Complete Streets Needs Assessment

Prepared for:
Town of Groveland

Prepared by:
Stantec Consulting Ltd.

July 25, 2019

Sign-off Sheet

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Executive Summary

This Complete Streets Needs Assessment was conducted as part of the development of the Town of Groveland's Prioritization Plan. The Prioritization Plan is a targeted investment strategy to improve safety, mobility and/or accessibility. It has identified the street, infrastructure, cost estimate and timeline for Groveland's desired Complete Street improvement.

As part of the needs assessment, Stantec has conducted numerous site visits to assess the existing conditions of the critical roadways. The assessment included noting speed limits, measuring roadway and shoulder widths and recording the availability and width of sidewalks. In addition, Stantec graded the conditions of the existing pavement and sidewalk condition along all critical roadways.

A Network Gap analysis was conducted to identify gaps within the pedestrian or bicycle network. These gaps can provide barriers to walking and bicycling between areas. Projects that help "fill in" these gaps could be given priority as they will help create a town wide network of pedestrian and bicycle accommodation. The Network Gap analysis was conducted using MAPC GIS database layers supplemented with field observations. The pedestrian and bicycle accommodations were verified on the critical roadways during our field visits. Of the public roadways within the Town of Groveland, very few have sidewalk. The most significant aspect of the lack of this deficiency is that many collector and arterial roadways that are heavily trafficked do not contain sidewalks.

Stantec has developed a list of potential projects based on the Town's identification of desired projects as well as additional projects identified based through our Network Gap Analysis and the field observations. The listing of projects has been evaluated to create a prioritized listing. The listing has been ranked based on a multitude of criteria, such as proximity to schools, roadway volumes etc. Order of magnitude cost estimates for each project were developed. A summary Table of the prioritized projects is shown at the end of this document.

1.0 INTRODUCTION

Complete Streets are designed and operated to provide safety and accessibility for all the users of our roadways, trails and transit systems. These users include pedestrians, bicyclists, transit riders, motorists, and drivers of commercial and emergency vehicles of all ages and abilities. Complete Streets principles contribute toward the safety, health, economic viability, and quality of life in a community by providing accessible and efficient connections between home, school, work, recreation and retail destinations.

This Complete Street Prioritization Plan is a targeted investment strategy to improve safety, mobility and/or accessibility. It has identified the street, infrastructure, cost estimate and timeline for Groveland's desired Complete Street improvement.

1.1 PUBLIC MEETINGS

Stantec has met with Town Officials met during the process of developing the Prioritization Plan, as well as communicated and shared information, including requests by residents. In addition, a special meeting was held on the evening of June 17, 2019 to present the draft plan and to solicit feedback. Subsequent to the meeting, an easy to use Wikimap was created to allow residents to input their concerns. https://wikimapping.com/Groveland.html

Comments received on the Wikimap as well as comments received by email and during the meeting were included into this final plan.

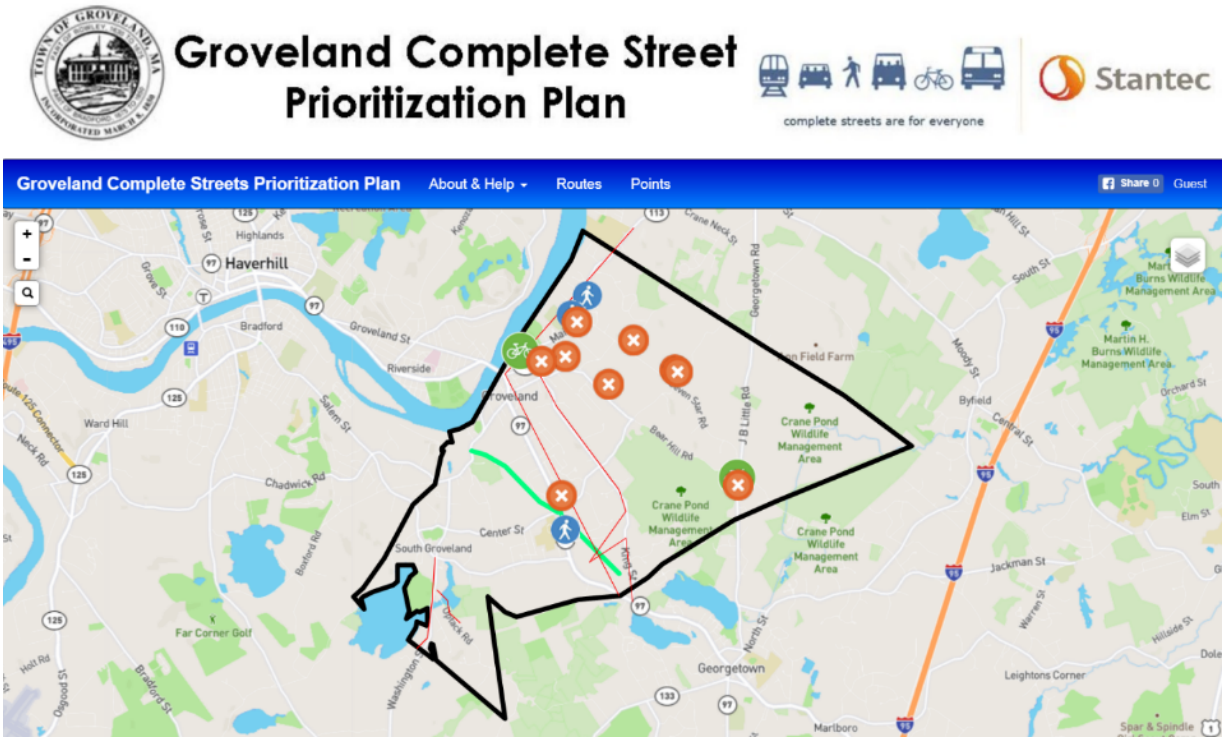


Figure 1 – Wikimap

2.0 PREVIOUS STUDIES

Prior to beginning the prioritization plan, Stantec reviewed previous studies and planning documents provided to us. The following is a brief summary of the previous studies that were reviewed, as well as information that is important to this Complete Streets prioritization plan.

2.1 TOWN OF GROVELAND COMPLETE STREETS POLICY

On May 2, 2017, the Town of Groveland Selectmen voted to adopt a Complete Streets Policy. The policy is included in the Appendix.

3.0 EXISTING ROADWAY NETWORK

Groveland has 53.9 miles of public roadways. Route 113 is a state-owned roadway while the rest are owned and maintained by the Town of Groveland. For the development of the needs assessment, all roadway segments that were classified as arterial or collector were reviewed. In addition, during a meeting with the Town Planner, additional roadway segments were identified as critical roadway segments that provide significant connections. Below is a listing of all the critical roadway segments that were reviewed, as well as the functional classification for each one.

Critical Roadway Segments	Classification
• Main Street (Rt. 113)	Principal Arterial
• School Street (Rt. 97)	Principal Arterial
• Salem Street (Rt. 97)	Principal Arterial
• Salem Street	Minor Arterial
• Washington Street	Minor Arterial
• Gardner Street	Minor Arterial
• 7 Star Road	Minor Arterial
• Main Street	Minor Arterial
• Elm Park Bypass	Minor Arterial
• JB Little Road	Minor Arterial
• Middle Street	Major Collector
• Center Street	Major Collector
• King Street	Major Collector
• Garrison Street	Major Collector
• Gardner Street	Major Collector
• Byfield Road	Local
• Bare Hill Road	Local
• Rivers Pine Drive	Local
• Governors Road	Local
• Rollins Street	Local
• Elm Park Street	Local

Figure 2 below shows a map of the functional classification of roadways within the Town.

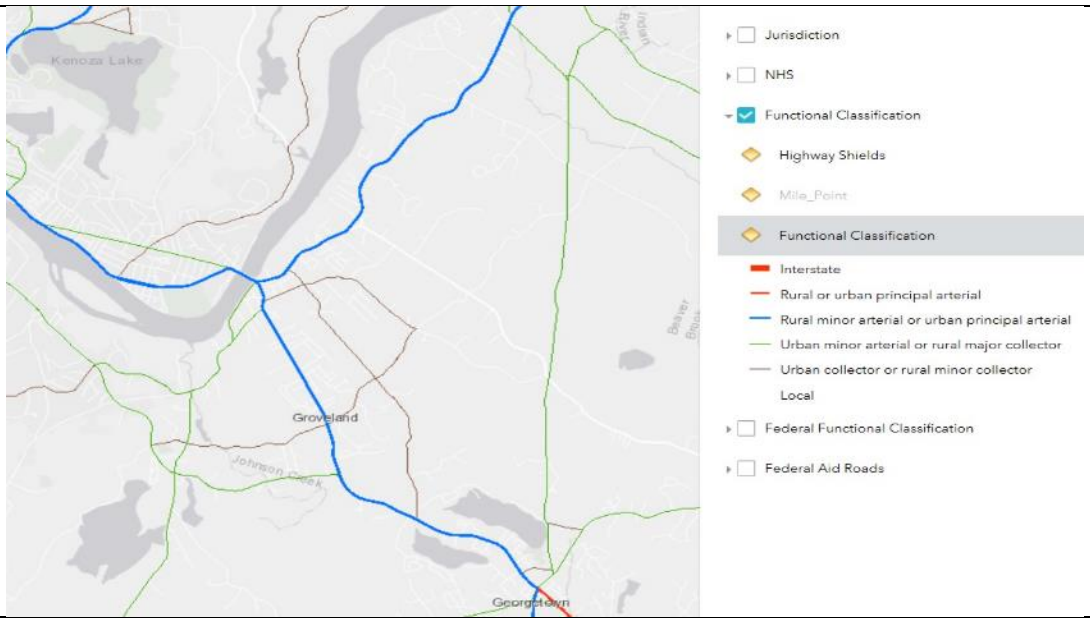


Figure 2 – Functional Classification

Figure 3 below shows a map of the jurisdiction of area roadways within the Town.

Figure 3 – Roadway Jurisdiction

Figure 4 below shows a map National Highway System Roadways.

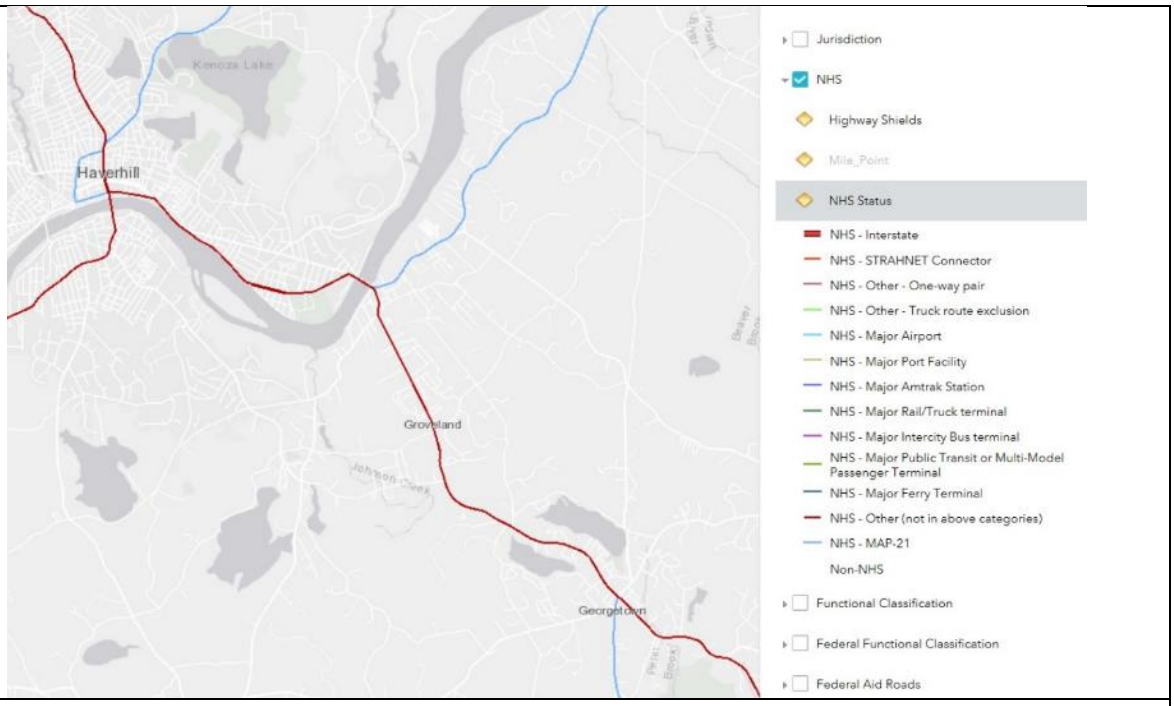


Figure 4 – National Highway System

Stantec conducted a site visit on Thursday January 3, 2019 to assess the existing conditions of the critical roadways and identify potential projects. The assessment included noting speed limits, measuring roadway and shoulder widths and recording the availability and width of sidewalks. In addition, Stantec graded the conditions of the existing pavement and sidewalk along all critical roadways.

SAFETY ANALYSIS

Crash data from MassDOT was reviewed for the entire Town. The data was reviewed for a 3-year period from 2014 through 2016, the most recent years for which data is available. Figure 5 shows the MassDOT data for all Town of Groveland crashes during this period, while Table 1 summarizes the crashes on major roadways.

From 2014-2016, the highest concentration of the crashes occurs along School Street and Pleasant Street and Salem Street. However, the segment rates for these roads are lower than the State average. Gardner Street is the only segment higher than the State average.

During the three-year period, a total of three pedestrian/bicyclist crashes were reported.

