all intersections to be analyzed.
  - Summarize existing traffic conditions within study area.
  - Using the results of the previously-developed analyses, summarize existing public transit conditions.
- Environmental Consequences
  - Summarize the positive and negative traffic impacts of the proposed project.
  - Include vehicular, bicycle and pedestrian traffic volume impacts, level-of-service analysis, and traffic circulation.
  - Summarize the positive and negative impacts of the proposed project on public transit conditions.
- Mitigation
  - Working with the City of Boston, develop proposed mitigation measures for negative impacts to traffic, parking, pedestrian, bicycle and the public transit networks.
- Regulatory Requirements
  - Discuss compliance with MassDOT Highway and City of Boston traffic and parking ordinances.

13.10 Noise

- Existing Conditions
    - Determine noise sensitive receptor locations at and near the site based on plans, U.S. Geological Survey (USGS) maps, aerial photographs, site visits, and following the procedures contained in the FTA guidance manual "Transit Noise and Vibration Impact Assessment" May 2006.
    - Explain noise projections and impact assessment details.
    - Site Visit/Measurement Protocol: Conduct a site visit to identify sensitive receptor locations in the vicinity of South Station and the proposed layover facility, and to select appropriate noise and vibration monitoring sites. These sites will be described in a protocol that will be submitted to MassDOT for review and concurrence prior to the start of the field measurement program. The protocol will also describe the noise and vibration metrics to be measured, the measurement methodology, and the instrumentation to be used.
    - Data Request/Modeling Protocol: A written request for the data that will be required to complete the noise and vibration analyses will be developed. This data request will describe, in detail, the input data needed for the modeling analyses. This protocol will be presented to MassDOT, and the appropriate oversight agencies for review and concurrence prior to the start of the modeling analysis.
    - Noise and Vibration Measurements: Noise Measurements will be obtained at representative receptor locations (as determined from the site visit). These measured levels will be used (1) to describe the existing noise environment; and (2) to determine the project noise criteria levels against which project impacts can be evaluated.
    - Depending on land use type, the noise measurements will consist of either peak-hour Leq noise levels, or 24-hour day-night (or Ldn) noise levels. For residential receptors, the FTA guidelines require that Ldn noise levels be measured. For institutional receptors, the FTA guidelines require that peak-hour noise levels be measured. Noise measurements will be obtained at up to ten measurement locations. The sound level meters that will be used to measure noise will meet or exceed the ANSI Standards for Type I accuracy and quality. Specifically, CEL Model 593 and Larson Davis Model 820 sound level meters, or their equivalents, will be used for the noise measurements.
    - Vibration measurements will be obtained at up to four locations to document existing vibration levels. Vibration measurements will be obtained using PCB Model 393C accelerometers. The measured vibration levels will be reported in RMS (root-mean-square) velocity in VdB (relative to 1 micro inch per second).
- Environmental Consequences

- Identify locations that would be adversely affected by noise during construction and post-construction, following FTA guidance and procedures.
- Use the FTA noise and vibration procedures to calculate project-related noise and vibration levels for the build alternative. Noise levels for the project build alternative will be predicted using the FTA noise model. This model includes input data consisting of vehicle or train type, number of cars in a typical train consist, speed, and the number of daytime (7AM to 10PM) and nighttime (10PM to 7AM) operations. The predicted project noise levels will be compared to the FTA noise criteria limits for the project to determine impact.
- Vibration levels will be predicted using FTA vibration procedures described in the FTA guidance manual. The predicted vibration levels will be compared with the FTA criteria limits to determine impact.
- Using GIS basemaps of the project corridor, the number and location of the noise and vibration impacted receptors can be graphically shown.

- Mitigation
  - Describe mitigation measures for noise impacts during construction and post-construction, following FTA guidance and procedures.
  - Include recommendations for any proposed restrictions on construction or post-constructions operations.
- Regulatory Requirements
  - Explain how the proposed project would comply with the City of Boston Noise Ordinance standards for construction and post-construction conditions.

