

ADA/Section 504 Transition Plan #

**City of Beverly,
Massachusetts**

Final DRAFT

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Volume 1

City of Beverly, Massachusetts



Final DRAFT

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Section 1 – Introduction

1.1 Overview

The City of Beverly retained BETA Group, Inc. to provide Engineering and GIS Services related to the development of an inventory of the City’s sidewalk wheelchair ramps and pedestrian signals at intersections, in order to identify physical obstacles that limit the accessibility of its programs or activities to individuals with disabilities, as they relate to the ADA/Section 504 Transition Plan. Services were also sought to enhance the City’s capability to manage its Transition Plan within a database and GIS environment.

1.2 ADA/Section 504 Transition Plan

Every Federal-Aid recipient with 15 or more employees and any public entity with 50 or more employees must complete a self-evaluation and prepare a transition plan for existing sidewalk wheelchair ramps. The purpose of the transition plan is to develop a strategy to guide the public entity in making existing deficient pedestrian facilities within the public right-of-way accessible and usable by persons with disabilities.

1.3 Community Profile

Beverly is a predominantly urban community with a population of 39,502 (2010 Census), and an area of approximately 22.7 square miles, which yields a population density of 1,740 persons per sq. mile. It is located in Essex County in North Eastern Massachusetts, bordered by Wenham to the north, Manchester to the east, Salem to the south, and Danvers to the west. The city is located along the North Shore, and is split from Salem by the Danvers River and Beverly Harbor. Beverly is located approximately 17 miles northeast of Boston, MA and 14 miles southwest of Gloucester, MA. There are 124.75 miles of public roadway and 1047 intersections, with 592 designated pedestrian crossings. Of the approximate 1,047 intersections, based on the inventory, there are approximately 1,384 wheelchair ramps within the City.

1.4 Study Approach

Meetings were held with the Director of Public Works and City staff in order to identify the goals of the City regarding ADA/Section 504 Transition Plan regulations. A wheelchair ramp and pedestrian signal inventory program was developed, with ramps and pedestrian signals inventoried at intersections only. The inventory included a review of existing ramp placement, ramp dimensions, ramp condition, pedestrian signal post locations, push button heights, and

pedestrian signal head displays. Ramp dimensions included measurements of opening width, landing width, landing length, and slope.

Establishing a Curb Ramp Schedule required an organized approach. The schedule was created using a five step process resolving issues outlined in the FHWA's ADA-504 2010 Technical Assistance Tool, including:

1. Evaluate Existing GIS Base Mapping
2. Field Data Collection Program
3. Data Analysis
4. Construction Activities Reports
5. Maintenance of Ramps

1.5 Evaluate Existing GIS Base Mapping

Determining the validity of existing GIS planimetric data is an important first step when deciding which field data collection methodology is best. Beverly had an existing road centerline layer created through their Pavement Management Program. That layer was referenced to the City's sidewalk, edge of pavement, and building polygon layers, along with the 2008-2009 MassGIS 30 cm Orthophotos. This in turn allowed for point placements at the various ramps and intersections which identified each location with a unique ID.

1.6 Field Data Collection Program

Curb Ramps

The base mapping allowed the team to use a GIS-based data collection approach. During the months of December 2011 and January 2012, the field inspection crew inspected each roadway intersection to locate and inventory each ramp. A point was created for each ramp in ArcView and was then spatially located according to the base mapping using a field laptop. A custom ESRI Geodatabase and GIS selection interface tool was developed. The custom ArcView Geodatabase allowed for the point and attribute data to be stored simultaneously in an Access and GIS environment. The major attributes collected were:

- Ramp ID
- Location (Intersecting Street and Cross Street)
- Ramp material
- Ramp condition (Excellent, Fair, Poor)
- Detectable Panel Present (Yes or No)
- Grade of Ramp
- Ramp Opening Width
- Ramp Landing Width
- Ramp Landing Length

- Obstruction Present (Yes or No)
- Crosswalk Present (Yes or No)
- Visible Obstruction (I.e. Utility Pole, Hydrant, Man Hole)
- Obstruction type

Physical inspections aided in the determination of the condition and measurements for each ramp. Ramp grades were collected using a smart level which digitally displays grades, represented in percent. Date-stamped pictures were also compiled and linked into the Geodatabase, allowing each ramp to be reviewed electronically. These procedures helped to ensure both data integrity and attribute quality.

Pedestrian Signals

Guidelines for pedestrian signals are defined by both the 2009 Manual on Uniform Traffic Control Devices (MUTCD) and draft Public Right-of-Way Access Guidelines (PROWAG). The draft PROWAG has been published in the Federal Register as a Notice of Proposed Rulemaking, and the FHWA's policy is to consider the draft guidelines (which require Accessible Pedestrian Signals (APS)) as recommended practice for new and reconstructed signals.

For a pedestrian signal to be APS compliant, the following criteria must be met:

- Pushbutton that “communicates information about the WALK and DON’T WALK intervals” in “non-visual formats (i.e. audible tones and vibrotactile surfaces)”. This requires a locator tone and tactile arrow at each pushbutton location, and requires a separate pushbutton location for each directional crosswalk.
- Pushbutton should be located not greater than 5 feet from the edge of the crosswalk line (extended) and between 1.5 and 6 feet from the edge of the curb, shoulder, or pavement. This edge of pavement constraint can be extended to 10 feet if it is impractical to place the pushbutton between 1.5 and 6 feet; for this reason, pushbuttons within 10 feet are considered in compliance.
- Audible walk indication during the WALK interval. This can be in the form of a percussive tone or a spoken message.

For a pedestrian signal to be compliant with the 2009 MUTCD, all pedestrian signal heads must have a countdown indication in addition to the APS requirements listed above.

A field investigation was performed in January of 2012 to gather pedestrian signal information. Similar to the ramps, each intersection was assigned an ID number which was used to identify each pedestrian signal location. Field measurements and photographs were taken at each location to assist in determining whether each location was within APS compliance. A Pedestrian Signal Inventory form was established to help gather information under the following categories:

- Controller Information (Make, Model, Serial Number)
- Number of posts per intersection
- Number of sections in each signal head
- Types of symbols within the signal head (countdown, word message/hand symbols, etc.)
- Pushbutton Present (Yes or No)
- Pushbutton height
- Pushbutton location from edge of pavement
- Pushbutton location from crosswalk
- Locator Tone (Yes or No)
- Audible system (Yes or No)

At each location, a sketch was developed showing locations and orientation of each signal head. Signal phasing information was also collected and charted on a Signal Timing form.