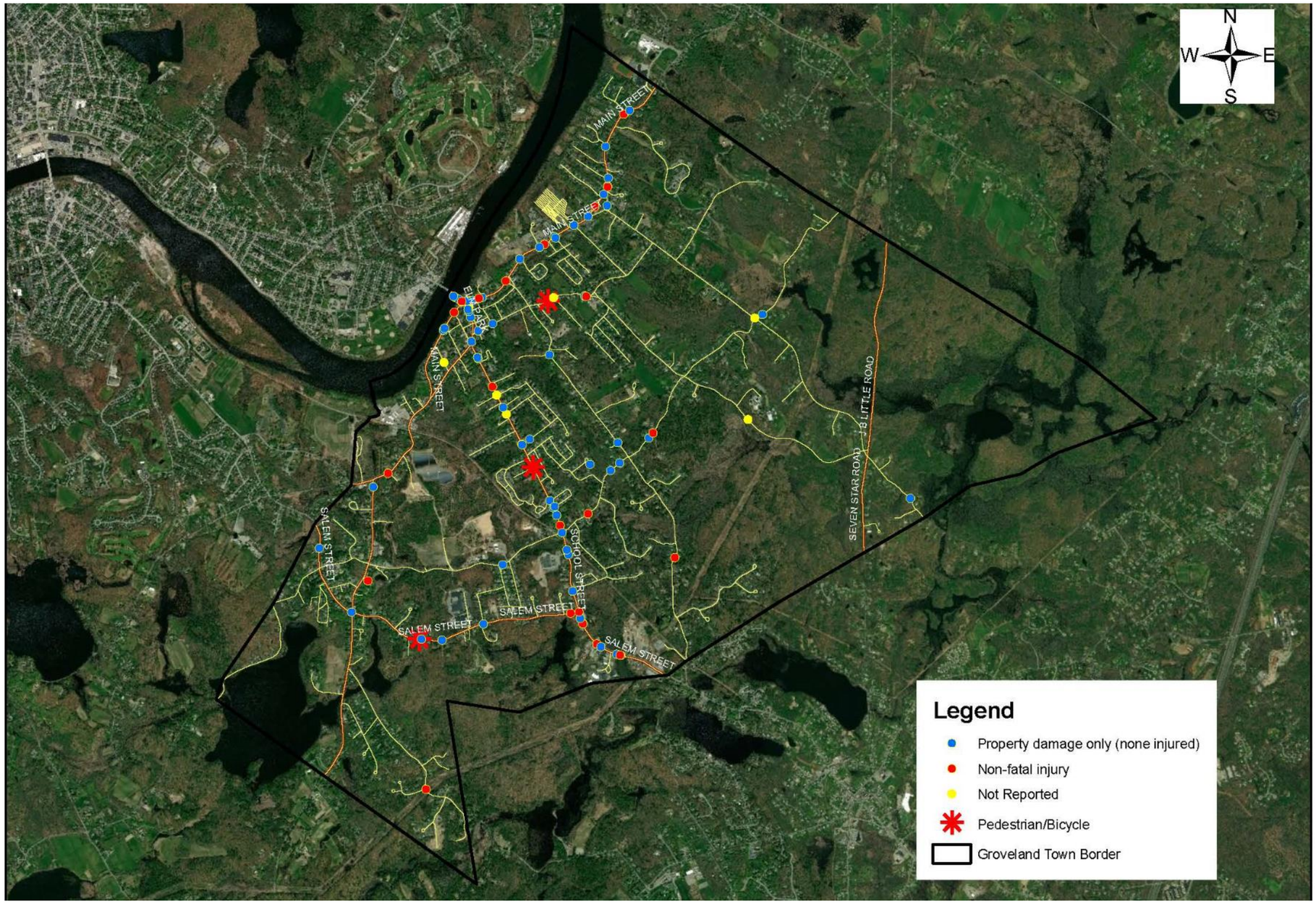


Figure 5 – Crash Locations

	Roadway													
	Main Street	**School Street**	**Salem Street**	**Elm Park Bypass**	**Center Street**	**Garrison Street**	**Gardner Street**	**King Street**	**Main Street**	**Washington Street**	**Salem Street**	**Byfield Road**	**Center Street**	**Elm Park Street**
Segment Length (mi)	1.7	1.9	0.6	0.3	3	0.4	0.3	2.4	2.9	1.6	1.8	0.4	0.8	0.2
Classification	Principal Arterial	Principal Arterial	Principal Arterial	Principal Arterial	Major Collector	Major Collector	Major Collector	Major Collector	Minor Arterial	Minor Arterial	Minor Arterial	Local	Local	Local
Year														
2014	14	14	4	1	1	0	2	1	2	1	3	0	0	1
2015	9	6	11	0	3	0	1	2	3	0	3	0	2	1
2016	10	12	9	4	3	4	0	0	2	1	5	2	0	0
Total	33	32	24	5	7	4	3	3	7	2	11	2	2	2
Average per year	11.00	10.67	8.00	1.67	2.33	1.33	1.00	1.00	2.33	0.67	3.67	0.67	0.67	0.67
Segment Crash Rate	2.9	1.36	2.54	1.13	2.63	1.08	4.71	0.77	0.77	0.52	1.06	N/A	N/A	N/A
Statewide Average Crash Rate	3.49	3.49	3.49	3.49	3.58	3.58	3.58	3.58	3.8	3.8	3.8	2.24	2.24	2.24
Severity														
Property Damage Only	21	19	15	3	5	2	2	2	4	2	8	1	1	1
Non-Fatal Injury	11	9	9	2	2	1	0	1	3	0	2	1	0	0
Fatal Injury	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Not Reported	1	4	0	0	0	1	1	0	0	0	1	0	1	1
Total	33	32	24	5	7	4	3	3	7	2	11	2	2	2
Type of Accident														
Single Vehicle	5	7	0	2	7	1	0	2	3	0	3	2	2	0
Head-On	2	0	2	0	0	0	0	0	0	0	0	0	0	0
Angle	9	11	8	2	0	0	1	0	2	1	2	0	0	2
Rear-End	15	6	10	1	0	1	2	0	1	0	3	0	0	0
Rear-to Rear	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sideswipe	2	8	4	0	0	0	0	0	1	1	2	0	0	0
Pedestrian/Bicyclist	0	0	0	0	0	1	0	0	0	0	1	0	0	0
Not Reported	0	0	0	0	0	1	0	1	0	0	0	0	0	0
Total	33	32	24	5	7	4	3	3	7	2	11	2	2	2

3.1 NETWORK GAP ANALYSIS

A Network Gap analysis was conducted to identify gaps within the pedestrian or bicycle network. These gaps can provide barriers to walking and bicycling between areas. Projects that help "fill in" these gaps could be given priority as they will help create a town-wide network of pedestrian and bicycle accommodations.

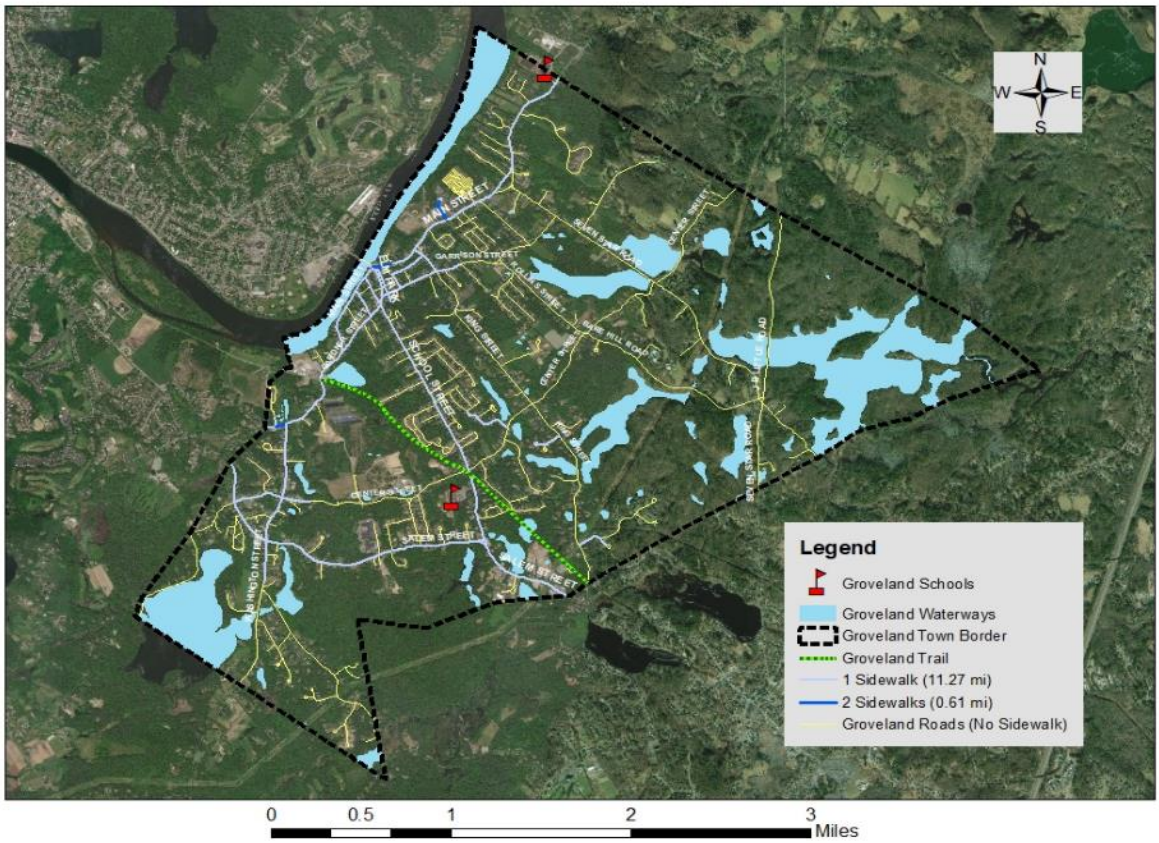


Figure 6 - Existing Road and Sidewalk Network

The Network Gap analysis was conducted MAPC GIS database layers supplemented with field data. The pedestrian and bicycle accommodations were updated based on observations from our field visits.

Figure 6 shows the existing town-wide roadway network as well as the existing pedestrian accommodations. The existing pedestrian accommodations consist of sidewalks as well as a

multi-use path. Walking trails are also provided within individual parks. The walking trails do not provide "Complete Streets" however; they are destinations and connection that link to existing sidewalks and/or multi-use paths.

As shown in Figure 6, many of the roadways do not contain any pedestrian accommodations. The most significant aspect of the lack of this deficiency is that many collector and arterial roadways that are heavily trafficked do not contain sidewalks or have sidewalks in poor condition. Sidewalks on the major roadways are critical both from a safety standpoint and from a pedestrian experience standpoint for ease of travel. Sidewalks reduce the likelihood of pedestrian-related crashes. In addition, pedestrians oftentimes do not feel secure walking along a busy roadway without a sidewalk.

No roadways within the Town feature specific bicycling accommodations.

3.2 ACTIVE TRANSPORTATION NETWORK UTILITY SCORES

The Metropolitan Area Planning Commission (MAPC) has developed the Local Access Tool, which quantifies the active transportation utility for a stretch of roadway. This measure provides a robust, quantitative estimate of current or potential roadway utility for walkers and bikers. The active transportation network utility score for each segment of roadway indicates how useful that street segment is for connecting residents with schools, shops, restaurants, parks, and transit stations.

These scores were researched in order to compare the relative demand for walking and biking. Therefore, the scores are being used to compare roadways within Groveland to other roadways in Groveland.

These scores are quantified using the following methodology.

1. Trip Generation: Number of trips of each type beginning and ending in each block.

2. Trip Distribution: Number of trips going that occur between each origin and destination block to each other block.

3. Mode Choice: Number of trips that might be made by walking or biking.

4. Route Assignment: Routes were assigned based on shortest network distance between the origin and destination census blocks. The network includes all surface roadways, regardless of whether or not they currently have a sidewalk or bike facility. The trips assigned to each segment were summed up for each trip type and mode to produce eight trip/mode specific Local Access Scores. The raw scores were rescaled to a range of 0 to 100, weighted and then combined into composite scores by mode.

3.2.1 Local Access Score: Walking

The Walking Local Access Scores emphasize shorter trips from home to local destinations. People are very likely to walk to destinations that are within a half of a mile of their homes. They are less likely to walk to destinations that are further away and are very unlikely to walk more than 2 miles to their destination. The model used to create the scores accounts for this behavior.

As shown on the figures and quantified in Table 2, the streets with the highest Walking Access Scores include Main Street, Washington Street, Grove Street, Bridge Street and the section of South Street from Main Street to the High School. The scores shown in Table 2 were utilized in the prioritization rankings. Higher scores show a higher need within the Town.

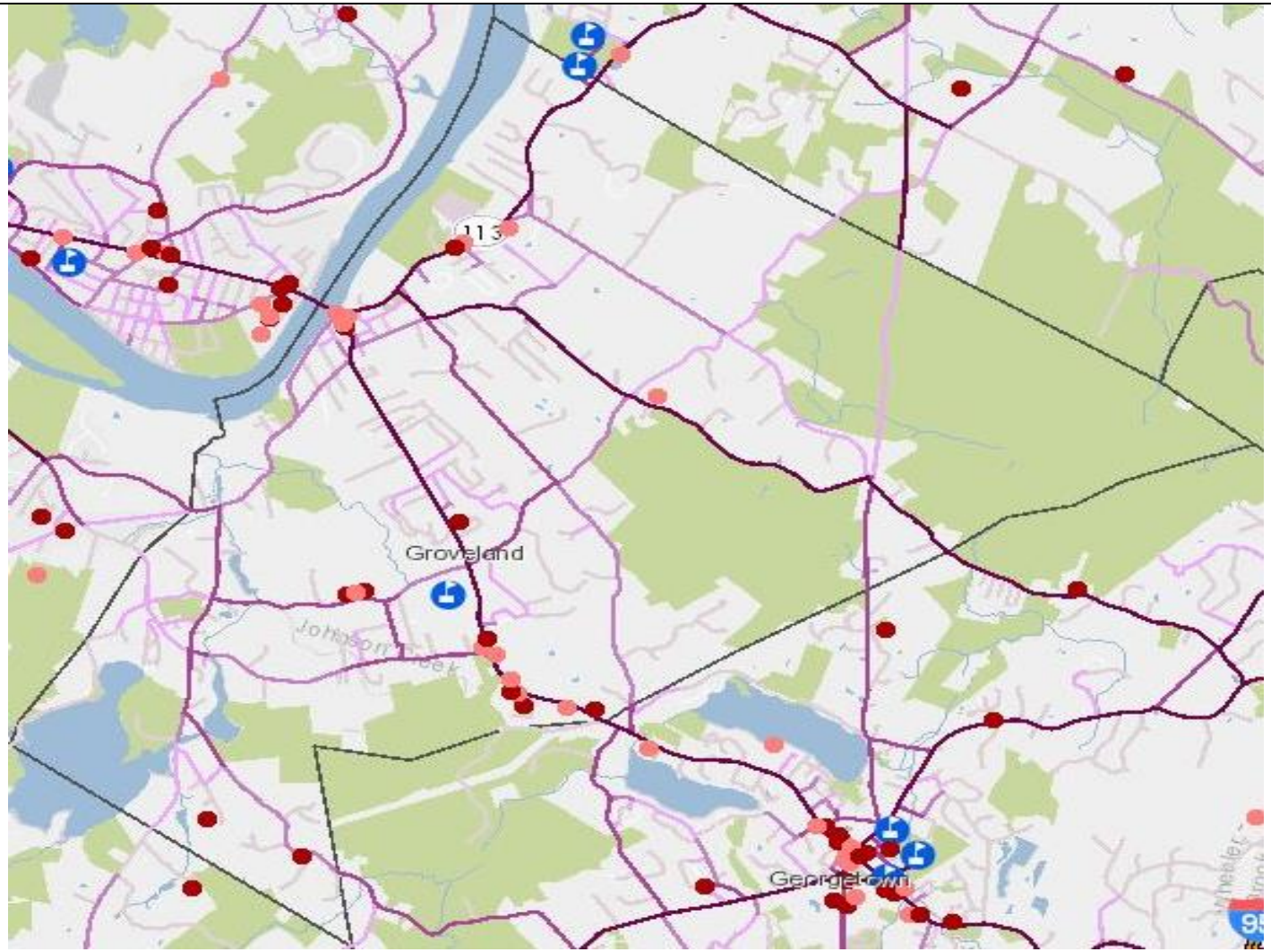


Figure 7 - Local Access Utility – Walking

3.2.2 Local Access Score: Bicycle

The Bicycle Local Access Scores emphasize longer trips than for the Walking Local Access Scores, since people are generally willing to bike further than they are willing to walk. As shown on the figures and quantified in Table 2, the streets with the highest Bicycle Access Scores include Main Street, Center Street, Washington Street and Byfield Road. The scores shown in Table 2 were utilized in the prioritization rankings.