13.11 Vibration

- Existing Conditions
  - Identify vibration sensitive receptor locations at and near the site based on USGS maps, aerial photographs, site visits and following the procedures contained in the FTA guidance manual (referenced above).
  - Provide details regarding vibration impact criteria and existing vibration conditions.
- Environmental Consequences
  - Identify locations that would be adversely affected by vibration during and/or after construction of the South Station Expansion project, following FTA guidance and procedures.
- Mitigation
  - Describe mitigation measures for vibration impacts during and/or after construction, as needed.
  - Include recommendations for any proposed restrictions on construction or post-construction operations.

13.12 Air Quality/Greenhouse Gases/Energy

- Existing Conditions

- Obtain DEP air quality monitoring data to determine the study area's attainment status for transportation-related pollutants.
- Conduct a hotspot analysis to calculate existing carbon monoxide (CO) and particulate matter (PM) concentrations.
- Evaluate and present existing Air Toxic and Greenhouse Gas emissions, based upon FTA, EPA, and DEP guidance manuals.
- Perform Greenhouse Gas emissions analysis in conformity with MEPA (and other relevant) requirements.

- Environmental Consequences
  - Obtain the latest mobile source emission factors, and evaluate the proposed project's impact on local and regional emissions.
  - Incorporate changes in traffic and rail emissions into the regional emissions.
  - Conduct a local hotspot analysis to evaluate CO and PM concentrations for each alternative.
  - Evaluate future Air Toxic and Greenhouse Gas emissions from the proposed project, based upon FTA, EPA, and DEP guidance manuals. Odor Impact Assessment (Optional): Diesel exhausts from locomotives or buses have a distinct and objectionable character. Increasing the number of diesel powered trains at South Station or introducing trains associated with a layover facility at a new location could, therefore, lead to odor complaints. This assessment will describe the nature of odor perception, the chemical components that cause the odor (usually sulfur compounds in the exhaust and fuel), and the likely changes in odor perception with the increase in train operations at South Station or the introduction of new sources associated a large layover facility. To accomplish this assessment, VOCs will be used as a surrogate compound and use dispersion modeling to determine the extent of changes in the concentrations of the odorous compounds and how these changes could be perceived.
  - Advanced Chemical Fingerprinting: The Advanced Chemical Fingerprinting (or ACF) technique was first developed in conjunction with the Exxon Oil spill in Alaska to determine culpability. All fuels and exhausts from fossil burning sources will contain the same kinds of hydrocarbons. The ACF techniques will use the following profiles to map the ambient samples (collected at neighborhood receptors) and compare them to reference sources: saturated hydrocarbon compounds, polycylic aromatics, steranes and triterpanes biomarkers, and the ratios of C3D/C3P versus C2D/C2P. By examining the ratios of these chemical compounds in the sample, and evaluating the degree to which they correspond to the ratios of the referenced exhausts and fuels, the sources of the contaminants can be identified.
  - The energy impacts of project alternatives will be assessed in terms of energy consumption during construction of the proposed facilities as

well as operation of the project. Energy use during construction will be reported by fuel type and by energy equivalent. The impacts will be assessed qualitatively, focusing on relative impacts by project alternatives.

- Energy consumption during operation will be discussed in terms of vehicular energy use and energy associated with maintenance. The vehicular energy use will examine the fuel use by the trains and the energy consumed by motor vehicles in the affected study area. This accounting of fuel use will reflect on estimates of diversion of vehicle miles traveled (VMT) to trains with the proposed project.
- The other component of energy use during operation is related to maintenance, including lights to illuminate the station; heating and cooling of the common areas; and servicing the rolling stock. The energy for maintenance will be discussed relatively from one project alternative to the next.

- Mitigation
  - Describe mitigation measures for short-term (construction-period) impacts from construction equipment, and for any long-term effects of the South Station Expansion project.
- Regulatory Requirements
  - Describe how the proposed project conforms to the State Implementation Plan (SIP) and the 1990 Clean Air Act Amendments (CAAA).

