



BOSTON REGION METROPOLITAN PLANNING ORGANIZATION

Richard A. Davey, MassDOT Secretary and CEO and MPO Chairman
Karl H. Quackenbush, Executive Director, MPO Staff

MEMORANDUM

DATE February 7, 2013
TO Boston Region Metropolitan Planning Organization
FROM Karl H. Quackenbush
CTPS Executive Director
RE Work Program for: Massachusetts Turnpike Boston Ramps Study
Technical Support

Action Required

Review and approval

Proposed Motion

That the Boston Region Metropolitan Planning Organization, upon the recommendation of the Massachusetts Department of Transportation's Office of Transportation Planning, vote to approve the work program for Massachusetts Turnpike Boston Ramps Study Technical Study in the form of the draft dated February 7, 2013.

Project Identification

Unified Planning Work Program Classification

Technical Support/Operations Analysis

CTPS Project Number

97101

Clients

Massachusetts Department of Transportation, Office of Transportation Planning
Project Supervisor: Paul Nelson

CTPS Project Supervisors

Principal: Efi Pagitsas
Manager: Mark Abbott

Funding

MassDOT SPR Contract #72982
Future MassDOT SPR Contract

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

The Massachusetts Department of Transportation (MassDOT), Planning Division, has begun a study to develop and evaluate alternatives for new ramps or alterations to the existing ramps along the Massachusetts Turnpike between Commonwealth Avenue in Allston and Interstate 93 in Chinatown in the city of Boston. Due to growth in the Back Bay, Longwood Medical and Academic Area, Fenway, and Seaport District neighborhoods, adding traffic to the existing heavily congested roadways, such as Massachusetts Avenue and Huntington Avenue, and to the area's parkways, such as Storrow Drive and Memorial Drive, MassDOT wishes to investigate alternative connections to the Massachusetts Turnpike in order to alleviate the growing congestion concerns. New or modified connections could also allow for new MBTA bus routes between these neighborhoods and better access to Logan Airport.

MassDOT's Office of Transportation Planning (OTP) has previously evaluated the existing conditions for the study and developed possible connections and ramp alternatives. However the analysis needs to be updated to current conditions that apply the current Highway Capacity Manual (HCM) methodologies.

Objectives

The goal of this study is for CTPS staff to assist OTP with the completion of its Boston Ramps Study. The objectives of the work program are as follows:

- Review existing data and analysis to establish what is available
- Update existing conditions analysis
- Conduct future-year analysis for future no-build conditions and four possible concept alternatives

Work Description

Task 1 Update Existing Conditions Analysis

Staff will review the previous existing conditions analysis completed in 2011 using the 2000 HCM methodologies and available data files from OTP. The existing conditions analysis will then be updated using the previously collected traffic data and 2010 HCM methodologies. The analysis will include the following:

- AM and PM merge and diverge analysis at 14 ramp locations:
 1. I-90 EB Cambridge Street on-ramp
 2. I-90 EB Copley Square off-ramp
 3. I-90 EB I-93/South Station off-ramp
 4. I-90 EB South Boston off-ramp
 5. I-90 EB I-93 northbound on-ramp
 6. I-90 EB South Boston on-ramp
 7. I-90 EB HOV on-ramp
 8. I-90 WB I-93/South Boston off-ramp
 9. I-90 WB South Boston on-ramp
 10. I-90 WB I-93 northbound on-ramp
 11. I-90 WB Arlington Street on-ramp
 12. I-90 WB Clarendon Street on-ramp
 13. I-90 WB Massachusetts Avenue on-ramp
 14. I-90 WB Cambridge Street off-ramp
- AM and PM mainline analysis along six sections of I-90 (Mass. Turnpike):
 1. I-90 EB between Allston Toll and Prudential tunnel
 2. I-90 WB between Prudential Tunnel and Allston toll
 3. I-90 EB between Prudential tunnel and I-93 exit
 4. I-90 WB between I-93 exit and Prudential tunnel
 5. I-90 EB in Ted Williams Tunnel
 6. I-90 WB in Ted Williams Tunnel
- AM and PM intersection analysis at 23 intersections:
 1. Commonwealth Avenue at Harvard Street
 2. River Street at Soldiers Field Road
 3. Commonwealth Avenue at Carlton Street
 4. Park Drive at Brookline Avenue/Boylston Street
 5. Kenmore Square (Commonwealth Avenue/Brookline Avenue/Beacon Street)
 6. Boylston Street at Bowker Overpass
 7. Huntington Avenue at Francis Street
 8. Huntington Avenue at Longwood Street
 9. Huntington Avenue at Ruggles Street
 10. Tremont Street at Ruggles Street
 11. Tremont Street at Melnea Cass Boulevard
 12. Massachusetts Avenue at Melnea Call Boulevard
 13. Massachusetts Avenue at Beacon Street
 14. Dartmouth Street at Saint James Avenue
 15. Arlington Street at Beacon Street
 16. Arlington Street at Stuart Street/Columbus Avenue

17. Washington Street at Kneeland Street
 18. Washington Street at Essex/Boylston Street
 19. Atlantic Avenue at Summer Street
 20. Congress Street at East Service Road
 21. West Fourth Street at Dorchester Avenue
 22. Albany Street at Herald Street
 23. Leverett Circle
- AM and PM arterial analysis at 11 key arterial locations
 1. Boston University Bridge – NB and SB
 2. Harvard Bridge – NB and SB
 3. Longfellow Bridge – EB and WB
 4. Memorial Drive between BU Bridge and Harvard Bridge – EB and WB
 5. Memorial Drive between Harvard Bridge and Longfellow Bridge – EB and WB
 6. Storrow Drive between Harvard Bridge and Longfellow Bridge – EB and WB
 7. Storrow Drive between Longfellow Bridge and Leverett Circle – EB and WB
 8. Callahan Tunnel - NB
 9. Sumner Tunnel – SB
 10. Zakim Bridge – NB and SB

Products of Task 1

Tables summarizing the completed existing conditions analysis update

Task 2 Update Crash Data

Staff will update the 2005-07 crash data used in the earlier existing conditions analysis to 2006–10 data.

