



2013 Pedestrian Accessibility Study

Somerville, Massachusetts

Prepared for

City of Somerville
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2013 PEDESTRIAN ACCESSIBILITY STUDY

Somerville, Massachusetts

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1. INTRODUCTION

BACKGROUND

The City of Somerville is located in Middlesex County, just outside of Boston, Massachusetts opposite the Charles River. Somerville has a comprehensive pedestrian accessibility infrastructure consisting of over 6,500,000 ft^2 of sidewalk area and over 3,000 ramps which allow the population of over 67,000 people, as well as tourists, to enjoy the city.

The City of Somerville, in March 2012, retained the firm of Fay, Spofford & Thorndike (FST) to create an inventory of both sidewalks and ramps in an effort to make the city more accessible. From the first meeting with Director of Engineering Robert King, and Senior Civil Engineer, Richard Libardoni, it was clear that Mayor Curtatone & the City of Somerville were committed to addressing sidewalk condition, accessibility, and conformance with the Massachusetts Architectural Access Board (MAAB).

This inventory was undertaken in order to develop a comprehensive pedestrian sidewalk and ramp database describing ramp locations and conditions, and to better understand Somerville's pedestrian accessibility infrastructure, so city-wide repair policies and priorities could be developed and established. The inventory was conducting utilizing geographic information systems (GIS) and global position systems (GPS) in order to create a comprehensive database describing locations and conditions. This inventory does not include detailed pedestrian ramp measurements to be used to determine absolute MAAB conformity, but rather general network-level information describing each ramp, so systematic analyzes could prioritize ramps for future pedestrian ramp construction programming, detailed MAAB compliant survey, and engineering. This inventory builds upon the pavement condition inventory conducted by FST, which provides Somerville with a more complete picture of the overall conditions to assist with long-term capital improvement planning.

This report is designed to be a network level - planning tool and intended to provide a foundation for managing the City's pedestrian accessibility resources by combining technology, local knowledge, and professional engineering input. The following pages describe our approach.

INVENTORY APPROACH

Using field tablet computers, Global Positioning System (GPS) receivers, and existing Geographic Information Systems (GIS) layers, FST and City consultants conducted a City-wide pedestrian sidewalk and ramp inventory and assessment with GIS integration to build a comprehensive database.

Sidewalks Inventory:

Beginning in August 2012, field personnel collected five (5) primary types of sidewalk field data:

1. Sidewalk material type; Examples of materials include:
   - CC – Cement Concrete
   - BR – Brick
   - BC – Bituminous Concrete
   - CB – Cement Concrete w/ Brick
   - OT – Other (see Appendix C for specifics)

Brick sidewalk on Central St.

2. Sidewalk distresses

   Field crews identified and quantified damage areas included hairline cracking, lips at curb and back of sidewalk, missing bricks, empty tree pits, lifting concrete sidewalk panels, utility cuts, and tripping hazards. These distressed areas were measured and used to calculate a total damage area for each segment using the following measurements:

   Length of Damage: The linear measure of damaged sidewalk in aggregate accurate to the nearest foot.

   Width of Damage: The average sidewalk damage width within the segment. (Measured to the nearest half foot) Occasionally, sidewalk damages did not extend the full width of the sidewalk and repairs would only require a small section to be replaced.

3. Sidewalk width; Average width of the sidewalk segment. (Measured to the nearest half foot)

4. Curb reveal; Average curb reveal along a given sidewalk segment. Sidewalk segments were broken out in the database on a street block-to-block basis.

5. Sidewalk slope; This measurement was based on a sidewalk cross-slope taken at a visually determined location where the slope appears to be the steepest, as a worst-case scenario within the segment.

Additional data was gathered during field collection including a notes field for any construction notes or special considerations at sidewalk location, the initials of the inspector, and a timestamp with the date of the field inspection. See Appendix C for a full listing of data collection attributes.

Ramps Inventory:

Beginning in August 2012, field personnel also collected five (5) primary types of ramp field data:

1. Ramp material information; Examples of materials include:

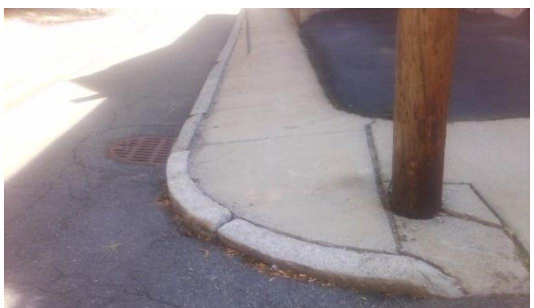
    - CC – Cement Concrete
    - BR – Brick
    - BC – Bituminous Concrete
    - CB – Cement Concrete w/ Brick

2. Ramp surface material conditions

    Based on a visual inspection of the ramp on the day of the survey- Ramp conditions were classified as:

    - Excellent – Like New
    - Fair – Needs Maintenance
    - Poor – Full Replacement

Poor ramp in need of Full Replacement



Ramp is missing with no crosswalk

3. Numeric code identifying obvious ramp deficiency

    This is a simple visual assessment (no field measurements) as to whether a wheelchair could access and utilize the ramp. Attributes consisted of:

    - 0 – Ramp is missing with no crosswalk, a likely sidewalk obstruction
    - 1 – Ramp is missing while crosswalk is present
    - 2 – All appears okay (has ramp and landing)
    - 3 – No level landing present
    - 4 – Obstruction within fair proximity to path of travel (in either ramp apron or landing)

4. Numeric code for crosswalks; Identified using the following convention:

    - 0 – Crosswalk does not exist
    - 1 – Crosswalk exists, not out of alignment with ramp
    - 2 – Crosswalk exists and encloses the ramp threshold

5. Ramp and landing slopes

A 2-foot electronic smart level was used to record the slope(s) of the ramp and landing for each pedestrian ramp. MAAB maximum slope for a ramp is 8.3% and maximum landing slope for a landing is 2.0%. While the MAAB has many other requirements for pedestrian ramp components, these measurements were not taken during this phase of data collection. Only the running ramp and landing slope were collected. The intent of this survey was to gather the basic data required to prioritize ramps for a subsequent detailed MAAB compliance assessment for construction.

