



BOSTON REGION METROPOLITAN PLANNING ORGANIZATION

Stephanie Pollack, MassDOT Secretary and CEO and MPO Chair
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WORK PROGRAM

ADDRESSING SAFETY, MOBILITY, AND ACCESS ON SUBREGIONAL PRIORITY ROADWAYS FFY 2020

SEPTEMBER 19, 2019

Proposed Motion

The Boston Region Metropolitan Planning Organization (MPO) votes to approve this work program.

Project Identification

Unified Planning Work Program (UPWP) Classification

Boston Region MPO Planning Studies and Technical Analyses

Project Number 13420

Client

Boston Region MPO

Project Supervisors

Principal: Mark Abbott

Manager: Chen-Yuan Wang

Funding Source

MPO 3C Planning and §5303 Contract #108217

Schedule and Budget

Schedule: 12 months after work commences

Budget: \$115,000

Schedule and budget details are shown in Exhibits 1 and 2, respectively.

Relationship to MPO Goals

The Boston Region MPO elected to fund this study with its federally allocated metropolitan planning funds during federal fiscal year (FFY) 2020. The work completed through this study will address the following goal areas established in the MPO's Long-Range Transportation Plan (LRTP): safety, system preservation, capacity management and mobility, clean air and clean communities, and economic vitality.

Background

During outreach for the development of the Boston Region MPO's UPWP and LRTP, Metropolitan Area Planning Council (MAPC) subregional groups and other entities submit comments and identify transportation problems and issues that concern the region. Often these issues are related to roadway bottlenecks, safety, or lack of safe or convenient access to abutting properties along roadway corridors. Such issues not only affect mobility and safety along a roadway and its side streets, but also livability, quality of life, economic development, and air quality.

To address these issues, MPO staff administers the *Addressing Safety, Mobility, and Access on Subregional Priority Roadways* study each year to identify and evaluate roadway corridor segments in the MPO region that are of concern, but have not been identified in the LRTP regional needs assessment.¹ The roadways selected for study are not necessarily major arterials; they can also include arterial or collector roadways that carry fewer vehicles daily. The studies are meant to emphasize the issues that are identified by relevant subregional groups and offer recommendations for short- and long-term improvements. In addition to safety, mobility, and access, other subjects considered are bicycle and pedestrian transportation, transit feasibility, and truck-related issues.

Roadway corridor segments are selected for study based on criteria that are used to evaluate safety and mobility needs; agency, municipal, and MAPC subregional group input; and the feasibility of implementing study recommendations. A segment selected for study may span multiple municipalities, or it may be restricted to 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 and considers all users, including pedestrians, bicyclists, motorists, public transportation users, and owners of adjacent properties. A holistic approach is taken to analyze the issues and develop recommendations for improvements within the roadway's right-of-way. The recommendations are intended to improve transportation facilities and traffic operations, and to increase safety and quality of life for all users. Pedestrians and bicyclists should be able to cross the street safely on their way to shops, schools, or recreation; buses should be able to run on schedule; and transit riders should be assured safe access to and from transit stations.

¹ *Destination 2040*, the Long-Range Transportation Plan of the Boston Region Metropolitan Planning Organization, endorsed by the Boston Region Metropolitan Planning Organization on August 29, 2019. The Plan will be reviewed by the MPO's federal partners and go into effect on October 1, 2019.

Objective(s)

The objectives of this study are as follows:

1. Finalize memorandum documenting the selection of study location
2. Identify safety, mobility, access, and other transportation-related problems of the study roadway
3. Develop and evaluate multimodal transportation solutions addressing the pedestrian, bicycle, truck, and transit modes
4. Select a roadway segment for study in FFY 2021 based on prioritization criteria and input from agencies, municipalities, and MAPC subregional groups

Work Description

In this work program, the selection of the study corridor began in the previous FFY. MPO staff reviewed over 20 potential corridors in the region. Staff will present the final selection of the FFY 2020 study corridor to the MPO and perform the following tasks:

- Identify problem locations in study corridor
- Collect data
- Analyze data
- Develop and evaluate improvement strategies
- Document methodology, findings, and recommendations
- Select roadway segment for study in FFY 2021

Task 1 Identify Problem Locations in Study Corridor

The MPO staff, working in conjunction with agencies, municipalities, and subregional groups, will identify the problem locations within the roadway corridor selected for study.

Staff will examine the safety, mobility, and access problems facing pedestrians, bicyclists, motorists, and transit users, and any transit service deficiencies and connectivity problems. Staff also will identify truck traffic issues indicated by crash locations with an unusually high level of truck involvement, turning-radius issues at intersections, heavy truck volumes contributing to congestion along the corridor, and points where trucks conflict with cars and pedestrians.