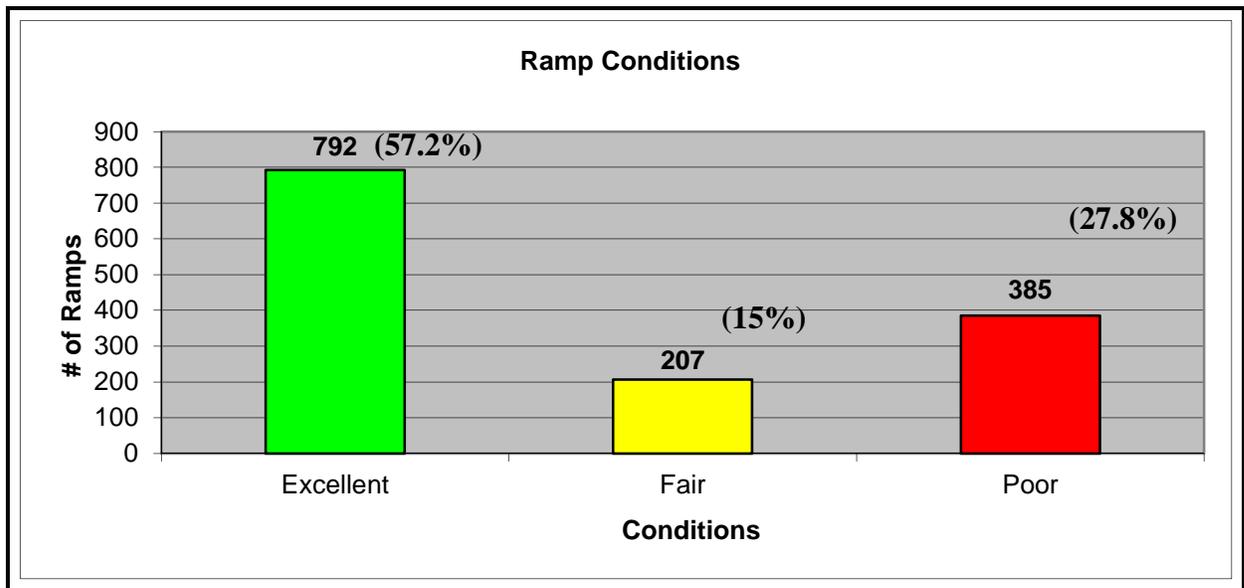
Section 2 – Summary of Findings

2.1 Ramp Findings

According to the inventory, Beverly has roughly 1,047 intersections, of which 592 included designated pedestrian crossings. The database has been created to provide key information that will be useful to the City in maintaining their ramps. Through querying the various data fields in the database, the following information can be identified: ramps that must be replaced, ramps to be considered for alteration, and ramps to be retained. An action plan has been outlined to replace the necessary ramps over the course of a multi-year program, starting with the most critical ramps. A Retro-Fit application has also been included in the action plan. Retro-Fit consists of applying approved ADA Detectable Warning Panels to ramp locations whose reason for non-compliance was nonexistent panels. Other more basic ramp information has been queried from the database and provided in the Appendix for anecdotal informational purposes.

A total of 1,384 ramps were found and evaluated at the 592 pedestrian crossing locations across the City. The following graphic provides a condition summary of the ramps inspected.

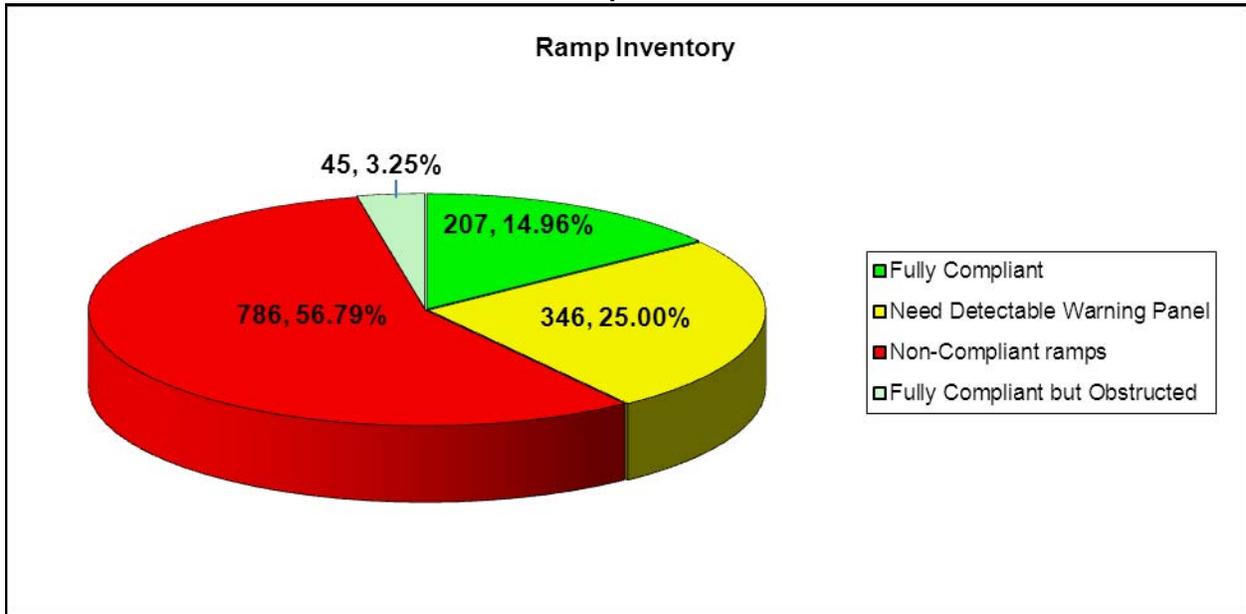
Graph 2.1



Excellent condition ramps displayed next to no physical distresses. Fair condition ramps displayed some physical distresses, but none which would conflict with accessibility. Poor condition ramps contained distresses which would conflict with accessibility. As can be seen, a majority of the ramps evaluated were in either excellent or fair condition.

