



BOSTON REGION METROPOLITAN PLANNING ORGANIZATION

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Executive Director, MPO Staff

The Boston Region MPO is
composed of:

Massachusetts Department of
Transportation

Metropolitan Area Planning Council

Massachusetts Bay Transportation
Authority Advisory Board

Massachusetts Bay Transportation
Authority

Massachusetts Port Authority

Regional Transportation Advisory
Council

City of Boston

City of Beverly

City of Everett

City of Newton

City of Somerville

City of Woburn

Town of Arlington

Town of Bedford

Town of Braintree

Town of Framingham

Town of Lexington

Town of Medway

Town of Norwood

Federal Highway Administration
(nonvoting)

Federal Transit Administration
(nonvoting)

MEMORANDUM

DATE May 17, 2012
TO Boston Region Metropolitan Planning Organization
FROM Karl H. Quackenbush
CTPS Executive Director
RE Work Program for: South Station Expansion Project: Support

ACTION REQUIRED

Review and approval

PROPOSED MOTION

That the Boston Region Metropolitan Planning Organization, upon the recommendation of the Massachusetts Department of Transportation, vote to approve the work program for the South Station Expansion Project: Support, in the form of the draft dated May 17, 2012.

PROJECT IDENTIFICATION

Unified Planning Work Program Classification

Planning Studies

CTPS Project Numbers

12311 for Project Management

12320 to Develop Existing Conditions

12321 to Support Operational Analysis

12322 to Support Preliminary Engineering

12323 to Support Environmental Analysis

Client

Massachusetts Department of Transportation

Project Supervisor: Matthew Ciborowski

CTPS Project Supervisors

Principal: Karl H. Quackenbush

Manager: Scott A. Peterson

Funding

New MassDOT Contract # tbd

(Federal Railroad Administration High-Speed Intercity Passenger Rail Grant with Local Match)

IMPACT ON MPO WORK

The MPO staff has sufficient resources to complete this work in a capable and timely manner. By undertaking this work, the MPO staff will neither delay the completion of nor reduce the quality of other work in the UPWP.

BACKGROUND

Boston's South Station is the premier passenger hub in New England, serving rail passengers from the Northeast Corridor and beyond, and connecting them to local and intercity destinations. South Station offers commuters and travelers not only Amtrak and MBTA commuter rail service, but also intercity bus, MBTA rapid transit, and MBTA bus rapid transit services. At present however, South Station operates above its design capacity for efficient train operations and convenient passenger queuing. In addition, South Station lacks sufficient ancillary vehicle storage capacity, constraining operations today and limiting future growth.

Several recent transportation studies have highlighted the existing limitations at South Station, and the limitations on the expansion of local, regional, and Northeast Corridor rail service. In order to realize the cumulative 50 percent increase in Amtrak high-speed and intercity passenger service outlined in the Northeast Corridor Plan, South Station and its support facilities need to be expanded and improved. In addition to this, the Commonwealth of Massachusetts is planning a number of major commuter rail expansion projects, and greater capacity at South Station is a prerequisite for the full realization of these plans. This project will make possible all of those improvements, for the benefit not only of Boston and New England, but for the entirety of the Northeast Corridor, via the improved intercity rail connections.

The object of the Massachusetts Department of Transportation (MassDOT) is to complete all of the environmental work and preliminary engineering (approximately 30 percent design) required for the successful expansion of South Station and the development of a new supporting rail storage yard. Other work that may be done as part of this project, but under a different work scope, includes environmental review and preliminary engineering for the relocation of the existing U.S. Postal Service General Mail Facility to make way for the South Station expansion.

OBJECTIVE

The objective of this work is to support MassDOT and the project team in examining how various transportation modes would be affected by an expansion of South Station and potential redevelopment of the area around South Station (the proposed study area is shown in Exhibit 1). This work will include collecting data on transit use and walk times in the area around South Station, developing service plans, producing travel demand forecasts, testing the impact of various land development scenarios on the different transportation modes,

overseeing work done by Amtrak and integrating it into the overall analysis, and participating in various coordination meetings with the project team, stakeholders, and the public.