Table 2 - Walking and Bicycle Local Access Scores

Critical Roadway	Segment	Walking Score	Bicycle Score
Main Street (Route 113)	West Newbury Town Line to Marlon Ave	2.97	0.12
	Marlon Ave to Elm Park Bypass	6.84	1.04
	Elm Park Bypass to Gardner Street	0.04	0.00
	Gardner Street to Washington Street	0.09	0.00
	Washington Street to Haverhill Town Line	0.84	1.47
King Street	Main Street to Garrison Street	4.02	0.90
	Garrison Street to Center Street	0.69	0.89
	Center Street to Georgetown Town Line	0.03	0.03
Garrison Street	Kings Street to Governors Road	3.36	0.00
Gardner Street	King Street to Elm Park Street	0.11	0.04
	Elm Park to Main Street	0.06	0.00
Rollins Street	Garrison Street to Center Street	3.38	0.29
Center Street	Haverhill Town Line to Washington Street	0.00	0.00
	Washington Street to School Street	0.38	1.19
	School Street to King Street	0.75	1.59
	King Street to Seven Star Road	0.08	0.29
School Street (97)	Center Street to Salem Street	1.12	0.04
Elm Park	Main Street to Gardner Street	1.11	0.07
Washington Street	Main Street to Salem Street	0.72	1.47
	Salem Street to Boxford Town Line	0.20	0.00
Salem Street	Haverhill Town line to Washington Street	0.00	0.00
	Washington Street to School Street	0.21	0.01
Seven Star Road	Broad Street to Center Street	0.07	0.00
	Center Street to Byfield Street	0.01	0.32
	Byfield Street to Georgetown Town Line	0.17	0.02
J B Little Road*	N/A*	0.00*	2.64*
Byfield Road	Seven Star Road to Georgetown Town Line	3.08	1.18
Bare Hill Road	Center Street to Seven Star Road	3.38	0.88
River Pines Drive	Town Hall Access Drive	0.00	0.00
Governors Road	Rollins Street to Seven Star Road	0.03	0.29

Source: Local Access MAPC, Note: * - Temporarily closed roadway

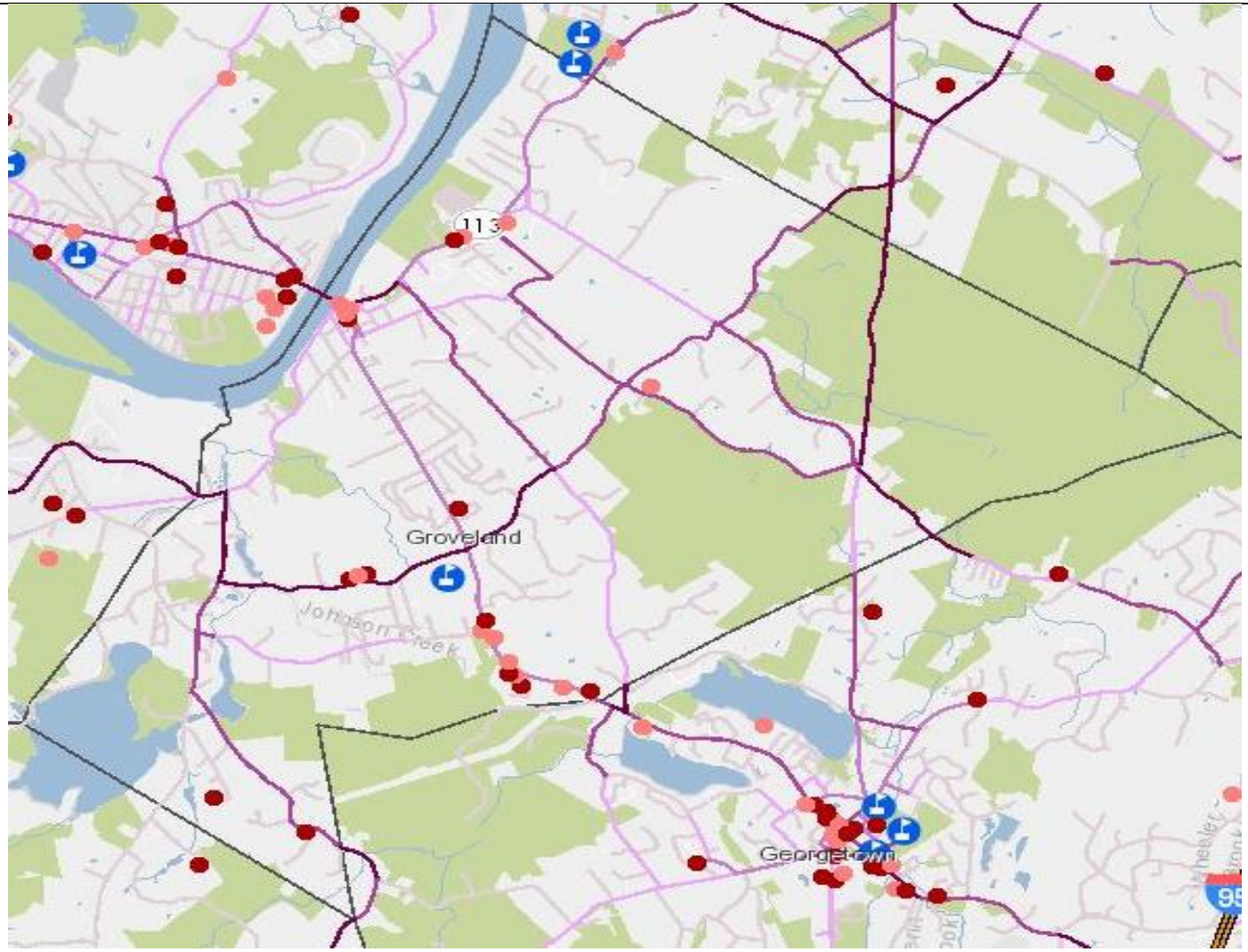


Figure 8 - Local Access Utility - Bicycle

Figure 9 - Strava Heat Map

A detailed description of each critical roadway segment is included on the following pages.

3.2.3 Main Street (Route 113) – West Newbury Town Line to Marlon Ave

Main Street Southbound (Route 113)

Roadway Width	33 ft
Segment Length	1.5 mi
Shoulders/Bike Lanes – North/South	5-6 ft
Sidewalks – North Side	5 ft North Side | Bituminous | Fair
Right-of-way width	50 ft Based on MassGIS
Classification	Principal Arterial
Posted Speed	35 mph
Average Daily Traffic	6,100 vpd
Destinations:	Pentucket Regional High/Middle School, Pines Recreation Area/ Town Hall/Library
Notes:	Radar Speed Sign observed southbound

3.2.4 Main Street (113) – Marlon Ave To Elm Park Bypass

Main Street Eastbound (113)

Roadway Width	33-34 ft
Segment Length	0.1 mi
Shoulders/Bike Lanes – North/South	5/8 ft
Sidewalk - North Sidewalk - South	4 ft | Bituminous | Fair 6 ft | Bituminous | Fair
Right-of-way width	50 ft Based on MassGIS
Classification	Principal Arterial
Posted Speed	25 mph
Average Daily Traffic	N/A
Destination:	Groveland Church/Perry Park School, Riverside plaza
Notes:	South Sidewalk ends at TD bank
Potential Improvement:	Bicycle Connection to the Groveland Trail

3.2.5 Main Street – Elm Park Bypass to Gardener Street

Main Street Southbound

Roadway Width	19 ft
Segment Length	0.6 mi
Shoulders/Bike Lanes – North	4 ft
Sidewalks - North	5 ft
Right-of-way width	40 ft Based on MassGIS
Classification	Minor Arterial
Posted Speed	30 mph
Average Daily Traffic	2,000 vpd
Destinations:	Scenic River View/Walking Area
Notes:	Recently Paved
Potential Improvement:	Bicycle Connection to the Groveland Trail

3.2.6 Main Street – Gardener Street to Washington Street

Main Street Northbound

Roadway Width	28 ft
Segment Length	0.6 mi
Shoulders/Bike Lanes -North	4 ft
Sidewalk - North	5 ft | Paved | Fair
Right-of-way width	40 ft Based on MassGIS
Classification	Minor Arterial
Posted Speed	30 mph
Average Daily Traffic	4,300 vpd
Destinations:	Shanahan Field
Notes:	Recently Paved, Concrete Sidewalk on both sides of Main Street for a short segment East of Washington Street
Potential Improvement:	Bicycle Connection to the Groveland Trail

3.2.7 Main Street – Washington Street to Yemma Road

Main Street Westbound

Roadway Width	28 ft
Segment Length	0.06 mi
North Shoulder/Bike Lane South Shoulder/Bike Lane	2 ft 2 ft
Sidewalk – North Sidewalk - South	3-5 ft | Concrete | Poor-Fair 3 ft | Bituminous | Fair
Right-of-way width	40 ft Based on MassGIS
Classification	Minor Arterial
Posted Speed	25 mph
Average Daily Traffic	2,300 vpd*
Notes:	Recently Paved, Lack of delineation of sidewalk versus driveways, minimal curb/ Grass buffer Lack of definition of edge or pavement at Groveland Liquors

3.2.8 King Street – Main Street to Garrison Street

King Street Northbound

Roadway Width	24-38 ft
Segment Length	0.2 mi
Shoulders/Bike Lanes	None
Sidewalk – East	5 ft | Bituminous | Fair
Right-of-way width	40 ft Based on MassGIS
Classification	Major Collector
Posted Speed	25 mph
Average Daily Traffic	2,300 vpd
Destinations	Groveland Church/ Main Street

3.2.9 King Street – Garrison Street to Center Street

King Street Southbound

Roadway Width	24 ft
Segment Length	1.0 mi
Shoulders/Bike Lanes	None
Sidewalks	None
Right-of-way width	N/A
Classification	Major Collector
Posted Speed	25 mph
Average Daily Traffic	1,100 vpd
Notes:	No curbs, Pedestrians observed walking on roadway

3.2.10 King Street – Center Street to Georgetown Town Line

King Street Southbound

Roadway Width	21 ft
Segment Length	1.1 mi
Shoulders/Bike Lanes	None
Sidewalks	None
Right-of-way width	40 ft Based on MassGIS
Classification	Major Collector
Posted Speed	25 mph
Average Daily Traffic	1,100 vpd

3.2.11 Garrison Street

Garrison Street Eastbound

Roadway Width	24 ft
Segment Length	0.4 mi
Shoulders/Bike Lanes	None
Sidewalks - North	5 ft | Bituminous | Good
Right-of-way width	40 ft Based on MassGIS
Classification	Major Collector
Posted Speed	N/A
Average Daily Traffic	N/A
Notes:	Sidewalk on one third of roadway length

3.2.12 Gardner Street – King Street to Elm Park Street

Gardner street Westbound

Roadway Width	23 ft
Segment Length	0.3 mi
Shoulders/Bike Lanes - South	2 ft
Sidewalk - North	6 ft | Bituminous | Good
Right-of-way width	50 ft Based on MassGIS
Classification	Major Collector
Posted Speed	25 mph
Average Daily Traffic	1,900 vpd
Notes:	Connection to Elm Park Bypass

3.2.13 Gardner Street – Elm Park to Main Street

Gardner Street Northbound

Roadway Width	21 ft
Segment Length	0.4 mi
Shoulders/Bike Lanes – West/East	1/2 ft
Sidewalk - West	4 ft | Bituminous | Fair
Right-of-way width	50 ft Based on MassGIS
Classification	Minor Arterial
Posted Speed	25 mph
Average Daily Traffic	N/A
Notes:	Electric pole at intersection

3.2.14 Rollins Street

Rollins Street Northbound

Roadway Width	24 ft
Segment Length	0.7 mi
Shoulders/Bike Lanes	None
Sidewalks	None
Right-of-way width	40 ft Based on MassGIS
Classification	Local
Posted Speed	30 mph
Average Daily Traffic	1,200 vpd

3.2.15 Center Street – (Boxford Town Line to Washington Street)

Center Street Westbound

Roadway Width	20 ft
Segment Length	1.3 mi
Shoulders/Bike Lanes	None
Sidewalk - North	4 ft | Paved | Poor
Right-of-way width	40 ft Based on MassGIS
Classification	Local
Posted Speed	N/A
Average Daily Traffic	600 vpd
Destinations	St. Patrick's Church, Groveland Playground
Notes:	3-5 ft sidewalk pathway from Salem to Washington Street