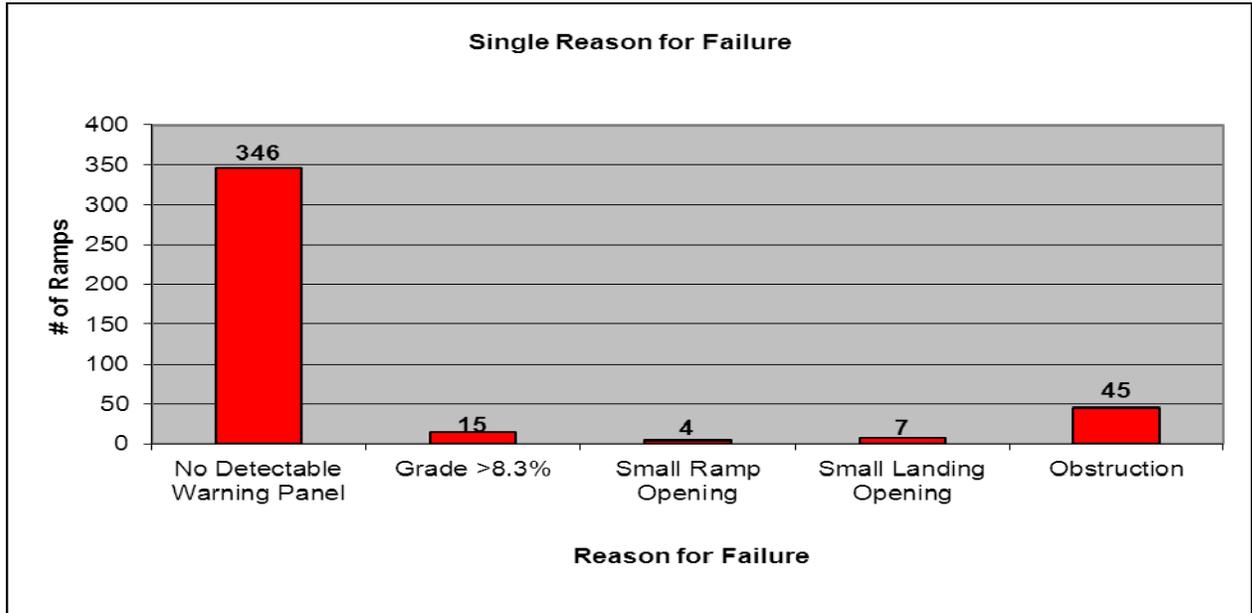
Out of the 1,384 ramps inspected in the City, 1,177 (85.04%) did not fully comply with the ADA standards. Therefore, only 207 ramps (14.96%) are considered to be compliant. This takes into account each ramp’s slope, opening, landing opening, obstructing features, and whether a detectable warning panel was present. The following graphic provides a compliance summary of all ramps inventoried.

Graph 2.2



As can be seen, the majority of the ramps evaluated were out of compliance with current ADA standards.

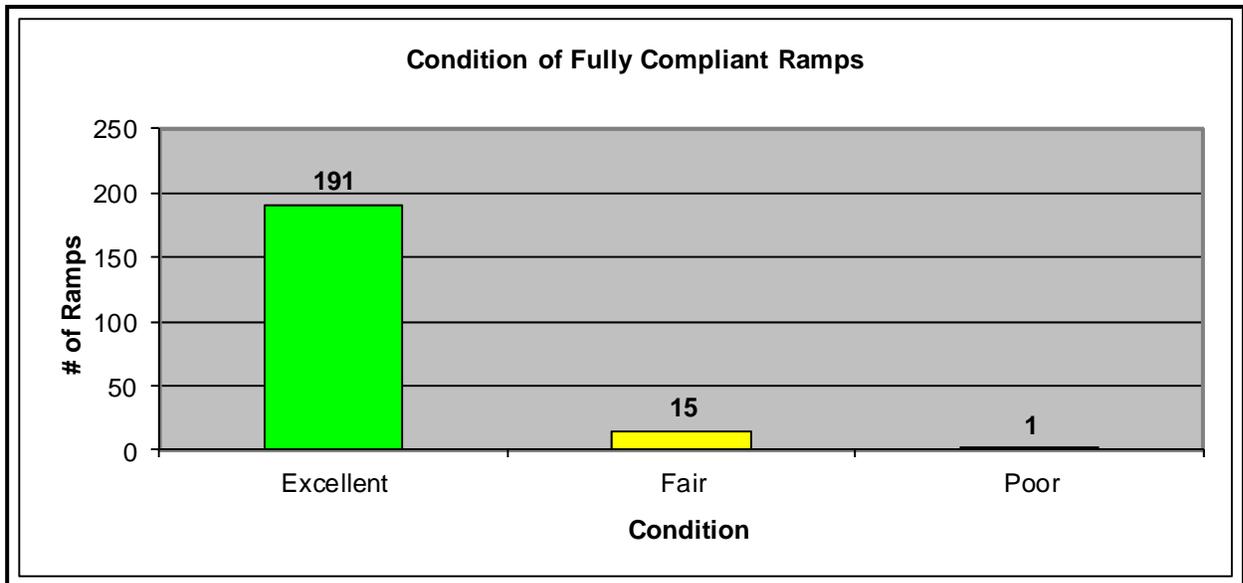
Graph 2.3



The graphic above indicates that the majority of single reason non-compliant ramps was the lack of detectable warning panels.

In the final ramp graph below, ramp conditions were categorized for the 207 fully compliant ramps.