WORK DESCRIPTION

The five tasks of this study are described below. MassDOT may select and/or exclude certain tasks from this list or ask CTPS to amend it as the project evolves. This work scope covers only the first three years of the project.

Task 1 Project Management

The project management task involves meeting with and coordinating with the client, project team, and stakeholder for the life of this project. The results of these meetings and coordination will involve conversations and documents that will support all aspects of the projects progress.

Subtask 1.1 Coordinate with Project Team and Stakeholders

This project will span three years and may involve many stakeholders. In order to ensure proper coordination with the project team, the various government entities, and the public, CTPS will participate in up to 80 meetings over the duration of the project.

Subtask 1.2 Document Results

CTPS will document the methodology and results. This task will cover the development and editing of all documents used to provide information to stakeholders, to educate the project team, and to document the study tasks.

Products of Task 1

- Attendance at meetings and general coordination with stakeholders as needed.
- Various technical memoranda will also be produced, examples of which are listed below.
 - “Data Collection Methodology”
 - “Description of Person Movement in and around South Station”
 - “Service Plan Needs to Project Team”
 - “Service Plan Assumptions for Analysis”
 - “Description and Extent of Base-Year Model Calibration”
 - “Description of Transit Markets Using South Station for Different Scenarios”
 - “An Examination of Transit Vehicle Crowding for Different Scenarios”
 - “A Modal Summary of the Travel Model Results for Different Scenarios”
 - “A Summary of the Environmental Analysis for Different Scenarios”
 - “Methodology and Results of the Economic Impact Analysis”
 - Various memos and correspondence to support and coordinate with the project team and Amtrak

Task 2 Develop Existing Conditions

The existing conditions task involves developing the data sets needed to understand the transportation and land use activities occurring at and around South Station.

Subtask 2.1 Collect Data on Intercity Bus and Amtrak Train Use at South Station

A key component of this study is to understand the transportation demand at South Station. The demand is associated with several modes, such as commuter rail, bus, rapid transit, and pedestrian activity. CTPS has some existing data, such as data from the recent Intercity Bus Study, which examined the demand for intercity bus routes funded by Massachusetts; and data from recent MBTA commuter rail, local bus, and rapid transit counts. Data on pedestrian activity will be collected by one of the consultants on the project team and by CTPS in a separate task. Two data sets that may be insufficient are described below.

There appears to be a lack of data on the number of people using non-state-funded intercity bus services at South Station and what modes they take to get to or leave the bus terminal. As part of this task, CTPS will develop a database of all bus lines using the South Station bus terminal, and their frequency, ridership, and the primary mode of egress.

Amtrak collects some data on intercity train use, which CTPS will examine and utilize if possible. If the Amtrak data do not contain the level of detail this project needs, CTPS will count and identify what modes and paths the Amtrak riders choose for entering and exiting South Station. CTPS will work with Amtrak to get count information if possible, and will potentially conduct an onboard survey of its users. If these data already exist, CTPS will process, geocode, and analyze the existing data.

All of the data sets of transportation demand by mode will be combined to present a detailed portrait of the use of South Station.

Subtask 2.2 Conduct Pedestrian Counts and Travel Time Estimates

CTPS is proposing to conduct several pedestrian counts inside and outside of South Station to understand the magnitude of flows of transit and non-transit users in and around South Station. South Station is also a destination and attracts a lot of pedestrian activity inside of and around the station. The activity can be divided into three categories: transit use, employment in the building, and general pedestrian activity on the first floor concourse.

The MBTA conducted an onboard transit survey in 2008–09 for all major transit modes (except for the Silver Line, for which a survey was conducted in 2005–06). Some modes, such as the rapid transit lines, were adequately sampled, but others, such as commuter rail, were undersampled. In order to examine the transfer activity of the commuter lines coming into South Station, CTPS will conduct counts and identify access and egress modes of south-side commuter rail users to determine what modes they transfer to and from and what paths they use.