In addition, staff will contact the municipalities in the study areas and review the Massachusetts Department of Transportation (MassDOT) Highway Division's databases and the MPO's Transportation Improvement Program (TIP) project information database to identify projects and studies planned or already implemented in the study areas. The information gathered from these sources will guide the selection of problem locations within each segment and enable staff to consider previous recommendations for incorporation into this study.

Products of Task 1

Documentation of the following:

- Safety, operational, and mobility problems facing pedestrians, bicyclists, motorists, and transit users
- Transit service issues, including service deficiencies and problems with connectivity
- Truck traffic issues
- Projects and studies already planned or conducted in the study corridor

Task 2 Collect Data

Once the issues have been identified on the roadway segment 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 Highway Division. Staff will also review statewide pedestrian and bicycle plans and municipal resource guides for walkability and bikeability to identify existing databases for planning, evaluating, and designing pedestrian and bicycle facilities.^{2 3 4 5} In addition, staff will use INRIX/RITIS data to collect roadway speeds and trip origin/destination data.⁶ Some of the data may need to be collected in the field, such as the following:

- Average annual weekday traffic data from automatic traffic recorder counts
- Turning movement counts for trucks, pedestrians, and bicyclists in the AM and PM peak periods
- Traffic signal timing plans and coordination settings
- Intersection geometry and lane configurations

² Massachusetts Pedestrian Transportation Plan, Massachusetts Department of Transportation, May 2019

³ Massachusetts Bicycle Transportation Plan, Massachusetts Department of Transportation, May 2019

⁴ Municipal Resource Guide for Walkability, Massachusetts Department of Transportation, May 2019

⁵ Municipal Resource Guide for Bikeability, Massachusetts Department of Transportation, May 2019

⁶ INRIX is a private company that collects roadway travel times and origin-destination data for most roadways that are collectors, arterials, limited-access roadways or freeways. Regional Integrated Transportation Information System (RITIS) provides INRIX data to the Boston Region MPO through its web portal. The data is archived and provided to transportation planning organizations that use the data to monitor congestion through performance measures.

- Most recent crash data from MassDOT Registry of Motor Vehicles and crash reports from state and local police departments
- Bus service performance data and locations of bus stops, signage, and shelter conditions
- Truck traffic data, including truck origins and destinations
- Condition of pavement, sidewalks, midblock crossings, pedestrian and bicycle amenities, and gaps in pedestrian and bicycle networks
- Mitigation proposals for development projects and proposed transportation projects, and specific proposed improvements for the chosen roadway segment from these sources
- Roadway traffic control signage and street markings

Products of Task 2

- Data sets for assessing safety, mobility, access, and operational performance at problem locations
- A list of economic development and transportation improvement proposals previously planned for the areas near the selected roadway segment

Task 3 Analyze Data

MPO staff will conduct a series of analyses to use in developing recommendations for ways to provide Complete Streets, where pedestrians, bicyclists, motorists, and transit riders of all ages and abilities are able to travel safely. Staff will perform the following analyses and evaluations:

- Analysis of crash data and preparation of crash diagrams to identify safety issues and possible improvements
- Analysis of crash, traffic-volume, and intersection turning-radius data to develop potential safety improvements related to truck traffic
- Analysis of INRIX/RITIS data to identify roadway speeds and trip origin/destination patterns
- Evaluation of sidewalk continuity to determine the need to install new sidewalks or replace damaged sidewalks
- Evaluation of pedestrian crosswalks to determine the need for new midblock crosswalks or the need to improve existing crosswalks by installing flashing beacons, improving signage, or making the crosswalks accessible to people with disabilities

- Evaluation of adjacent bicycle networks to explore potential improvements for connectivity to the study roadway
- Development of safe and economical means for accommodating bicyclists; for example, by adding bicycle lanes, providing adequate shoulders, or making other provisions so that bicyclists can share the road with motorists
- Analyses of traffic signal warrants and signal retiming and coordination plans to determine the appropriate intersection traffic controls and best signal timing plans for the safe and efficient movement of pedestrians, bicyclists, and motorists
- Assessment of traffic signal equipment to determine the need for upgrades, including upgrades to signalized intersections for compliance with the requirements of the Americans with Disabilities Act
- Evaluation of the on-time performance of bus service, bus stop placement in relation to demand and pedestrian activity, and the need for bus route signs and shelters

Product of Task 3

- Documentation of the results of Task 3 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

Task 4 Develop and Evaluate Improvement Strategies

Based on the analyses described above, staff will develop short- and long-term improvement strategies that would address the following issues: 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.