Graph 2.4



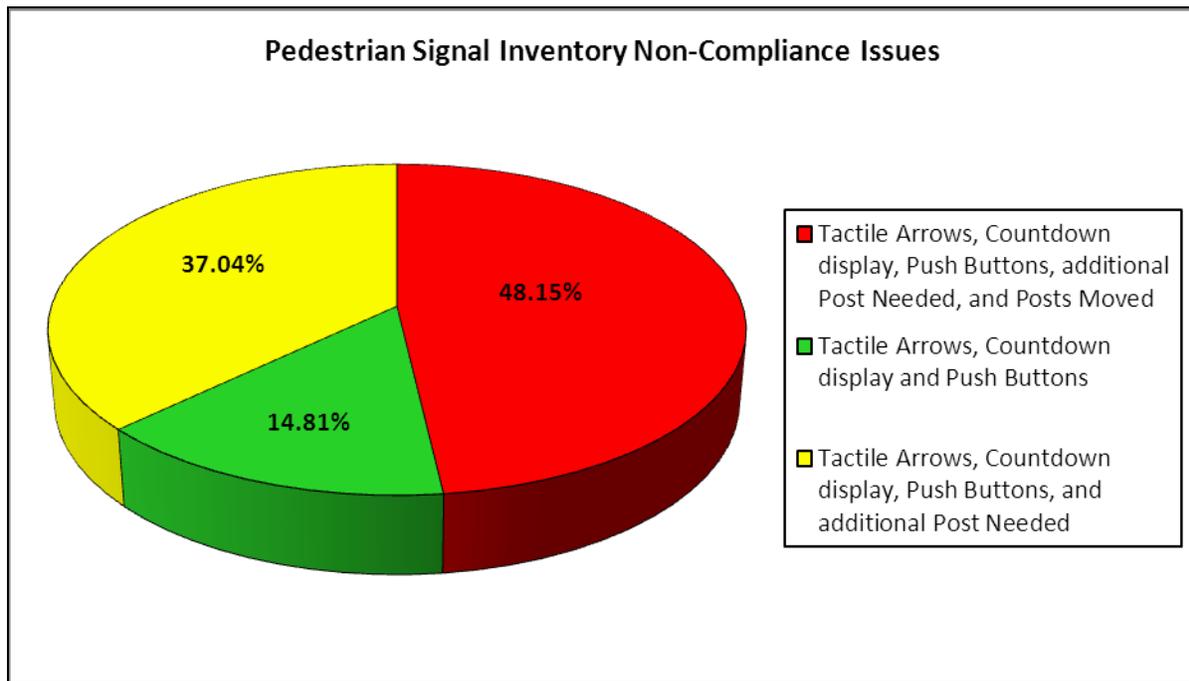
2.2 Pedestrian Signal Findings

According to field inspection reports, 27 intersections were inventoried for pedestrian signals, accounting for approximately 164 potential pedestrian movements throughout the intersections. A database has been created breaking down each pedestrian movement, providing the City with the information needed to upgrade all signals at these intersections to become APS and 2009 MUTCD compliant.

During the inspections, none of the pedestrian signals were found to be fully APS compliant. The results of the inspections show that the push buttons used throughout the City are not in compliance with APS standards. It has been assumed that new push buttons as well as Advanced Pedestrian Controllers (APC) will be installed at all locations within the study. The APC allows control of all pushbuttons at an intersection from within the controller cabinet.

The following graphic shows a percentage of the signal locations and the corresponding work which needs to be performed in order to meet APS requirements:

Graph 2.5



As indicated above, approximately 85% of the inspected locations will need additional posts and pedestrian signal heads or existing posts relocated in order to meet standards. Additional posts may be needed due to multiple push buttons being mounted on one post, which is not desirable. Approximately 15% of the locations inspected do not need any additional posts, or post relocations.

2.3 Missing Ramp Locations

There were 1,047 intersections inspected, where 329 (31.4%) did not contain any ramps but did contain sidewalks. For these intersections a proposed estimate to install compliant ramps was created based upon visual observation of each intersection. An initial estimate of 801 ramps was calculated using available GIS information such as the existing sidewalk, edge of pavement, and building layers. This information was validated to ensure accuracy for this estimate.

A physical inspection was then performed on 100 out of the 329 intersections. This investigation concluded with a confirmed ramp count of 256 out of an initial estimate of 269 resulting in an accuracy of 95.2%. Applying this accuracy factor to the initial total, a re-valuated city-wide estimate of 763 ramps was calculated. Attached in appendix C are the intersections which were confirmed in the field and their projected ramp quantities. Potential Ramp Locations were assumed at areas where sidewalks exist without existing ramps.

Section 3 – Data Analysis & Prioritization

3.1 Overview

The creation of the custom ArcView application enhanced not only the field data collection process, but also the data analysis. The GIS/Microsoft Access integration allowed for more efficient data management along with a more complete data analysis and reporting tool. The dynamic link between Microsoft Access-based Geodatabase and ArcGIS creates both a visual and data environment for the data analysis.

3.2 Curb Ramps

Initial/Proposed Conditions Analysis

Development of an analysis strategy to repair non-compliant ADA ramps and installation of newly constructed ADA ramps was created, based on proximity to specific locations located across the city. These locations include: Public Schools and Buildings (First Priority), MBTA Bus Stops and Train Stations (Second Priority), and Parks and Recreation (Third Priority). Attribute data was found for these locations in the following GIS layers.

- *Beverly_CL_2010 (from city) [Centerlines]*
- *General Landmarks (from city)*
- *MBTA Bus Stops (Downloaded from MassGIS website)*
- *Parks (from city)*

Beverly Priority Locations

Each of these 4 datasets was exported to a feature class, a commonly used data source composed of geographic features with the same type of geometry, in an effort to combine all significant data into the same feature class. Unnecessary fields and locations (non-relevant, duplicates) were removed from each of the 4 feature classes. The only fields that were retained in each of these datasets included Name, Address, and Type. Once the 4 feature classes were edited and had matching fields, they were appended to the Beverly_CL_2010 file and renamed Beverly_Priority_Locations. Upon completion of this step, the 4 aforementioned feature classes were deleted from the ADA Ramp geodatabase and the following two new fields were added to the new Feature class:

- *Priority (Coded 1, 2, 3, or Public Buildings and Transit priority)*
- *Buffer Miles (The total distance of each buffer to the corresponding location)*

Buffering

The Beverly Priority Locations feature class was used to project buffer zones around specific locations as seen below:

- *Priority 1*
 - Public Schools (1 mile buffer)
 - Public Building Locations (City Hall, Post Offices, Libraries, etc.; 0.1 mile buffer)
- *Priority 2*
 - Mass Transit (MBTA Bus Stops and Train Stations; 0.25 mile buffer)
- *Priority 3*
 - Parks (0.25 mile buffer)
- *Public Buildings and Transit Priority*
 - Public Schools (1 mile buffer)
 - Public Building Locations (City Hall, Post Offices, Libraries, etc.; 0.1 mile buffer)
 - Mass Transit (MBTA Bus Stops and Train Stations; 0.25 mile buffer)

ADA Ramp Inventory and Roadway Functional Classification

Combining the ADA Ramps with the Master Pavement database made it possible to link the functional classification of each roadway with the intersecting street of each ramp. In doing so, ramps could be analyzed not only by Priority Zone, but also in combination with a particular roadways functional classification.

New Fields added to the ADA Ramp included the following:

- *Class Code* – Indicates Functional Classification of Intersecting Street for each ramp location as Arterial and Collector Roadway.
- *Dead End/Cul De Sac* – Indicates if a Dead End, Cul De Sac, or Circle exists on the Intersecting Street for each ramp location

Selection by Location – Priority Zones

In order to determine the number of non-compliant ramps within each of the priority zones, a selection by location was performed. To represent this information in the ADA Ramp feature class, the following four fields were added to the ADA Ramp feature class:

- *Priority 1*- Non-Compliant Ramps completely contained within the Priority 1 buffer zone; coded as “Public School/Building”
- *Priority 2* – Non-Compliant Ramps completely contained within the Priority 2 buffer zone; coded as “MBTA”
- *Priority 3* – Non-Compliant Ramps completely contained within the Priority 3 buffer zone; coded as “Park”
- *Public Buildings and Transit Priority*- Non-Compliant Ramps contained within both Priority 1 and Priority 2 zones.

Additionally, Ramps existing on Cul De Sacs or Dead Ends **were not** included for this analysis.