Recording ramp slope in field

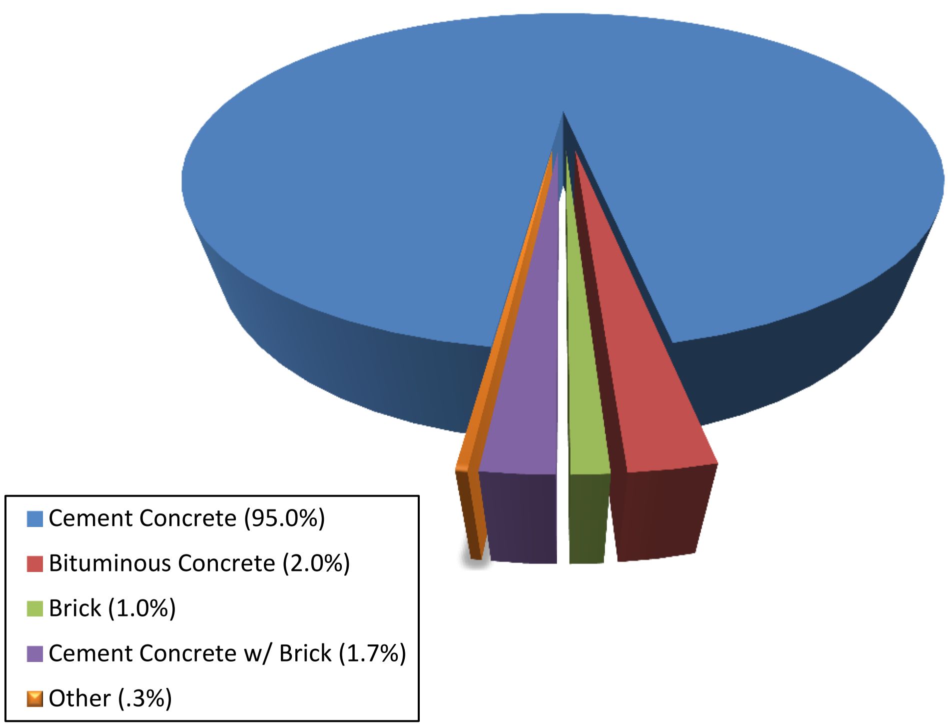
Additional gathered data included whether there was a "lip" present based on transition from the street to the bottom of the pedestrian ramp; a comments field containing any other information pertaining to the ramps not covered in the other data fields; the initials/identity of the data collector; and finally a timestamp from when the survey was conducted. See Appendix C for a full listing of data collection attributes.

2. EXISTING CONDITIONS

SIDEWALK INVENTORY:

A total of 3,017 sidewalk segments were inventoried throughout the City of Somerville. The predominant material used for sidewalks in Somerville is cement concrete. Figure 1 below shows the citywide distribution of sidewalk area based on material type.

Figure 1
Distribution of Sidewalks by Material Type



SIDEWALK CONDITION INDEX

A sidewalk condition index or SCI value was established to quickly categorize sidewalk conditions into a repair strategy schema. The SCI is calculated by taking the damaged area and dividing it by the total sidewalk area, then multiplying by 100. The result is then subtracted by 100 to produce an SCI value.

$$SCI = 100 - \left(\left(\frac{damage\ area}{sidewalk\ area}\right) * 100\right)$$

SCI treatment bands were established and categorized to determined repair strategies accordingly:

0-49 = Full Replacement/ Reconstruction
50-79 = Localized Repairs/ Panel Replacement
80-100 = Do Nothing

The figures below show the visual difference between the three categories:

FULL REPLACEMENT/ RECONSTRUCTION

Medford Street

LOCALIZED REPAIRS

Gibbens Street

DO NOTHING

Washington Street (E)

Table 1 below shows the distribution of these SCI treatment bands throughout the city.

Table1
Distribution of SCI treatment bands

SCI Treatment Band	Sidewalk Count	Sidewalk Area
Full Replacement/Reconstruction	1903	3,906,473
Localized Repair/ Panel Replacement	834	1,981,257
Do Nothing	280	874,345

The average area based SCI in Somerville was 46.5, which puts it on the top of the full replacement threshold. Since almost 60% of the sidewalk area in the city is in the Full Replacement band, the City has much work to do to improve sidewalk conditions throughout the network.

SIDEWALK SEGMENT ACCESSIBILITY

In order to determine the likelihood of meeting the minimum MAAB sidewalk standard, the cross-slope and sidewalk width values were examined. In order to be a likely MAAB compliant sidewalk, a segment must have a cross-slope of less than 2% and a sidewalk width greater than 4 feet. The notes field was also evaluated to determine if street furniture, buildings, or other hardscape obstructions prevented passage along the sidewalk. Figures 2 and 3 display both the cross-slope and sidewalk widths respectively, where green bars represent likely compliant attributes, and red bars represent likely non-compliant attributes. It can be seen from these that the primary reason for likely non-compliance in Somerville is the sidewalk cross-slope since the majority of sidewalk widths far surpass the 4 foot threshold.

If the sidewalk is considered likely compliant, it is likely to assume that the sidewalk is accessible. However, being "likely compliant" does not mean that the sidewalk is MAAB compliant and further verification is required to confirm complete compliance. An example requiring further verification would be a sidewalk segment that may include non-standard driveways, and/or overgrown tree pits.

This investigation has revealed approximately 77% of Somerville sidewalks do not comply with MAAB requirements.