3.2.16 Center Street- (At St. Patrick's Church)

Center Street Eastbound

Roadway Width	20-22 ft
Segment Length	2.7 mi
Shoulders/Bike Lanes	None
Sidewalks	None
Right-of-way width	40 ft Based on MassGIS
Classification	Major Collector
Posted Speed	N/A
Average Daily Traffic	1,000 vpd
Destination	St. Patrick's Church, Groveland Playground
Notes:	6 ft sidewalk from Washington St to church

3.2.17 School Street (97) – (Gardner Street to Center Street)

School Street Northbound

Roadway Width	32 ft
Segment Length	1.1 mi
Shoulders/Bike Lanes – North/South	4/4 ft
Sidewalk - West	4 ft | Bituminous | Good
Right-of-way width	50 ft Based on MassGIS
Classification	Principal Arterial
Posted Speed	40 mph
Average Daily Traffic	N/A
Destinations	Bagnall School/Shops Restaurant
Potential Improvement:	Bicycle Lanes

3.2.18 School Street (97) – (Center Street to Salem Street)

School Street Northbound

Roadway Width	36 ft
Segment Length	0.4 mi
Shoulders/Bike Lanes – North/South	5/5 ft
Sidewalks- West	7 ft | Concrete | Good
Right-of-way width	50 ft Based on MassGIS
Classification	Principal Arterial
Posted Speed	N/A
Average Daily Traffic	11,308 vpd
Destinations	Bagnall School/Shops/Restaurant
Notes:	New Pavement/Sidewalk

3.2.19 Elm Park Bypass – Main Street to Gardner Street

Elm Park Bypass Southbound

Roadway Width	34 ft
Segment Length	0.3 mi
Shoulders/Bike Lanes - East	1 ft
Sidewalks - West	4 ft | Concrete | Fair
Right-of-way width	60 ft Based on MassGIS
Classification	Principal Arterial
Posted Speed	25 mph
Average Daily Traffic	13,400 vpd
Destination	Shops/Restaurant, Haverhill Shopping Center
Notes	Faded Shoulder striping's

3.2.20 Washington Street – Main Street to Center Street

Washington Street Southbound

Roadway Width	26 ft
Segment Length	0.4 mi
Shoulders/Bike Lanes	None
Sidewalks - East	5 ft | Paved | Poor
Right-of-way width	40 ft Based on MassGIS
Classification	Minor Arterial
Posted Speed	N/A
Average Daily Traffic	2,000 vpd
Destination	Connects to Groveland baseball field

3.2.21 Washington Street – Center Street to Salem Street

Washington Street Southbound

Roadway Width	32 ft
Segment Length	0.3 mi
Shoulders/Bike Lanes	None
Sidewalks - West	5 ft | Paved | Poor
Right-of-way width	40 ft Based on MassGIS
Classification	Minor Arterial
Posted Speed	N/A
Average Daily Traffic	2,500 vpd
Destination	St. James Episcopal Church
Notes	No Sidewalks beyond Salem Street

3.2.22 Washington street – Salem Street to Boxford Town Line

Washington Street Southbound

Roadway Width	24 ft
Segment Length	0.9 mi
Shoulders/Bike Lanes	None
Sidewalks	None
Right-of-way width	40 ft Based on MassGIS
Classification	Minor Arterial
Posted Speed	30 mph
Average Daily Traffic	2,200 vpd
Destinations	Veasey Memorial Park
Notes	

3.2.23 Salem Street – Haverhill Town Line to Washington Street

Salem Street Southbound

Roadway Width	28 ft
Segment Length	0.6 mi
Shoulders/Bike Lanes	None
Sidewalks - East	6 ft
Right-of-way width	60 ft Based on MassGIS
Classification	Minor Arterial
Posted Speed	25 mph
Average Daily Traffic [2017]	5,300 vpd

3.2.24 Salem Street – Washington Street to School Street

Salem Street Westbound

Roadway Width	28 ft
Segment Length	1.3 mi
Shoulders/Bike Lanes	1 - 4 ft
Sidewalk - North	6 ft
Right-of-way width	60 ft Based on MassGIS
Classification	Minor Arterial
Posted Speed	35 mph
Average Daily Traffic	5,200 vpd

3.2.25 Salem Street – School Street to Georgetown Town Line

Salem Street Northbound

Roadway Width	42 ft
Segment Length	0.5 mi
Shoulders/Bike Lanes –	8 ft
Sidewalk - West	4 ft
Right-of-way width	80 ft Based on MassGIS
Classification	Principal Arterial
Posted Speed	40 mph
Average Daily Traffic	14,400 vpd
Destinations	Shops

3.2.26 7 Star Road – Byfield Road to Georgetown Town Line

Seven Star Road Southbound at Byfield Street

Roadway Width	24 ft
Segment Length	0.5 mi
Shoulders/Bike Lanes	None
Sidewalks	None
Right-of-way width	50 ft Based on MassGIS
Classification	Minor Arterial
Posted Speed	30 mph
Average Daily Traffic	N/A

3.2.27 J B little Road – Byfield Road to West Newbury Town Line

J B Little Road

Roadway Width	N/A
Segment Length	1.2 mi
Shoulders/Bike Lanes	N/A
Sidewalks	N/A
Right-of-way width	50 ft Based on MassGIS
Classification	Minor Arterial
Posted Speed	N/A
Average Daily Traffic	100 vpd
Notes:	Temporarily closed

3.2.28 Byfield Road – JB Little Road to Mulberry Street

Byfield Road Southbound

Roadway Width	20 ft
Segment Length	0.4 mi
Shoulders/Bike Lanes	None
Sidewalks	None
Right-of-way width	40 ft Based on MassGIS
Classification	Local Road
Posted Speed	N/A
Average Daily Traffic	N/A

3.2.29 Bare Hill Road – Center Street To 7 Star Road

Bare Hill Road Northbound

Roadway Width	22 ft
Segment Length	1.1 mi
Shoulders/Bike Lanes	None
Sidewalks	None
Right-of-way width	40 ft Based on MassGIS
Classification	Local Road
Posted Speed	N/A
Average Daily Traffic	N/A
Destinations	Groveland Outing Center

3.2.30 River Pines Drive – Town Hall Access Drive

River Pines Drive-Eastbound

Roadway Width	45 ft
Segment Length	0.1 mi
Shoulders/Bike Lanes	None
Sidewalk - North Sidewalk - South	4 ft | Paved | Poor 6 ft | Paved | Poor
Right-of-way width	N/A
Classification	Local Road
Posted Speed	N/A
Average Daily Traffic	N/A
Destinations	Town hall

4.0 POTENTIAL PROJECTS

Stantec has developed a list of potential projects based on the Town's identification of desired projects as well as additional projects identified based on the Network Gap Analysis and the field observations. The listing of projects has been evaluated to create a prioritized listing. The listing has been ranked based on a multitude of criteria, such as proximity to schools, roadway volumes etc. A detailed listing of rankings and criteria is included in the Appendix.

Order of magnitude cost estimates for each project were developed. Cost estimates were developed based on unit costs. Breakdowns of the cost estimates for each project are included in the Appendix.

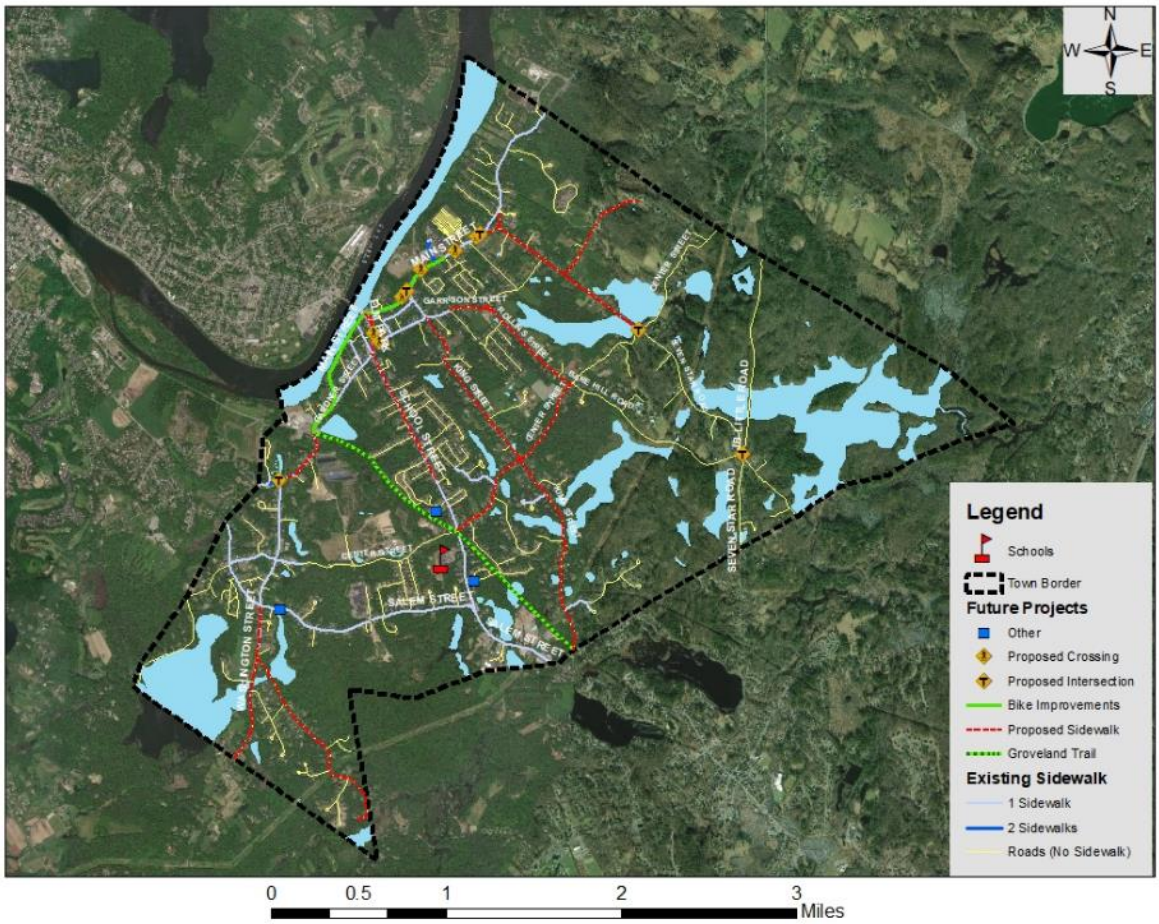


Figure 10 – Potential Projects

4.1 DOWNTOWN SIDEWALKS – KING STREET

Limits:

- Garrison Street to Center Street

Estimated Cost: $975,000

Proposed Improvements
Proposed new sidewalk along one side of King Street with ADA compliant curb ramps at each crossing. This project will help connect pedestrians along King Street and the neighborhood to the existing pedestrian network in the Town Center.

4.2 MAIN STREET PEDESTRIAN ACCOMMODATION – PHASE 1

Limits:

- Main Street – Post Office to Broad Street

Estimated Cost: $930,000

Proposed Improvements
Re-construct north side walk with vertical granite curbing to be installed. This section is under MassDOT jurisdiction.

4.3 ROLLINS STREET:

Limits:

- Rollins Street from Governors Road to Center Street

Estimated Cost: $700,000

Proposed Improvements
Proposed new sidewalk along one side of Rollins Street with ADA compliant curb ramps at each crossing. There is currently no sidewalk. This project will help connect pedestrians along Rollins Street to the existing pedestrian network in the Town Center.

4.4 GARRISON STREET:

Limits:

- Garrison Street from Cannon Hill Avenue to Rollins Street

Estimated Cost: $330,000

Proposed Improvements
Proposed new sidewalk along one side of Garrison Street with ADA compliant curb ramps at each crossing. There is currently no sidewalk. This project will help connect pedestrians along Garrison Street and the neighborhood to the existing pedestrian network in the Town Center.

4.5 MAIN STREET PEDESTRIAN CROSSING/ADA IMPROVEMENTS

Limits:

- Main Street – Pedestrian crossing at Chestnut Ave, King Street, Manor Dr, Pines Recreation Area Rd, River Pines Dr, Marjorie St, Balch Ave and Broad St (North and South), Washington St.

Estimated Cost: $213,000

Proposed Improvements

At all Intersections, we propose the Installation of ADA curb ramps and new ladder crosswalk markings and standard signages. In addition, we propose RRFB's at the King Street and Broad street intersections.

A Rectangular Rapid Flashing Beacon is an alternative to a traditional beacon installation. RRFBs are user-actuated amber LEDs that supplement warning signs at unsignalized intersections or mid-block crosswalks. RRFBs use an irregular flash pattern that is similar to emergency flashers on police vehicles.

An official FHWA-sponsored experimental implementation and evaluation conducted in St. Petersburg; Florida found that RRFBs at pedestrian crosswalks are dramatically more effective at increasing driver yielding rates to pedestrians than traditional overhead beacons.

Rectangular Rapid Flashing Beacon

The lights are typically post mounted on both sides of the roadway and face both directions for added visibility. These systems are warning systems only. All laws and regulations regarding crosswalk use still apply.

4.6 SCHOOL STREET PEDESTRIAN/BICYCLE ACCOMMODATION PHASE 2

Limits:

- School Street – Gardner Street to Parker Street

Estimated Cost: $1,115,000

Currently, this section of roadway provides a sidewalk on one side of the roadway and 4-5 ft shoulders on both sides of the roadway travel lane. Shoulder striping condition is poor and barely visible. This segment of main street provides direct access to key destinations such as the Bagnall

Proposed Improvements

This section of roadway provides 4-5 ft of shoulders on both sides of the travel way with poor road striping conditions. This project entails the re-stripping of the roadway shoulder lane to accommodate bicyclist with adequate pavement markings and signages, new sidewalk along roadway and roadway reconstruction. This project will essentially extend the recently constructed School Street TIP project further north to Groveland Town Center.

4.7 CENTER STREET PEDESTRIAN SAFETY ACCESS ACCOMMODATION – PHASE 1:

Limits:

- Washington Street to School Street

Estimated Cost: $1,193,000

Propose new sidewalk along one side of Center Street in conjunction with roadway reconstruction. ADA compliant curb ramps will be constructed at each crossing. The cost for this project includes only the sidewalk portion of the project.