Selection by Location – Priority Zones by Functional Class

To determine the number of non-compliant ramps within each of the 3 priority zones according to functional class, a selection by location again was performed. In order to store this information, the following four new fields were added to the ADA Ramp feature class:

- *Priority 1*– Ramps that have an intersecting street coded as an arterial or collector and are completely contained within the Priority 1 buffer zone; coded as “Public School/Building”
- *Priority 2*– Ramps that have an intersecting street coded as an arterial or collector and are completely contained within the Priority 2 buffer zone; coded as “MBTA”
- *Priority 3*– Ramps that have an intersecting street coded as an arterial or collector and are completely contained within the Priority 3 buffer zone; coded as “Park”
- *Public Buildings and Transit Priority*- Ramps that have an intersecting street coded as an arterial or collector and are completely contained within the Priority 1 and Priority 2 buffer zones; coded as “Public School/Building” and “MBTA”

Additionally, Ramps existing on Cul De Sacs or Dead Ends **were not** included for this analysis.

Analysis Findings

As indicated earlier in section 3 of this report, priority locations were assembled which identified specific areas throughout the City. These priority locations allow each alteration or new addition to be an effective choice for allocating available funds for improvements. The following tabulated results have been categorized according to their specific priority locations. Table 3.1 represents the results city-wide, and Table 3.2 represents data which only include locations on Arterial and Collector roadways.

Table 3.1: City-Wide Priority Results

-	Total Number of Non-Compliant Existing Ramps	Total Number, To Be Reconstructed Ramps	Total Number of Missing Ramps	Total Number of to be Retro-fitted Ramps	Total Cost at \$6,000 per Ramp and \$500 per Retro-fit
Priority 1	626	431	403	195	\$5,101,500
Priority 2	123	100	56	23	\$947,500
Priority 3	47	40	30	7	\$423,500
Public Building and Transit Priority	229	165	159	7	\$1,947,500

Table 3.2: Priority Results Focused on Arterial and Collector Roadways Only

	Total Number of Non-Compliant Existing Ramps	Total Number, To Be Reconstructed Ramps	Total Number of Missing Ramps	Total Number of Retro-fitted Ramps	Total Cost at \$6,000 per Ramp and \$500 per Retro-fit
Priority 1	359	250	162	109	\$1,554,500
Priority 2	69	55	7	14	\$337,000
Priority 3	20	19	43	1	\$114,500
Public Building and Transit Priority	173	132	81	41	\$812,500

Analysis Summary

From this analysis, we have decided to focus on the Non-Compliant Ramps coded as an Arterial/Collector that are not located on a Cul De Sac or Dead End. Attached to this write-up are detailed reports generated from Microsoft Access indicating each non-compliant and proposed ramp that should be targeted based on the priority scheme. Additionally, 4 “24x36” maps have been provided to indicate the different priority zones and ramp locations in relation to the city of Beverly.

3.3 Pedestrian Signals

Field inspection data was compared to APS compliance requirements to help develop an Action Plan to repair non-compliant pedestrian signals. APS compliance requires push buttons to be within 5’ of the crosswalk line (extended) and no more than 10’ from the edge of curb, shoulder, or pavement line. For the purpose of this study, mounting heights between 36” and 48” are determined to be in compliance. MUTCD recommends a mounting height of “approximately 3.5 feet, but no more than 4 feet, above the sidewalk” Draft PROWAG specifies mounting heights between 15 inches and 48 inches above sidewalk. The 2009 MUTCD states that all pedestrian signal heads must be equipped with countdown, as well as walk/don’t walk displays. Locations for replacing non-compliant pedestrian signals will be deferred to curb ramp replacement locations for the purposes of this study.

3.4 Construction Activities and Reports

Upon completion of the compliance evaluation, an Action Plan was created for the replacement of necessary ramps and pedestrian signals based on different priority zones reflecting the ADA/Section 504 Transition Plan guidelines. From use of the GIS Microsoft Access integration, an inventory was also compiled for the number of ramps which were found fully compliant with the one exception of an absent detectable warning panel and also for ramps which need to be reconstructed. A visual inspection was performed at each intersection where sidewalks existed but no ramps were present. At each of these intersections, the minimum number of required ramps was quantified according to “existing sidewalk/no ramp” conditions. An estimate was calculated using a typical per ramp construction price of \$6,000, reflecting the design/build cost. Ramps which fell under the retro-fit category were priced at \$500 per ramp. The action plan is provided in Appendix C of this report. The electronic database will also be provided to the City to easily identify the ramps that need replacement or alteration.

3.5 Maintenance of Ramps

It is essential that the City continue to update all ramps through an on-going maintenance program beyond implementation of the Action Plan. This would include periodic ramp inspections and preservation activities which would deter future deterioration (i.e., Nonstructural Liquid Seal Coating) of compliant ramps. It is strongly recommended that the database be kept up to date with findings of additional inspections and any new ramps that have been installed. Moving forward, a maintenance program will guide the City and will serve to help avoid replacing ramps prematurely.

Section 4 – ADA Compliance Coordinator & Public Participation Plan

The City of Beverly has assigned a Disability Commissioner/ADA Title II Coordinator official who is responsible for implementing the aforementioned actions presented within this report. This official also has assumed responsibility for coordinating all City efforts to comply with ADA/504 Regulations. Any complaints or suggestions which coincide with these regulations will also be handled by this official.

The City has adopted necessary grievance procedures that conform to ADA/504 requirements, providing for prompt and equitable resolution of complaints alleging any action that may be prohibited by Title II. (developed accordingly to 49 CFR 27.13 & 27.15, also see <http://www.ada.gov/pcatoolkit /chap2toolkit.htm>). This form can be viewed in Appendix A of this report. The City of Beverly has also made available a copy of the original plan and all updates will be available for public inspection for three years following the completion of the self-evaluation.

Section 5 – Transition Schedule

5.1 Current Status

The Public Services Department, in coordination with the Disabilities Commission, has been actively improving accessibility in the city of Beverly through the City's Pavement Management Program. The City has spent an average of almost 38% of their roadway reconstruction funds (which amounts to an average of 33% of their chapter 90 funds) on access improvements. They have completed a number of major sidewalk improvements, including installations of large stretches of sidewalks that connect residents to MBTA train stations and improving hundreds of feet of additional sidewalks throughout the City, which are essential to the safety of residents in an otherwise difficult area to walk.

Beverly has also significantly improved/reconstructed hundreds of feet of sidewalk at one of the gateways to the City, granting access to the waterfront.

The table below summarizes the City's chapter 90 funds allocated toward access improvements for years 2009 through 2012.