Figure 2
Distribution of Sidewalk Cross-Slope

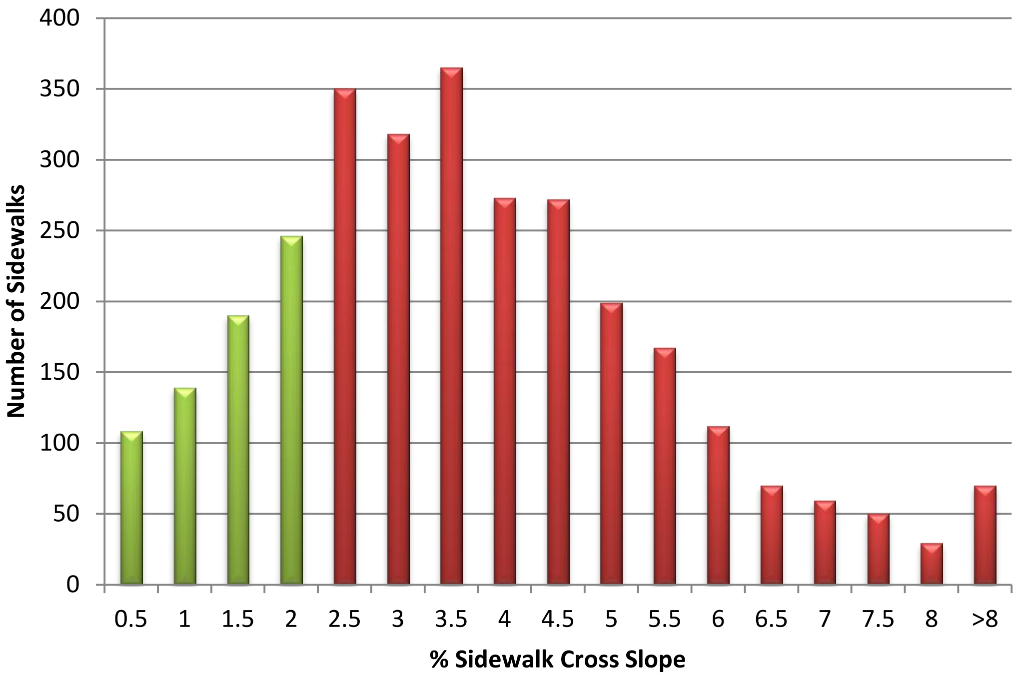
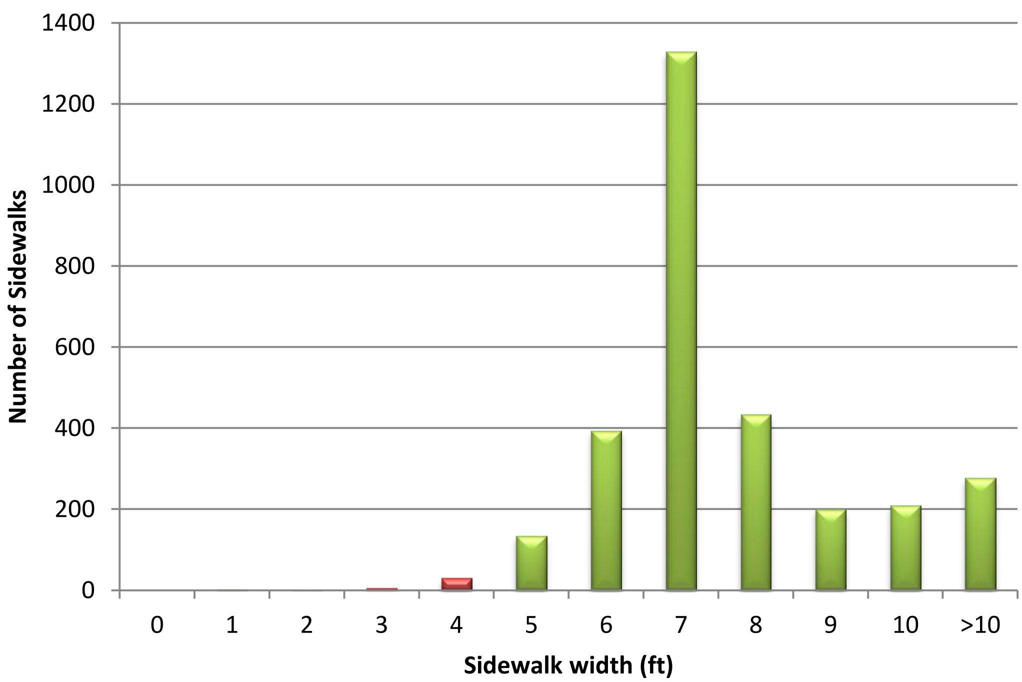


Figure 3
Distribution of Sidewalk Widths



Residual Curb Reveal (RCR):

The RCR value is a further means to identify where MAAB compliant sidewalks can easily be installed without extensive roadway resurfacing or reconstruction based on existing cross-slope, width of sidewalk, and curb reveal. This value will help Public Works assign sidewalk repairs to specific capital sidewalk repair programs and quickly define whether the segment can be repaired in the field by a maintenance contract or whether the segment requires an engineered solution. The RCR equation is shown below:

$$RCR = \left(\left(\frac{Cross\ Slope - 1.5}{100}\right) * (Sidewalk\ width * 12)\right) + Curb\ Reveal$$

There are three categories identified from this equation. If the RCR value is less than six (6), it is likely that the segments can be reconstructed in the field without affecting the roadway and could be repaired under an area wide maintenance contract.. If the RCR value is between six (6) and ten (10), segments may still be reconstructed in the field without affecting the roadway, depending on existing conditions of structures. These segments require project level analysis to determine whether they can be repaired under an area wide maintenance contract. If the RCR value is greater than ten (10), it is likely that roadway work will be required.

Table 2
RCR Categories

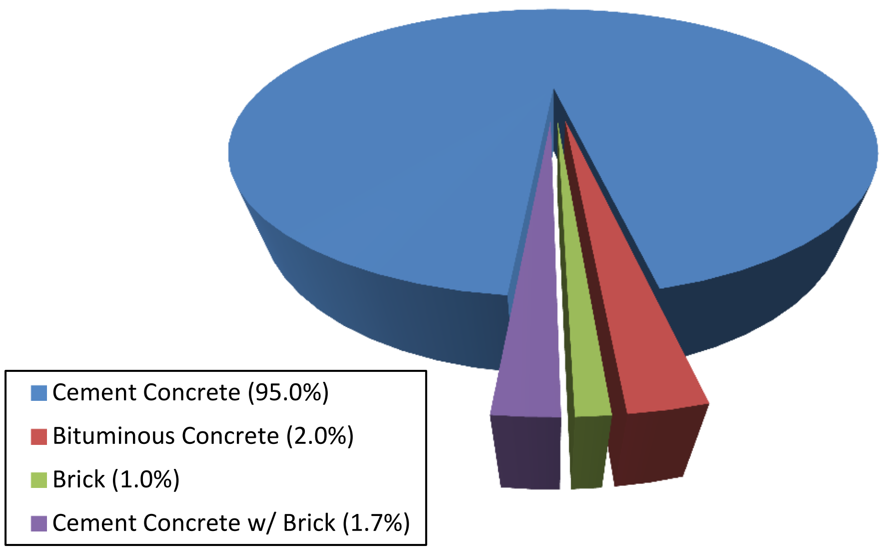
RCR Categories	Sidewalk Count	Sidewalk Area
RCR <6"	902	1,918,534
RCR >6", <10"	1886	4,335,639
RCR >10"	229	507,902

This investigation found that only approximately 30% of sidewalk area in Somerville have an RCR value less than 6" and can be reconstructed in the field without affecting the roadway. Nearly 65% of sidewalk area has an RCR value between 6" and 10" as well, so there may be many cases in which roadway work will not be required.

