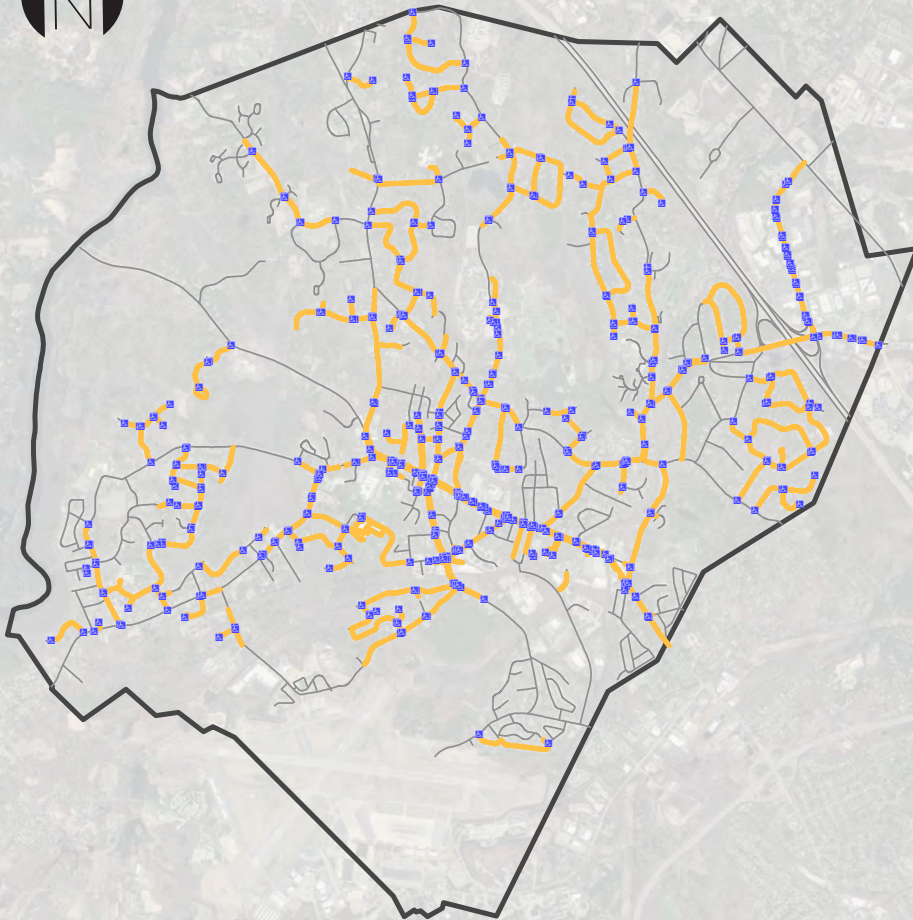




FY 2019

Sidewalk & Ramp Management Summary



Legend

- 2019 Ramp Inventory
- 2019 Sidewalk Inventory



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Sidewalks

A total of 437 sidewalk segments were inventoried in the Town of Bedford totaling approximately 47 miles.

