



BOSTON REGION METROPOLITAN PLANNING ORGANIZATION

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

MEMORANDUM

DATE October 16, 2014
TO Boston Region Metropolitan Planning Organization
FROM Karl H. Quackenbush
CTPS Executive Director
RE Work Program for: Priority Corridors for LRTP Needs Assessment: FFY 2015

Action Required

Review and approval

Proposed Motion

That the Boston Region Metropolitan Planning Organization vote to approve the work program for Priority Corridors for LRTP Needs Assessment: FFY 2015 presented in this memorandum

Project Identification

Unified Planning Work Program Classification
Planning Studies

CTPS Project Number
13267

Client

Boston Region Metropolitan Planning Organization

CTPS Project Supervisors

Principal: Mark Abbott
Manager: Seth Asante

Funding

MPO Planning Contract #84053
MPO §5303 Contract #78922 and subsequent MPO §5303 contract

Impact on MPO Work

This is MPO work and will be carried out in conformance with the priorities established by the MPO.

Background

The Boston Region MPO's Long-Range Transportation Plan (LRTP), *Paths to a Sustainable Region*, identified existing needs for all modes of transportation in the MPO region.¹ These needs guide decisions about which projects to include in future Transportation Improvement Plans (TIPs).² When identifying the region's needs, staff divided the MPO region into subregional corridors and areas (six radial, two circumferential, and one central) in order to simplify and examine its complex transportation system. Among the region's current mobility needs are maintaining and modernizing roadways with high congestion levels and safety problems; improving the quantity and quality of venues for walking and bicycling; improving transit service's adherence to schedules; and advancing its efficiency, and modernization.

For roadways, the LRTP identified several priority arterial segments that need maintenance, modernization, safety, and mobility improvements. These arterial segments were identified based on previous and ongoing transportation-planning work, including the MPO's Congestion Management Process (CMP), the MBTA's Program for Mass Transportation (PMT), and MPO planning studies. To help identify solutions to address the mobility, safety, and preservation concerns in some of these arterial segments, a roadway corridor study was included in the federal fiscal year (FFY) 2015 Unified Planning Work Program (UPWP).³ In FFYs 2012, 2013, and 2014, MPO staff studied Route 203 in Boston, Route 114 in Danvers, Route 2 in Concord, Route 30 in Framingham, and Route 140 in Franklin; several of the recommendations for which already are being considered.

Studying a roadway corridor or corridor segment is a logical way to address regional multimodal transportation needs, as it allows the corridor to be evaluated comprehensively: pedestrians, bicyclists, motorists, and public-transportation users are considered using a holistic approach to analyzing the issues and recommending associated improvements. The result is an improved roadway corridor, where it is safe to cross the street, walk or cycle to shops or schools, or for recreation; where buses run on time; and where it is safe for people to walk to and from train stations. Typically, a roadway corridor or corridor segment study is multimodal and addresses issues,

¹ *Paths to a Sustainable Region, the Long-Range Transportation Plan of the Boston Region Metropolitan Planning Organization*, September 22, 2011.

² Transportation Improvement Program and Air Quality Conformity Determination, Federal Fiscal Years 2015–18, endorsed by the Boston Region Metropolitan Planning Organization on July 10, 2014.

³ Unified Planning Work Program, Federal Fiscal Year 2015, Endorsed by the Boston Region Metropolitan Planning Organization on June 26, 2014.

analyzes services, makes short- and long-term recommendations for areas within the roadway's right-of-way, and takes into account the needs of abutters.

In this document, an arterial segment is defined broadly as a portion of roadway corridor that spans multiple towns, or is restricted to just a few intersections in a town or shopping center. For an arterial segment that spans multiple or an entire town, the problem locations usually are in subsegments of the arterial segment. The arterial segments that will be considered for study are identified in the current LRTP.

Objectives

The objectives of this study are to:

- Select as many as two arterial segments—one only, if the roadway is particularly long, or challenging to study—from a selection of arterials identified in the current LRTP
- Identify the safety, mobility, access, and other transportation-related problems within the arterial segments
- Ascertain and evaluate multimodal transportation solutions to the problems

Work Description

MPO staff will perform the following tasks:

1. Solicit agency and municipal input
2. Select study locations
3. Collect and gather data
4. Analyze data
5. Recommend improvements
6. Document study results

Task 1 Solicit Agency and Municipal Input

In addition to municipal officials and members of the MPO subregional groups for the areas in which the arterial segments are located, MPO staff will invite representatives from the Massachusetts Department of Transportation (MassDOT) Office of Transportation Planning, MassDOT Highway Division, and Metropolitan Area Planning Council (MAPC) to participate in the study, in order to give MPO staff advice and input on data; identify transportation-related problems; and develop multimodal transportation solutions and recommendations. Recommendations from this study will be fulfilled by the municipalities or the Highway Division; therefore, it is important that the recommendations reflect those entities' experience and design standards.

