

**COMMONWEALTH OF MASSACHUSETTS
MASSACHUSETTS DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION**

PROJECT NEED FORM

Part I: Summary Information

A. Proponent Information

Municipality/Agency submitting form: Town of Watertown

Municipal Contact: Gerald S. Mee, Jr. Completed by: James D. Fitzgerald

Title: Superintendent Title: Director of Municipal Services

Department: Department of Public Works Representing: WorldTech Engineering

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B. Geographic Location of Transportation Need and/or Opportunity (check all that apply)

Highway Division District: Statewide District 3
 District 1 District 4
 District 2 District 5
 District 6

MPO: Statewide Merrimack Valley MPO
 Berkshire MPO Montachusett MPO
 Boston Region MPO Nantucket
 Cape Cod MPO N. Middlesex MPO
 Central Mass MPO Old Colony MPO
 Franklin TPPO Pioneer Valley MPO
 Martha's Vineyard Southeastern Mass MPO

Municipality(ies): Town of Watertown

C. Maximum Geographic Extent or Coverage of the Project or Program (Check one)

Statewide
MassDOT Highway Division Districtwide
Entire Metropolitan Planning Organization
Regional Transit Authority district
Municipality(ies) only

D. Facility Location

If the need and/or opportunity is related to a particular facility, please complete as much of the following information that applies. Please include a locus map if available.

Route Number(s): Route 16
Street Name(s): Mount Auburn Street
From Cross Street: Summer Street
To Cross Street: Cambridge City Line
Mile Marker: From: _____ To: _____
Intersection of: _____ and _____
Address: _____
Other Location Info: _____

If work is proposed on a bridge or bridges as part of the project, please complete the following:

Bridge ID Number(s): _____
Facility Carried on Bridge: _____
Facility Bridge is Over: _____

Part II: Project or Program Description

A. Summary of Need and/or Opportunity

Please briefly describe the issues, deficiencies, need, or opportunities that may warrant a transportation project or program:

Mount Auburn Street is an approximately two mile long urban principal arterial connecting Watertown Square on the west with the City of Cambridge on the east. Land use along the corridor is low density commercial and residential. The roadway travels through the Coolidge Square business district and past Watertown High School and Hosmer Elementary School. The roadway, which is under Town jurisdiction but carries State Route 16, was last reconstructed by MassHighway in the early 1980s with little regard to users other than through traffic. As a result, the roadway presently consists of a four-lane cross section (two 11' basic lanes in each direction) with left turn bays provided at only one of eight signalized intersections, excessively long crosswalks, and no additional accommodations for bicycles or turnouts for the MBTA route

71 trackless trolley, which operates along the length of the corridor. Eight pedestrian/bicycle crashes were reported along the corridor between 2006 and 2008, and two pedestrian fatalities have occurred between 2006 and November 2013.

Under the present configuration, left turn traffic from Mount Auburn Street is required to stop amid fast-moving through traffic without protected left turn lanes. Thru traffic volumes along the corridor do not warrant a four-lane cross section, presenting an opportunity to reduce the number of basic lanes from four to two, add exclusive turn lanes and protected signal phasing at key locations, provide bicycle lanes as provided in the Town's 2002 Bicycle Master Plan, widen sidewalks, and shorten pedestrian crossing distances. In addition to improving traffic flow, accommodating all users, and providing aesthetic improvements to the built environment, these proposed improvements are anticipated to be fully compliant with MassDOT's Healthy Transportation Policy Directive.

B. Summary of Possible Alternatives to Address the Need and/or Opportunity

Please briefly describe possible transportation project(s) or program(s) that may address the need and/or opportunity summarized in the previous section. Please note if solutions have not yet been identified, or if there is more than one alternative.