RAMP INVENTORY:

3,021 Pedestrian ramps were inventoried throughout the City of Somerville, including ramps that were classified as "missing" where existing crosswalk markings led to vertical curb face(s) with no curb cut to access sidewalk. A categorization of the inventoried pedestrian ramps, as seen in Figure 4, shows that they are predominately made from cement concrete (97.05%), with bituminous concrete, brick, and cement concrete with brick making up the other 2.95%.

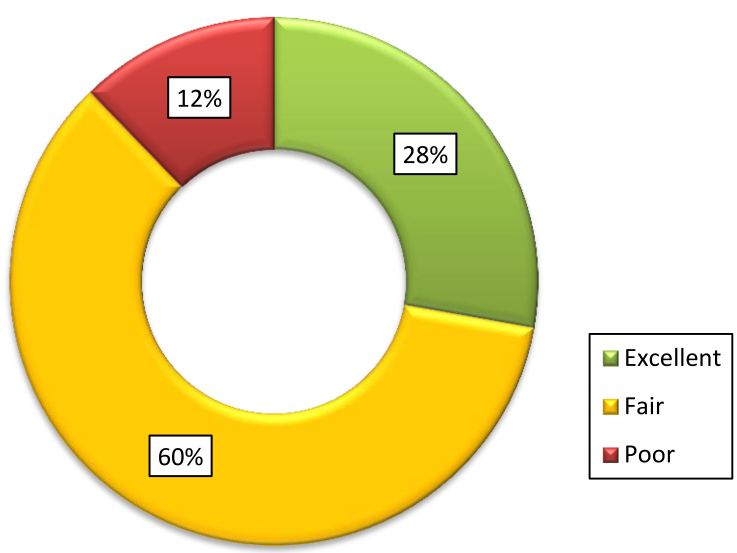
Figure 4
Distribution of Ramps by Material Type



RAMP CONDITIONS:

Surface material conditions revealed that the majority of pedestrian ramps in Somerville are in Fair condition, with more in Excellent condition than Poor condition. Figure 5 shows the split between these three categories.

Figure 5
Surface Material Conditions



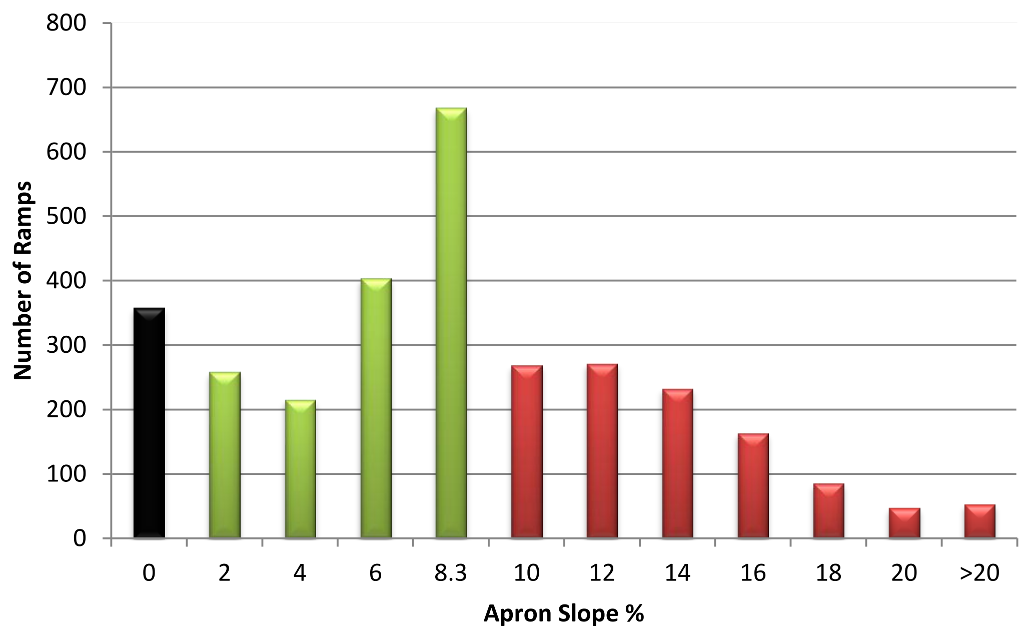
While Table 3 displays general condition data, more extensive field measurements were collected to assess MAAB compliance probability based on two main criterion: ramp and landing slopes.

Table 3
Visual Ramp Assessment

NUMERIC CODE	COUNT OF INSTANCES
0- [Ramp is missing with no crosswalk, a likely sidewalk obstruction]	234
1- [Ramp is missing while a crosswalk is present]	124
2- [Existing Ramp w/landing and no obstruction]	2,342
3- [Existing Ramp w/ no landing]	301
4- [Existing Ramp w/obstruction within proximity to travel of path]	20
TOTAL	3,021

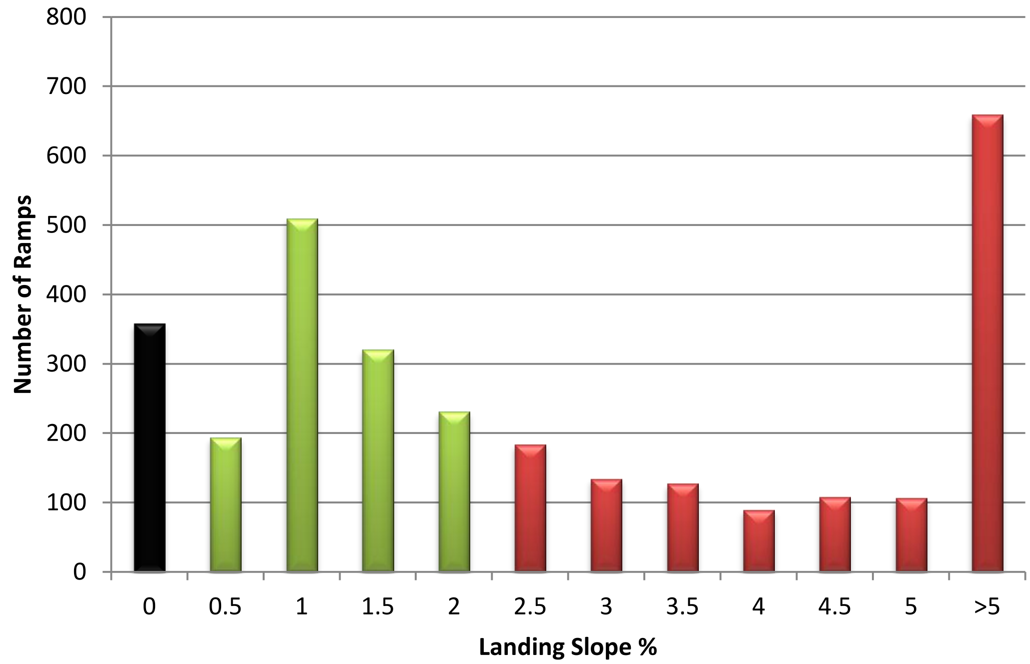
To get a more in depth analysis of MAAB compliance beyond visual inspection, pedestrian ramp and landing slopes were integrated. MAAB maximum slope for ramps and landings is 8.3% and 2.0% respectively. Figures 6 and 7 show distributions of both attributes with green bars showing compliant standards and red showing non-compliant standards and a black bar representing ramps which are missing and have 0 values.