Products of Task 1

Notes reflecting stakeholder input on data, selection of study locations, review of study products, and recommendations for possible solutions

Task 2 Select Study Locations

First, MPO staff will rank the arterial segments using available CMP data, such as traffic volumes, crashes, speeds, bus crowding and/or schedule adherence, traffic signal coordination, and pedestrian and bicycle needs. The arterial segments selected for study will be ones that could benefit from improvements related to sidewalks and crosswalks, access management, traffic control and operations (including traffic signal upgrades and coordination), and pavement rehabilitation. In addition, the selected segments would need to have the support and interest of the communities through which they pass; and the communities need to be committed to implementing the recommendations of the study. Cited below are the selection criteria for potential locations.

- Safety: Experiences high crash rate and/or contains one or more top-200 high-crash sites
- Congestion: Experiences extensive delays during peak periods
- Multimodal Significance: Carries bus route(s); is adjacent to a transit stop or station; supports bicycle or pedestrian activities; or has an implementation project to support one or more of these activities
- Regional Significance: Carries large proportion of regional traffic and/or is part of the National Highway System
- Implementation Potential: Has a strong commitment from the community and/or MassDOT

Then, based on the rankings of the arterial segments and support and interest of the communities to implement the study's recommendations, MPO staff will select as many as two arterial segments for this study—one only, if the roadway is particularly long, or challenging to study. Both the list of segments from the LRTP and the staff recommendation for the segment(s) to study will be presented to the MPO for discussion. For the arterial segment(s) selected for this study, MPO staff, working in conjunction with agency and municipal officials, will identify problem locations (subsegments) within the arterial segment where this study should focus on developing multimodal transportation improvements.

To this end, staff will identify safety and mobility problems facing pedestrians, bicyclists, motorists, and transit users, as well as transit service deficiencies and connectivity problems. Staff also will identify truck traffic issues, such as crash locations with unusually high truck involvement, possible turning-radius issues at intersections along the corridor, heavy truck volumes adding to congestion along the corridor, and points of truck conflicts with cars and pedestrians. In addition, MPO staff will review the Highway Division's and MPO's TIP project information databases and contact the municipalities to identify projects and studies that have already been planned or conducted for each arterial segment selected for study. This information will guide the selection of problem locations on which the study should focus.

Products of Task 2

A technical memorandum that will include documentation of:

- Safety, operational, and mobility problems facing pedestrians, bicyclists, and motorists
- Transit service issues, including service deficiencies, connectivity, and linkage problems
- Truck traffic issues
- Projects and studies already planned for the arterial segments
- Rationale for the selection of final study locations

Task 3 Collect and Gather Data

Once the problem locations have been identified, recent and historical data will be gathered from existing sources, including studies performed by municipalities or by proponents of private development projects, and databases maintained by the MPO and the Highway Division. Unavoidably, some data will need to be collected in the field for the type of analysis anticipated for this work program. The following data likely will be gathered for the selected study segments:

- Turning-movement counts for the AM and PM peak periods, including trucks, pedestrians, and bicyclists, and average annual weekday traffic data from automatic traffic recorder (ATR) counts
- Traffic-signal timing plans and coordination settings, signage, and lane configurations
- Bus service performance data and locations of stops, signage, and shelters
- Truck traffic data, including truck origins and destinations
- Right-of-way, pavement widths and conditions, sidewalk widths and conditions, and the condition and signage at midblock crossings
- Development projects, development mitigation proposals, and proposed transportation projects
- Crash statistics, crash rates, and crash diagrams for locations with crash rates exceeding the Highway Division's district average

Products of Task 3

- Files of various kinds of data for assessing safety, mobility, and operational performance of the problem locations, including roadway inventory data, and inventory of bus service and performance data
- A list of economic development and transportation improvement proposals previously planned for the arterial segments

Task 4 Analyze Data

Based on analyses performed in similar past studies and the need to provide "complete streets"—where pedestrians, bicyclists, motorists, and transit riders of all ages and abilities can move along and across a street safely—staff anticipates performing the following types of investigations in this study:

- Analyze crash data and prepare crash diagrams to confirm safety concerns and identify possible improvements
- Evaluate the need for installing new sidewalks, replacing broken and crumbling sidewalks, and providing continuity of sidewalks
- Evaluate the need for improving midblock pedestrian crossings by adding new ones; installing pedestrian crosswalk flashing beacons; improving signage at or near midblock pedestrian crossings; or making crossings accessible
- Assess safe and economical means to accommodate bicyclists—for example, adding bike lanes, providing adequate shoulders, or allowing bicyclists to share the road with motorists
- Analyze crash and traffic volume data and intersection turning-radius data to determine potential truck traffic safety improvements
- Conduct roundabout, traffic signal warrant, signal retiming, and coordination analyses to determine appropriate intersection traffic controls and best signal-timing plans for safe and efficient movement of pedestrians, bicyclists, and motorists
- Assess need to upgrade traffic-signal equipment to comply with Americans with Disabilities Act (ADA) requirements for signalized intersections
- Evaluate on-time performance of bus service, bus-stop placement in relationship to demand and pedestrian activity, and the need for bus signs and shelters

Products of Task 4

Crash analysis tables, intersection crash diagrams, delay and queue calculations, bus performance statistics, and maps and other graphics showing pedestrians' and bicyclists' needs

Task 5 Recommend Improvements for Pedestrian Mobility, Traffic Operations, Bus Service, and Safety

Based on the combined results of consulting with agency and municipal officials and the analyses described above, staff will recommend geometric, traffic control, pavement rehabilitation, roadway enhancement, and other changes to improve traffic operations, with special emphasis on the effective, safe accommodation of pedestrians and bicyclists. Additional recommendations will include improvements to allow buses to run on time, and make it safe for people to walk to and from bus stops and train stations.

Products of Task 5

Recommendations for addressing pedestrian, bicyclist, and motorist safety; accommodation of pedestrians, bicyclists, and transit users; other traffic operations issues, including trucks; and bus-service issues

Task 6 Document Study Results

Documentation will be in the form of a report or a technical memorandum on the following subjects: study background, agency and municipal input, identification of problems, data collection, analyses, and recommendations. The document will follow the MassDOT Highway Division's guidelines for preparation of functional design reports as much as possible, taking into consideration the study's budget. The document will be available for review by municipal officials, members of the MPO's subregional groups for the areas in which the arterial segments are located, and the MassDOT Highway Division and Office of Transportation Planning. After comments have been addressed, the draft will be submitted to the MPO for final approval.

Products of Task 6

A final report or memorandum documenting all of the project's tasks and products, including recommendations

Estimated Schedule

Staff estimates that this project will be completed 12 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 \$110,000. This includes the cost of 37.6 person-weeks of staff time, overhead at the rate of 91.82 percent, and travel. A detailed breakdown of estimated costs is presented in Exhibit 2.

KQ/MSA/msa

Exhibit 1
ESTIMATED SCHEDULE
Priority Corridors for LRTP Needs Assessment: FFY 2015

Task	Month												
	1	2	3	4	5	6	7	8	9	10	11	12	
1. Solicit Agency and Municipal Input	A												
2. Select Study Locations	B												
3. Collect and Gather Data			C										
4. Analyze Data			D										
5. Recommend Improvements for Pedestrian Mobility, Traffic Operations, Bus Service, and Safety							E						
6. Document Study Results													F

Products/Milestones

- A: Notes on stakeholder input
- B: Technical memorandum on location selection and other documentation
- C: Lists and files of data collected, including notes, worksheets and economic development proposals
- D: Worksheets, traffic model outputs, notes, and other types of analysis documentation
- E: Study recommendations for addressing identified issues
- F: Final report or memorandum documenting study analyses, findings, and recommendations

Exhibit 2
ESTIMATED COST
Priority Corridors for LRTP Needs Assessment: FFY 2015

Direct Salary and Overhead	\$109,772
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Task	Person-Weeks						Direct Salary	Overhead (91.82%)	Total Cost
	M-1	P-5	P-4	P-2	Temp	Total			
1. Solicit Agency and Municipal Input	0.2	2.0	0.0	0.0	0.0	2.2	\$3,863	\$3,547	\$7,409
2. Select Study Locations	0.2	1.0	0.0	0.0	0.0	1.2	\$2,107	\$1,935	\$4,041
3. Collect and Gather Data	0.0	3.0	0.0	0.0	3.0	6.0	\$6,780	\$6,225	\$13,005
4. Analyze Data	0.2	4.6	2.1	2.0	0.0	8.9	\$13,087	\$12,016	\$25,103
5. Recommend Improvements for Pedestrian Mobility, Traffic Operations, Bus Service, and Safety	0.2	5.0	2.0	0.0	0.0	7.2	\$11,772	\$10,809	\$22,582
6. Document Study Results	4.1	6.0	0.0	2.0	0.0	12.1	\$19,618	\$18,013	\$37,631
Total	4.9	21.6	4.1	4.0	3.0	37.6	\$57,227	\$52,545	\$109,772

Other Direct Costs	\$228
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Travel	\$228
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TOTAL COST	\$110,000
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Funding

MPO Planning Contract #84053
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