During the planning phase of the project, multiple alternatives were explored for applying a "road diet" concept to the Mount Auburn Street corridor to reduce the number of basic travel lanes from four to two, add turning lanes at key intersections, shorten pedestrian crossing distances, and provide separate bicycle accommodations. Alternatives explored for the roadway cross section included restriping the roadway as a basic two-lane section with one travel lane in each direction separated by a double yellow centerline; reconstructing the roadway with one travel lane in each direction separated by a raised, landscaped median; and restriping the roadway as a three-lane cross section with one travel lane in each direction and a center two-way left turn lane. A modern roundabout was considered for the intersection of Mount Auburn Street with Kimball Road and Bigelow Avenue in the Coolidge Square business district but was eliminated from consideration due to poor projected operations. Alternatives for bicycle transportation included investigation of conventional on-street bicycle lanes and one-way and two-way cycle tracks separated from the traffic lanes by a physical buffer or change in grade.

Based on operational analysis, physical site constraints, and public feedback, the preferred alternative consists of reducing the roadway cross-section to two basic lanes (one lane in each direction) separated by a double yellow centerline between Common Street and the Cambridge City Line, with additional turn lanes provided at key intersections, 5' wide on-street bicycle lanes, improvements to traffic signal equipment, and wider sidewalks with curb extensions at selected locations to reduce crossing distances. The reduction in roadway width will also allow the addition of on-street parking in location where a need is indentified, as well as for the provision of turnouts for the MBTA route 71 trackless trolley.

C. Estimated Costs

If a transportation project(s) and/or program(s) has been identified, please include any available cost estimates or estimated cost ranges in current-year dollars:

<i>Estimated Construction Costs:</i>		<i>Estimated Other Costs:</i>	
Construction Items:	<u>\$8,510,000</u>	Planning/Design:	<u>\$1,228,000</u>
Contingencies (@15%):	<u>\$1,276,500</u>	Right-of-way:	<u>\$0</u>
Other Constr. Costs (@10%):	<u>\$851,000</u>	Env. Mitigation:	<u>\$0</u>
Total Est. Construction Cost:	<u>\$10,637,500</u>	Total Other Costs:	<u>\$1,228,000</u>

D. Funding

Please identify any current or expected funding related to this need or opportunity, including federal earmarks in legislation, budget acts, or programs; state earmarks in bond bills, budget acts, or programs; funding provided by the municipality or other local agency; and/or funding provided by private entities:

Federal:	_____	Year(s) _____	Amount: _____
Federal:	_____	Year(s) _____	Amount: _____
State:	_____	Year(s) _____	Amount: _____
State:	_____	Year(s) _____	Amount: _____
Municipal:	<u>Chapter 90</u>	Year(s) <u>2008-2013</u>	Amount: <u>\$676,158.50</u>
Private:	_____	Year(s) _____	Amount: _____
Other:	_____	Year(s) _____	Amount: _____

Part III: Detailed Project or Program Need Information

Please complete all applicable parts of Part II to the extent possible.

A. Condition of Existing Facilities

1. Please describe the surface condition of the roadway, path, or other horizontal facility, such as type of cracking (alligator, reflective, etc.), extent of cracking (percentage of surface, etc.), ride-ability, structural adequacy, or other surface defects such as raveling, shoving, bleeding, etc. This can be based on visual inspection or automatic detection methods.

The pavement surface along the corridor is in fair condition with an overall Pavement Condition Index (PCI) ranging from 40 to 75 percent based on visual inspection conducted in 2011. Moderate alligator cracking was observed on approximately 50 percent of the roadway surface. Approximately 10 percent of the roadway is patched due to subsurface utility work.

2. Please describe the condition of any roadside/facility appurtenances, such as signs, signals, lighting, median barriers, guardrail, pavement markings, drainage facilities, curbs/sidewalks, fences, etc.

Sidewalks and curbs along the length of the corridor vary in condition from fair to poor, and wheelchair ramps typically do not comply with the latest ADA/AAB requirements for location, slope, or provision of detectable warning panels. Pavement markings along the length of the corridor are in poor condition. 94 percent of the signs along the corridor do not meet MUTCD requirements for size, legend, and/or retroreflectivity. The nine existing traffic signals along the corridor are outdated, including three which operate with electromechanical controllers. Pedestrian signal equipment along the corridor does not comply with MUTCD requirements for accessible pedestrian signals. Drainage and lighting along the roadway are outdated but adequate.

