



BOSTON REGION METROPOLITAN PLANNING ORGANIZATION

MEMORANDUM

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TO Boston Region Metropolitan Planning Organization

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Project Manager

RE FFY 2012 Safety and Operations Analyses at Selected Intersections
Task 1: Intersections 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. Four similar studies in previous funding years were completed or are underway and have received favorable responses from municipalities for assisting them with conceptual design and implementation of low-cost improvements and with their planning processes.

The previous studies focused mainly on individual intersections. In this study, both large, single intersections and locations that include two or more adjacent intersections were considered eligible to be selected for analysis. The focus is on major intersections on the region's arterial roadways where both (1) according to the MassDOT crash database, many crashes occur, and (2) there is congestion during peak periods. Three high-crash bottleneck locations (the maximum number allowed for in the work program) have been selected to analyze for potential for safety and operations improvements.

The selection procedure comprised two major parts. First, staff identified 25 locations as potential candidates for this study through the following steps:

- Started with the MassDOT 2007–09 Statewide Top 200 Crash Locations data and retained the locations within the MPO region. The resulting file contained 96 at-grade intersections that all have a high (over 100) EPDO¹ (Equivalent Property Damage Only) rating.
- Reviewed each screened 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.

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

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- 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 2012-15 Transportation Improvement Program (TIP) and those that have been or are being studied by the MPO or other agencies.
- Identified 25 locations that are suitable for this study.

Second, staff selected three from the 25 identified locations through the following steps:

- Used ArcMap to cross-reference detailed MassDOT 2007–09 crash data at the 25 identified crash 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 connection with 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 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.²

Table 1 lists the 25 identified locations with their municipality, major intersecting streets, total number of 2007–09 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 three locations (highlighted in the table) to be evaluated for improvements in this study:

Location 20: Southern Artery (Route 3A) at McGrath Highway/Field Street and at Sea Street/Coddington Street in Quincy

Location 22: Turnpike Road (Route 9) at Oak Hill Road/Central Street in Southborough

Location 25: Main Street (Route 38) at Church Street/Burlington Avenue (Route 62) in Wilmington

² Locations under Department of Conservation and Recreation (DCR) jurisdiction are considered to have lower potential for implementation.

It should be noted that three other intersections meet as many criteria (four) as two of the selected intersections. The Lynn intersection (Location 14) was not selected because examination of its crash locations and patterns indicates that it should be studied as a part of the Route 107 corridor. The Braintree and Waltham intersections (Locations 5 and 24) have EDPO ratings similar to that of the selected Southborough intersection (Location 22). The Southborough intersection was chosen because (1) it had a fatality crash and (2) MassDOT Highway Division District 3 has received many complaints about it from the public and is very interested in improving it.

In summary, the selection process began with the 96 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 three locations in the MPO region with safety concerns and congested conditions that it considers to be most suitable for this study.

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TABLE 1
Potential Study Locations in the Region, with Selection Criteria
Selected Locations Highlighted
FFY 2012 Safety and Operations Analyses at Selected Intersections