Table 5.1

Year	Total Roadway Reconstruction Cost	Roadway Funds Allocated Toward Access Improvements	Chapter 90 Funds	Percentage of Chapter 90 Funds Allocated Toward Access Improvements
2009	\$981,988.15	\$509,310.43	\$780,847	65.23%
2010	\$422,850.03	\$96,788.71	\$781,386	12.39%
2011	\$1,129,967.09	\$349,081.67	\$802,555	43.50%
2012	\$461,062.44	\$176,674.60	\$1,030,315	17.15%
Total	\$2,995,867.71	\$1,131,855.41	\$3,395,103	33.34%
Average	\$748,966.93	\$282,963.85	\$848,776	33.34%

These figures do not include the recent \$115,000 spent on a porous pavement sidewalk or the current reconstruction of \$120,000 worth of sidewalks/ramps downtown. The City plans to continue improvements in the most efficient fashion to improve pedestrian safety and accessibility for all their residents.

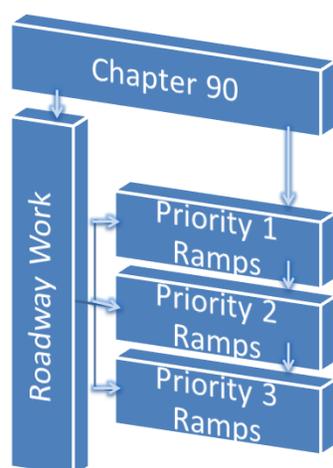
5.2 Transition Plan

Curb Ramps

As mentioned within section 5.1, curb ramp alteration/installations have previously been a priority of the City, mainly focused within locations of the City's ongoing Pavement Management Program. These alterations are changes to a facility in the public right-of-way that affect access, circulation, or use. Alterations incorporate pedestrian access improvements within the scope of the project to meet the requirements of the ADA and Section 504. Roadway projects consisting of structural repair methods; such as reconstruction, major rehabilitation, and resurfacing methods, arrange for specific locations for curb ramp improvements to be made.

The newly adopted transition plan has resulted in an improved budget, allowing curb ramp alteration/installations to be continued during times of absent pavement projects, as shown in figure 5.1. This allows for reasonable and consistent standards to be followed through the implementation of this schedule. Missing ramp locations will be targeted first, followed ramp reconstruction locations, and finally the retro-fitted ramp locations; beginning within locations in priority 1, followed by priority 2 and lastly priority 3. A curb ramp schedule has been proposed to make effective access improvements within the city (shown in table 5.1). However, due to the unpredictability of future roadway projects, exact construction locations are not available within the schedule.

Figure 5.1



The 31 year schedule has assumed an average improvement spending of 20% of annual chapter 90 funds, amounting to approximately \$200,000 per year. This estimate has been based exclusively on of the previous 4 years statistics displayed in table 5.1. Table 5.1 displays a 31

year schedule which will allow the City to be on track in achieving compliance within critical locations where accessibility is needed, according to current technical standards. However, a number of ramps within the City were constructed before July 26, 2001, and are in compliance according to the minimum technical standards under the 1991 ADAAG. Curb ramps which only follow under the 1991 ADAAG minimum standards will be reconstructed to current standards in connection with any future alteration projects as defined in the **Policy & Procedures** section further on in this report. These ramps have been omitted from this table, in order to focus efforts in locations which need to be addressed where accessibility may not currently exist at all.

Table 5.1

Year	Total Number of Non-Compliant Existing Ramps	Total Number, To Be Reconstructed Ramps	Total Number of Retro-fitted Ramps	Total Number of Missing Ramps	Total Cost
2012	796	571	225	489	-
Priority 1					
2013	792	0	4	33	\$200,000
2014	788	0	4	33	\$200,000
2015	784	0	4	33	\$200,000
2016	780	0	4	33	\$200,000
2017	776	0	4	33	\$200,000
2018	772	0	4	33	\$200,000
2019	768	0	4	33	\$200,000
2020	764	0	4	33	\$200,000
2021	760	0	4	33	\$200,000
2022	756	0	4	33	\$200,000
2023	752	0	4	33	\$200,000
2024	748	0	4	33	\$200,000
2025	718	26	4	7	\$200,000
2026	681	33	4	0	\$200,000
2027	644	33	4	0	\$200,000
2028	607	33	4	0	\$200,000
2029	570	33	4	0	\$200,000
2030	533	33	4	0	\$200,000
2031	496	33	4	0	\$200,000
2032	459	33	4	0	\$200,000
2033	422	33	4	0	\$200,000
2034	385	33	4	0	\$200,000
2035	348	33	4	0	\$200,000
2036	311	33	4	0	\$200,000
2037	206	6	99	0	\$85,500
Priority 2					
2037	205	0	1	19	\$114,500
2038	201	0	4	33	\$200,000
2039	168	29	4	4	\$200,000
2040	131	33	4	0	\$200,000
2041	90	31	10	0	\$191,000
Priority 3					
2041	84	0	6	1	\$9,000
2042	79	4	1	29	\$198,500
2043	48	31	0	0	\$186,000

Pedestrian Signals

The transition plan for pedestrian signals which has been formulated is based on an average of \$50,000 per year (approximately 5% of the City's chapter 90 funding) for a 13 year period. According to the analysis of the 27 intersections which were inspected, the average cost per intersection is approximately \$22,500. On average, the City of Beverly can bring two intersections per year up to APS compliance with the \$50,000 per year suggested. If this is the course of action taken, the City should be able to bring all intersections in this study up to standard in approximately 13 years.

Policy & Procedures

Following FHWA guidelines, any new construction of a facility or part of a facility constructed by, on behalf of, or for the use of a public entity shall be designed and constructed in such a manner that the facility or part of the facility is readily accessible to and usable by individuals with disabilities. Also each facility or part of a facility altered by, on-behalf of, or for the use of a public entity in a manner that effects or could affect the usability of the facility or part of the facility shall, to the maximum extent feasible, be altered in such a manner that the altered portion of the facility is readily accessible to and usable by individuals with disabilities.

Alteration is defined as a change to a facility in the public right-of-way that affects or could affect access, circulation, or use. Projects which alter the public right-of-way will incorporate pedestrian access improvements within the scope of the project to meet the requirements of the ADA and Section 504. Alterations include items such as reconstruction, major rehabilitation, widening, resurfacing, signal installation and upgrades, and projects of similar scales. It has been determined that maintenance activities intend to; preserve a system, retard future deterioration, and maintain the functional condition of the roadway without increasing the structural capacity. Activities which fall under maintenance activities include but are not limited to; thin nonstructural surface treatments, joint repair, pavement patching, shoulder repair, signing, striping, minor signal upgrades, and drainage system repairs.