4.8 RADAR FEEDBACK SPEED SIGNS – SCHOOL STREET

Limits:

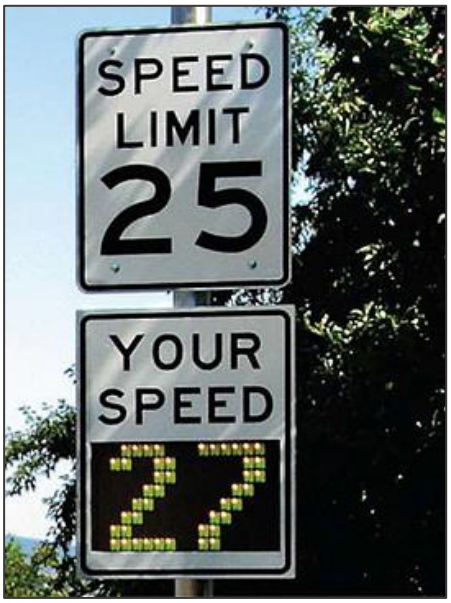
- School Street near Bagnall School

Estimated Cost: $10,000

Proposed Improvements

Excessive speeding is a significant concern along School Street in the vicinity of the Bagnall. To discourage speeding, Radar Feedback Speed Signs are proposed on School Street. In the eastbound direction, the sign should be prior to Central Street. In the westbound direction the sign should be located west of Salem Street.

An example of a Radar Feedback Sign is shown to the right. These can be installed to run on Solar Power, eliminating the need to trench conduit to an electric source.



Radar Feedback Sign

4.9 CENTER STREET PEDESTRIAN SAFETY ACCESS ACCOMMODATIONS PHASE 2:

Limits:

- School Street to Rollins Street

Estimated Cost: $1,420,000

Propose new sidewalk along one side of Center Street in conjunction with roadway reconstruction. ADA compliant curb ramps will be constructed at each crossing. The cost for this project includes only the sidewalk portion of the project.

4.10 SEVEN STAR ROAD AT JB LITTLE:

Limits:

- Intersection of Seven Star Road at JB Little Road

Estimated Cost: $200,000

The existing intersection is very wide open, with wide radii and open curb cuts. This leads to confusing turning maneuvers. The are no marked crosswalks or ADA ramps. This project will tighten the geometry, add ADA ramps and provide two new crosswalks.

4.11 WASHINGTON STREET AT MAIN STREET INTERSECTION IMPROVEMENTS

Limits:

- Washington Street at Main Street

Estimated Cost: $100,000

The existing intersection is very wide open, with wide radii and open curb cuts. This leads to confusing turning maneuvers. The are no marked crosswalks or ADA ramps. This project will tighten the geometry, add ADA ramps and provide two new crosswalks.

Potential Improvements at Washington Street/ Main Street

4.12 MAIN STREET BICYCLE ACCOMMODATION

Limits:

- Main Street – Groveland Rail Trail to Town Hall

Estimated Cost: $120,000

This segment of main street provides direct access to key destinations such as: Pentucket Regional Middle and High School, the Town Hall, Pines Recreational Area and the Public Library.

This project consists of an opportunity to improve on-road bicycle connectivity between the proposed Groveland Community Trail and the Groveland Town Offices by determining potential bike routes and recommending improvement options. Improving access will benefit residents, as the Groveland Community Trail is envisioned to be part of a larger bicycle transportation network with potential for connections to the Border to Boston Trail, Bradford Rail Trail, and the Bradford MBTA Commuter Rail Station.

The preferred route follows Main Street (in its entirety) from the proposed trailhead at the Groveland Community Trail to the Groveland Town Offices. This proposed route is expected to use three different design treatments: Shared Lane Markings, Contra-Flow Bike Lane, and Bike Lanes. The preferred route is a balance between safety, directness, and rider comfort.

Groveland Community Trail to Gardner Street

Due to the narrow pavement width along this section it is not possible to accommodate a bike lane without roadway widening. It is therefore recommended to use a shared lane approach for this section involving the addition of supplemental signage and shared lane markings.

Main Street – Gardner Street to Elm Park

The existing 20-foot paved width could be striped to allow for a 5-foot-wide northbound contra-flow bike lane while still maintaining a shared travel lane in the southbound direction. The northbound bike lane would be installed on the east side of the road and separated from opposing traffic by a 3-foot-wide painted buffer striped with longitudinal and diagonal yellow pavement markings. The shared travel lane would use supplemental signage and shared lane markings.

Adding a 5-foot-wide bike lane with a 3-foot-wide buffer would make it necessary to modify the shoulder and lane widths along this section of Main Street. The resulting travel lane would be 11-feet wide with a 1-foot shoulder on the west side of the street. Due to the modifications necessary to implement the contra-flow bike lane, on-street parking would need to be restricted along this section of the route.

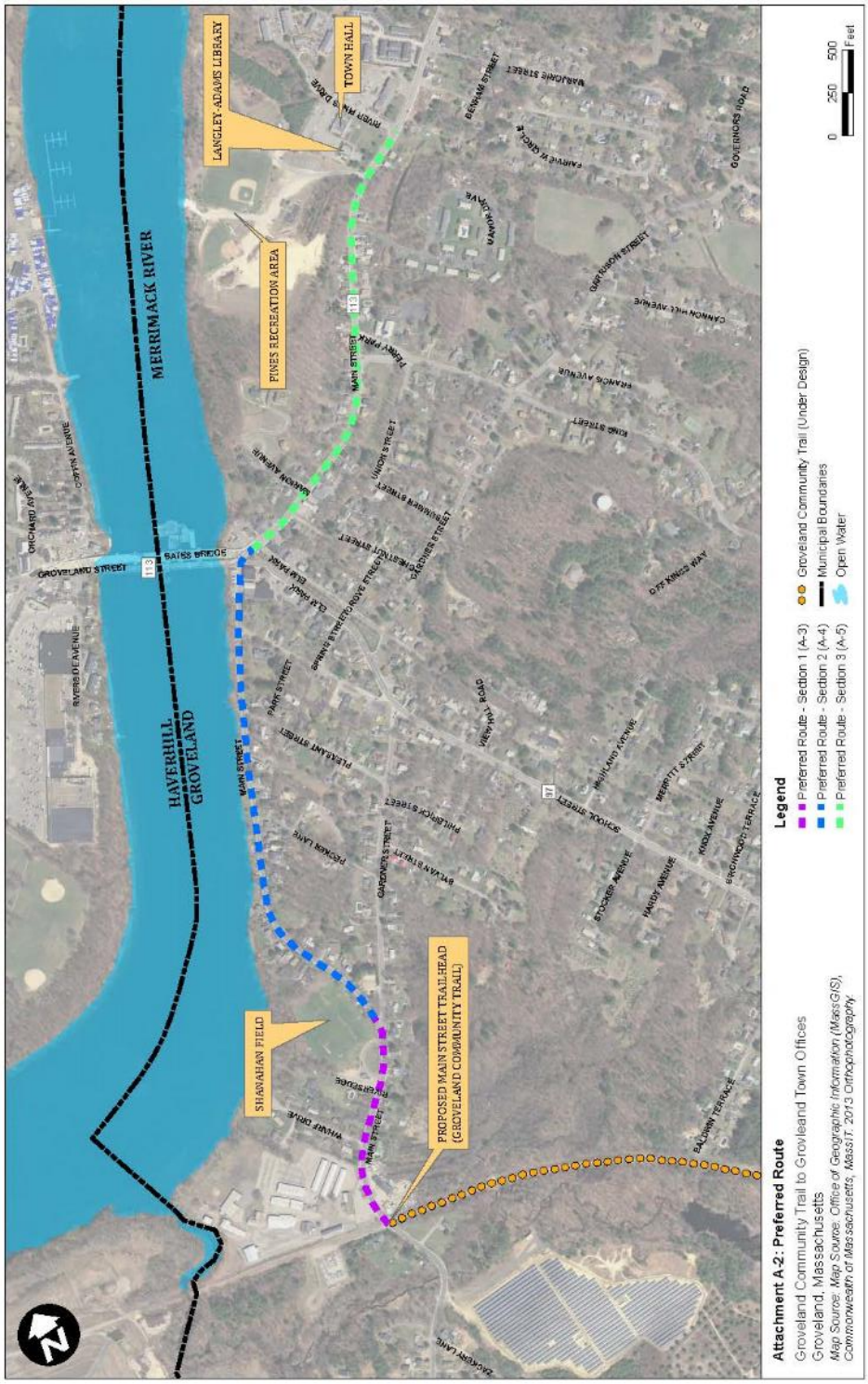
North of Elm Park

Immediately north of the Main Street/Elm Park Intersection, the route will operate as a shared lane in both directions for 250 feet in the northbound direction and 400 feet in the southbound

direction. The southbound right turn lane at the intersection limits the available width and a bike lane cannot be accommodated without roadway widening.

From the Elm Park Intersection to the Groveland Town Offices the existing 32-foot minimum paved width allows for an 11-foot travel lane with 5-foot bike lanes in each direction extending until the end of the route at the Groveland Town Offices.

The speed limit varies from 25 to 35 mph along this section. Narrowing the travel lane from 12 to 11 feet may aid in reducing instances of speeding, while still providing sufficient width for cars and trucks



Attachment A-2: Preferred Route
Groveland Community Trail to Groveland Town Offices
Groveland, Massachusetts
Map Source: Map Source: Office of Geographic Information (MassGIS), Commonwealth of Massachusetts, Massit. 2013 Orthophotography.

Project 1 Location

4.13 SCHOOL STREET CROSSING AT ASHCROFT TERRACE

Limits:

- School Street at Ashcroft Terrace

Estimated Cost: $25,000

Proposed Improvements

Install an RRFB across School Street at Ashcroft Terrace. A crosswalk and ADA ramps have recently been installed; therefore, the improvements would be limited to the proposed beacon, which would increase awareness of the crossing and improve safety. This will also improve pedestrian access to the Bagnall School.

4.14 ROLLINS STREET RADAR FEEDBACK SPEED SIGNS

Limits:

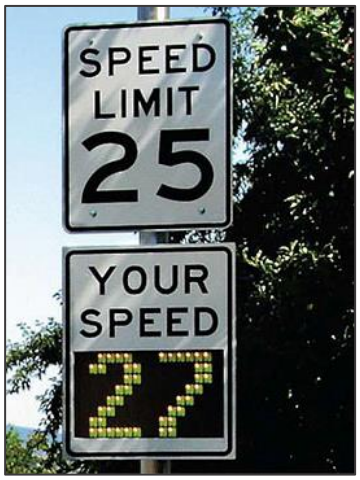
- Rollins Street

Estimated Cost: $10,000

Proposed Improvements

Excessive speeding is a significant concern along Rollins Street. To discourage speeding, Radar Feedback Speed Signs are proposed on Rollins Street.

An example of a Radar Feedback Sign is shown to the right. These can be installed to run on Solar Power, eliminating the need to trench conduit to an electric source.



Radar Feedback Sign

4.15 CENTER STREET INTERSECTION PEDESTRIAN IMPROVEMENT

Limits:

- Center Street/ Washington Street and Center Street/ Salem Street

Estimated Cost: $64,000

Proposed Improvements

Propose crosswalk with ADA compliant curb ramps at the intersections of Center Street with Washington Street and Center Street with Salem Street.

4.16 UPTACK ROAD PEDESTRIAN ACCESS AND ACCOMMODATIONS

Limits:

- Washington Street to 15 Uptack Road

Estimated Cost: $950,000

Proposed Improvements

Proposed new sidewalk along one side of Uptack Road with ADA compliant curb ramps at each crossing. There is currently no sidewalk.

4.17 ELM PARK PEDESTRIAN ACCESS AND ACCOMMODATIONS:

Limits:

- Elm Park Bypass to Main Street to Elm Park End

Estimated Cost: $270,000

Proposed Improvements

Reconstruct existing sidewalk and install ADA ramp at intersection with Gardner Street. Construct new sidewalk from Gardner street to Elm Park end.

4.18 MAIN STREET PEDESTRIAN SAFETY AND ACCESS ACCOMMODATIONS – PHASE 2

Limits:

- Main Street from Dewhirst Street to Groveland Rail Trail

Estimated Cost: $410,000

Proposed Improvements

This section of roadway provides 5 ft sidewalk and 4 ft variable shoulder width on the North-side of the roadway. From the Groveland Rail Trail to Washington Street. Sidewalk reconstruction and vertical granite curbs are proposed to be installed along this segmented sidewalk. It will provide at grade separation between the roadway and the sidewalk while improving pedestrian access.

4.19 SEVEN STAR SIDEWALK PHASE 1:

Limits:

- Main Street to East Main Street

Estimated Cost: $1,030,000

Proposed Improvements

Proposed new sidewalk along one side of Seven Star Road with ADA compliant curb ramps at each crossing. There is currently no sidewalk. This project will help connect pedestrians along Seven Star Road and the neighborhood to the existing pedestrian network in the Town Center.

4.20 MAIN STREET/ BROAD STREET – NORTHERN LOCATION

Limits:
- Main Street/ Broad Street Intersection

Estimated Cost: $260,000

Proposed Improvements
At the Northern Intersection of Main Street/ Broad Street (at Scotland Yard Estates, provide new crossing of Main Street, including a rectangular rapid flashing beacon. Consider a full realignment of the intersection. Please note that this intersection is within MassDOT jurisdiction.

4.21 ELM PARK BYPASS:

Limits:
- Main Street to End of Elm Park Bypass

Estimated Cost: $25,000

Proposed Improvements
Propose a new bike/shoulder lane on the eastern side of Elm Park. Elm Park provides a more bike friendly alternative to School Street.

4.22 CENTER STREET AT SEVEN STAR - REALIGNMENT:

Limits:
- Center Street/ Seven Star Road Intersection

Estimated Cost: $200,000

Re-align Intersection and install four way stop sign to improve pedestrian safety

4.23 KING STREET SIDEWALK PHASE 2:

Limits:
- Groveland Trail Terminus to Rocky Woods Drive

Estimated Cost: $100,000

Proposed Improvements
Construct a sidewalk from trail terminus at King Street substation to Rocky Woods Road. This will provide additional access to the soon to be constructed Groveland Trail.

4.24 KING STREET SIDEWALK PHASE 3:

Limits:

- Center Street to Georgetown Town Line (with the exception of the segment built in Phase 2

Estimated Cost: $1,000,000

Proposed Improvements

In concert with the previously proposed sidewalks of King Street and Center Street, this section of sidewalk will help to complete the sidewalk network on the east side of School Street. ADA compliant curb ramps at each crossing.