Subtask 2.3 Update South Station Model Network and Times

The MPO regional travel demand model set uses detailed information on travel and transfer times between modes and by time of day. This task will update the transfer times at South Station for all modes and by commuter rail platform.

Subtask 2.4 Calibrate Base-Year Model Set for 2010

Using the most current information available, CTPS will develop, calibrate, and summarize a base-year model set for 2010. The model set calibration will include highway, transit, and nonmotorized modes. The estimated traffic volumes from the model for roadways near South Station, for the Mass Turnpike, and for the Southeast Expressway will be compared to counts by time period. A relocated postal facility would cause a shift in truck trips to the Seaport District, a shift that may be examined by CTPS, and that will be compared to truck classification counts where possible. For the public transit mode, CTPS will focus on all modes serving South Station. This includes MBTA commuter rail, the Red Line, the Silver Line, and all buses going to the bus terminal. CTPS will also spend time making sure the model is replicating boardings, alightings, and transfers between the transit modes.

Products of Task 2

- Summaries of transportation demand by mode at South Station.
- Data sets from Amtrak documenting existing levels of demand.
- Summaries of how many people use south-side commuter rail trains and what transportation modes they choose to use to get to or leave the terminal
- This will be complemented by a pedestrian survey of people in and around South Station.
- Summaries of transfer times by mode and time period at South Station. A calibrated base-year model set.

Task 3 Support Operational Analysis

This task will involve the coordinated development of operations plans for transit services using South Station or the bus terminal as a stop.

Subtask 3.1 Coordinate Service Plan Developments

CTPS will work with the MassDOT project team to identify and incorporate up to 12 variations of proposed new commuter rail service plans, and would potentially incorporate service plans for other modes, such as buses and Amtrak, into formats that can be examined in the regional model set. The service plans will identify the commuter rail lines, which stations they serve, headways, run times, fares, and the platform locations at South Station that they would possibly serve, all by the time periods represented in the regional model set.

Subtask 3.2 Coordinate with Amtrak

CTPS will support the project team in coordinating with Amtrak and in integrating Amtrak's future service plan information into the project. Amtrak plans to increase

service in the Northeast Corridor, which cannot be done without expanding South Station. CTPS will work with Amtrak to verify service plans, travel demand forecasts, and the timing of service improvements.

Products of Task 3

Up to 12 transit service plans for the proposed expansion of South Station, which will be coordinated with Amtrak

Task 4 Support Preliminary Engineering

The support to preliminary engineering task includes the analysis of alternatives using the travel demand model set, process of results, and reporting of them to the project team.

Subtask 4.1 Model Future-Year No-Build Scenarios

CTPS will develop up to two 2035 no-build scenarios. Both of the future-year no-build scenarios will build on the set of transportation projects in the Recommended Plan (Chapter 8) of the Boston Region MPO's Long-Range Transportation Plan. The first scenario will utilize the adopted land use, while the second will consist of the adopted land use but will also include a relocated postal facility and any street configuration changes associated with it.

Subtask 4.2 Model Future-Year Build Scenarios

There will be up to 16 build alternatives for 2035; they will be a function of service plans, land use development scenarios, and platform configurations. The service plans will represent various improvements to MBTA commuter rail service and Amtrak service at South Station. The land use development scenarios will be developed in consultation with the Boston Redevelopment Authority (BRA) to determine how the study area could be developed with an expanded South Station. If the number of platforms at South Station were increased, the footprint of the train station would increase dramatically and movement in and around the station would become more complex. This would likely change walk times to and from the station and transfer times between the various transit modes. In order to understand these issues, CTPS will examine service plans that match the various commuter rail and Amtrak services with platforms.