The implementation of Accessible Pedestrian Signals (APS) at newly constructed intersections or intersections with major alteration/reconstruction shall follow the policy set forth in MassDOT's Accessible Pedestrian Signal Installation Policy, effective June 1, 2012 (or latest revision). This policy defines major alteration as physical relocation or replacement of existing traffic signal infrastructure, and allows routine or emergency maintenance or repair without requiring APS installation. This policy may be found on pages 26 through 28 of this report.

The MassDOT policy also includes a policy for installation of APS based on need at existing traffic signals. A form has been created by which any individual or entity can submit a request for installation of APS at an existing signalized location. The request includes a signed statement that the individual or someone in their care has a demonstrated need based on a disability, and the request must include review and signatory support of a local municipal official. This form may be found on page 29 of this report.

Locations found to be non-compliant will be re-evaluated before any alterations/installations are carried out. Some locations could prove to be technically infeasible or structurally impracticable based on a project by project basis where; physical constraints exist, underlying terrain exists, existing underground structures, the presence of a notable natural or historic feature, along with other underlying conflicts. When the above situations arise, the City will conform to the proper variation procedures to ensure accessibility alterations meet the maximum extent feasibility requirements per M.G.L., Chapter 22, Section 13A.

In order to track the City's progression towards compliance, the database shall be maintained electronically in the field to show updated alterations and installations as projects are completed, and in-office as variances are obtained, once or twice a year. To confirm the newly compliant accessibility improvements, periodic self-audits shall be performed once every 3 to 5 years. A user friendly Access based form that displays the City's improvements will be posted within City hall and notifications will be sent out to the ADA committee and the public to inform them of the public display.

APPENDIX A:

ADA Curb Ramp Grievance Procedure

Who May File

Any qualified person with a disability who believes that he or she has been denied access where sidewalks cross curbs.

Procedure

Step 1. Complete the Grievance Procedure Form

Fill out the grievance form attached to this sheet with all the information requested. The grievance form shall be filed with the Disability Commissioner/ADA Title II Coordinator within 60 working days of the alleged disability-related discrimination. Upon request, reasonable accommodations will be provided in completing this form. The grievance procedure and form may be obtained by visiting or contacting the following:

Director of Municipal Inspections, Mr. Steve Frederickson, P.E. located at 502 Cabot Street, Beverly, MA 01915 or by telephone at 978-605-2401.

Step 2. An Investigation is Conducted

The complainant will be notified within 5 working days of the receipt of the grievance that his or her grievance was received. The Disability Commissioner/ADA Title II Coordinator or other authorized representative will commence an investigation into the merits of the complaint, within 30 calendar days of receipt of the grievance. If necessary, the Disability Commissioner/ADA Title II Coordinator or other authorized city associate will contact the complainant directly to obtain additional facts or documentation relevant to the grievance.

Step 3. A Written Decision is Prepared and Forwarded to the Complainant

The Disability Commissioner/ADA Title II Coordinator or other authorized city representative shall prepare a written decision, after full consideration of the merits of the grievance, no later than 60 calendar days following the receipt of the grievance. A copy of the written decision shall be mailed to the complainant no later than 5 working days after preparation of the written decision.

Step 4. If Required, Appeal to the City ADA Coordinator

If the complainant is dissatisfied with the written decision, he or she may file a written appeal with the City ADA Coordinator in the City Administrator's Office no later than 30 calendar days of the date of the mailing of the decision. The appeal must contain a statement of the reasons why the complainant is dissatisfied with the written decision, and must be signed by the complainant or by someone authorized to do so on the complainant's behalf. The City ADA Coordinator will act upon the appeal no later than 30 calendar days after receipt, and a copy of the City ADA Coordinator's written decision shall be forwarded to the complainant no later than 5 working days after preparation of the decision.

Note: The Disability Commissioner/ADA Title II Coordinator shall maintain the confidentiality of all files and records relating to grievances filed, unless disclosure is authorized or required by law. Any retaliation, coercion, intimidation, threat, interference, or harassment for the filing of a grievance, or used to restrain a complainant from filing, is prohibited and should be reported immediately to the City ADA Coordinator.

Curb Ramp Accessibility Grievance Form

Name: _____

Address: _____

City: _____ **State:** _____ **Zip:** _____

Phone: (_____) _____ **Email:** _____

Please provide a complete description of your grievance:

Please specify the locations of your grievance:

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

Please state what you think should be done to resolve the grievance:

Please attach additional pages as needed.

Signature: _____ **Date:** _____

Please return to:

Director of Municipal Inspections, Mr. Steve Frederickson, P.E. located at 502 Cabot Street, Beverly, MA 01915 or by telephone at 978-605-2401.

Upon request, reasonable accommodation will be provided in completing this form.

APPENDIX B:



ACCESSIBLE PEDESTRIAN SIGNAL INSTALLATION POLICY

I. Introduction

This policy is based on the *National Cooperative Highway Research Program Guidelines for Accessible Pedestrian Signals*, NCHRP Project 3-62 (2007). The Massachusetts Department of Transportation ("MassDOT" or "Department") will follow this policy guidance with respect to new construction, alterations/reconstruction and retrofit requests for the installation of Accessible Pedestrian Signals ("APS"). It is anticipated that when further guidance materials, rules, and/or regulations are provided by the United States Department of Transportation ("USDOT"), the United States Department of Justice ("USDOJ"), and the United States Access Board this policy will be amended to be consistent with any required modifications. Updated guidelines concerning the installation of APS devices at new construction, major alteration/reconstruction, and existing traffic signals will be developed following finalization of the Public Rights-of-Way Accessibility Guidelines ("PROWAG").

In the decision making process, the "Prioritization Tool" developed through the NCHRP Project 3-62, will be utilized to evaluate signalized intersections owned or maintained by the Department. The level of priority to install APS devices will also depend on whether the signalized intersection is considered to be part of a new construction project, part of a major alteration/reconstruction project, part of an existing traffic signal, or upon request following a showing of demonstrated need.

II. Background

The Americans with Disabilities Act of 1990 ("ADA"), 42 U.S.C. § 12101, requires access to the public right-of-way for people with disabilities. Access to traffic and signal information is an important feature of accessible sidewalks and street crossings for pedestrians who have vision impairments. The Federal Highway Administration has strongly encouraged states to implement the draft PROWAG policy for APS installation pending approval of the final PROWAG guidelines. The national trend is to incorporate APS devices where feasible.

Section 4A.02 of the Manual on Uniform Traffic Control Devices ("MUTCD") defines an Accessible Pedestrian Signal as a device that communicates information about pedestrian timing in a non-visual format such as audible tones, verbal messages, and/or vibrating surfaces. The draft PROWAG definition is similar; however, under PROWAG, APS devices must include both audible and vibrotactile functions. APS devices let pedestrians who are blind or visually impaired know when the WALK interval begins and terminates. Pedestrians who know when the crossing interval begins will be able to start a crossing before turning cars enter the intersection and can complete a crossing with less delay. Audible signals can also provide directional guidance, which is particularly useful at non-perpendicular intersections and at wide multi-lane crossings.