Figure 6
Distribution of Ramp Slope Percentage



FAY, SPOFFORD & THORNDIKE

Figure 7
Distribution of Landing Slope Percentage



In determining likelihood of MAAB compliance, five primary attributes were used: visual inspection, ramp slope, landing slope, crosswalk deficiences, and presence of a lip. In using these, it was determined that 2,428, or 80% of the total ramps in Somerville are likely not compliant with MAAB standards.

3. METHODOLOGY

NETWORK PRIORITY RANKING (NPR):

The NPR number reflects the comparative merit of repairing one sidewalk/ramp over another, using variables other than simple observed deficiencies. In order to effectively manage Somerville's pedestrian accessibility backlog, a systematic NPR was developed for each sidewalk/ramp. The NPR variables were developed and discussed between FST and Somerville officials. The database of sidewalk and ramp locations and ensuring methodology was tailored to reflect Somerville's specific decision making criteria for selecting ramps that would be most beneficial to repair first.

RAMPS NPR:

The NPR served as the means to prioritize ramp repair using 4 criteria that were scored separately and were key to the decision making process. The criterion is:

1. Ramp Condition
2. Proximity to MBTA station
3. Proximity to parcels with high pedestrian traffic
4. Slope severity of ramp

1. Ramp Condition

Missing ramps significantly hinder pedestrian accessibility, which is why ramp existence played a key role in determining the NPR for ramps. In the case in which a ramp was missing with no crosswalk, an NPR score of 450 was given. If the ramp was missing, but a crosswalk was present, an NPR score of 250 was given. If a ramp was present regardless of material or damage present, a score of 0 was given.

2. Proximity to MBTA station

The ramps locations were related spatially to the closest MBTA stations within a buffer of 300 feet. The NPR score for a ramp was based on its distance from a MBTA station ranged from 0-300. If the ramp fell outside of the buffer, a score of 0 was given. However, if the ramp fell within the buffer, a score was given based on distance from the station, shown below.

$$NPR_{MBTA} = 300 - distance\ to\ MBTA\ station$$

The rationale behind this calculation is the closer a pedestrian ramp is to a transit station, the higher the score will be for that ramp will be.

3. Proximity to High Pedestrian Parcels (HPP)

The ramps locations were related spatially to High Pedestrian Parcels within a buffer of 150 feet. High Pedestrian Parcels include hospitals, schools, retail, etc. The NPR score for a ramp was based on its distance from an HPP ranged from 0-150. If the ramp fell outside of the buffer, a score of 0 was given. However, if the ramp fell within the buffer, a score was given based on distance from the HPP, shown below.

$$NPR_{HPP} = 150 - distance\ to\ Parcel$$

4. Slope Severity of Ramp

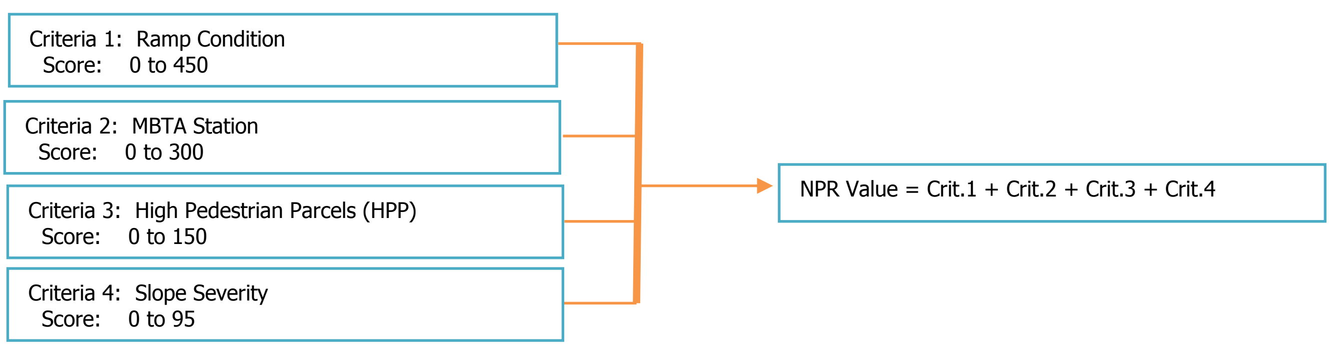
The NPR number also includes information on the measured percent slope of the ramp and landing. Higher percent slopes would require a higher priority for repair. The equation below shows how the NPR was calculated, which ranged from 0-95:

$$NPR_{Slope\ Severity} = (Ramp\ Slope\ \% * 2) + (Landing\ Slope\ \% * 2)$$

NPR Formula

The NPR formula adds the rankings for each criterion together to get a composite number ranking for each ramp in the data set. Figure 8 below shows a flowchart of the method:

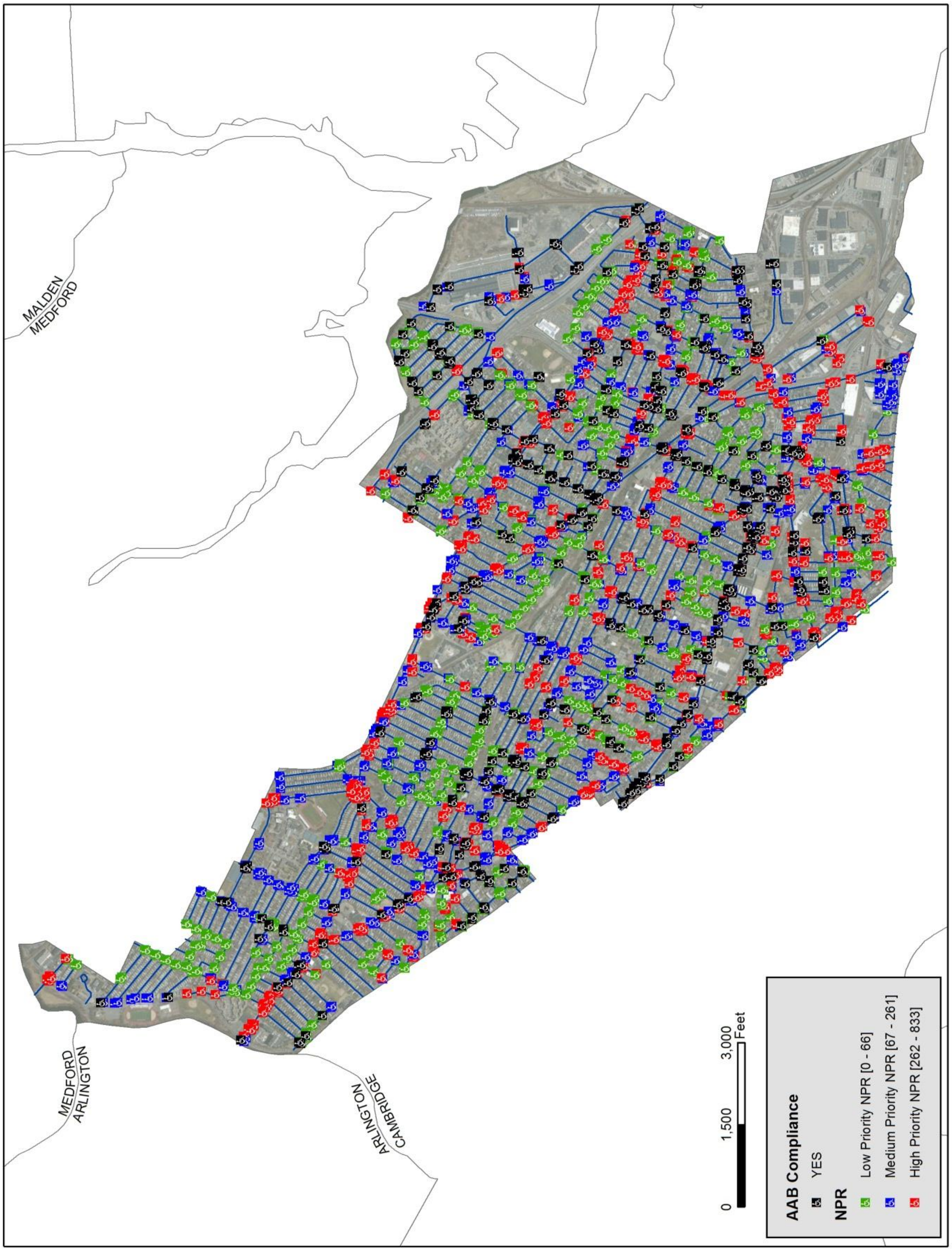
Figure 8
Ramps NPR Calculation Flowchart



Note- if a ramp was likely-compliant, it received an NPR value of 0.

Once the final NPR values were summed for ramps, they were distributed into three categories based on a geometric split. Figure 11 shows the priority levels for all likely non-compliant ramps, as well as locations of compliant ramps throughout the network.

Figure 9
Network Ramp NPR



SIDEWALKS NPR:

The NPR served as the means to prioritize ramp repair using 2 criteria that were scored separately and were key to the decision making process. The criterion is:

1. Proximity to MBTA station
2. Proximity to high pedestrian parcels

1. Proximity to MBTA station

Sidewalk polygons were related spatially to the closest MBTA stations within a buffer of 300 feet. If the MBTA buffer intersected any part of the sidewalk polygon, it was given an NPR value; otherwise a value of 0 was given. The NPR value was calculated by subtracting the maximum distance any sidewalk polygon centroid inside the buffer zone had to an MBTA station, which was 742′, by all sidewalk polygon centroids.

$$NPR_{MBTA} = 742 - MBTA\ distance$$

2. Proximity to High Pedestrian Parcels (HPP)

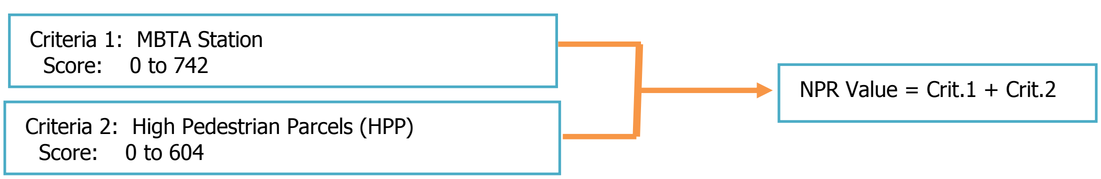
Sidewalk polygons were related spatially to High Pedestrian Parcels within a buffer of 150 feet. If sidewalk fell outside of the buffer, a score of 0 was given. However, if the sidewalk fell within the buffer, an NPR value was calculated by subtracting the maximum distance any sidewalk polygon centroid inside the buffer zone had to a HPP, which was 604′, by all sidewalk polygon centroids.