Subtask 4.3 Perform a Market Analysis

In order to understand who is utilizing South Station transit services and who is attracted to the area, CTPS will examine flows by mode and time from survey data and the regional model set. The market analysis will look at existing conditions and the future-year no-build scenario. This information will provide a market analysis of person-trips utilizing South Station by mode and time period. This will be helpful in developing the service plans, sizing and planning the layout of the station, and helping understand the travel forecast results by alternative.

Subtask 4.4 Perform a Transit Crowding Analysis

CTPS will compare the build scenarios with the no-build scenarios in order to gauge the impact of demand on transit load points and identify any crowding issues on transit vehicle for the various modes serving South Station. This comparison will be used by the project team to do a more detailed analysis of peak load points and station design. This work will build on the 16 alternatives developed in Subtask 4.2.

Subtask 4.5 Perform an Analysis of Transit and Revenue Changes

CTPS will examine the transit levels by line and station, in addition to changes in revenue associated with the build scenarios. This task will include examining all of the transit modes and identifying the changes associated with the no-build scenario. This work will build on the alternatives developed in Task 4.2.

Subtask 4.6 Perform an Economic Impact Analysis

Given the magnitude of investment of the expansion of South Station, and the level of efficiencies of the local transportation system that would be increased by the expansion, it is important to understand the economic impacts this investment would have on the state's economy. Using an economic modeling tool, CTPS will examine the benefits and burdens associated with improving South Station operations and the resulting land use changes to consumer, producer, and labor markets for the 16 alternatives developed in Task 4.2. The results will be coordinated with the work of the project team.

Products of Task 4

- Model set and summary of two 2035 no-build scenarios. A model set of 16 different 2035 build scenarios
- A market analysis of trips produced at, attracted to, or passing through South Station
- Tabular and graphic summaries of transit vehicle load profiles for the no-build and build scenarios
- Tabular and graphic summaries of transit demand and revenue estimates for the no-build and build scenarios
- Technical memoranda summarizing the results of an economic impact analysis

Task 5 Support Environmental Analysis

The environmental analysis support task will utilize the results of the alternatives examined in Task 4.2 in order to support an environmental analysis.

Subtask 5.1 Perform an Analysis of Study-Area Traffic Patterns

CTPS will identify the changes in traffic conditions on major roadways in the study area, which will support the traffic consultant's work for each of the build scenarios. This task assumes that up to 20 intersections will be examined and a level-of-service analysis will be performed on them by the consultant. This work will build on the alternatives developed and analyzed in in Task 4.2.

Subtask 5.2 Perform an Environmental Analysis

The environmental analysis being proposed will be used to support an Environmental Assessment (EA) and an Environmental Impact Report (EIR). These documents are needed to satisfy Article 80 of the Boston Zoning Code, the Massachusetts Environmental Protection Act (MEPA), and the National Environmental Protection Act (NEPA) regulations. The two types of analysis are described below.

CTPS will examine the transportation benefits and burdens associated with environmental justice (EJ) issues. The Federal Transit Administration (FTA) requires that an EJ analysis be performed whenever a significant change to the transit system is proposed. The EJ analysis will examine how travel times and costs change for low-income and minority populations relative to non-EJ populations in eastern Massachusetts. Accessibility to higher education facilities, healthcare, and jobs for the EJ and non-EJ populations will also be examined.

CTPS will also perform a regional analysis by scenario of the air quality impacts and greenhouse gases associated with the highway and transit modes. This analysis will be separate from the EJ analysis. The air quality analysis will look at carbon monoxide, nitrogen oxides, hydrocarbons, particulate matter, and carbon dioxide.