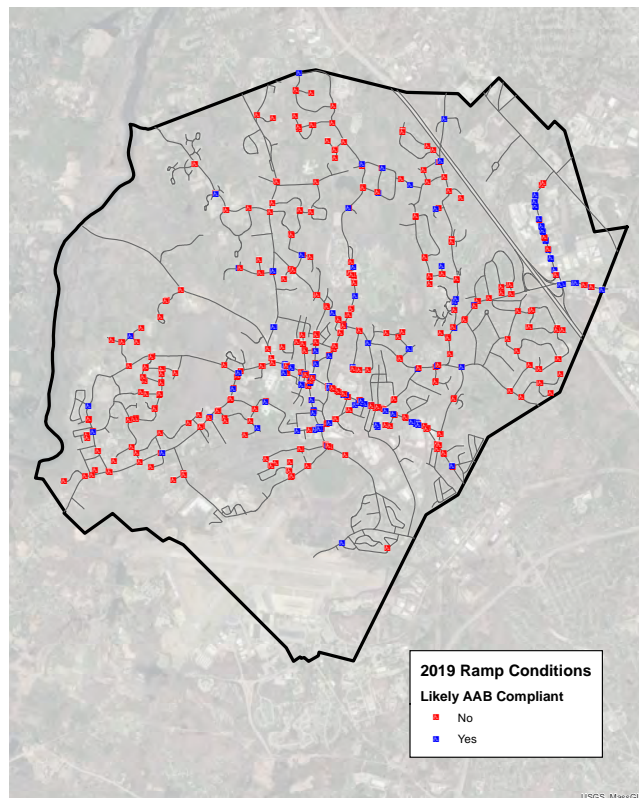
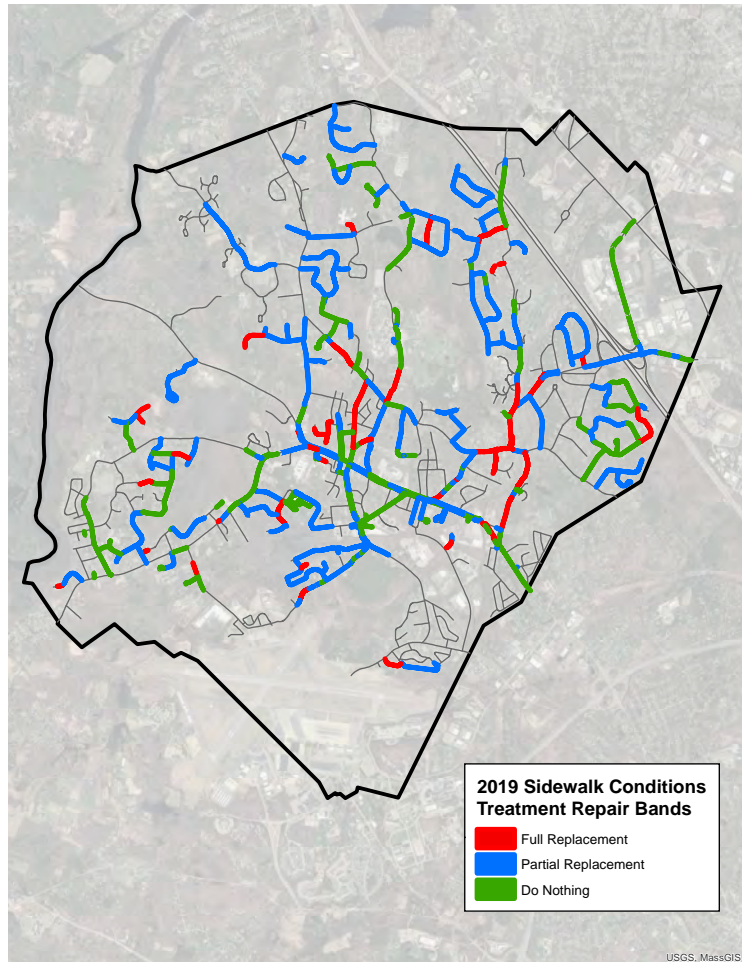
For each sidewalk segment Stantec quantified the damaged area and created a Sidewalk Condition Index (SCI) to categorize sidewalks into treatment repair bands. Below is the equation used to calculate the SCI:
$$SCI = 100 - (((\text{damage area}) / (\text{sidewalk area})) * 100)$$

The average SCI for the Town's sidewalk network is **69.2**. Based on the SCI, Stantec categorized individual segments into three treatment repair bands, shown on the map to the right:

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

To calculate the repair backlog, Stantec quantified costs based on material type and the repair bands. For segments in the 'Full Replacement' treatment band, the entire sidewalk area was used to estimate backlog cost. However, for the sidewalks in the 'Localized Repairs' treatment band, only the damaged area was used to estimate backlog cost.

The total sidewalk repair backlog is **\$2,948,710**.



Ramps

A total of 506 ramps were inventoried in the Town of Bedford.

Along with general ramp attributes, Stantec collected specific attributes to determine the likely compliance of the ramp.