13.13 Economic

- Existing Conditions
  - Characterize the general social and economic conditions within the project area and the adjacent neighborhoods using information provided by the U.S. Census, Metropolitan Area Planning Council, the Boston Redevelopment Authority, Bureau of Labor Statistics, Bureau of Economic Analysis, and other sources (aerial photography, municipal mapping, etc).
  - Include summaries of important socioeconomic data such as land uses, proposed new projects in the area, population statistics, housing income and trends, employment statistics, and property tax rates.
- Environmental Consequences
  - Analyze potential beneficial or detrimental socioeconomic impacts from the proposed project including property tax revenue loss/gain, business displacement, and job loss/gain.

13.14 Environmental Justice[4]

- Existing Conditions

4 As appropriate, this work will be done in concert with the Central Transportation Planning Staff.

  - Obtain state Environmental Justice census data (census block and block-group) to determine locations of minority and low-income populations near the project area.
  - Include maps showing locations of Environmental Justice populations within one-half mile of the site.
  - Identify potential impacts both positive and negative to these communities based on changes in noise, traffic, air quality, or other resources.
- Environmental Consequences
  - Describe any potential negative impacts from the South Station Expansion project that would disproportionately affect Environmental Justice populations.
- Regulatory Requirements
  - Describe compliance with the Massachusetts Executive Office of Energy and Environmental Affairs Environmental Justice Policy, Executive Order 12898, and US Department of Transportation Order 5610.2.
  - Ensure compliance with Title VI requirements of the U.S. Department of Transportation as described in the Federal Transit Administration Circular No. 4702.1A.

13.15 Cumulative Impacts

- Impacts of South Station Expansion
  - Assess cumulative impacts of the elements of the proposed project in combination with reasonably foreseeable future projects on the neighborhoods surrounding the project area.
  - Gather information on land uses and future development in these neighborhoods from the Boston Redevelopment Authority and the Metropolitan Area Planning Council.
  - Include timeframe for analysis with two components: the time period covering past, known effects and a period covering future, predictable effects.
  - Use CEQ's *Considering Cumulative Effects under the National Environmental Policy Act* (CEQ 1997) to guide the cumulative impacts analysis.
- Impacts of Layover Facility
  - Assess cumulative impacts of the proposed project on the neighborhoods surrounding the site in combination with reasonably foreseeable future projects.
  - Gather information on land uses and future development in these neighborhoods from the Boston Redevelopment Authority and the Metropolitan Area Planning Council.
  - Include timeframe for analysis with two components: the time period covering past, known effects and a period covering future, predictable effects.

  - Use CEQ's *Considering Cumulative Effects under the National Environmental Policy Act* (CEQ 1997) to guide the cumulative impacts analysis.
- Impacts of Potential Future Overbuild
  - Making use of data and analyses developed in previous tasks, assess the cumulative impacts of the potential overbuild development, as a reasonably foreseeable future project, on the neighborhoods surrounding the proposed project area.
  - Assessment of the cumulative impacts of the potential overbuild development would be made on a conceptual basis, given that a specific proposal for such development does not exist at this time. Assume a 'highest and best use' scenario and attendant greatest potential impacts.
- Summary
  - Summarize the projected cumulative impacts of the proposed project and potential overbuild in combination with reasonably foreseeable future projects on the neighborhoods surrounding the proposed project.

13.16 Prepare and File an Environmental Notification Form[5]

- Develop an Environmental Notification Form that contains sufficient documentation to be able to appropriately scope the project for environmental review purposes.
- Print and distribute an ENF as required by MEPA.

13.17 Prepare and File a proposal of agency action

- Prepare documentation to initiate the federal environmental review process.

