BOSTON REGION METROPOLITAN PLANNING ORGANIZATION

Stephanie Pollack, MassDOT Secretary and CEO and MPO Chair
Karl H. Quackenbush, Executive Director, MPO Staff

MEMORANDUM

DATE October 15, 2015

TO Boston Region Metropolitan Planning Organization

FROM Karl H. Quackenbush
CTPS Executive Director

RE Work Program for: Priority Corridors for LRTP Needs Assessment: FFY 2016

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 2016, presented in this memorandum

Project Identification

Unified Planning Work Program Classification

Planning Studies

CTPS Project Number

13271

Client

Boston Region Metropolitan Planning Organization

CTPS Project Supervisors

Principal: Mark Abbott
Manager: Seth Asante

Funding

MPO Planning Contract #89787
MPO §5303 Contract #84080 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), *Charting Progress to 2040,* identifies 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] Among the region's current mobility needs are maintaining and modernizing the roadways that have high congestion levels and safety problems; improving the quantity and quality of venues for walking and bicycling; improving adherence to schedules of transit service; and advancing the efficiency, and modernization of transit service.

For roadways, the LRTP identified several priority arterial segments that need maintenance, modernization, and 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 Massachusetts Bay Transportation Authority's (MBTA) Program for Mass Transportation (PMT), and MPO planning studies. To help identify solutions to address the mobility and safety concerns in some of the identified arterial segments, a roadway corridor study was included in the federal fiscal year (FFY) 2016 Unified Planning Work Program (UPWP).[3] In FFYs 2012 through 2015, MPO staff studied Route 203 in Boston, Route 114 in Danvers, Route 2 in Concord, Route 30 in Framingham, Route 140 in Franklin, and Route 1A/Lynnway in Lynn; several of the recommendations from those studies are 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 use a holistic approach to analyzing the issues and recommending 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, analyzes services,

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[1] *Charting Progress to 2040, the Long-Range Transportation Plan of the Boston Region Metropolitan Planning Organization,* July 30, 2015.

[2] Transportation Improvement Program and Air Quality Conformity Determination, Federal Fiscal Years 2016–20, endorsed by the Boston Region Metropolitan Planning Organization on July 30, 2015.

[3] Federal Fiscal Year 2016 Unified Planning Work Program, Endorsed by the Boston Region Metropolitan Planning Organization on July 30, 2015.

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 either a portion of a roadway corridor that spans multiple towns, or a segment that includes just a few intersections in a town or shopping center. For an arterial segment that spans multiple towns 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—only one 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 segment or segments
- Develop and evaluate multimodal transportation solutions to the problems

Work Description

MPO staff will perform the following tasks:

1. Solicit input from state transportation agencies and municipalities
2. Select the study locations
3. Collect and gather data
4. Analyze data
5. Recommend improvements
6. Document the results of the study

Task 1 Solicit Input from Agencies and Municipalities

In addition to municipal officials and members of the MPO subregional groups whose jurisdictions include areas in which the arterial segments are located, MPO staff will invite representatives from the Massachusetts Department of Transportation (MassDOT) Office of Transportation Planning, the MassDOT Highway Division, and the Metropolitan Area Planning Council (MAPC) to participate in the study, in order to give MPO staff advice about the areas being studied and input on the data to be used; to help identify transportation-related problems; and to help develop multimodal transportation solutions and recommendations. The 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 on stakeholder input on data, selection of study locations, and input on possible study products

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 segments that could benefit from improvements related to sidewalks and crosswalks, access management, traffic control and operations (including traffic signal upgrades and coordination), and changes in land use. In addition, the selected segments would need to have the support and interest of the communities through which they pass, and the communities would need to be committed to implementing the recommendations of the study. The selection criteria for potential locations are:

- Safety Conditions: Experiences a high crash rate; contains one or more top-200 Massachusetts high-crash locations or a Highway Safety Improvement Program crash cluster; or has a significant number of pedestrian and bicycle crashes
- Congested Conditions: Experiences extensive delays during peak periods
- Multimodal Significance: Carries at least one bus route; is adjacent to a transit stop or station; supports bicycle or pedestrian activities, but has a need for improvement; lacks bicycle or pedestrian accommodation; carries a high volume of truck traffic that serves regional commerce; or has an implementation project already planned or in process to support one or more of these activities
- Regional Significance: Carries large percentage of the traffic that serves regional economic, cultural, or recreational development; is part of the National Highway System; or is located in Environmental Justice Transportation Analysis areas or zones
- Implementation Potential: Has a strong commitment from the community; is endorsed by the subregion; is endorsed by its roadway's administrative agency; or has strong support from other stakeholders
- Regional Equity: Study locations are distributed throughout the MAPC subregions over time

Then, based on the rankings of the arterial segments and the support of the stakeholders for implementing the study's recommendations, MPO staff will select as many as two arterial segments for this study—only one if the roadway is particularly long or challenging to study. Both the list of segments from the LRTP and the staff recommendations of which a segment or segments to study will be presented to the MPO for discussion. For the arterial segments selected

for this study, MPO staff, working in conjunction with transportation agency and municipal officials, will identify the problem locations (subsegments) within each arterial segment that this study should focus on for developing multimodal transportation improvements.