$$NPR_{HPP} = 604 - distance\ to\ Parcel$$

NPR Formula

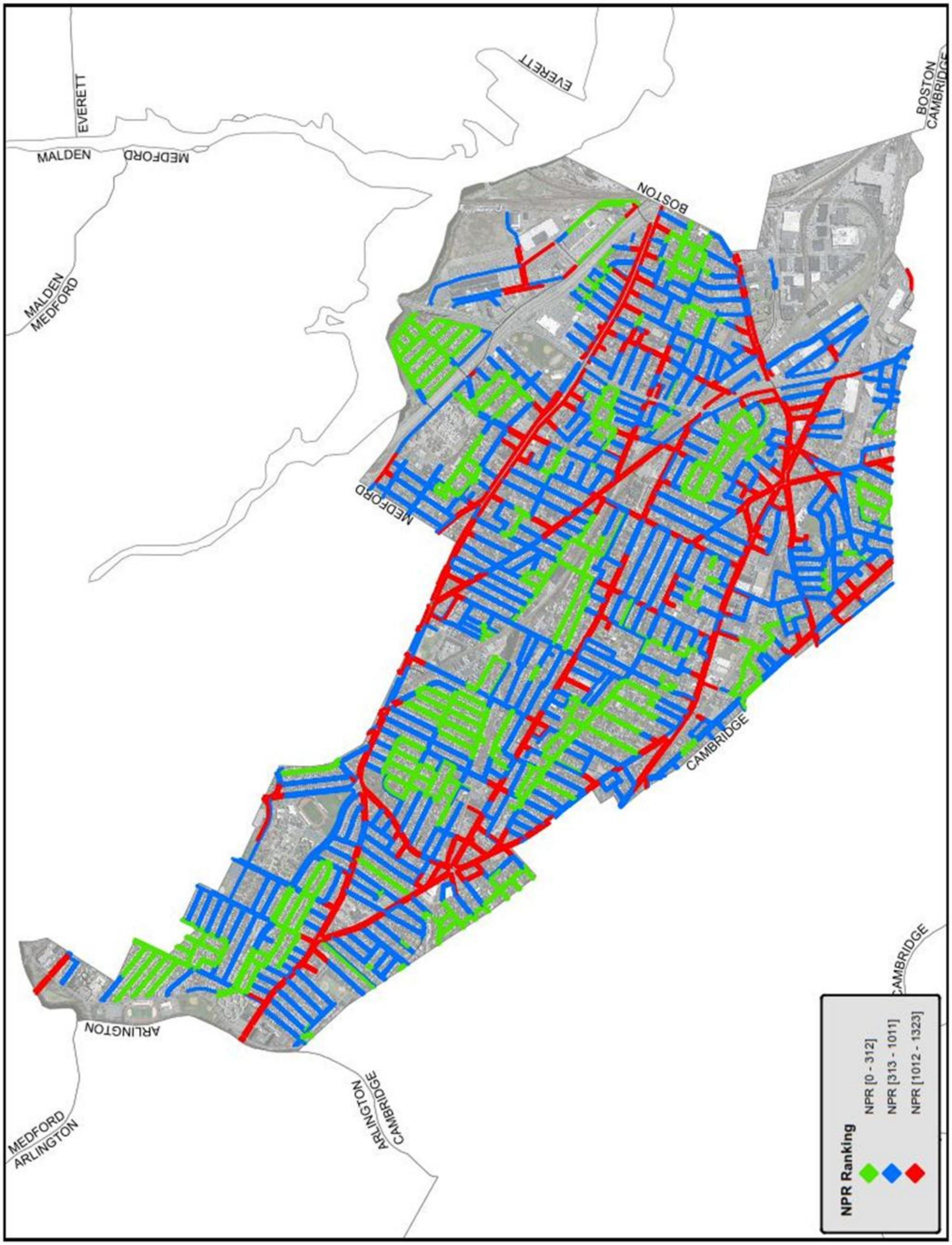
The NPR formula adds the rankings for each criterion together to get a composite number ranking for each ramp in the data set. Figure 10 below shows a flowchart of the method:

Figure 10
Sidewalks NPR Calculation Flowchart



Once the final NPR values were summed for sidewalks, they were distributed into three categories based on geometric split. Figure 12 shows the NPR values for sidewalks throughout the City.

Figure 11
Network Sidewalk NPR



4. REPAIRS/ BACKLOG

SIDEWALK REPAIR COSTS:

Having established a detailed inventory for existing sidewalks, financial costs were needed for future budget planning. Consideration was given based on historical pedestrian sidewalk repair costs, material classification, and sidewalk damage area. The following sidewalk budgetary reconstruction costs were used for analysis:

Table 4
Sidewalk Reconstruction Costs

SIDEWALK MATERIAL	COST (2013 Dollars)
CC- Cement Concrete	\$ 16/ft2
BR- Brick	\$ 28/ft^2
CB- Cement Concrete w/ Brick	\$ 20/ft^2
BC- Bituminous Concrete	\$ 12/ft^2
OT- Other/Specialty	\$ 36/ft^2

The above costs were applied to the city-wide sidewalk network based on damage area based on the following categories:

1. Reconstruction: SCI = 0-49 – Entire sidewalk area is budgeted to be reconstructed
2. Localized Repair: SCI = 50-79 – Only damage area is budgeted to be reconstructed
3. Do Nothing: SCI = 80-100 – Zero backlog

CURRENT SIDEWALK BACKLOG:

Backlog is defined as the cost of repairing all sidewalks, partial panel replacement, and full replacement sidewalk reconstruction within one year bringing sidewalks to a near perfect condition. Backlog is a "snapshot" or relative measure of outstanding repair work. The backlog not only represents how far behind the Somerville sidewalk network is in terms of its condition, but it also offers a basis for comparison for future and/or past year's backlog(s) to determine if the City is catching up, or falling behind. Backlog dollars represent the cost to repair sidewalks and curbing only. It does not include related repair costs for relocation and installation of utilities, lighting, signal apparatus, signs, or landscaping.

As of February 2013, Somerville's backlog of sidewalk repair work totaled $75,143,944

RAMP REPAIR COSTS:

Budget considerations for ramps were based on historical costs, and material classification. Ramps were categorized into two groups to calculate backlog. If the ramp was likely MAAB compliant, it was considered do nothing, however; if the ramp was likely non-compliant it was considered a reconstruct based on material type. Table 5 shows reconstruction costs based on material type:

Table 5
Ramp Reconstruction Costs

SIDEWALK MATERIAL	COST (2013 Dollars)
CC- Cement Concrete	$ 3000/ ramp
BR- Brick	$ 6000/ ramp
CB- Cement Concrete w/ Brick	$ 4500/ ramp

Note: Ramps that are currently bituminous concrete will be reconstructed in cement concrete. Ramps that are currently constructed completely of brick will be reconstructed in cement concrete while reconstructing the adjacent sidewalk in brick.

CURRENT RAMP BACKLOG:

As of February 2013, Somerville's backlog of ramp repair work totaled over $7,420,500.

5. RECOMMENDATION

RECOMMENDED PLAN OF ACTION

The overall pedestrian sidewalk network in the City of Somerville is currently in fair to poor condition. With an average SCI of around 50 and over 80% of sidewalks likely non-MAAB compliant, there is substantial work to be done to improve walkability and accessibility for sidewalks. Using the reconstruction costs from Table 4, it was calculated that the backlog for repairing sidewalks in Somerville totals to $75,143,944.

The overall pedestrian ramp network in the City of Somerville is also currently in fair to poor condition. The data gathered from this study shows a "high-probability" that only 20% of Somerville's pedestrian ramps are in compliance with MAAB standards. This study shows that future diligence with respect to MAAB standards will be necessary to improve City-wide ramp conditions. The backlog to reconstruct these ramps to compliance would cost Somerville $7,420,500.

The City has recently taken steps to include accessibility improvements while performing capital roadway improvement projects however this commitment will direct funding away from its pavement management plan, previously studied under a separate report indicating a funding shortfall. It's important for the City to have a balanced attack of mixed treatments to tackle deteriorating infrastructure and non-compliant sidewalks and ramps.