13.18 Prepare and File City of Boston Article 80 documentation

- Prepare documentation in compliance with City of Boston Article 80 requirements.
- Print and distribute any Article 80 documentation as described below. The proposed project is a state sponsored project on state-owned land. However, the overbuild aspect of the project is expected to undergo review by BRA under Article 80 of the City's Zoning Code. In addition, other aspects of the project such as the layover areas, landscaping and urban design, and station elements may also go through Article 80. Article 80 Large Project Review is a comprehensive review that examines many of the same impact categories as does NEPA/MEPA review (e.g., traffic, infrastructure) as well as urban design issues that are not typically covered by the state or federal process, e.g., pedestrian wind impacts, shadow impacts, potential daylight obstruction, and public realm.
- Because of the different focus of Article 80, the process needs to be managed differently from the federal/state NEPA/MEPA process. Because Article 80 will focus on the overbuild rather than the transportation aspects of the project, the HNTB Team recommends that the Article 80 documentation not be combined with the NEPA and

5 MassDOT does not anticipate requesting a Single Environmental Impact Report.

MEPA documentation. While the Article 80 process would proceed roughly concurrently with NEPA/MEPA, they would be kept separate. The HNTB Team will prepare and file the Article 80 Project Notification Form (PNF) at approximately the same time as the Environmental Notification Form (ENF) is filed under MEPA. The scope of the Draft Project Impact Report will likely provide guidance on how to refine the extent of the likely overbuild and how this extent will be determined. The Draft and Final Project Impact Reports may be filed at the same time as the Draft and Final EA/EIRs are filed, or sometime later if the overbuild is not yet determined.

- It will be important to manage the Article 80 process to obtain approvals that will maximize the site's development potential while ensuring that the future development can be constructed seamlessly with South Station's infrastructure and the already permitted air rights development (EOEA # 9131) above the existing South Station footprint.

13.19 Prepare and File Appropriate Municipal, State and Federal Environmental Documentation (Draft)

- Develop an outline based upon the Executive Office of Energy and Environmental Affairs Certificate on the Environmental Notification Form and requirements of FRA NEPA regulations.
- It is anticipated that a Section 4(f) Evaluation will be prepared in accordance with the U.S. DOT Act of 1966. It is assumed that this will be an Individual Section 4(f) Evaluation.
- As discussed previously in the Historic and Archaeological Resources section, Section 106 of the National Historic Preservation Act will apply and documentation of resources/eligibility and effects findings will be prepared. As required, a Memorandum of Agreement or Programmatic Agreement will be prepared for review and adoption by the appropriate state and federal agencies.
- Internal Draft:
    - Prepare a full document for review and publication, in accordance with the Secretary's Certificate on the Environmental Notification Form.
    - Print and distribute the Draft EA/EIR document, CD, and Executive Summary in compliance with Section 508 and other relevant regulations.

13.20 Prepare and File Appropriate Municipal, State and Federal Environmental Documentation (Final)

- Develop internal drafts as necessary
- Based upon the Certificate on the Draft document.
- Conduct additional technical studies specified in the Certificate.
- Print and distribute the Final document, CD, and Executive Summary in compliance with Section 508 and MEPA regulations.

13.21 Public Hearings and Agency Coordination

- Assist MassDOT with the preparation for public hearings on the environmental documents.
- Prepare for and conduct coordination meetings with interested and affected parties to inform the public, solicit input and feedback, and coordinate among agencies.
- Meet with City of Boston and DEP representatives to discuss compliance with Waterways Regulations and the City of Boston Municipal Harbor Plan. Assume at least four consultation meetings will occur.
- Meet with MEPA on all relevant issues.
- Meet with the City of Boston regarding the Article 80 process and any other relevant City of Boston processes.
- Meet with the Massachusetts Historical Commission on Section 106 and Section 4F issues.
- A total of 36 agency coordination meetings are planned for Task SSX.13.