Specific improvements may relate to geometric configuration; traffic control devices; pavement rehabilitation; and traffic operations, including effective and safe accommodations for pedestrians and bicyclists. In addition, MPO staff will recommend safe accommodation and connectivity for pedestrians and bicycles based on the goals and principles of the statewide pedestrian and bicycle plans. Staff will also make recommendations related to truck traffic; improving on-time performance of bus service; and providing safe access to bus stops and train stations for pedestrians and bicyclists.

Staff will then evaluate the proposed strategies and review them with participating municipal officials, agencies, and subregional group representatives.

Product of Task 4

- Recommendation of improvements

Task 5 Document Methodology, Findings, and Recommendations

MPO staff will produce a final technical report documenting the study's tasks and products. The final document will cover study background; input from agencies, municipalities, and MAPC subregional groups; identification of problems; data collection; analyses; and recommendations. When preparing the document, staff will follow the MassDOT Highway Division's guidelines for preparing functional design reports to the possible extent considering the limits of the study's budget. A draft document will be made available for review by municipal officials, members of the subregional groups where the study segment is located, the MassDOT Highway Division and the MassDOT Office of Transportation Planning.

Product of Task 5

- Final study report

Task 6 Select Roadway Segments for Study in FFY 2021

During the draft report review period, MPO staff will start the process of selecting FFY 2021 roadway study locations. Staff will review public comments gathered during the development of the LRTP, UPWP, and from other FFY 2020 outreach activities, and construct an initial list of roadway segments to consider.

Subsequently, staff will invite MassDOT Office of Transportation Planning and Highway Division District officers, and relevant municipal officials, MAPC subregional representatives, and regional transit authorities to provide input. Staff will seek their comments on the candidate roadway segments, and their advice and input regarding data, the selection of study segments, and the identification of major transportation problems associated with those roadways.

MPO staff will develop a ranking system and apply it to the candidate roadway segments in order to select a roadway corridor for study. The ranking system will use metrics based on the following criteria:

- Safety conditions
- Multimodal significance
- Subregional priority
- Implementation potential
- Regional equity (so that locations will be studied throughout the MPO's planning area over time)

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

Products of Task 6

A technical memorandum containing:

- The process for selecting the study roadway segments
- Evaluation criteria and results

Task 7 Finalize Study and Prepare for MPO Presentation

After receiving comments on the draft report from municipal officials, MassDOT, and other study advisory groups, MPO staff will address these comments and finalize the FFY 2020 study report. The final study report will be presented to the MPO for approval at the next scheduled MPO meeting.

Products of Task 7

- Final study report and MPO presentation.

Exhibit 2

ESTIMATED COST

Addressing Safety, Mobility, and Access on Subregional Priority Roadways FFY 2020

| | |
|-----------------------------------|------------------|
| Direct Salary and Overhead | \$114,246 |
|-----------------------------------|------------------|

| Task | Person-Weeks | | | | | | Direct Salary | Overhead (102.11%) | Total Cost |
|--|--------------|------|-----|-----|------|-------|---------------|--------------------|------------|
| | M-1 | P-5 | P-4 | P-3 | Temp | Total | | | |
| 1. Identify Problem Locations in Study Corridor | 0.2 | 1.0 | 0.0 | 0.0 | 0.6 | 1.8 | \$2,676 | \$2,732 | \$5,408 |
| 2. Collect Data | 0.2 | 1.0 | 0.0 | 0.0 | 1.5 | 2.7 | \$3,152 | \$3,218 | \$6,370 |
| 3. Analyze Data | 0.4 | 3.0 | 0.8 | 0.8 | 2.2 | 7.2 | \$10,032 | \$10,243 | \$20,275 |
| 4. Develop and Evaluate Improvement Strategies | 1.0 | 6.6 | 0.8 | 0.4 | 1.4 | 10.2 | \$17,372 | \$17,738 | \$35,110 |
| 5. Document Methodology, Findings, and Recommendations | 1.0 | 6.0 | 0.4 | 0.2 | 0.8 | 8.4 | \$15,032 | \$15,349 | \$30,382 |
| 6. Select Roadway Segments for Study in FFY 2021 | 0.4 | 1.8 | 0.2 | 0.0 | 1.2 | 3.6 | \$5,243 | \$5,354 | \$10,598 |
| 7. Finalize Study and Prepare for MPO Presentation | 0.4 | 1.0 | 0.2 | 0.0 | 0.0 | 1.6 | \$3,020 | \$3,083 | \$6,103 |
| Total | 3.6 | 20.4 | 2.4 | 1.4 | 7.7 | 35.5 | \$56,526 | \$57,719 | \$114,246 |

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|---------------------------|--------------|
| Other Direct Costs | \$754 |
|---------------------------|--------------|

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| Travel | \$754 |
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| TOTAL COST | \$115,000 |
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Funding

MPO 3C Planning and §5303 Contract #108217