Products of Task 5

- Analysis of tabular and graphic summaries of changes to traffic for the build scenarios
- Tabular and graphic summaries of changes to environmental justice populations and regional air quality for the no-build and build scenarios

ESTIMATED SCHEDULE

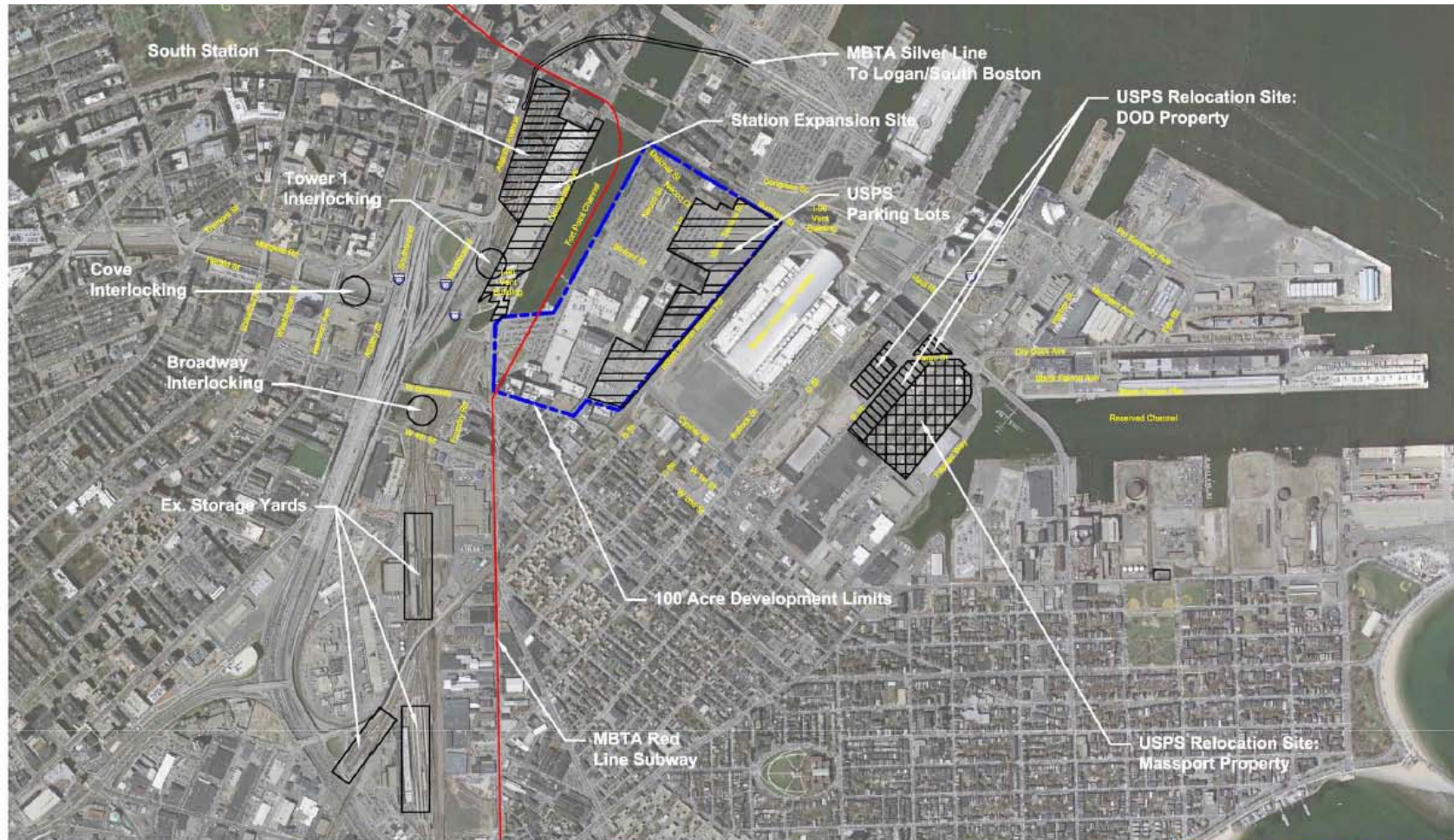
It is estimated that this project will be completed 36 months after the notice to proceed is received. The proposed schedule, by task, is shown in Exhibit 2.