13.22 Preparation of Draft and Final EIS (if required)

- Prepare for and assist with public scoping sessions in support of an EIS
- Prepare and file Notice of Intent in the Federal Register
- Prepare a Draft and Final EIS

Deliverables

- Environmental strategy memo
- A proposal of agency action (federal)
- Written correspondence with resource agencies for MassDOT use
- Environmental Notification Form
- Article 80 PNF
- Article 80 Project Impact Report (draft & final)
- Draft EA or EIS/EIR
- Final EA or EIS/EIR
- Individual Section 4(f) Evaluation
- Section 106 Programmatic Agreement or Memorandum of Agreement
- Air quality, energy, greenhouse gases, technical memorandum
- Noise and vibration technical memorandum
- Resource Area mapping
- Responses to comments on documents circulated to agencies and the public for review & comment
- Phase I Environmental Site Assessment Report for the USPS property;
- Phase I Environmental Site Assessment Report for the new layover facility;
- Scope of Work for Phase II Subsurface Investigations for the USPS property;
- Scope of Work for Phase II Subsurface Investigations for the new layover facility;
- Phase II Subsurface Investigation Report for the USPS property;
- Phase II Subsurface Investigation Report for the new layover facility;
- Release Notification Form (BWSC-103) for the USPS property and/or the new layover facility (if required under the Massachusetts Contingency Plan);

- Massachusetts Contingency Plan deliverables (if required);
- Letter Report on Existing Data Review and Analysis on the USPS property, with Recommendations for Additional Hazardous Building Materials Testing;
- Summary Report on Additional Hazardous Building Materials Sampling and Analysis on the USPS property, with Recommendations for Abatement;
- Letter Report on Existing Data Review and Analysis on buildings on the new layover facility property, with Recommendations for Additional Hazardous Building Materials Testing;
- Summary Report on Additional Hazardous Building Materials Sampling and Analysis on the new layover facility property, with Recommendations for Abatement;
- Any other ancillary materials, as needed, including responses to public comments.

Task SSX.14 South Station Area Urban Design

Objectives:

- To develop urban design standards for public areas of the project, in consultation with the City of Boston, neighborhood stakeholders, and the general public.

- To create preliminary engineering for the reopening of Dorchester Avenue. Also, to consider design issues for Atlantic Avenue, Summer Street, and new interior walkways and concourses of an expanded South Station.

- To create preliminary engineering for the inclusion of an extension of the Boston Harborwalk along reopened Dorchester Avenue.

- To identify appropriate design elements for newly-created public spaces around and within an expanded South Station.

- To ensure consistency of urban design with documented plans for the Rose Kennedy Greenway, Summer Street, Fort Point and Leather District neighborhoods, and other pertinent planning processes and ongoing projects in the area.

Tasks:

14.1 Urban Design Standards

- Develop a set of urban design standards to guide the design of redeveloped public ways adjacent to the project area.
- Tour the study area, analyze and document existing physical conditions. Urban design issues to be addressed include the following:
    - Location within the community and region
    - Connection to history
    - Natural features and environmental constraints
    - Relationship to surroundings and edge conditions
    - Land use and development patterns
    - Regulatory issues and code constraints

  - Central places and focal points
  - Parks, open space systems and public spaces
  - Vehicular, transit and pedestrian movement including streets and sidewalk systems
  - Parking resources, including an inventory of public and private parking
  - Pedestrian and bicycle infrastructure and conditions
  - Summary of parcel boundaries and ownership of sites within the immediate study area
- Take photographs and conduct field studies and key measurements of the Station Area. This will include documentation of existing land uses, vacant and underutilized parcels/buildings, public spaces, building form and massing, streetscape characteristics for key streets, as well as opportunities for transportation (pedestrian, bicycle, vehicular) connections.
- Summarize the existing conditions analysis into a series of Opportunities and Constraints boards that will be used throughout the planning and design process. The boards will include diagrams and photographs. The diagrams will be illustrated as color site plans, will be placed on aerial photographs at an appropriate scale, and will illustrate the following information:
  - Development site(s)
  - Community focal points, and visual points of interest
  - Potential gateways
  - Easements, right-of-way and similar encumbrances
  - Potential overbuild and air rights development opportunities
  - Regulatory and code constraints including Chapter 91, height, setbacks, etc.
  - Parking areas and access
  - Traffic "hot spots" and vehicular, bicycle and pedestrian access issues
  - Desired pedestrian routes, including potential for interior walkways and concourses
  - Connections to surrounding amenities including the Harborwalk and Rose Kennedy Greenway, and surrounding areas including Fort Point and Leather District neighborhoods
  - Potential for reopening of Dorchester Avenue
  - Noise and nuisance areas
- Develop a set of urban design standards that will guide the design of redeveloped public ways adjacent to the project area. The urban design standards will be prepared that address the following:
  - Reopening of Dorchester Avenue, including design for the inclusion of an extension of the Boston Harborwalk
  - Streetscape design improvements along Atlantic Avenue and Summer Street
  - Interior walkways, courtyards and concourse areas
  - Newly created public spaces within and around an expanded South Station

