



MEMORANDUM

DATE November 1, 2012
TO Boston Region Metropolitan Planning Organization
FROM Mark S. Abbott and Chen-Yuan Wang
MPO Staff
RE Safety and Operations Analyses at Selected Intersections—FFY 2013
Task 1: Intersection Selection Procedure

This study builds on recommendations generated by the MPO's Congestion Management Process (CMP) to address safety and congestion problems at intersections in the MPO region. Five similar studies in previous funding years were completed and have received favorable responses from municipalities for assisting them with conceptual design of low-cost improvements and with their planning processes and the implementation process.

The previous studies have examined large, complex intersections, simpler intersections, and locations that include two or more adjacent intersections. The focus this time is on simpler intersections. As before, the basic characteristics required in order for a location to be a candidate for selection were for it to be an intersection on an arterial roadway in the MPO region where (1) according to the MassDOT crash database, many crashes occur, (2) there is congestion during peak periods, and (3) there is serious implementation interest from implementing agencies and/or municipalities.

Four locations (the maximum number allowed for in the work program) have been selected to analyze for potential safety and operations improvements. The selection procedure comprised two major parts. First, staff identified 21¹ locations as potential candidates for this study through the following steps:

- Started with the MassDOT 2008–10 Statewide Top 200 Crash Locations list and selected the at-grade signalized and unsignalized intersections in the MPO region that have an EPDO² (Equivalent Property Damage Only) rating over 95. The intersections meeting those criteria numbered 84.

¹ It should be noted that the 21st location, in Reading, was added to the list of potential locations at the suggestion of MassDOT District 4.

² EPDO = 10*Fatal Crashes + 5*Injury Crashes + 1*Other Crashes (Property Damage Only or Not Reported)

- Reviewed each of those 84 intersection's location, geometry, congestion conditions, and transit services using the MPO's CMP travel time and intersection databases.
- Reviewed responses from the CMP Intersection Survey to identify issues and concerns related to the screened locations.
- Excluded locations that belong to a larger potential study area, such as highway interchanges or a long traffic corridor with an extensive area of congestion.
- Excluded intersections that are programmed with an advanced status (such as 25% or higher design status) in the 2013-16 Transportation Improvement Program (TIP) and those that have been or are being studied by the MPO or other agencies.

Second, staff selected four from the 21 identified locations through the following steps:

- Used ArcMap to cross-reference detailed MassDOT 2008–10 crash data at the 21 locations and the State Road Inventory File. This allowed staff to further examine the exact location and pattern of the crashes and number of pedestrian- or bicycle-related crashes in the context of each crash location's jurisdiction and related roadway information.
- Reviewed data related to each of five selection criteria (see below).
- Consulted with the MassDOT Highway Division District offices and with municipalities to review the locations scoring high in the selection criteria (meeting at least four of the five criteria).

The five criteria used for assessing the suitability of a location were:

- Pedestrian/Bicycle Crashes: Location had a total number of pedestrian/bike crashes greater than or equal to three during the three-year period examined.
- Congested Conditions: Location experiences extensive delays during peak periods.
- Transit Significance: Location carries bus route(s) or is adjacent to a transit stop or station.
- Regional Significance: Location carries high proportion of regional traffic or carries noticeable commuter bike traffic.
- Implementation Potential: Location either is under MassDOT jurisdiction, has a TIP "conceptual" status, or has a strong commitment from city/town.³

³ Locations under Department of Conservation and Recreation (DCR) jurisdiction are considered to have lower potential for implementation.

Geographic equity was considered; no more than one intersection from a single city or town would be selected.

Table 1 lists the 21 identified locations with their municipality, major intersecting streets, total number of 2008–10 EPDO crashes, total crash count, number of fatal/injury crashes, number of pedestrian/bike crashes, related transit routes, jurisdiction, TIP status, and overall score based on the selection criteria. From these, staff selected the following four locations (highlighted in the table) to be evaluated for improvements in this study:

- South Franklin Street (Rte. 37) at Union Street (Rte. 139) in Holbrook
- Western Avenue (Rte. 107) at Washington Street (Rte. 129) in Lynn
- Lexington Street at Beaver Street in Waltham
- Franklin Street (Rte. 37) at West Street in Braintree

It should be noted that two other intersections met all five criteria. These two other intersections were in Lynn, for a total of three in that municipality. Only one of these was selected, in the interest of geographic equity; Lynn's preference was to study the Western Avenue at Washington Street intersection at this time.

In summary, the selection process began with the 84 intersections in the region with the highest crash rates and applied, iteratively, extensive sets of criteria. In addition to these data screenings, the process included extensive interactions with MassDOT District offices and with cities and towns. Through this careful effort, the project staff identified the four locations in the MPO region with safety concerns and congested conditions that it considers to be most suitable for this study.

MSA/msa

Encl.