Products of Task 2

Tables summarizing the updated crash data

Task 3 Update Transit Data

Transit data will be updated from year 2008 to the most recently available data from CTPS's Transit Service Planning Group. Updates will be sought for the following data:

- Daily, AM, and PM boardings for the Silver Line, Orange Line, and Green Line.
- Ridership data for the Framingham/Worcester commuter rail line for weekday AM and PM trains.

- Ridership data for MBTA bus routes in the study area. (MassDOT will need to provide information on how the previous summary was created.)

Product of Task 3

Updated summary of transit data

Task 4 Future-Year Analysis

In this task, 2035 future-year conditions analysis for the No Build and 4 Build scenarios will be conducted using 2010 HCM methodologies. The analysis will include the following:

- AM and PM merge and diverge analysis at the fourteen locations listed previously in the existing condition task
- AM and PM mainline analysis along six sections of I-90 (Mass. Turnpike), as listed previously in the existing condition task
- AM and PM intersection analysis at six key intersections at the following locations:
 1. St. James Avenue at Dartmouth Street
 2. Stuart Street at Arlington Street
 3. Kenmore Square
 4. Brookline Avenue at Boylston Street
 5. Bowker Overpass at Boylston Street
 6. Beacon Street at Massachusetts Avenue
- AM and PM arterial analysis at 11 key arterial locations as listed previously in the existing conditions task

Products of Task 4

Tables summarizing the completed future-year analysis

Task 5 Review Alternative Designs and Develop Cost Estimates

For the four proposed concept alternatives, staff will do the following:

- Provide preliminary concept design refinements and concept graphics of alternatives
- Develop preliminary project cost estimates in conjunction with the MassDOT Highway Division

Products of Task 5

Preliminary concept designs and associated preliminary cost estimates of the alternatives

Task 6 Support MassDOT at Meetings

Attend up to four public meetings and up to two other meetings. Support MassDOT's Office of Transportation Planning in answering technical questions related to completed analysis (no presentations) and, if necessary, provide graphics showing alternatives.

Product of Task 6

- Attendance at up to four public meetings and up to two other meetings
- Graphics showing alternatives, if necessary

Estimated Schedule

It is estimated that this project will be completed 10 months after work commences. The proposed schedule, by task, is shown in Exhibit 1.

Estimated Cost

The total cost of this project is estimated to be \$75,456. This includes the cost of 24.2 person-weeks of staff time, overhead at the rate of 96.58 percent and travel costs. A detailed breakdown of estimated costs is presented in Exhibit 2.

KQ/MSA/msa

Exhibit 1
ESTIMATED SCHEDULE
Massachusetts Turnpike Boston Ramps Study Technical Support

Task	Month										
	1	2	3	4	5	6	7	8	9	10	
1. Update Existing Conditions Analysis	A										
2. Update Crash Data			B								
3. Update Transit Data				C							
4. Future Year Analysis				D							
5. Review Alternatives and Develop Cost Estimates						E					
6. Support MassDOT at Meetings											

Products/Milestones

- A: Tables summarizing the updated existing conditions analysis
- B: Tables summarizing the updated crash data
- C: Updated summary of transit data
- D: Tables summarizing the completed future-year analysis
- E: Preliminary concept designs and cost estimates of alternatives

Exhibit 2
ESTIMATED COST
Massachusetts Turnpike Boston Ramps Study Technical Support

Direct Salary and Overhead	\$75,356
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Task	Person-Weeks					Direct Salary	Overhead (96.58%)	Total Cost
	M-1	P-5	P-4	P-3	Total			
1. Update Existing Conditions Analysis	0.6	2.0	0.0	1.8	4.4	\$6,257	\$6,043	\$12,301
2. Update Crash Data	0.2	1.0	1.0	0.0	2.2	\$3,278	\$3,166	\$6,445
3. Update Transit Data	0.2	1.0	0.0	0.0	1.2	\$2,017	\$1,948	\$3,964
4. Future Year Analysis	0.2	3.4	0.0	1.2	4.8	\$7,300	\$7,050	\$14,350
5. Review Alternatives and Develop Cost Estimates	0.6	8.0	0.0	0.0	8.6	\$14,438	\$13,944	\$28,382
6. Support MassDOT at Meetings	0.6	2.4	0.0	0.0	3.0	\$5,043	\$4,871	\$9,914
Total	2.4	17.8	1.0	3.0	24.2	\$38,334	\$37,022	\$75,356

Other Direct Costs	\$100
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Travel	\$100
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TOTAL COST	\$75,456
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Funding

MassDOT SPR Contract #72982
 Future MassDOT SPR Contract