To this end, staff will identify the safety and mobility problems facing pedestrians, bicyclists, motorists, and transit users, as well as transit service deficiencies, connectivity problems, and linkage 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 where trucks conflict with cars, pedestrians, or bicyclists. In addition, MPO staff will review the Highway Division's and MPO's TIP project information databases and contact 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 final selection of segments to be studied

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, as well as by MPO staff. Unavoidably, some data will need to be collected in the field for the type of analysis anticipated for these studies. 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
- Already-planned development projects, development mitigation proposals, and proposed transportation projects
- Crash statistics, crash rates, and crash diagrams for locations that have 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 an inventory of bus service and performance data
- A list of already-planned economic development and transportation improvement proposals 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 anticipate performing the following tasks:

- 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; and/or making crossings accessible
- Assess potential safe and economical means of accommodating bicyclists—for example, adding protected bike lanes, providing adequate shoulders, and 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 analyses of roundabout, traffic signal warrant, signal retiming, and signal coordination to determine appropriate intersection traffic controls and the best signal-timing plans for the safe and efficient movement of pedestrians, bicyclists, and motorists
- Assess the need for upgrading traffic-signal equipment to comply with Americans with Disabilities Act (ADA) requirements for signalized intersections
- Evaluate the on-time performance of bus service, bus-stop placement in relation 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, tables of bus performance statistics, and maps and other graphics showing pedestrians' and bicyclists' needs

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

Based on the results of consultations 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 an emphasis on the effective, safe accommodation of pedestrians and bicyclists. Additional recommendations will include improvements to allow buses to run on time, and to 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 Results

Documentation will be in the form of a report or a technical memorandum on the following subjects: background of the study, 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 MassDOT's Highway Division and Office of Transportation Planning. After their comments have been addressed, the final document will be presented to the MPO.

Products of Task 6

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

Estimated Schedule

Staff estimate 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 38.4 person-weeks of staff time, overhead at the rate of 98.88 percent, and travel. A detailed breakdown of estimated costs is presented in Exhibit 2.

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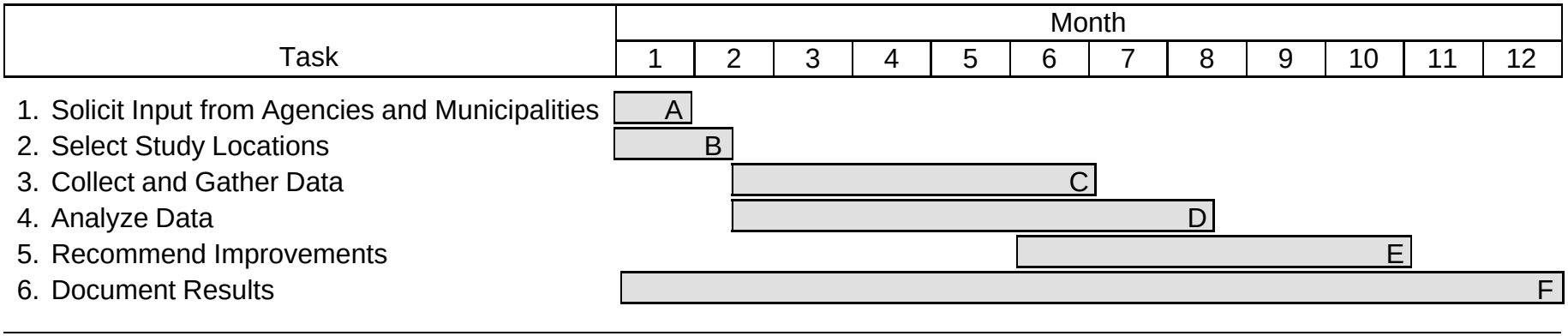
Exhibit 1
ESTIMATED SCHEDULE
Priority Corridors for LRTP Needs Assessment: FFY 2016



Products/Milestones

- A: Notes on stakeholder input
- B: Technical memorandum
- C: List and files of data and information collected
- D: Documentation of analysis
- E: Study recommendations
- F: Final report or memorandum

Exhibit 2
ESTIMATED COST
Priority Corridors for LRTP Needs Assessment: FFY 2016

Direct Salary and Overhead	**$109,651**

Task	Person-Weeks						Direct Salary	Overhead (98.88%)	Total Cost
	M-1	P-5	P-4	P-2	Temp	Total			
1. Solicit Input from Agencies and Municipalities	0.2	1.5	0.0	1.1	0.0	2.8	$4,162	$4,115	$8,277
2. Select Study Locations	1.0	1.0	0.0	2.5	0.0	4.5	$5,992	$5,925	$11,918
3. Collect and Gather Data	0.1	1.0	1.5	2.0	3.0	7.6	$7,463	$7,379	$14,842
4. Analyze Data	0.5	3.5	2.0	2.0	0.0	8.0	$11,866	$11,733	$23,600
5. Recommend Improvements	0.5	4.0	2.0	1.5	0.0	8.0	$12,289	$12,152	$24,441
6. Document Results	3.0	4.5	0.0	0.0	0.0	7.5	$13,362	$13,212	$26,573
Total	5.3	15.5	5.5	9.1	3.0	38.4	$55,134	$54,517	$109,651

Other Direct Costs	**$349**
Travel	$349

TOTAL COST	**$110,000**

Funding

MPO Planning Contract #89787
MPO §5303 Contract #84080 and subsequent MPO §5303 Contract