4.25 WASHINGTON STREET PEDESTRIAN SAFETY AND ACCESS ACCOMMODATION:

Limits:

- $Washington Street between Salem Street and Boxford Town Line

Estimated Cost: $883,000

Proposed Improvements

Proposed new sidewalk along one side of Washington Street from Salem Street to Veasey Memorial Park. This will provide access to the resident on Salem Street and Uptack Road, as well as Veasey Memorial Park. Rollins Street with ADA compliant curb ramps at each crossing.

4.26 SEVEN STAR SIDEWALK PHASE 2:

Limits:

- Center Street to Bare Hill Road

Estimated Cost: $960,000

Proposed Improvements

Proposed new sidewalk along one side of Seven Star Road with ADA compliant curb ramps at each crossing. There is currently no sidewalk. This project will help connect pedestrians along Seven Star Road and the neighborhood to the existing pedestrian network in the Town Center.

4.27 SALEM STREET CULVERT:

Proposed Improvements

The Town of Groveland needs to replace a culvert at Salem Street including roadway reconstruction. This project includes the installation of a sidewalk on top of the new culvert.

4.28 WOOD STREET PEDESTRIAN ACCESS AND ACCOMMODATION:

Limits:

- Seven Star Road to end

Estimated Cost: $780,000

Proposed Improvements
Proposed new sidewalk along one side of Wood Street with ADA compliant curb ramps at each crossing. There is currently no sidewalk.

4.29 GROVELAND COMMUNITY TRAIL MILE MARKERS:

Limits:

- Groveland Community Trail

Estimated Cost: $3,000

Proposed Improvements
Installation of mile markers on Groveland Rail Trail

4.30 MAIN STREET PEDESTRIAN SAFETY IMPROVEMENTS

Limits:

- Washington Street to Route 97

Estimated Cost: $500,000
Currently, this section of roadway provides a 5 ft sidewalk and a 4 ft variable shoulder on the North-side of the roadway. This segment was recently paved and striped. Some of the sidewalk sections are on the same level as the shoulder and roadway often with a grass buffer. This segment of Main Street provides direct access to the Shanahan field.

Proposed Improvements
Vertical granite curbs are proposed to be installed along this segments sidewalk and would provide a grade separation between the roadway and the sidewalk while promoting perceived pedestrian safety

4.31 BIKE RACKS

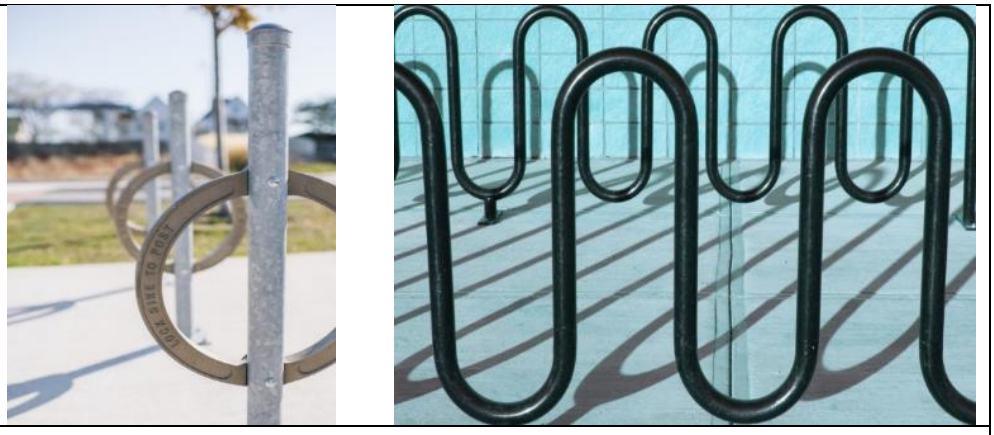
Limits:
- Various

Estimated Cost: $3,000

Proposed Improvements

To promote bicycling, bike racks are proposed at locations around Town. Bike Racks are proposed in Elm Park, where they would be centrally located within the densest area of Town, as well as being adjacent to the roadway with the highest Bicycling demand.

Bike racks are also proposed within the Pines Recreational Area.



Bike Rack Examples

4.32 PEDESTRIAN WAYFINDING SIGNAGE:

Limits:
- Various

Estimated Cost: $10,000

Install Pedestrian Wayfinding along Town Center Roadways to provide pedestrians with improved guidance.

Pedestrian Wayfinding Signage Example

4.33 PEDESTRIAN/ BICYCLING WAYFINDING SIGNAGE:

Limits:

- Various

Estimated Cost: $10,000

Proposed Improvements

Install Pedestrian / Bicycling Guide Signs in the following areas - Meadow Pond Reservation (Uptack Road), Groveland Town Forest (Off Main Street, Brake Hill Terrace, Wood Street Hilltop Circle and Nichols Way) and the new Center Street Greenway (between Washington Street and School Street).

4.34 RIVER PINES DRIVE PEDESTRIAN AND ACCESSIBILITY UPGRADES:

Limits:

- Main Street to Housing Authority Buildings

Estimated Cost: $200,000

Proposed Improvements

Rebuild existing sidewalk and curb ramps. The curbing is crumbling, and tree roots are growing through the sidewalks, making it difficult to travel on them. This short segment of the roadway serves the Town Hall, the Langley-Adams Library, the Groveland Police/Fire Department and the Groveland Housing Authority. Therefore, safe ADA compliant pedestrian accommodation is important in the vicinity.

5.0 PRIORITIZATION PLAN

For the evaluation, we have used a Weighted Evaluation Criteria method.

The process of prioritizing projects involved evaluation criteria tailored to addressing issues/needs and accomplishing goals desired by the Town of Groveland. Each project was scored based on the improvement/ impact for each criterion. The criterion that Stantec used consists of the following elements.

- Safety Benefits (addresses high crash location),
- Pedestrian Improvements
- Bicycle Mobility
- Compatibility with local or regional goals
- Degree of public stakeholder support
- Plan progress
- Cost Estimate

The spreadsheet used for the development of the ranking is included in the Appendix. The ranking spreadsheet was developed in the same format of as that of the MassDOT Prioritization Template. The results of the ranking spreadsheet were then imported into the MassDOT prioritization template. The complete listing of the projects is shown in Table 3.

COMPLETE STREETS NEEDS ASSESSMENT

PRIORITIZATION PLAN
July 25, 2019

Rank	Project Name	Project Description	Project Limits	Total Estimated Project Cost
1	King Streets- Downtown Sidewalk - Phase 1	Proposed new sidewalk along one side of King Street with ADA compliant curb ramps at each crossing. This project will help connect pedestrians along King Street and the neighborhood to the existing pedestrian network in the Town Center.	Garrison Street to Center Street	$975,000
2	Main Street Pedestrian Safety and Access Accommodations - Phase 2	Re-construct north side walk with vertical granite curbing to be installed. This section is under MassDOT jurisdiction.	Main Street between post office and Broad Street.	$931,000
3	Rollins Street Pedestrian Access and Accommodation	Proposed new sidewalk along one side of Rollins Street with ADA compliant curb ramps at each crossing. There is currently no sidewalk. This project will help connect pedestrians along Rollins Street to the existing pedestrian network in the Town Center.	Governors Rd to Center Street	$701,000
4	Garrison Street Pedestrian Access Accommodations	Proposed new sidewalk along one side of Garrison Street with ADA compliant curb ramps at each crossing. There is currently no sidewalk. This project will help connect pedestrians along Garrison Street and the neighborhood to the existing pedestrian network in the Town Center.	Cannon Hill Avenue to Rollins Street	$330,000
5	Main Street Crossing and ADA Improvements	This project includes the installation of 8 ADA curb ramps, as well as new ladder crosswalks at the Main Street intersections with King Street, Manor Drive, Marjorie Street, and Broad Street (South) along with warning signs. Rectangular Rapid Flashing Beacons (RRFB) is proposed at King Street and Broad Streets. In addition, Adjustments are recommended to the curb line at King Street and Broad Street. Currently, the identified intersections do not have ADA compliant curb ramps. This section of roadway is high volume and difficult to cross. These crossings help connect the neighborhoods on the eastern side of the roadway to the Town Recreation Facilities on the western side of the roadway. This location as under the jurisdiction of MassDOT, therefore MassDOT involvement will be necessary. Due to this Complete Streets funding might not be appropriate.	Main Street crossing at Chestnut Ave., King St., Manor Dr., River Pines Dr., Marjorie St., Balch Ave and Broad St.	$213,000
6	School Street Phase 2	This section of roadway provides 4-5 ft of shoulders on both sides of the travel way with poor road striping conditions. This project entails the re-stripping of the roadway shoulder lane to accommodate bicyclist with adequate pavement markings and signages, new sidewalk along roadway and roadway reconstruction. This project will essentially extend the recently constructed School Street TIP project further north to Groveland Town Center.	School Street between Gardner Street to Parker Road.	$1,115,000
7	Center Street Pedestrian Safety Access Accommodations-Phase 2	Propose new sidewalk along one side of Center Street in conjunction with roadway reconstruction. ADA compliant curb ramps will be constructed at each crossing. The cost for this project includes only the sidewalk portion of the project.	Washington Street to School Street	$1,193,000
8	Radar Speed Feedback Signs - School Street (Rte. 97)	The Bagnall School is located along the roadway with heavy pedestrian traffic during peak hours. The police have expressed concern about the amount of speeding on School Street. Propose installing radar speed feedback signs to reduce drivers speed.	Vicinity of Bagnall School	$25,000

Rank	Project Name	Project Description	Project Limits	Total Estimated Project Cost
9	Center Street Pedestrian Safety Access Accommodations-Phase 1	Propose new sidewalk along one side of Center Street in conjunction with roadway reconstruction. ADA compliant curb ramps will be constructed at each crossing. The cost for this project includes only the sidewalk portion of the project.	School Street to Rollins Street	$1,418,000
10	Seven Star Road at NB Little Intersection Realignment	Re-align Intersection at intersection with Bare Hill Rd and Byfield Rd. The intersection is currently askew. Realign the intersection and create a four way stop controlled intersection with crosswalks and ADA ramps.	Seven Star Rd Intersection at JB Little Road	$200,000
11	Washington Street at Main Street intersection Improvements	The existing intersection is very wide open, with wide radii and open curb cuts. This leads to confusing turning maneuvers. The are no marked crosswalks or ADA ramps. This project will tighten the geometry, add ADA ramps and provide two new crosswalks.	Washington Street Intersection at Main Street	$67,000
12	Main Street Bicycle Accommodations	This project is intended to provide a critical on-road connection between the soon to be constructed Groveland Trail and Town Center, the Town Recreation Area and the Town Hall. Bicycle connection will be made via on-road accommodation on Main Street. South of Route 97, the route is locally owned. North of Route 97, Main Street is owned by MassDOT. Therefore so, MassDOT involvement will be required for the northern portion. This proposed route is expected to use three different design treatments: Shared Lane Markings, Contra-Flow Bike Lane, and Bike Lanes. The preferred route is a balance between safety, directness, and rider comfort. **Groveland Community Trail to Gardner Street** - Due to the narrow pavement width along this section it is not possible to accommodate a bike lane without roadway widening. It is therefore recommended to use a shared lane approach for this section involving the addition of supplemental signage and shared lane markings. **Main Street – Gardner Street to Elm Park -** The existing 20 foot (one-way) paved width could be striped to allow for a 5-foot-wide northbound contra-flow bike lane while still maintaining a shared travel lane in the southbound direction. The northbound bike lane would be installed on the east side of the road and separated from opposing traffic by a 3-foot-wide painted buffer striped with longitudinal and diagonal yellow pavement markings. **North of Elm Park - Immediately** north of the Main Street/Elm Park Intersection, the route will operate as a shared lane in both directions for 250 feet in the northbound direction and 400 feet in the southbound direction. From the Elm Park Intersection to the Groveland Town Offices the existing 32-foot minimum paved width allows for an 11-foot travel lane with 5-foot bike lanes in each direction extending until the end of the route at the Groveland Town Offices.	Main Street between Groveland Rail Trail and West Newbury Townline.	$25,000
13	School Street Crossing improvement at Ashcroft Terrace	Install an RRFB across School Street at Ashcroft Terrace. A crosswalk and ADA ramps have recently been installed; therefore, the improvements would be limited to the proposed beacon, which would increase awareness of the crossing and improve safety. This will also improve pedestrian access to the Bagnall School.	School Street intersection at Center Street and Ashcroft Ter.	$25,000
14	Rollins Street Radar Speed Feedback Sign	Roadway is heavily traveled by bicyclist and pedestrians. Propose Installing a radar speed feedback signs to reduce drivers speed.	Along Rollins Street	$10,000
15	Center Street intersection pedestrian improvement - 2 locations	Propose crosswalk with ADA compliant curb ramps at the intersections of Center Street with Washington Street and Center Street with Salem Street. Currently the ramps at	Washington and Salem Street intersections	$64,000