Consistency with urban design and documented plans for surrounding open space areas (Rose Kennedy Greenway, Fort Point Channel) and neighborhoods (Leather District, Fort Point, Summer Street)

14.2 *Existing Area Plans*

- Review master plans and development proposals for the project area, including Fort Point Channel proposals and projects and Leather District proposals and projects. Likewise, consider the evolution of the Rose Kennedy Greenway and the need to harmonize designs.
- Build upon, use, and be consistent with other past planning and design efforts, including those for the Central Artery/Tunnel project, Municipal Harbor Plans, zoning plans, design guidelines, etc.
- Review existing plans for the site and relevant planning and design studies undertaken by MassDOT, Massport, the BRA and other agencies that relate to the South Station area. Particular focus will be placed on reviewing those plans that pertain to the integration of South Station into the surrounding urban landscape. Build upon, not re-invent, previously conducted planning and design work. Documents to be reviewed may include the following:
    - Existing zoning
    - Northeast Corridor Infrastructure Master Plan
    - New Bedford/Fall River Commuter Rail Extension Supplemental Draft EIS
    - US Postal Service General Mail Facility redevelopment proposals
    - Central Artery/Tunnel designs
    - Municipal Harbor Plan(s)
    - Fort Point Channel Watersheet Activation Plan
    - Fort Point Channel proposals and projects
    - Leather District proposals and projects
    - Design and evolution of the Rose Kennedy Greenway
    - Boston Harborwalk plans and proposals

14.3 Streetscape and Pedestrian Area Design

- Using the Urban Design standards developed in Task 14.1, and the Urban Design Analysis developed in Task 14.2, create preliminary design and engineering for streetscapes adjacent to the project area, including:
    - the re-opening of Dorchester Avenue to public access
    - interior walkways and courtyards
    - and, potential streetscape improvements along Atlantic Avenue and Summer Street, including Dewey Square.

Deliverables:

- Summary of urban design analysis and associated opportunities and constraints
- Draft and Final Urban design standards
- Preliminary designs and plans for adjacent streetscapes and pedestrian areas

Task SSX.15 Phasing and Staging

Objectives:

- To develop phasing plans to mitigate construction impacts related to the expansion of South Station, the demolition of the U.S. Postal Service General Mail Facility, and construction of a new layover facility. Stage the phasing of construction to limit the impact on pedestrians, bicyclists, motorists, and Amtrak/MBTA passengers and operators.

Tasks:

15.1 Railroad Infrastructure Construction

- Prepare a set of phasing plans for any construction activities on or near railroad infrastructure. Phase track construction in order to minimize delays to MBTA and Amtrak trains.
- Provide an operational analysis and appropriate simulations in order to assess construction impacts on rail operations.
- Coordinate with MBTA and Amtrak officials and other members of the design team to ensure proper staging of track infrastructure work within available work area and tolerances to minimize disruption to existing service.
- Develop phasing/staging plans for construction activities on or near railroad infrastructure. These plans will phase track construction in order to minimize delays to MBTA and Amtrak trains.
- Develop phasing/staging plans for construction of a new layover facility (location to be determined). These plans will depict the staging of pedestrians, bicycles, motorists, public transit and railroad traffic to facilitate the construction of the new facility.

