



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: Addressing Safety, Mobility, and Access on
Subregional Priority Roadways: FFY 2016

Action Required

Review and approval

Proposed Motion

That the Boston Region Metropolitan Planning Organization vote to approve the work program for Addressing Safety, Mobility, and Access on Subregional Priority Roadways: FFY 2016, presented in this memorandum

Project Identification

Unified Planning Work Program Classification

Planning Studies

CTPS Project Number

13270

Client

Boston Region Metropolitan Planning Organization

CTPS Project Supervisors

Principal: Mark Abbott

Manager: Chen-Yuan Wang

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

During MPO outreach for the development of its Unified Planning Work Program (UPWP) and Long-Range Transportation Plan (LRTP), Metropolitan Area Planning Council (MAPC) subregional groups and other entities submit comments and identify transportation problems and issues that concern them. Often these issues are related to bottlenecks, safety, or lack of safe or convenient access to abutters along roadway corridors in their areas. Such issues can affect not only the mobility and crash incidence along a roadway and its side streets, but also livability and quality of life, including economic development and air quality.

To address these kinds of issues, MPO staff will identify and study roadway corridor segments in the MPO region that are of concern to them but that have not been identified in the LRTP regional needs assessment.¹ The selected roadways will not be major arterials, but rather arterial or collector roadways that may carry fewer vehicles daily than major arterials, and some of them are maintained by a city or town. The study will emphasize the issues that are identified by relevant subregional groups and will develop recommendations for low-cost, short- and long-term improvements. In addition to safety, mobility, and access, other subjects that will be considered are transit feasibility, truck-related issues, and bicycle and pedestrian transportation.

The selection of the corridor segments to be studied will be based on criteria that include safety and mobility needs; agency, municipal, and MAPC subregional group input; and implementation feasibility, as described in Task 2. As many as two corridor segments will be selected; the number selected will depend on the lengths of the road segments and the nature of the issues that need to be addressed. A segment selected for study may span multiple towns, or it may be restricted to just a few intersections in a town center, shopping area, or office park.

A roadway corridor study is a logical way to address subregional multimodal transportation needs, since it evaluates a roadway corridor segment comprehensively: pedestrians, bicyclists, motorists, public-transportation users, and abutters are all considered, using a holistic approach to analyzing the issues and developing recommendations for improvements within the roadway's right-of-way. This study will aim not only to improve transportation facilities and traffic operations, but also to increase safety and quality of life for all users. Pedestrians and bicyclists

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

will be able to cross the street safely on their way to shops, schools, or recreation; buses will be able to run on time; and transit riders will be assured safe access to and from train stations.

Objectives

The objectives of this study are to:

- Select as many as two arterial or collector roadway segments—only one, if the roadway is particularly long or is challenging to study— based on prioritization criteria and input from agencies, municipalities and MAPC subregional groups
- Identify the safety, mobility, access, and other transportation-related problems within those segments
- Evaluate the feasibility of multimodal (including pedestrian, bicycle, truck, and transit modes) transportation solutions to the problems

Work Description

MPO staff will perform the following tasks:

- Solicit agency, municipal, and MAPC subregion input
- Select study segments
- Collect data
- Analyze data
- Recommend improvements
- Document methodology, findings, and recommendations

Task 1 Solicit Agency, Municipal, and MAPC Subregion Input

MPO staff will review already-existing comments from LRTP, UPWP, and other outreach activities to begin constructing an initial list of roadway segments to consider. Subsequently, staff will invite municipal officials from the potential study areas; members of the MAPC subregional groups in the potential study areas; representatives from the Massachusetts Department of Transportation (MassDOT) Office of Transportation Planning and Highway Division; and representatives of the MAPC to comment on the initial list of potential study segments. Participants will provide advice and input on data; help select study segments; identify transportation-related problems; and provide input into the development of potential multimodal transportation solutions and recommendations. The recommendations from this study will be fulfilled by the Highway Division or municipalities; therefore, it is important that the study recommendations reflect their experience and design standards.