Rank	Project Name	Project Description	Project Limits	Total Estimated Project Cost
16	Uptack Rd Pedestrian Access and Accommodation	Proposed new sidewalk along one side of Uptack Road with ADA compliant curb ramps at each crossing. There is currently no sidewalk. T	Washington Street to Georgetown Townline	$993,000
17	Elm Park Pedestrian Access and Accommodation	Reconstruct existing sidewalk and install ADA ramp at intersection with Gardner Street. Construct new sidewalk from Gardner street to Elm Park dead end.	From Main Street to Elm Park Dead End	$269,000
18	Main Street Pedestrian Safety and Access Accommodations - Phase 1	This section of roadway provides 5 ft sidewalk and 4 ft variable shoulder width on the North-side of the roadway. From the Groveland Rail Trail to Washington Street. Sidewalk reconstruction and vertical granite curbs are proposed to be installed along this segmented sidewalk. It will provide at grade separation between the roadway and the sidewalk while improving pedestrian access.	Main Street between Dewhirst Street to Groveland Rail Trail.	$408,000
19	Seven Star Rd. Pedestrian Access Accommodation - Phase 1	Proposed new sidewalk along one side of Seven Star Road with ADA compliant curb ramps at each crossing. There is currently no sidewalk. This project will help connect pedestrians along Seven Star Road and the neighborhood to the existing pedestrian network in the Town Center.	Main Street to Center Street	$1,028,000
20	Main Street / Broad Street Pedestrian Access and Accommodation - Northern Location	At the Northern Intersection of Main Street/ Broad Street (at Scotland Yard Estates, provide new crossing of Main Street, including a rectangular rapid flashing beacon. Consider a full realignment of the intersection. Please note that this intersection is within MassDOT jurisdiction.	West Main Street to East Main Street	$258,000
21	Elm Park Upgrades	Propose a new bike/shoulder lane on the eastern side of Elm Park. Elm Park provides a more bike friendly alternative to School Street.	From Main Street to Elm Park Dead End	$24,000
22	Center Street at Seven Star Rd. Intersection Realignment	Re-align Intersection and install four way stop sign to improve pedestrian safety while crossing.	Seven Star Rd Intersection at Center Street	$13,000
23	King Street Sidewalk Phase 2	Construct a sidewalk from trail terminus at King Street substation to Rocky Woods Road. This will provide additional access to the soon to be constructed Groveland Trail.	Groveland Trail Terminus to Rocky Woods Drive	$1,156,000
24	King Street-Sidewalk - Phase 3	In concert with the previously proposed sidewalks of King Street and Center Street, this section of sidewalk will help to complete the sidewalk network on the east side of School Street. ADA compliant curb ramps at each crossing.	Center Street to Georgetown Townline	$1,156,000
25	Washington Street Pedestrian Safety and Access Accommodation	Proposed new sidewalk along one side of Washington Street from Salem Street to Veasey Memorial Park. This will provide access to the resident on Salem Street and Uptack Road, as well as Veasey Memorial Park. Rollins Street with ADA compliant curb ramps at each crossing.	Washington Street between Salem Street and Boxford Town Line	$883,000

Rank	Project Name	Project Description	Project Limits	Total Estimated Project Cost
26	Seven Star Rd. Pedestrian Access Accommodation - Phase 2	Propose new sidewalk along roadway with ADA compliant curb ramps at each crossing.	Center Street to Bare Hill Rd.	$958,000
27	Salem Street Culvert	Replace culverts at Salem Street including roadway reconstruction.	East of Hales Court Road.	$21,000
28	Wood Street Pedestrian Access and Accommodation	Proposed new sidewalk along one side of Wood Street with ADA compliant curb ramps at each crossing. There is currently no sidewalk.	Seven Star Rd to Dead end	$780,000
29	Groveland Rail Trail Mile markers	Installation of mile markers on Groveland Rail Trail		$3,000
30	Main Street Pedestrian Improvements	Reconstruction of the sidewalk along the river side of Main Street.	Gardner Street to Route 97	$500,000
31	Bike Storage Installments	Project entails the Installation of bike racks at Elms Park and Pine Recreation Area to facilitate the usage of bicycles in the town center.	Elm Park and Pine Recreation Area	$10,000
32	Pedestrian Wayfinding Signage	Install Pedestrian Wayfinding along Town Center Roadways to provide pedestrians with improved guidance.	Various Location in Town Center	$3,000
33	Pedestrian /Bicycle Wayfinding Signage	Install Pedestrian / Bicycling Guide Signs in the following areas - Meadow Pond Reservation (Uptack Road), Groveland Town Forest (Off Main Street, Brake Hill Terrace, Wood Street Hilltop Circle and Nichols Way) and the new Center Street Greenway (between Washington Street and School Street).	Uptack Road, Main Street, Brake Hill Terrace, Wood Street Hilltop Circle and Nichols Way, Center Street	$5,000
34	River Pines Drive Pedestrian and Accessibility Upgrades	Rebuild existing sidewalk and curb ramps. The curbing is crumbling, and tree roots are growing through the sidewalks, making it difficult to travel on them. This short segment of the roadway serves the Town Hall, the Langley-Adams Library, the Groveland Police/Fire Department and the Groveland Housing Authority. Therefore, safe ADA compliant pedestrian accommodation is important in the vicinity.	Main Street to Groveland Housing Authority Buildings.	$150,000

APPENDIX

Appendix A

A.1 COMPLETE STREETS PRIORITIZATION PLAN

Complete Streets Funding Program Project Prioritization Plan

Municipality Groveland
MassDOT District 4

Date 7/26/2019
Name/Title

Project Details			EJ	Complete Streets Location			Project Origin and Type		Complete Streets Needs							Complete Streets Funding Request				Construction Schedule	
Rank	**Project Name**	**Project Description**	**Environmental Justice Population**	**Project Limits**	**Project Start Location: X,Y Coordinates** (MA State Plane meter)	**Project End Location: X,Y Coordinates** (MA State Plane meter)	**Complete Streets Project Origin** (planning documentation or supporting analysis)	Complete Streets Project Type (refer to the Eligible Projects Worksheet)	Safety	ADA Accessibility	Pedestrian Mobility	Bicycle Mobility	Transit Operations and Vehicular Operations	Freight Operations	**Will this project be in Coordination with other Communities?** (list, if applicable)	**Total Estimated Project Cost**	**Complete Streets Funding Requested**	**Other Funding Source(s) and Amount** (if applicable)		**Anticipated Construction Duration** (number of months)	**Desired Construction Start Date** (month/year)
1	King Streets- Downtown Sidewalk - Phase 1	Proposed new sidewalk along one side of King Street with ADA compliant curb ramps at each crossing. This project will help connect pedestrians along King Street and the neighborhood to the existing pedestrian network in the Town Center.	No	Garrison Street to Center Street	238,818m, 945,914m	239,678m, 944,611m	Complete Streets Needs Assessment	P2,P3,P5,P9,S14	X	X	X				No	$975,000	$400,000			8 months	05/01/21
2	Main Street Pedestrian Safety and Access Accommodations - Phase 1	Re-construct north side walk with vertical granite curbing to be installed. This section is under MassDOT jurisdiction.	No	Main Street between post office and Broad Street.	237,618m, 944,476m	237,788m, 944,841m	Complete Streets Needs Assessment	P1,S14	X	X	X				No	$930,000				8 months	05/01/21
3	Rollins Street Pedestrian Access and Accommodation	Proposed new sidewalk along one side of Rollins Street with ADA compliant curb ramps at each crossing. There is currently no sidewalk. This project will help connect pedestrians along Rollins Street to the existing pedestrian network in the Town Center.	No	Governors Rd to Center Street	239,383m, 946,031m	240,160m, 945,304m	Complete Streets Needs Assessment	P2,P3,P5,P9,S14	X	X	X				No	$700,000	$400,000			8 months	05/01/22
4	Garrison Street Pedestrian Access Accommodations	Proposed new sidewalk along one side of Garrison Street with ADA compliant curb ramps at each crossing. There is currently no sidewalk. This project will help connect pedestrians along Garrison Street and the neighborhood to the existing pedestrian network in the Town Center.	No	Cannon Hill Avenue to Rollins Street	239,038m, 945,984m	239,418m, 945,985m	Complete Streets Needs Assessment	P2,P3,P5,P9,S14	X	X	X				No	$330,000	$330,000			8 months	05/01/22
5	Main Street Crossing and ADA Improvements	This project includes the installation of 8 ADA curb ramps, as well as new ladder crosswalks at the Main Street intersections with King Street, Manor Drive, Marjorie Street, and Broad Street (South) along with warning signs. Rectangular Rapid Flashing Beacons (RRFB) is proposed at King Street and Broad Streets. In addition, Adjustments are recommended to the curb line at King Street and Broad Street. Currently, the identified intersections do not have ADA compliant curb ramps. This section of roadway is high volume and difficult to cross. These crossings help connect the neighborhoods on the eastern side of the roadway to the Town Recreation Facilities on the western side of the roadway. This location as under the jurisdiction of MassDOT, therefore MassDOT involvement will be necessary. Due to this Complete Streets funding might not be appropriate.	No	Main Street crossing at Chestnut Ave., King St., Manor Dr., River Pines Dr., Marjorie St., Balch Ave and Broad St.	238,622m, 946,129m* 238,741m, 946,317m* 238,910m, 946,419m*	239,040m, 946,510m* 239,209m, 946,606m* 239,318m, 946,668m*	Complete Streets Needs Assessment	P2,P3,P5,P9,P12, S6,S14	X	X	X				No	$213,000				8 months	
6	School Street Phase 2	This section of roadway provides 4-5ft of shoulders on both sides of the travel way with poor road striping conditions. This projects entails the re-stripping of the roadway shoulder lane to accommodate bicyclist with adequate pavement markings and signages, new sidewalk along roadway and roadway reconstruction. This project will essentially extend the recently constructed School Street TIP project further north to Groveland Town Center.	No	School Street between Gardner Street to Parker Road.	238,334m, 945,667m	238,920m, 944,397m	Complete Streets Needs Assessment	S1,S12,B2,B9,P2,P5 ,P9	X	X	X	X			No	$1,115,000	$400,000			8 months	
7	Center Street Pedestrian Safety Access Accommodations-Phase 1	Propose new sidewalk along one side of Center Street in conjunction with roadway reconstruction. ADA compliant curb ramps will be constructed at each crossing. The cost for this project includes only the sidewalk portion of the project.	No	Washington Street to School Street	237,436m, 943,691m	239,106m, 943,958m	Complete Streets Needs Assessment	P2,P3,P5,P9,S14	X	X	X				No	$1,193,000				8 months	
8	Radar Speed Feedback Signs -School Street (Rte. 97)	The Bagnall School is located along the roadway with heavy pedestrian traffic during peak hours. The police have expressed concern about the amount of speeding on School Street. Propose installing radar speed feedback signs to reduce drivers speed.	No	Vicinity of Bagnall School	239,130m, 943,871m	239,177m, 943,704m	Complete Streets Needs Assessment	S5	X		X		X		No	$25,000				8 months	
9	Center Street Pedestrian Safety Access Accommodations-Phase 1	Propose new sidewalk along one side of Center Street in conjunction with roadway reconstruction. ADA compliant curb ramps will be constructed at each crossing. The cost for this project includes only the sidewalk portion of the project.	No	School Street to Rollins Street	239,106m, 943,958m	240,161m, 945,303m	Complete Streets Needs Assessment	P2,P3,P5,P9,S14	X	X	X				No	$1,418,000				8 months	
10	Seven Star Road at JB Little Intersection Realignment	Re-align Intersection at intersection with Bare Hill Rd and Byfield Rd. The intersection is currently askew. Realign the intersection and create a four way stop controlled intersection with crosswalks and ADA ramps.	No	Seven Star Rd Intersection at JB Little Road	241,736m, 944,622	N/A	Complete Streets Needs Assessment	S13,S14,P2, P3	X				X		No	$200,000				8 months	
11	Washington Street at Main Street intersection Improvements	The existing intersection is very wide open, with wide radii and open curb cuts. This leads to confusing turning maneuvers. The are no marked crosswalks or ADA ramps. This project will tighten the geometry, add ADA ramps and provide two new crosswalks.	No	Washington Street Intersection at Main Street	237,478m, 944,417m*	N/A	Complete Streets Needs Assessment	P2,S6,P9,	X	X	X				No	$100,000	$100,000			6 months	05/01/20