MassDOT Accessible Pedestrian Signal Installation Policy

III. Design and Installation for New Construction and Major Alterations/Reconstruction

The major Alteration/Reconstruction of intersections is considered to constitute a substantial modification of an existing traffic signal at an intersection. A major alteration or reconstruction involves physical relocation or replacement of traffic signal infrastructure (as an example, addition of turn lanes with accompanying protected turn phases). Routine and emergency maintenance or repairs of the equipment does not constitute a major alteration (as an example, replacement of the signal controller due to a lightning strike). For major alterations to existing pedestrian signals, the design will include the installation of APS devices where technically feasible.

New construction is considered the installation of a new pedestrian signal at a previously signalized or non-signalized intersection/crossing. For new construction where pedestrian signals are being added as part of the project, the design will include the installation of APS.

A traffic signal shall be designed and equipped with APS devices for all crosswalks that are to be equipped with pedestrian signals. Installation of APS devices will not be considered at intersection approaches where an engineering study has determined that pedestrian crossings are to be prohibited. However, the designer should take into consideration that a non-visual format to prohibit pedestrian crossing (some sort of physical means of prohibiting the crossing such as railing, heavy vegetation, etc.) be provided in addition to crossing prohibition signs. Minor signal modifications, such as installation of left-turn signal heads, modification of existing signal phasing, or installation of vehicle detection systems, etc., that do not require substantial reworking of the intersection signal poles or wiring would not require a redesign of the intersection as mentioned above.

IV. Installation of APS based on Demonstrated Need at Existing Traffic Signals

MassDOT will consider requests to retrofit an existing traffic signal with APS devices to provide crossing assistance at MassDOT maintained signalized intersections upon a showing of demonstrated need. To be considered for APS, the location must first meet the following criteria: (1) the intersection must already be signalized and the existing infrastructure must be readily capable (i.e., not requiring major alteration/reconstruction), as determined by MassDOT, of being upgraded with APS devices; (2) the location must be suitable for the installation of APS devices in terms of safety; and (3) there must be a demonstrated need for an APS device (this need is demonstrated through a user request) (See Attachment 1). If APS can be added with minor changes (such as simply replacing the non APS pushbutton with an APS pushbutton), then this will be done under District Signal Betterment Contracts, generally within 90 days.

If APS installation requires changes to the signal or other infrastructure work (the installation of posts, pedestrian housings, conduit systems, significant changes to the traffic signal controller assembly, right-of-way impacts, utility relocation, drainage improvements, geometric modifications, etc.) then appropriate staff from the District, Traffic Engineering, and Construction sections will conduct an engineering study of the signalized intersection. This study should be completed by staff, generally within 90 days, utilizing the NCHRP Prioritization

MassDOT Accessible Pedestrian Signal Installation Policy

Tool (See Attachment 2).¹ In performing the study, staff shall coordinate with the local jurisdiction to solicit community involvement and comments on the proposed request. The engineering evaluation will be used to determine a priority for the installation of APS devices by District. Where multiple requests requiring major alteration are pending, the scores should be arranged in order from the highest to the lowest. Locations with the highest scores and associated with a specific request should be considered highest priority. The goal is for all requests for APS installation to receive a fair and equal assessment and to ensure that available funds are expended in the most effective manner. The resulting prioritized schedule will be accomplished within a reasonable timeframe based on readiness of design and available funding.

The potential list ("Priority List") of locations will be routinely updated based on additional requests and locations removed from the list (due to changes to signals via scheduled projects) and will be scored using the NCHRP Prioritization Tool. APS devices will be designed and installed in order of priority depending upon the availability of funding and the complexity of the work.

The Department will publish the Priority List once a year on its website and in the Central Register for public review and comment. The Department may also schedule meetings with concerned stakeholders, including the Massachusetts Commission for the Blind, local Disability Commissions and regional Independent Living Centers, to review and prioritize intersections from the Priority List and other intersections with construction opportunities. The final list will be used by the Department to request funding for design and construction of APS.

V. NCHRP Prioritization Tool

The NCHRP Prioritization Tool provides traffic engineers and other technical practitioners with the means to take measurable characteristics of a pedestrian crosswalk and produce a rating that reflects the relative crossing difficulty for pedestrians who are blind or otherwise sensory impaired. The system of scoring is based on the premise that it is the individual crosswalk that is critical, as opposed to the APS intersection as a whole. The crosswalks with the highest ratings will have the highest priority for APS installation, with greater emphasis placed on those crosswalks in which a retrofit request was submitted to the Department.

VI. Changes to this Policy

The Department will notify concerned stakeholders, including the Massachusetts Commission for the Blind, in writing of any proposed additions, amendments, or rescission to this policy. Such notice will be given at least 60 calendar days in advance of any such action to allow these organizations to discuss the proposed additions, amendments, or rescission with the Department prior to the addition, amendment, or rescission taking effect.

¹ The study should also include consultation with or participation from (i) the community in the potentially affected area; (ii) mobility and orientation specialists, the Massachusetts Commission for the Blind, local Disability Commissions and regional Independent Living Centers; and (iii) any other individuals or organizations that may assist in developing the engineering study.



**ACCESSIBLE PEDESTRIAN SIGNAL INSTALLATION REQUEST FORM FOR
MASSDOT CONTROLLED INTERSECTIONS**

Date of Request:

Name of Person/Entity Making Request:

Address of Person/Entity Making Request:

Phone Number of Person/Entity Making Request:

Email of Person/Entity Making Request:

Intersection where APS has been requested:

- Character of the area (residential, urban, or rural):
- Unique characteristics of the intersection, if any:

City/Town where the intersection is located:

Reason for request:

I certify that I, someone in my household, or someone in my direct care is a qualified person with a disability as defined by the Americans with Disabilities Act of 1990 (ADA) and that my request is based upon individual need.

Name and signature of person making the request

Date

An appropriate official for the City/Town in which the intersection is located, must review the proposal and indicate its approval or objection to the requested installation of APS at this location. If the appropriate official objects to the APS installation, the grounds for objection must be included with this request form. As such, the signature of City/Town official is required.

Name and Signature of Approval of City/Town Official

Date:

Please submit two copies of the signed forms: one copy to the MassDOT Highway Division State Traffic Engineer (Neil Boudreau, State Traffic Engineer, 10 Park Plaza, Room 7210, Boston, MA 02116) and one copy to the relevant District Traffic Engineer. For listing and addresses of District offices, refer to the [MassDOT website](#).

Updated June 1, 2012