3. If the project/program includes a bridge or bridges, please describe its/their condition, such as bridge ratings, dates of inspection, weight restrictions, closings, structural adequacy, functional obsolescence, condition of other bridge elements, etc.

The proposed project does not include bridges.

4. Please describe the condition of other facilities, structures, or equipment (buildings, noise barriers, bus shelters, bike racks, etc.)

The proposed project does not impact other facilities. Bus shelters are being improved in 2013 under the MBTA Key Bus Routes project.

5. Please describe the most recent repairs, preventive maintenance, rehabilitation, reconstruction, or replacement of the facility, including the extent and date.

The roadway was last reconstructed in the early 1980s. No significant surface repairs have recently been performed along the corridor.

B. Mobility and/or Usage Issues/Opportunities

1. Please describe any existing or prospective highway congestion issues or opportunities for improvement related to level-of-service, duration of congestion, delay, travel time, etc., and any opportunities related to the implementation of Intelligent Transportation System components, such as cameras, traffic detectors, etc.

One or more approaches at nine intersections along the study corridor presently operate at level of service (LOS) F, indicating oversaturated conditions, long delays, and extensive vehicle queues. Additionally, the existing four lane roadway configuration does not allow for exclusive turn lanes, resulting in turning vehicles blocking through traffic and basic lanes becoming "de facto" turn lanes at key intersections. Only two of the nine traffic signals along the corridor provide protected phases for turning movements, and most signalized intersections are semi-actuated, with loop detection only on minor approaches. Emergency vehicle pre-emption is only provided at the signal at East End Fire Station driveway, via a hard-wired push button inside the fire station.

Under the proposed project, the corridor would be restriped to provide one basic travel lane in each direction, exclusive turn lanes at key intersections, and bicycle lanes. All signals would be replaced with new equipment, including NEMA electronic controllers, video detection for all vehicular movements, and optical emergency vehicle pre-emption at all signalized intersections. In addition, proposed traffic signal equipment would be compatible with transit signal priority technology to allow the MBTA to reduce travel times along the route 71 trackless trolley, which has been identified as one of 15 "Key Bus Routes" in the MBTA system.

2. Please describe usage issues or opportunities for improvement to other facilities related to crowding, occupancy rates, usage, trucks, access, etc.

The proposed roadway cross section would provide wider travel lanes (12 feet) than what is currently provided (11 feet), improving accommodations truck traffic along the corridor. In addition, separate bicycle lanes would be provided in each direction along the corridor.

C. Safety and Security Issues/Opportunities

1. Please describe any highway safety concerns, such as number and severity of crashes, crash rates, fatalities, etc.

A total of 214 crashes occurred within the study area roadways between 2006 and 2008, the most recent three years of data available at the time of analysis. Ten or more crashes each occurred at seven intersections along the corridor (five signalized, two unsignalized); approximately 55 percent of these crashes were angle or rear end collisions, indicating conflicts between turning vehicles and through traffic or failure to yield. The intersection of Mount Auburn Street with Irving Street and Palfrey Street is a 2010 HSIP-eligible crash cluster, with an EPDO rating of 50. Additionally, two pedestrian fatalities have occurred in the eastern portion of the project corridor in recent years – one at the School Lane intersection (approximately 900 feet east of the Arlington Street intersection) in June 2008, and one at the Adams Street intersection in August 2009. Both fatal crashes occurred during weekday mornings with clear weather and dry pavement.

2. Please describe any safety issues for other users such as pedestrians, bicyclists, persons with disabilities, transit riders, trucks, school children, etc.