Location	Community	Street 1	Street 2	EDPO Crash Rating*	Crash Count	Fatal Crashes	Injury Crashes	Non-Inj. Crashes	Ped/Bike Crashes	Transit Routes**	Jurisdiction	TIP Status	Selection Criteria***					
													Ped/Bike Crashes	Congested Conditions	Transit Significance	Regional Significance	Implement. Potential	Total Score
1	BOSTON	MORTON STREET (RTE 203)	HARVARD STREET	164	52	0	28	24	2p	#21, #31	DCR/City	None		√	√	√		3
2	BOSTON	GALLIVAN BOULEVARD (RTE 203)	DORCHESTER AVENUE	149	49	0	25	24	1p	8 MBTA buses	DCR/City	None		√	√	√		3
3	BOSTON	GALLIVAN BOULEVARD (RTE 203)	GRANITE AVENUE	115	43	0	18	25	0	4 MBTA buses	DCR/City	None		√	√	√		3
4	BRAINTREE	GRANITE STREET (RTE 37)	FORBES ROAD	134	62	0	18	44	0	#236, #238	MDOT-6/Town	None		√	√	√		3
5	BRAINTREE	FRANKLIN STREET (RTE 37)	WEST STREET	106	38	0	17	21	0	#236, #238	MDOT-6/Town	None		√	√	√	√	4
6	CHELSEA	CENTRAL AVENUE	SHAWMUT STREET	136	72	0	16	56	6p+3b	#112	City	None	√		√			2
7	CHELSEA	EVERETT AVENUE	SPRUCE STREET	118	54	0	16	38	0	#112, #114	City	None		√	√	√		3
8	CONCORD	CONCORD TURNPIKE (RTE 2)	MAIN STREET (RTE 62)	141	61	0	20	41	0	None	MDOT-4/Town	None		√		√	√	3
9	CONCORD	CONCORD TURNPIKE (RTE 2)	WALDEN STREET (RTE 126)	130	58	0	18	40	0	None	MDOT-4/Town	None		√		√	√	3
10	DEDHAM	WASHINGTON STREET	INCINERATOR ROAD	182	62	0	30	32	0	#34E, #36	MDOT-6/Town	None		√	√			2
11	EVERETT	REVERE BEACH PARKWAY (RTE 16)	EVERETT AVENUE	106	46	0	15	31	0	#112	DCR/City	None		√	√	√		3
12	HOLBROOK	SOUTH FRANKLIN STREET (RTE 37)	UNION STREET (RTE 139)	147	63	0	21	42	1p	#230	Town	None		√	√	√		3
13	LEXINGTON	BEDFORD STREET (RTE 4)	HANCOCK STREET	109	53	0	14	39	2b	#62	Town	None			√	√		2
14	LYNN	WESTERN AVENUE (RTE 107)	WASHINGTON STREET (RTE 129)	171	75	0	24	51	5p+4b	4 MBTA buses	City	None	√	√	√	√		4
15	LYNN	ESSEX STREET	CHESTNUT STREET	100	39	1	13	25	1p+2b	#436	City	None	√	√	√			3
16	MALDEN	FELLSWAY EAST	HIGHLAND AVENUE	121	49	0	18	31	0	#99	DCR/City	None			√			2
17	MILTON	RANDOLPH AVENUE (RTE 28)	CHICKATAWBUT ROAD	223	75	0	37	38	0	#240	DCR/MDOT-6	None			√	√		2
18	MEDFORD	MYSTIC VALLEY PARKWAY (RTE 16)	WINTHROP STREET (RTE 38)	117	53	0	16	37	0	#101	DCR/City	None		√	√	√		3
	MEDFORD	WINTHROP STREET (RTE 38)	HIGH STREET (RTE 60)	100	60	0	10	50	0	4 MBTA buses	City	None		√	√	√		3
19	REVERE	REVERE BEACH PARKWAY (RTE 16)	WINTHROP AVENUE	106	46	0	15	31	1p	#119	DCR/City	None		√	√	√		3
20	QUINCY	SOUTHERN ARTERY (RTE 3A)	MCGRATH HIGHWAY	155	71	0	21	50	5p+2b	#214, #216	Town	None	√	√	√	√	√	5
	QUINCY	SOUTHERN ARTERY (RTE 3A)	SEA STREET	140	76	0	16	60	1p	#214, #216	Town	None		√	√	√	√	4
21	QUINCY	GRANITE STREET	HONORABLE THOMAS S BURGIN PARKWAY	133	77	0	14	63	2p	Red Line, #245	Town	None		√	√			2
22	SOUTHBOROUGH	TURNPIKE ROAD (RTE 9)	OAK HILL ROAD	102	53	1	10	42	1p	MWRTA #7	MDOT-3/Town	None		√	√	√	√	4
23	WALPOLE	PROVIDENCE TURNPIKE (RTE 1)	HIGH PLAIN STREET	111	55	0	14	41	1p	None	MDOT-5/Town	None		√		√	√	3
24	WALTHAM	LEXINGTON STREET	TOTTEN POND ROAD	102	66	0	9	57	2p	#70	City	Conceptual		√	√	√	√	4
25	WILMINGTON	MAIN STREET (RTE 38)	CHURCH STREET (RTE 62)	132	52	0	20	32	3p+1b	MBTA Rail, LRTA #12	MDOT-4/Town	None	√	√	√	√	√	5

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

** MBTA bus routes, unless indicated otherwise

*** Selection Criteria (Check mark in table means criterion is met):

Ped/Bike Crashes: Total number of ped/bike crashes >= 3

Congested Conditions: Experiences extensive delays during peak periods.

Transit Significance: Carries bus route(s) or is adjacent to a transit route or station.

Regional Significance: Carries high proportion of regional traffic or carries noticeable commuter bike traffic.

Implementation Potential: Is under MassDOT jurisdiction, has a TIP "conceptual" status, or has a strong commitment from city/town.

(Locations under DCR jurisdiction are considered to have lower implementation potential)