Somerville needs to increase future funding levels for pedestrian accessibility for sidewalks and ramps to address its backlog needs. Based on existing backlog collectively $2,200,000 annually should be spent improving sidewalks and ramps. The City should consider two (2) sidewalk repair programs, one to address localized ramps and sidewalk panel/tree pit repairs driven by NPR and another larger dedicated program toward ramp improvements and block-to-block sidewalk reconstruction in concert with the City's annual asphalt resurfacing program.

Somerville should assemble an ADA Task Force including members from different City departments, as well as members from the physically challenged and disabled communities. Review and feedback from the accessibility community can vastly benefit Somerville's efforts for improving pedestrian accessibility.

The City's ADA Task Force should maintain and expand upon the database assembled by FST. Asset management is a systematic process that needs the long-term commitment and support of Somerville's practitioners and decision-makers to maintain the pedestrian ramp management database system. The following are general recommendations and standard management and upkeep practices for ramps and sidewalks:

Ramps and Sidewalks:

1. Implement a sound departmental quality control/assurance program, with particular focus on MAAB standards.
2. Maintain MAAB violations in GIS to establish critical regions for immediate repairs.
3. Identify a single individual who will act as a custodian of the maintenance and upkeep of the sidewalk GIS layer/database.
4. Update sidewalk segment information where past reconstruction dates are known.
5. During construction season equip inspectors with mobile devices that can be used to update the asset databases with information such as newly constructed ramps,

sidewalks, and roadways thereby populating the database with new and current information. ArcServer and ArcPad can be utilized together for improved mobile mapping on table PC, GPS units, and other handheld devices.

6. Do not delete features that no longer exist. 'Retire' these features instead.
7. Post historical as-built construction dates in the database, for each ramp to categorize post & pre ADA ramps. The ADA standards for accessible design changed January 26, 1992. Categorizing the ramp database by this date allows DPW to maximize priority spending.
8. Post all annual pedestrian ramp and sidewalk improvements into the GIS database. Both the pedestrian ramp condition ratings and the repair history information should be entered. Track MAAB ramp variance requests and grants in a geo-database environment.
9. Add any new pedestrian ramps and sidewalks to the database as soon as the City accepts them. Pavement and sidewalk data can be added/modified as it becomes available.
10. Re-inspect pedestrian ramps and sidewalks annually.

In summary, the pedestrian accessibility inventory should serve as a valuable tool to the City of Somerville and to Somerville decision-makers in their pro-active approach to managing Somerville's infrastructure network.

APPENDIX A

Data Attribute Dictionary

City of Somerville Pedestrian Ramp and Sidewalk Inventory Attribute Definitions

A) RAMPS

COND: This is the general overall surface condition of the ramp surface material.

- Excellent – Like New
- Fair – Needs Maintenance
- Poor – Full Replacement

MATERIAL: This code represents the ramp/sidewalk material.

- CC – Cement Concrete
- BR – Brick
- BC – Bituminous Concrete
- CB – Cement Concrete w/brick

ACCESS: It has been assumed that many to the existing pedestrian ramps do not meet today's MAAAB requirements. This rating is intended to help identify apparent pedestrian ramps deficiencies to develop a strategy to prioritize repair/upgrade. This rating is a simple visual assessment (no field measurements) as to whether a wheelchair can access this ramp. The following is the numeric coding system and priority ranking for each ramp point:

0 – Ramp is missing with no crosswalk, a likely sidewalk obstruction - 450
1 – Ramp is missing while a crosswalk is present - 250
2 – All appears Okay - 0
3 – No Landing - 0
4 – Obstruction within fair proximity to path of travel (in either ramp apron or landing) - 0

CROSS: This is a numeric rating code to identify apparent crosswalk deficiencies.

0 – Crosswalk does not exist
1 – Crosswalk exists, but out of alignment with ramp
2 – Crosswalk exists and encloses the ramp threshold

APRON_SL: Recorded running ramp slope percentage field measurement using 2' Smartlevel.
LANDING_SL: Recorded worst running or cross-slope landing (if substantial landing present) slope percentage field measurement using 2' Smartlevel.
LIP: Yes or No field identifying whether the ramp surface is not within ¼" of adjacent roadway surface.
NOTES: Any other comments pertaining to ramp.
INSP: This is initials/identity of data collector.
INSP_DATE: Date attributes were collected.
RAMP_ID: Unique number ramp identifier.
ROUTE: This is the general street where the ramp threshold leads to.
AAB_COMP: Yes or No field if the ramp is likely MAAB compliant based on data gathered as part of this project.
CURB_REV: Average vertical curb height (non-transitional curbing) adjacent to ramp.
PHOTO: Picture of ramp taken by inspector on date of inspection.

B) SIDEWALKS

MATERIAL: This code represents the sidewalk material.

- CC – Cement Concrete
- BR – Brick
- BC – Bituminous Concrete
- CB – Cement Concrete w/brick
- OT – Other (see notes)

INSP: This is initials/identity of data collector.
INSP_DATE: Date attributes were collected.
NOTES: Any other comments pertaining to ramp.
SWK_SLOPE: Recorded average cross-slope field measurement using 2' Smartlevel.
CURB_REV: Average curb reveal along the sidewalk segment in inches.
SWK_WIDTH: Recorded average sidewalk width in feet.
DAM_LENGTH: Measured aggregate length of sidewalk damage along the sidewalk segment in feet.

City of Somerville Pedestrian Ramp and Sidewalk Inventory Attribute Definitions

DAM_WIDTH: Average sidewalk width of damage area. In some instances the damage width may be smaller than the actual sidewalk width.

DAM_AREA: Approximated damage area based on field measurements. Damages include sunken or raised curb, hairline cracks, fractured slabs, missing brick, black patches, empty tree pits, tree root lifting of sidewalk, etc.

SWK_AREA: Geospatially calculated area value based on the size of the segment layer as provided by the City of Somerville.

HOTLINE: Picture of ramp taken by inspector on date of inspection.

SCI: Sidewalk Condition Index (SCI) value is calculated by:

SCI = 100 – ((DAM_AREA / SWK_AREA) * 100)

This index is used by PWD to indicate sidewalk segment age, density of damage, and ability to plan repairs. SCI ranges from (0-100) and generally categorized as:

RECONSTRUCTION = 0 – 49

LOCALIZED REPAIRS = 50 – 79

DO NOTHING = 80 – 100

RCR: Residual Curb Reveal (RCR) is used for programming sidewalk repair contracts. The value determines which sidewalks can be completed under a maintenance contract, requires an overlay, or should be placed in an engineering contract for reconstruction.