Several significant pedestrian generators are located along the Mount Auburn Street corridor, including commercial districts at Common Street and Coolidge Square, Watertown High School, and Hosmer Elementary School. Additionally, as the home of the Perkins School for the Blind, Watertown has a higher than average amount of visually impaired pedestrians. Over the three year study period, 12 crashes involving pedestrians or bicycles were reported along the study corridor, and two pedestrian fatalities have occurred along the corridor between 2006 and November 2013.

Under the proposed project, crossing distances would be shortened by a combination of roadway narrowing and construction of curb extensions at key crosswalk locations. All pedestrian signal equipment would be upgraded to feature MUTCD and AAB compliant accessible pedestrian signals. Bicycle safety would be improved by replacing the existing 11 foot wide shared travel lanes with a 12 foot wide vehicular lane and a 5 foot wide exclusive bicycle lane in each direction.

3. Please describe any issues or deficiencies related to security, such as vulnerability, evacuation procedures, hazardous materials, etc.

As a major arterial through the Town of Watertown and a portion of Route 16, Mount Auburn Street has the potential to be used as an evacuation route from Watertown and Cambridge. The proposed project would improve efficiency by providing a modern, coordinated traffic signal system and eliminating the need for through traffic to weave around vehicles turning left, reducing overall travel time along the corridor and resulting in a positive impact to regional evacuation procedures.

D. Land Use and Economic Development Issues/Opportunities

Please describe any issues or opportunities that the project or program will address or impact such as land use and economic development, such as job creation, housing, freight access, parking availability, transit-oriented development, smart growth, etc.

The project includes the reconfiguration of Mount Auburn Street through the Coolidge Square business district. The proposed changes would move traffic along the corridor and through Coolidge Square more efficiently and safely, improving access to the business district and reducing delays for vehicles turning from Mount Auburn Street to adjacent destinations and parking opportunities. The Coolidge Square business district would be further enhanced by streetscape improvements to be implemented as part of the project, identifying the area as a commercial destination. It is intended that these changes will encourage pass-by traffic to stop and patronize local small businesses, resulting in economic development and job creation in the community.

E. Environmental Quality Issues/Opportunities

Please describe any environmental quality issues or opportunities that the project or program will address or impact such as air quality, climate change, water quality, water supply, wetlands, historic or cultural resources, hazardous materials, noise, wildlife habitat, endangered species, etc.

The project is located in an urban setting, and no environmental impacts are anticipated. By reducing travel times along the corridor, the project would reduce tailpipe emissions and improve air quality in the vicinity of the project. The addition of safe bicycle accommodations and improved travel times for the MBTA route 71 trackless trolley will potentially result in the diversion of existing vehicular trips to these non-motorized modes of transportation, further reducing greenhouse gas emissions in the area. Additionally, the project aims to reduce impervious surface area by narrowing the roadway and expanding the width of landscaped buffer zones along sidewalks.

F. Community Issues/Opportunities

Please describe any community or neighborhood issues or opportunities that the project or program may address or impact such as emergency vehicle access, land takings, access to schools, cut-through traffic, environmental justice, etc.

This project will improve community character, operations and safety for all users of the project corridor, approximately half of which is located in or within a quarter mile of a Minority Environmental Justice population. Narrowing the roadway cross section, providing curb extensions at key crossing locations, and upgrading the pedestrian signal equipment will result in shorter, safer pedestrian crossings along the corridor, particularly in the vicinity of the Coolidge Square business district, Hosmer Elementary School, and Watertown High School. The reconfigured roadway would reduce vehicle delays improve efficiency and travel times for vehicular traffic during congested peak hours, while employing roadway treatments to reduce vehicle speeds during off-peak times. The addition of bicycle lanes and improved efficiency for the MBTA route 71 trackless trolley will encourage users of the corridor to seek non-motorized transportation options, improving air quality and reducing congestion in the community. Improving traffic flow along the corridor will encourage through traffic to use this arterial roadway instead of cutting through local streets to avoid congestion, and adding optical emergency vehicle pre-emption at signalized intersections will decrease emergency response times.

Thank you for completing this form. Please contact your MassDOT Highway Division District office to submit the form.