Of the 506 ramps inventoried, 104 were "missing" ramps which hinder accessibility greatly.

Utilizing attributes for threshold width, apron slope, landing slope, and presence of a ¼" lip at the threshold Stantec determined the likelihood of ADA compliance for the ramps inventoried.

For the entire ramp network, Stantec found that **26.9%** were likely compliant.

Excluding missing ramps and only accounting for built ramps, **33.8%** of ramps were likely compliant.

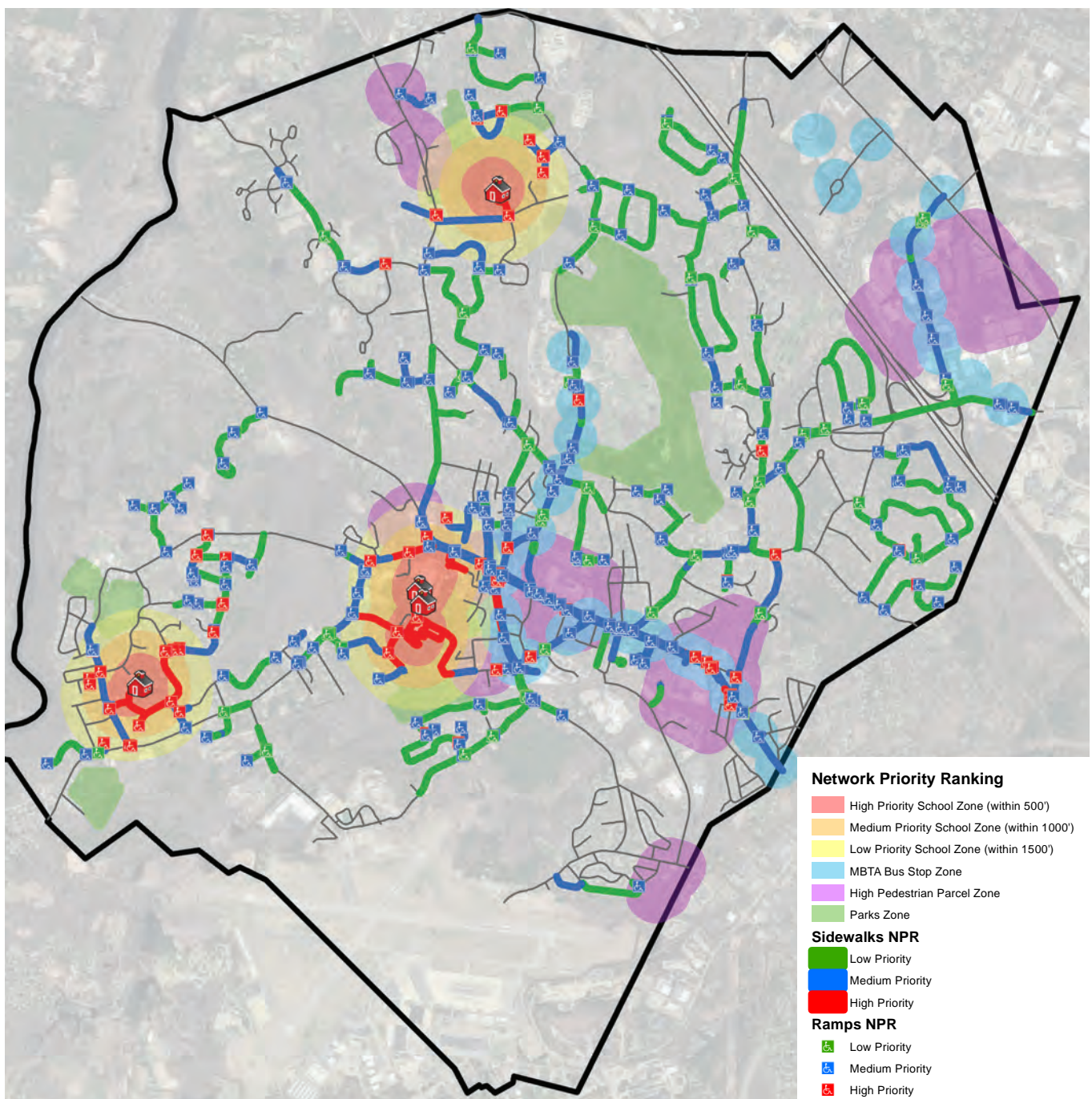
The map on the left shows the locations of the likely compliant, and non-compliant ramps.