15.2 Building Construction

- Prepare a construction phasing plan for the demolition of the current U.S. Postal Service General Mail Facility, and the ultimate expansion of South Station.
- Coordinate with area stakeholders on maintenance of traffic, pedestrian and bicycle access.
- Prepare a construction phasing plan to support the demolition of the current U.S. Postal Service General Mail Facility, and expansion of South Station. This plan will depict the rerouting of transit users, employees and those with business within the facility. All plans will have provisions for the maintenance of access to South Station, the Fort Point Channel (where such access exists today), the existing Central Artery Tunnel Ventilation Building and 245 Summer Street from Dorchester Avenue during construction.
- Develop truck route and contractor/truck staging area diagrams for the surrounding area to better articulate how access will be maintained during construction and identify possible infrastructure needs to support the proposed work.
- Prepare staging plans and BTD access permits to support soil boring work within the public way.

15.3 Pedestrian/Vehicular/Bicycle Access Phasing

- Prepare a set of phasing plans to re-route pedestrian, bicycle, MBTA buses, and vehicular access to South Station and the adjacent neighborhoods during construction.
- Prepare a set of phasing plans to re-route pedestrian, bicycle, and vehicular access to the layover site and adjacent to site during construction.

Deliverables:
- Construction phasing plans

Task SSX.16 Cost and Schedule Estimation

Objectives:
- To develop rigorous cost and schedule estimate documents for the final design and construction of an expanded South Station, including the demolition of the existing U.S. Postal Service General Mail Facility.

- To develop rigorous cost and schedule estimate documents for the final design and construction of a new layover facility.

Tasks:

16.1 Cost Estimate
- Prepare baseline cost estimates for the final design and construction of the proposed expansion of South Station, including the demolition of the U.S. Postal Service General Mail Facility.
- Prepare baseline cost estimates for the final design and construction of a new layover facility.
- Update and continuously develop cost estimates as the project evolves.

16.2 Schedule Estimate
- Prepare baseline schedule estimates for the final design and construction of the proposed expansion of South Station, including the demolition of the U.S. Postal Service General Mail Facility.
- Prepare baseline cost estimates for the final design and construction of a new layover and ancillary facilities.
- Update and continuously develop schedule estimates as the project evolves.

16.3 Funding Source Development
- Consult with design, permitting and real estate teams to identify impacts of project design, development and/or phasing choices, and to ensure continued compatibility with funding / financing requirements and strategies. This task will include preparation of internal memoranda at key decision points.
- Identify and evaluate potential federal and state funding sources for Project development and construction.
  - Inventory and screen Federal (USDOT, FRA, FTA, Homeland Security, other) and State (grants, loans, bonds) funding sources for availability, criteria, competition, conditions, and compatibility with other funding sources and public goals.

  - Inventory and screen PPP opportunities for compatibility with public funding sources; include value capture strategies that require both public and private action.
  - Review other major transportation terminal projects for innovative financing and funding practices.
  - Perform SWOT analysis to establish (i) a portfolio of most likely / advantageous sources, (ii) magnitude of funding availability; and (iii) strategic approach.
- Match funding sources to final design and construction needs.
  - Using capital and life-cycle costs developed under Task 16, develop funding scenarios to match projected funding needs.
  - Analyze timing of (a) loan programs (RRIF, TIFIA), (b) grants (c) P3 sources (d) cash flow strategies such as GANs, ABP, and Advance Construction.
  - Coordinate with real estate team [Task 11], to develop alternative financing scenarios and funding solutions.
  - If appropriate and so requested, outline potential legislation.
- Coordinate funding strategy with Joint Development / Overbuild Strategies.
  - Coordinate with real estate team to screen overbuild opportunities for compatibility with public funding sources.
  - Assist with joint development discussions as requested to assure compliance with current and potential state and Federal funding requirements.
  - Support evaluation and development of life-cycle funding and financing strategies for the SSX Project.
- As requested by MassDOT Planning, provide strategy support and, as necessary, prepare appropriate materials for additional federal funding application(s) not yet identified. Preparation of application materials and related support will be provided as requested.