ESTIMATED COST

The total cost of this project is estimated to be \$350,000. This includes the cost of 157.5 person-weeks of staff time and overhead at the rate of 94.57 percent. A detailed breakdown of estimated costs is presented in Exhibit 3.

KQ/SAP/sap

Exhibit 1
 SOUTH STATION EXPANSION PROJECT STUDY AREA
 South Station Expansion Project: Support



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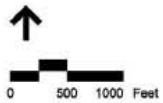


Figure 1-1
Boston South Station
HSIPR Expansion Project
Project Overview Map
Existing Properties and Yards
 Image Source: MassGIS
 Prepared by: VHB, May 2010

Exhibit 2
 ESTIMATED SCHEDULE
 South Station Expansion Project: Support

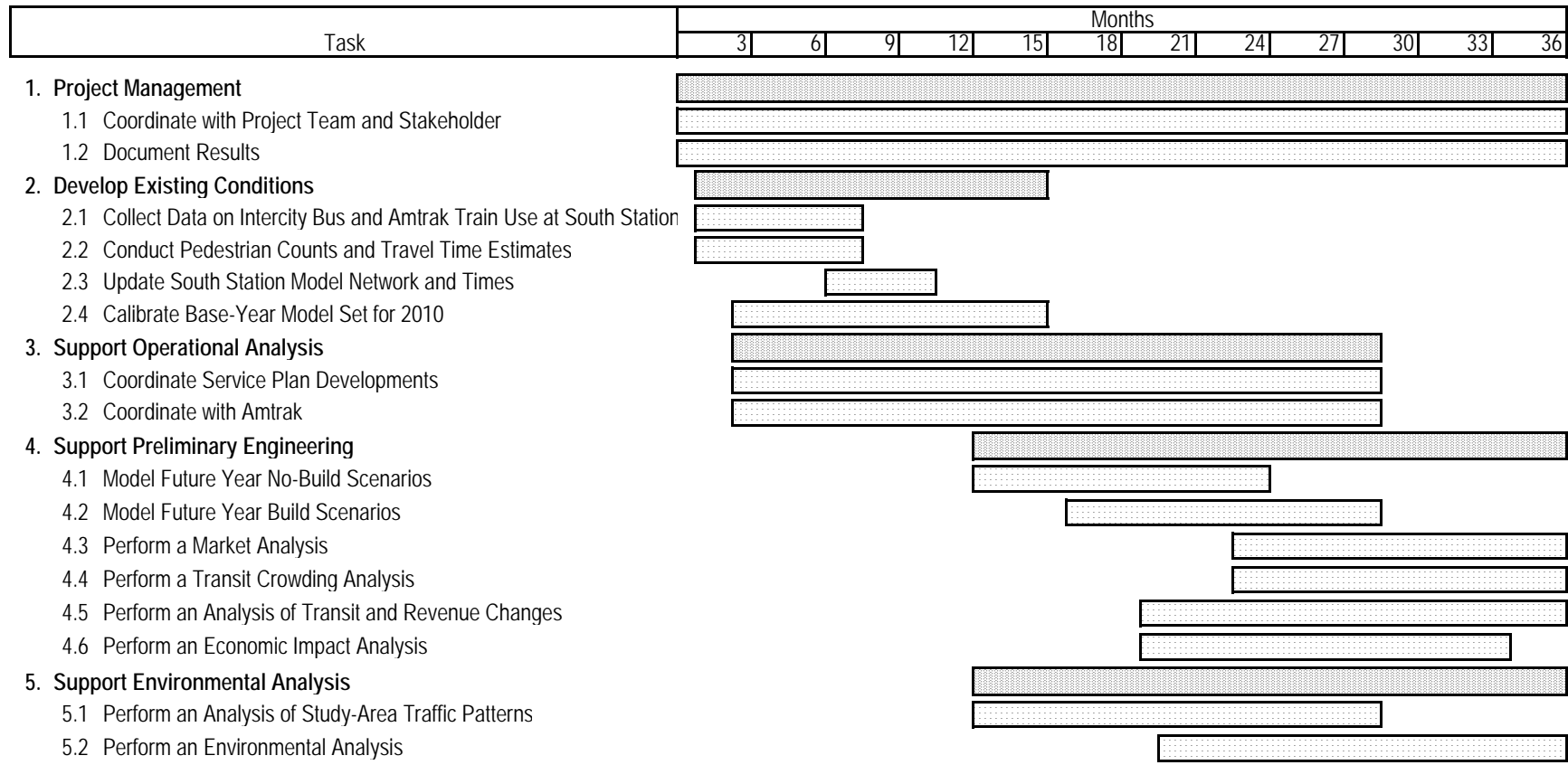


Exhibit 3
ESTIMATED COST
South Station Expansion Project: Support

Direct Salary and Overhead **\$340,000**

Task	Person Weeks								Direct Salary	Overhead (@ 94.57%)	Total Cost
	M-1	P-5	P-4	P-3	P-2	SP-3	SP-1	Total			
1. Project Management	5.9	4.0	3.9	1.5	0.0	3.7	1.2	20.2	\$26,211	\$24,788	\$51,000
1.1 Coordinate with Project Team and Stakeholders									\$15,727	\$14,873	\$30,600
1.2 Document Results									\$10,485	\$9,915	\$20,400
2. Develop Existing Conditions	3.6	2.0	7.9	3.0	2.0	7.5	35.0	61.0	\$51,396	\$48,605	\$100,000
2.1 Collect Data on Intercity Bus and Amtrak Train Use at South Station									\$17,988	\$17,012	\$35,000
2.2 Conduct Pedestrian Counts and Travel Time Estimates									\$16,447	\$15,554	\$32,000
2.3 Update South Station Model Network and Times									\$3,084	\$2,916	\$6,000
2.4 Calibrate Base-Year Model Set for 2010									\$13,877	\$13,123	\$27,000