Products of Task 1

Notes on participants' advice, and input on: data, selection of study segments, identification of problems, and possible solutions

Task 2 Select Roadway Segments to Be Studied

MPO staff will develop a ranking system similar to what they used for the “Addressing Safety, Mobility, and Access on Subregional Priority Roadways—FFY 2015” study, and will apply it to the candidate segments for this study in order to select up to two segments—only one if the roadway is particularly long or is challenging to study. The ranking system will use metrics for the following criteria:

- Safety
- Congestion
- Transit significance
- Regional significance
- Implementation potential
- Regional equity (the study areas are distributed throughout the MAPC subregions over time)

The staff’s proposed selection of up to two segments, along with the list of candidate segments, will be presented to the MPO for discussion and approval.

Within each segment selected for this study, MPO staff, working in conjunction with agencies, municipalities, and subregional groups, will identify the problem subsegments and isolated locations that this study should focus on when developing multimodal transportation improvements. To this end, staff will examine, for each selected segment, the safety and mobility problems facing pedestrians, bicyclists, motorists, and transit users, as well as any transit-service deficiencies and connectivity problems. Staff also will identify truck-traffic issues, such as crash locations with an unusually high level of truck involvement, possible turning-radius issues at intersections along the corridor, heavy truck volumes contributing to congestion along the corridor, and points where trucks conflict with cars and pedestrians.

In addition, staff will review the Highway Division’s databases and the MPO’s Transportation Improvement Program (TIP) project information database, and will contact the municipalities to identify projects and studies that already have been planned or conducted that include the roadway segments selected for study. This information will not only guide the selection of problem locations within each segment, but will also enable staff to consider previous recommendations for incorporation into this study.

Products of Task 2

Documentation of:

- Safety, operational, and mobility problems facing pedestrians, bicyclists, and motorists

- Transit-service issues, including service deficiencies and problems with connectivity
- Truck-traffic issues
- Projects and studies already planned or conducted that include the study's roadway segments
- The segment selection process (presented in a technical memorandum)

Task 3 Collect and Gather Data

Once the problem locations have been identified for each of the roadway segments selected for this study, corresponding recent and historical data will be gathered from existing sources, including studies performed by municipalities or proponents of private development projects and databases maintained by the MPO and MassDOT's Highway Division. It is likely that some data would need to be collected in the field for various analyses in this work program, such as:

- Turning-movement counts for AM and PM peak periods, including trucks, pedestrians, and bicyclists; and average annual weekday traffic data from automatic traffic recorder 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 signage for midblock crossings, along with their conditions
- Development projects mitigation proposals for those projects, and proposed transportation projects; and specific proposed improvements for the chosen roadway segments from these sources
- Crash statistics, rates, and diagrams for locations with crash rates exceeding the Highway Division's district average
- Signage, street markings, and pavement conditions

Products of Task 3

- Data sets of various categories of data to be used for assessing safety, mobility, and operational performance at problem locations
- A list of economic-development and transportation-improvement proposals previously planned for the areas near selected roadway segments

Task 4 Analyze Data

Based on the types of 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 are able to travel safely—the following types of analyses and evaluations will be performed:

- Analyze crash data and prepare crash diagrams to identify safety issues and to develop possible improvements
- Analyze crash- and traffic-volume data and intersection turning-radius data in order to develop potential truck-traffic safety improvements
- Evaluate the need to provide continuity of sidewalks, including installing new sidewalks, and replacing broken and/or crumbled sidewalks
- Evaluate the need for providing new midblock pedestrian crosswalks or improving existing crosswalks by installing pedestrian crosswalk flashing beacons, improving signage at or near crosswalks, and/or making the crosswalks accessible to people with disabilities
- Develop safe and economical means for accommodating bicyclists—for example, adding bike lanes, providing adequate shoulders, or making other provisions so that for bicyclists can share the road with motorists
- Conduct analyses on traffic-signal warrants and signal retiming and coordination, and on the possibility of constructing roundabouts, to determine the appropriate intersection traffic controls and best signal-timing plans for the safe and efficient movement of pedestrians, bicyclists, and motorists
- Assess the need for traffic-signal equipment upgrades, including upgrades for the purpose of complying with the requirements of the Americans with Disabilities Act for signalized intersections
- Evaluate the on-time performance of bus service, bus-stop placement in relationship to demand and pedestrian activity, and need for bus route signs and shelters