Network Priority Ranking (NPR)

To assist the Town in prioritizing repairs for both sidewalks and ramps, Stantec developed a Network Priority Ranking (NPR) score.

This score consisted of proximity to important accessible locations within the Town as well as elements of accessibility within the sidewalk and ramp datasets. For both ramps and sidewalks, Stantec calculated the distance to the nearest schools, MBTA Bus Stops, High Pedestrian Parcels (commercial), and parks. Scores were derived based on distances to these elements. For sidewalks

additional scores were calculated based on trip hazards and cross-slope severity, while for ramps additional scores were calculated for missing ramps, missing landings, and slope severity of both the existing apron and landing. The additional scores for both the sidewalks and ramps were created to distinguish which of these assets were “the most non-compliant.” Summing both the proximity-based scores and the condition-based scores for both assets lead to the cumulative NPR score. Below is a map highlighting the proximity elements used for the ranking along with tiers of priority for both sidewalks and ramps.



In order to determine the necessary funding to keep the network in good conditions, three future funding scenarios were run for three years.

In these scenarios, a lifetime of 25 years and 40 years were used for Bituminous and Cement Concrete sidewalks respectively. The unit prices used include the repair of ramps, if applicable to the sidewalk segment. For the funding analysis, 90% of the budget was dedicated to full replacement while 10% was used for partial repair. An inflation rate of 3.5% was used on a yearly basis.

The first scenario run was to have no funding contributed to the sidewalk network. This scenario is used to gauge the deterioration levels of the network in a worst-case scenario where there is no funding available. As seen in the table below, in this scenario the sidewalk network deteriorates to an SCI of 59 in just three years, while the backlog jumps to \$4,302,827.

YEAR	FUNDING	BACKLOG	NETWORK SCI
Present		\$2,948,710	69
FY 2020	\$0	\$3,425,394	66
FY 2021	\$0	\$3,742,356	63
FY 2022	\$0	\$4,302,827	59

Next, a scenario was run to spend \$165k on the sidewalk network per year. In this scenario, the network SCI decreases by 4 points over three years while the backlog increases by approximately \$500,000. While this level of funding keeps the backlog relatively sustainable, the network conditions do decrease showing this level of funding is still regressive.

YEAR	FUNDING	BACKLOG	NETWORK SCI
Present		\$2,948,710	69
FY 2020	\$165k	\$3,185,341	68
FY 2021	\$165k	\$3,324,885	66
FY 2022	\$165k	\$3,479,271	65

Lastly, a scenario was run to try to keep the backlog at sustainable levels while keeping the network in good conditions. It was observed that spending \$300k a year keeps the backlog at current levels while network conditions start slightly improving. This is a good baseline for the Town to establish when budgeting for their sidewalk network.

YEAR	FUNDING	BACKLOG	NETWORK SCI
Present		\$2,948,710	69
FY 2020	\$300k	\$2,975,566	69
FY 2021	\$300k	\$2,976,073	70
FY 2022	\$300k	\$3,037,512	70

Based on the funding analysis done herein, Stantec recommends the Town to appropriate \$300k towards their sidewalk network to keep the backlog sustainable and improve network conditions. Stantec will provide the Town with a 5-year sidewalk capital improvement plan based on the calculated NPR scores to assist in planning efforts.



South Rd. @ Railroad Ave.
Well constructed AAB compliant ramp with slight threshold lip maintenance issue



Fitchdale Avenue
SCI: 86- Good Condition



The Great Rd. @ Walsh Rd.
Recently Constructed AAB Compliant ramp, prematurely cracking/tactile panel lifting