Deliverables:
- Cost estimates
- Schedule estimates
- Technical memoranda identifying and assessing potential Federal and State funding sources
- Technical memoranda addressing recommended funding sources and strategies
- Technical memorandum regarding alignment between public funding plans and future joint development / overbuild program
- Future federal funding application materials and support, as needed

Task SSX.17 Coordination & Future Conditions

Objectives:
- To ensure coordination with concurrent planning and construction projects in the area of an expanded South Station and new layover facility.

- To ensure design does not preclude other proposed future capital projects, including the redevelopment of Parcels 26a, 26b, and 27.

Tasks:
- *17.1 Coordination and Future Conditions* Provide design that does not preclude potential future capital projects, including but not limited to expansion of service on the Fairmount Line, South Coast Rail, North-South Rail Link, and NextGen Amtrak Services.
- Coordinate shared resources with any concurrent projects.

Deliverables:
- Inter-project coordination plan
- Report outlining aspects of future project infrastructure preserved in design

Task SSX.18 Railroad Interaction and Insurance

Objectives:
- To prepare agreements for complying with liability and insurance requirements.

- To prepare schedule and cost estimate of flagging services.

- To ensure overall coordination with railroads currently operating in and around South Station and new layover facility.

Tasks:

18.1 Right of Entry Agreement
- Prepare a set of Right of Entry agreements that comply with MBTA, MassDOT, MBCR, and other involved agency standards.

18.2 Scheduling and Estimate of Flagging Services
- Prepare a schedule and cost estimate of necessary flagging services agreed on by the contractor and MBTA, MassDOT, MBCR and other involved agencies.

18.3 Coordination Agreements
- As necessary, prepare coordination agreements to manage existing railroad operations during the period of construction (and afterwards, as necessary).

Deliverables:
- Right of Entry agreement(s)
- A schedule and cost estimate for flagging services
- Any necessary railroad agreements

Task SSX.19 Preparation of Solicitation for Construction Services

Objectives:

- Prepare a project delivery implementation plan based on the availability of funding, construction staging and sequencing, schedule requirements and various other risk elements.

- If necessary, to prepare a public solicitation or final engineering and/or construction of the project, as directed by MassDOT.

Tasks:

19.1 Prepare Project Delivery Implementation Plan

- Prepare documentation outlining next steps to move the project forward.
- Develop approaches to contract packaging and delivery, establishment of MOU's and Force Account agreements with railroads,
- Determine rights-of entry requirements
- Schedule and cost estimates for flagging services
- Establish necessary railroad agreements

Deliverables:

- Project Implementation Plan
- Rights-of-entry
- Schedule and cost estimate for flagging services
- Necessary railroad agreements

Task SSX.20 Reserve

Objectives:

- If necessary, to provide MassDOT with miscellaneous support during the term of the contract.

Tasks:

20.1 Reserve- General

- During the course of a long and complex project, unanticipated needs, directions and priorities may arise as a result of discoveries during the project research, input from agency stakeholders and the broader public, or changes in public policies at the state or federal level.
- Enable MassDOT and the consultant team to address additional needs as they arise.

20.2 Reserve – Preparation of a Request for Responses

- Develop public solicitation packages for final engineering and/or construction of the South Station Expansion project, including new layover facility and ancillary facilities. For purposes of estimating man-hours, assume the following seven procurements will be required for progression of the project):
    - Demolition
    - Early Utility
    - Railroad Force Account
    - Enabling Package

  - (1) Design-Build Station
  - (2) P3 Development
- Public solicitation packages and all necessary attachments.

- Provide all deliverables electronically to MassDOT Planning and the MBTA.

Deliverables:
- N/A