Product of Task 4

Documentation of the results of Task 4 analyses, including crash-analysis tables, intersection-crash diagrams, delay-and-queue calculations, warrant analyses, bus-performance statistics, maps and other graphics showing pedestrian and bicyclist needs, and all other results of Task 4

Task 5 Recommend Improvements

Based on consultations with agency and municipal officials and with subregional group representatives, and on the analyses described above, staff will make recommendations of improvements that would address the following issues: pedestrian, bicyclist, and motorist safety; accommodation of pedestrians, bicyclists, and transit users; and other traffic operations issues, including those related to trucks; and bus-service issues. Specific improvements may include geometric configuration; traffic-control devices; pavement rehabilitation; and other changes for improving traffic operations, including effective and safe accommodations for pedestrians and bicyclists. Staff will also make recommendations related to truck traffic, improving on-time performance of bus

service, and increasing the safety of people walking or bicycling to and from bus stops and train stations.

Products of Task 5

Recommendations of improvements

Task 6 Document Methodology, Findings, and Recommendations

MPO staff will produce a final technical memorandum documenting the study's tasks and products. The final document will cover, for each segment studied, the following: study background; input from agencies, municipalities, and MAPC subregional groups; identification of problems; data collection; analyses; and recommendations. Wherever possible, the document will follow the MassDOT Highway Division guidelines for preparing functional-design reports, taking into consideration the study's budget. A draft document will be made available for review by municipal officials, members of the subregional groups where the study segments are located, and MassDOT's Highway Division and Office of Transportation Planning. Once their comments have been addressed, the memorandum will be presented to the MPO.

Products of Task 6

Final technical memorandum

Estimated Schedule

It is estimated 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 37.0 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.

KQ/MSA/cw

Exhibit 1
ESTIMATED SCHEDULE
Addressing Safety, Mobility, and Access on Subregional Priority Roadways: FFY 2016

Task	Month												
	1	2	3	4	5	6	7	8	9	10	11	12	
1. Solicit Agency, Municipal, and MAPC Subregion Input	A												
2. Select Roadway Segments to Be Studied		B											
3. Collect and Gather Data			C										
4. Analyze Data				D									
5. Recommend Improvements						E							
6. Document Methodology, Findings, and Recommendations	F												

Products/Milestones

- A: Notes on stakeholder input
- B: Technical memorandum on the segment selection process
- C: List and files of data collected
- D: Documentation of results of Task 4 analyses
- E: Study recommendations
- F: Final technical memorandum

Exhibit 2
ESTIMATED COST
Addressing Safety, Mobility, and Access on Subregional Priority Roadways: FFY 2016

Direct Salary and Overhead	\$109,594
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Task	Person-Weeks						Direct Salary	Overhead (98.88%)	Total Cost
	M-1	P-5	P-4	P-2	Temp	Total			
1. Solicit Agency, Municipal, and MAPC Subregion Input	0.5	1.5	0.0	1.0	0.0	3.0	\$4,578	\$4,527	\$9,104
2. Select Roadway Segments to Be Studied	0.5	1.5	0.0	2.0	0.0	4.0	\$5,559	\$5,496	\$11,055
3. Collect and Gather Data	0.2	1.5	1.5	1.5	2.5	7.2	\$7,805	\$7,718	\$15,523
4. Analyze Data	0.3	3.5	2.0	1.0	0.0	6.8	\$10,543	\$10,425	\$20,968
5. Recommend Improvements	2.0	4.0	2.0	1.5	0.0	9.5	\$14,860	\$14,693	\$29,553
6. Document Methodology, Findings, and Recommendations	1.0	5.5	0.0	0.0	0.0	6.5	\$11,762	\$11,630	\$23,391
Total	4.5	17.5	5.5	7.0	2.5	37.0	\$55,106	\$54,489	\$109,594

Other Direct Costs	\$406
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Travel	\$406
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TOTAL COST	\$110,000
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Funding
MPO Planning Contract #89787
MPO §5303 Contract #84080 and subsequent MPO §5303 Contract