



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: Addressing Safety, Mobility, and Access on
Subregional Priority Roadways: FFY 2015

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 2015 presented in this memorandum

Project Identification

Unified Planning Work Program Classification

Planning Studies

CTPS Project Number

13266

Client

Boston Region Metropolitan Planning Organization

CTPS Project Supervisors

Principal: Mark Abbott

Manager: Chen-Yuan Wang

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

During MPO outreach for the development of the Unified Planning Work Program (UPWP) and the 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 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 These will not be major arterials, but arterial or collector roadways that may carry fewer vehicles daily than major arterials and may be maintained by a city or town. The study will emphasize issues identified by the relevant subregional groups and development of recommendations for low-cost, short- and long-term improvements. In addition to mobility, safety, 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 mobility and safety 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 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/business park.

A roadway corridor study is usually a logical way to address subregional multimodal transportation needs, as it evaluates a roadway corridor segment comprehensively: pedestrians, bicyclists, motorists, public-transportation users, and abutters all are considered, using a holistic approach to analyzing the issues and developing recommendations for improvements within the roadway's right-of-way. The resulting roadway corridor will not only experience improved vehicular traffic operations, it also will possess increased safety and quality of life for all users: Pedestrians and bicyclists can safely cross the street on their way to shops, schools, or recreation;

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

buses can run on time; and transit riders can be assured of 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—one only, if the roadway is particularly long, or challenging to study— based on prioritization criteria and input from subregional MAPC groups, municipalities, and agencies
- Identify the safety, mobility, access, and other transportation-related problems within these segments
- Evaluate the feasibility of multimodal transportation solutions to the problems, including pedestrian, bicycle, truck, and transit modes

Work Description

MPO staff will perform the following tasks:

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

Task 1 Solicit Agency, MAPC Subregion, and Municipal Input

MPO staff will review existing comments from LRTP, UPWP, and other outreach activities to begin constructing an initial list of corridors to consider.

Subsequently, staff will invite pertinent municipal officials; members of the MAPC subregional groups in the potential study segments; 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 corridors. Participants will provide advice and input on data; help select study locations; identify transportation-related problems; and provide input into developing potential multimodal transportation solutions and recommendations. Recommendations from this study will be fulfilled by the municipalities or the Highway Division; therefore it is important that study recommendations reflect their experience and design standards.

Products of Task 1

Written notes on participants' advice, and input on: data, selection of study locations, identification of problems, and possible solutions

Task 2 Select Roadway Segments to Be Studied

MPO staff will develop a ranking system similar to that of the “Addressing Safety, Mobility, and Access on Subregional Priority Roadways—FFY 2014” study and apply it to the candidate segments for this study in order to select as many as two segments—one only, if the roadway is particularly long, or challenging to study. The system will use metrics for the following criteria:

- Safety
- Congestion
- Transit significance
- Regional significance
- Implementation potential
- Regional equity

The road segments selected for study will be those that study participants consider suitable, and whose communities through which the roads pass would be committed to furthering the study recommendations. The staff’s proposed selection of as many as 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 agency, subregional, and municipal officials, will identify problem subsegments and isolated locations where this study should focus on developing multimodal transportation improvements. To this end, staff will examine the segments to identify safety and mobility problems facing pedestrians, bicyclists, motorists, and transit users in the corridor, as well as any 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 conflict with cars and pedestrians.

In addition, staff will review the Highway Division’s and MPO’s Transportation Improvement Program (TIP) project information databases and contact the municipalities to identify projects and studies that already have been planned or conducted, and which include each roadway segment selected for study. This information will not only guide the selection of problem locations within each segment, but also will enable staff to consider previous recommendations to incorporate 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 and linkage
- Truck-traffic issues
- Projects and studies already planned or conducted that include the study's roadway segments
- The corridor segment selection process (in a table and accompanying technical memorandum)

Task 3 Collect and Gather Data

Once the problem locations have been identified for each roadway segment selected for 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 the Highway Division. Unavoidably, some data likely would need to be collected in the field for some types of 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, development of mitigation proposals, 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 and if possible, car with bike/pedestrian crashes
- Signage, street markings, and pavement conditions

Products of Task 3

- Various kinds of data for assessing safety, mobility, and operational performance at problem locations
- A list of economic-development and transportation-improvement proposals previously planned along the 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 safe to traverse—the following types of analyses and evaluations will be performed:

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

Products of Task 4

Analysis results, 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 from 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 in many areas, including geometric configuration; traffic-control devices; pavement rehabilitation; roadway enhancements and other changes to improve traffic operations, including effective and safe accommodations for pedestrians and bicyclists. Additional recommendations will

be made 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 to address: pedestrian, bicyclist, and motorist safety; accommodation of pedestrians, bicyclists, and transit users; other traffic operations issues, including those related to trucks; and bus-service issues

Task 6 Document Study Methodology and Results

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

Products of Task 6

A final technical memorandum for each selected roadway segment documenting all of the project's tasks and products, including recommendations

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 36.7 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

Addressing Safety, Mobility, and Access on Subregional Priority Roadways: FFY 2015

Task	Month												
	1	2	3	4	5	6	7	8	9	10	11	12	
1. Solicit Agency, MAPC Subregion, and Municipal 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 Study Methodology and Results	F												

Products/Milestones

- A: Notes on participants' input
- B: Technical memorandum on location selection
- C: Data for analysis
- D: Analysis results
- E: Study recommendations for corridor segments
- F: Technical memorandum

Exhibit 2

ESTIMATED COST

Addressing Safety, Mobility, and Access on Subregional Priority Roadways: FFY 2015

Direct Salary and Overhead	\$109,706
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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, MAPC Subregion, and Municipal Input	0.4	2.0	0.0	0.0	0.0	2.4	\$4,214	\$3,869	\$8,083
2. Select Roadway Segments to Be Studied	0.4	1.5	0.0	0.0	0.0	1.9	\$3,336	\$3,063	\$6,399
3. Collect and Gather Data	0.0	2.5	0.0	0.0	3.0	5.5	\$5,902	\$5,419	\$11,321
4. Analyze Data	0.4	4.4	1.1	0.0	0.0	5.9	\$9,881	\$9,073	\$18,954
5. Recommend Improvements	0.4	5.0	3.0	2.1	0.0	10.5	\$15,423	\$14,162	\$29,585
6. Document Study Methodology and Results	4.5	6.0	0.0	0.0	0.0	10.5	\$18,436	\$16,928	\$35,363
Total	6.1	21.4	4.1	2.1	3.0	36.7	\$57,192	\$52,514	\$109,706

Other Direct Costs	\$294
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Travel	\$294
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TOTAL COST	\$110,000
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Funding

MPO Planning Contract # 84053

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