3. Support Operational Analysis	3.5	5.3	5.5	1.3	0.0	1.5	0.0	17.1	\$23,642	\$22,358	\$46,000
3.1 Coordinate Service Plan Developments									\$11,821	\$11,179	\$23,000
3.2 Coordinate with Amtrak									\$11,821	\$11,179	\$23,000
4. Support Preliminary Engineering	4.4	6.0	17.0	11.0	3.5	2.0	0.0	43.9	\$53,965	\$51,035	\$105,000
4.1 Model Future Year No-Build Scenarios									\$5,397	\$5,103	\$10,500
4.2 Model Future Year Build Scenarios									\$24,824	\$23,476	\$48,300
4.3 Perform a Market Analysis									\$4,317	\$4,083	\$8,400
4.4 Perform a Transit Crowding Analysis									\$4,317	\$4,083	\$8,400
4.5 Perform an Analysis of Transit and Revenue Changes									\$5,397	\$5,103	\$10,500
4.6 Perform an Economic Impact Analysis									\$9,714	\$9,186	\$18,900
5. Support Environmental Analysis	2.4	3.6	4.2	3.2	0.0	0.5	1.5	15.4	\$19,530	\$18,470	\$38,000
5.1 Perform an Analysis of Study-Area Traffic Patterns									\$12,695	\$12,005	\$24,700
5.2 Perform an Environmental Analysis									\$6,836	\$6,464	\$13,300
Total	19.8	20.9	38.5	19.9	5.5	15.2	37.7	157.5	\$ 329,958.48	\$ 312,041.74	\$340,000

Other Direct Costs **\$10,000**

Travel	\$1,500
Other (software for economic impact analysis)	\$8,500

TOTAL COST **\$350,000**

Funding

New MassDOT Contract # tbd
(Federal Railroad Administration High-Speed Intercity Passenger Rail Grant with Local Match)
The direct costs associated with travel and software are approximations and may be larger than are actually needed. These costs need to be approved by MassDOT before they are expended.