Project Details			EJ	Complete Streets Location			Project Origin and Type		Complete Streets Needs							Complete Streets Funding Request			Construction Schedule	
Rank	**Project Name**	**Project Description**	**Environmental Justice Population**	**Project Limits**	**Project Start Location: X,Y Coordinates** (MA State Plane meter)	**Project End Location: X,Y Coordinates** (MA State Plane meter)	**Complete Streets Project Origin** (planning documentation or supporting analysis)	Complete Streets Project Type (refer to the Eligible Projects Worksheet)	Safety	ADA Accessibility	Pedestrian Mobility	Bicycle Mobility	Transit Operations and	Vehicular Operations	Freight Operations	**Will this project be in Coordination with other Communities?** (list, if applicable)	**Total Estimated Project Cost**	**Complete Streets Funding Requested**	**Other Funding Source(s) and Amount** (if applicable)	**Anticipated Construction Duration** (number of months)	**Desired Construction Start Date** (month/year)
12	Main Street Bicycle Accommodations	This project is intended to provide a critical on-road connection between the soon to be constructed Groveland Trail and Town Center, the Town Recreation Area and the Town Hall. Bicycle connection will be made via on-road accommodation on Main Street. South of Route 97, the route is locally owned. North of Route 97, Main Street is owned by MassDOT. Therefore so, MassDOT involvement will be required for the northern portion. This proposed route is expected to use three different design treatments: Shared Lane Markings, Contra-Flow Bike Lane, and Bike Lanes. The preferred route is a balance between safety, directness, and rider comfort. **Groveland Community Trail to Gardner Street** - Due to the narrow pavement width along this section it is not possible to accommodate a bike lane without roadway widening. It is therefore recommended to use a shared lane approach for this section involving the addition of supplemental signage and shared lane markings. **Main Street – Gardner Street to Elm Park -** The existing 20 foot (one-way) paved width could be striped to allow for a 5 foot wide northbound contra-flow bike lane while still maintaining a shared travel lane in the southbound direction. The northbound bike lane would be installed on the east side of the road and separated from opposing traffic by a 3 foot wide painted buffer striped with longitudinal and diagonal yellow pavement markings. **North of Elm Park -** Immediately north of the Main Street/Elm Park Intersection, the route will operate as a shared lane in both directions for 250 feet in the northbound direction and 400 feet in the southbound direction. From the Elm Park Intersection to the Groveland Town Offices the existing 32 foot minimum paved width allows for an 11 foot travel lane with 5 foot bike lanes in each direction extending until the end of the route at the Groveland Town Offices.	No	Main Street between Groveland Rail Trail and West Newbury Townline.	237,788m, 944,841m	239,919m, 947,808m	Complete Streets Needs Assessment	S1, B2,B7, B9,B13	X		X				No	$120,000	$15,000	MassDOT Juridication for portion north of Route 97	6 months	
13	School Street Crossing improvement at Ashcroft Terrace	Install an RRFB across School Street at Ashcroft Terrace. A crosswalk and ADA ramps have recently been installed, therefore the improvements would be limited to the proposed beacon, which would increase awareness of the crossing and improve safety. This will also improve pedestrian access to the Bagnall School.	No	School Street intersection at Center Street and Ashcroft Ter.	239,192m, 943,485m	239,107m, 943,961m	Complete Streets Needs Assessment	P12	X		X					No	$25,000			8 months	
14	Rollins Street Radar Speed Feedback Sign	Roadway is heavily traveled by bicyclist and pedestrians. Propose Installing a radar speed feedback signs to reduce drivers speed.	No	Along Rollins Street	239,716m, 945,684m	N/A	Complete Streets Needs Assessment	S5	X					X		No	$10,000			8 months	
15	Center Street intersection pedestrian improvement - 2 locations	Propose crosswalk with ADA compliant curb ramps at the intersections of Center Street with Washington Street and Center Street with Salem Street. Currently the ramps at both intersections are not ADA compliant.	No	Washington and Salem Street intersections	237,436m 943,691m	237,012m, 943,653m	Complete Streets Needs Assessment	P2,P9	X	X	X					No	$64,000			8 months	
16	Uptack Rd Pedestrian Access and Accommodation	Proposed new sidewalk along one side of Uptack Road with ADA compliant curb ramps at each crossing. There is currently no sidewalk.	No	Washington Street 15 Uptack Road	237,261m, 942,785m	238,267m, 941,534m	Complete Streets Needs Assessment	P2,P5,S14	X	X	X					No	$950,000			8 months	
17	Elm Park Pedestrian Access and Accommodation	Reconstruct existing sidewalk and install ADA ramp at intersection with Gardner Street. Construct new sidewalk from Gardner street to Elm Park end.	No	From Main Street to Elm Park Dead End	238,290m, 945,958m	238,414m, 945,624m	Complete Streets Needs Assessment	S12,S14,P2,P5	X	X	X					No	$269,000			8 months	
18	Main Street Pedestrian Safety and Access Accommodations - Phase 1	This section of roadway provides 5ft sidewalk and 4ft variable shoulder width on the North-side of the roadway. From the Groveland Rail Trail to Washington Street. Sidewalk reconstruction and vertical granite curbs are proposed to be installed along this segmented sidewalk. It will provide at grade separation between the roadway and the sidewalk while improving pedestrian access.	No	Main Street between Dewhirst Street to Groveland Rail Trail.	237,618m, 944,476m	237,788m, 944,841m	Complete Streets Needs Assessment	P2,P5,S14	X	X	X					No	$408,000			8 months	
19	Seven Star Rd. Pedestrian Access Accommodation - Phase 1	Proposed new sidewalk along one side of Seven Star Road with ADA compliant curb ramps at each crossing. There is currently no sidewalk. This project will help connect pedestrians along Seven Star Road and the neighborhood to the existing pedestrian network in the Town Center.	No	Main Street to Center Street	239,318m, 946,669m 239,498m, 946,942m	240,784m, 945,798m	Complete Streets Needs Assessment	P2,P5,S14	X	X	X					No	$1,028,000			8 months	
20	Main Street / Broad Street Pedestrian Access and Accommodation - Northern Location	At the Northern Intersection of Main Street/ Broad Street (at Scotland Yard Estates, provide new crossing of Main Street, including a rectangular rapid flashing beacon. Consider a full realignment of the intersection. Please note that this intersection is within MassDOT jurisdiction.	No	West Main Street to East Main Street	239,319m, 946,670m	239,499m, 946,942m	Complete Streets Needs Assessment	P2,P5,S14	X	X	X					No	$258,000			8 months	
21	Elm Park Upgrades	Propose a new bike/shoulder lanes on the eastern side of Elm Park. Elm Park provides a more bike friendly alternative to School Street.	No	From Main Street to Elm Park Dead End	238,290m, 945,958m	238,414m, 945,624m	Complete Streets Needs Assessment	S1, B2,B9,P9,P12	X		X	X				No	$24,000			8 months	
22	Center Street at Seven Star Rd. Intersection Realignment	Re-align Intersection and install four way stop sign to improve pedestrian safety while crossing.	No	Seven Star Rd Intersection at Center Street	240,783m, 945,798m	N/A	Complete Streets Needs Assessment	S7,S13,S14	X		X			X		No	$13,000			8 months	
23	King Street Sidewalk Phase 2	Construct a sidewalk from trail terminus at King Street substation to Rocky Woods Road. This will provide additional access to the soon to be constructed Groveland Trail.	No	Groveland Trail Terminus to Rocky Woods Drive	239,678m, 944,612m	240,179m, 942,856m	Complete Streets Needs Assessment	P2,P5,S14	X	X	X					No	$150,000			8 months	

Project Details			EJ	Complete Streets Location			Project Origin and Type		Complete Streets Needs							Complete Streets Funding Request			Construction Schedule	
Rank	**Project Name**	**Project Description**	**Environmental Justice Population**	**Project Limits**	**Project Start Location: X,Y Coordinates** (MA State Plane meter)	**Project End Location: X,Y Coordinates** (MA State Plane meter)	**Complete Streets Project Origin** (planning documentation or supporting analysis)	Complete Streets Project Type (refer to the Eligible Projects Worksheet)	Safety	ADA Accessibility	Pedestrian Mobility	Bicycle Mobility	Transit Operations and	Vehicular Operations	Freight Operations	**Will this project be in Coordination with other Communities?** (list, if applicable)	**Total Estimated Project Cost**	**Complete Streets Funding Requested**	**Other Funding Source(s) and Amount** (if applicable)	**Anticipated Construction Duration** (number of months)	**Desired Construction Start Date** (month/year)
24	King Street-Sidewalk - Phase 3	In concert with the previously proposed sidewalks of King Street and Center Street, this section of sidewalk will help to complete the sidewalk network on the east side of School Street. ADA compliant curb ramps at each crossing.	No	Center Street to Georgetown Townline	239,678m, 944,612m	240,179m, 942,856m	Complete Streets Needs Assessment	P2,P5,S14	X	X	X					No	$1,000,000			8 months	
25	Washington Street Pedestrian Safety and Access Accommodation	Proposed new sidewalk along one side of Washington Street from Salem Street to Veasey Memorial Park. This will provide access to the resident on Salem Street and Uptack Road, as well as Veasey Memorial Park. Rollins Street with ADA compliant curb ramps at each crossing.	No	Washington Street between Salem Street and Boxford Town Line	237,293m, 943,273m	237,052m, 941,866m	Complete Streets Needs Assessment	P2,P3,P5,P9,S14	X	X	X					No	$883,000			8 months	
26	Seven Star Rd. Pedestrian Access Accommodation - Phase 2	Propose new sidewalk along roadway with ADA compliant curb ramps at each crossing.	No	Center Street to Bare Hill Rd.	240,783m, 945,799m	241,707m, 944,667m	Complete Streets Needs Assessment	P2,P3,P5,P9,S14	X	X	X					No	$958,000			8 months	
27	Salem Street Culvert	Replace culverts at Salem Street including roadway reconstruction. This portion of the project would entail the construction of a sidewalk after replacement of the culvert.	No	East of Hales Court Road.	237,432m, 943,237m	N/A	Complete Streets Needs Assessment	P5	X					X		No	$21,000			8 months	
28	Wood Street Pedestrian Access and Accommodation	Proposed new sidewalk along one side of Wood Street with ADA compliant curb ramps at each crossing. There is currently no sidewalk. T	No	Seven Star Rd to Dead end	240,087m, 946,304m	240,783m, 946,981m	Complete Streets Needs Assessment	P2,P5,P9,S14	X	X	X					No	$780,000			8 months	
29	Groveland Rail Trail Mile markers	Installation of milemarkers on Groveland Rail Trail	No	Groveland Community Trail	239,975m, 943,058m	237,804m, 944,842m	Complete Streets Needs Assessment	B7,P4			X	X				No	$3,000	$3,000		1 month	05/01/20
30	Main Street Pedestrian Improvements	Reconstruction of the sidewalk along the river side of Main Street.	No	Gardner Street to Route 97	237,978m, 945,172m	238,234m, 945,932m	Complete Streets Needs Assessment	P1,S14	X	X	X					No	$500,000			8 months	
31	Bike Storage Installments	Project entails the Installation of bike racks at Elms Park and Pine Recreation Area to facilitate the usage of bicycles in the town center.	No	Elm Park and Pine Recreation Area	238,809m, 946,379m	238,290m, 945,956m	Complete Streets Needs Assessment	B3				X				No	$10,000	$10,000		1 month	05/01/20
32	Pedestrian Wayfinding Signage	Install Pedestrian Wayfinding along Town Center Roadways to provide pedestrians with improved guidance.	No	Various Location in Town Center	N/A	N/A	Complete Streets Needs Assessment	P4			X					No	$3,000	$3,000		1 month	05/01/20
33	Pedestrian /Bicycle Wayfinding Signage	Install Pedestrian / Bicycling Guide Signs in the following areas - Meadow Pond Reservation (Uptack Road), Groveland Town Forest (Off Main Street, Brake Hill Terrace, Wood Street Hilltop Circle and Nichols Way) and the new Center Street Greenway (between Washington Street and School Street).	No	Uptack Road, Main Street, Brake Hill Terrace, Wood Street Hilltop Circle and Nichols Way, Center Street	237,469m, 942,466m 238,102m, 943,058m	240,274m, 947,288m	Complete Streets Needs Assessment	B7,P4			X	X				No	$5,000	$5,000		1 month	05/01/20
34	River Pines Drive Pedestrian and Accessibility Upgrades	Rebuild existing sidewalk and curb ramps. The curbing is crumbling and tree roots are growing through the sidewalks, making it difficult to travel on them. This short segment of the roadway serves the Town Hall, the Langley-Adams Library, the Groveland Police/Fire Department and the Groveland Housing Authority. Therefore safe ASDA compliant pedestrian accommodation is important in the vicinity.	No	Main Street to Groveland Housing Authority Buildings.	238,908m, 946,421m	238,853m, 946,616m	Complete Streets Needs Assessment	P1,P2,P3	X	X	X					No	$150,000			6 months	

Appendix B

B.1 PROJECT RANKING DATA

Complete Streets Funding Program Project Prioritization Plan

Municipality Groveland **Date** 7/26/2019
MassDOT District 4 **Name/Title**

Project Details			EJ	Complete Streets Location	Complete Streets Needs							Rank		Rank		
Rank	**Project Name**	**Project Description**	**Environmental Justice Population**	**Project Limits**	Safety	ADA Accessibility	Pedestrian Mobility	Bicycle Mobility	Transit Operations and Vehicular Operations	Freight Operations	**Will this project be in Coordination with other Communities?** (list, if applicable)	Ped Score	Ped Improved?	Bike Score	Bike Improved?	**Weighted Average**
1	King Streets- Downtown Sidewalk - Phase 1	Proposed new sidewalk along one side of King Street with ADA compliant curb ramps at each crossing. This project will help connect pedestrians along King Street and the neighborhood to the existing pedestrian network in the Town Center.	No	Garrison Street to Center Street	X	X	X				No	4.02	10.00	0.90	0.00	**40.20**
2	Main Street Pedestrian Safety and Access Accommodations - Phase 1	Re-construct north side walk with vertical granite curbing to be installed. This section is under MassDOT jurisdiction.	No	Main Street between post office and Broad Street.	X	X	X				No	3.93	10.00	0.70	0.00	**39.33**
3	Rollins Street Pedestrian Access and Accommodation	Proposed new sidewalk along one side of Rollins Street with ADA compliant curb ramps at each crossing. There is currently no sidewalk. This project will help connect pedestrians along Rollins Street to the existing pedestrian network in the Town Center.	No	Governors Rd to Center Street	X	X	X				No	3.38	10.00	0.29	0.00	**33.80**
4	Garrison Street Pedestrian Access Accommodations	Proposed new sidewalk along one side of Garrison Street with ADA compliant curb ramps at each crossing. There is currently no sidewalk. This project will help connect pedestrians along Garrison Street and the neighborhood to the existing pedestrian network in the Town Center.	No	Cannon Hill Avenue to Rollins Street	X	X	X				No	3.36	10.00	0.00	0.00	**33.60**
5	Main Street Crossing and ADA Improvements	This project includes the installation of 8 ADA curb ramps, as well as new ladder crosswalks at the Main Street intersections with King Street, Manor Drive, Marjorie Street, and Broad Street (South) along with warning signs. Rectangular Rapid Flashing Beacons (RRFB) is proposed at King Street and Broad Streets. In addition, Adjustments are recommended to the curb line at King Street and Broad Street. Currently, the identified intersections do not have ADA compliant curb ramps. This section of roadway is high volume and difficult to cross. These crossings help connect the neighborhoods on the eastern side of the roadway to the Town Recreation Facilities on the western side of the roadway. This location as under the jurisdiction of MassDOT, therefore MassDOT involvement will be necessary. Due to this Complete Streets funding might not be appropriate.	No	Main Street crossing at Chestnut Ave., King St., Manor Dr., River Pines Dr., Marjorie St., Balch Ave and Broad St.	X	X	X				No	2.97	10.00	1.04	0.00	**30.70**
6	School Street Phase 2	This section of roadway provides 4-5ft of shoulders on both sides of the travel way with poor road striping conditions. This projects entails the re-stripping of the roadway shoulder lane to accommodate bicyclist with adequate pavement markings and signages, new sidewalk along roadway and roadway reconstruction. This project will essentially extend the recently constructed School Street TIP project further north to Groveland Town Center.	No	School Street between Gardner Street to Parker Road.	X	X	X	X			No	1.31	10.00	0.08	10.00	**23.88**
7	Center Street Pedestrian Safety Access Accommodations-Phase 1	Propose new sidewalk along one side of Center Street in conjunction with roadway reconstruction. ADA compliant curb ramps will be constructed at each crossing. The cost for this project includes only the sidewalk portion of the project.	No	Washington Street to School Street	X	X	X				No	0.38	10.00	1.19	0.00	**13.80**
8	Radar Speed Feedback Signs -School Street (Rte. 97)	The Bagnall School is located along the roadway with heavy pedestrian traffic during peak hours. The police have expressed concern about the amount of speeding on School Street. Propose installing radar speed feedback signs to reduce drivers speed.	No	Vicinity of Bagnall School	X			X	X		No	1.12	1.00	0.04	1.00	**11.16**
9	Center Street Pedestrian Safety Access Accommodations-Phase 1	Propose new sidewalk along one side of Center Street in conjunction with roadway reconstruction. ADA compliant curb ramps will be constructed at each crossing. The cost for this project includes only the sidewalk portion of the project.	No	School Street to Rollins Street	X	X	X				No	0.42	10.00	1.02	0.00	**9.15**
10	Seven Star Road at JB Little Intersection Realignment	Re-align Intersection at intersection with Bare Hill Rd and Byfield Rd. The intersection is currently askew. Realign the intersection and create a four way stop controlled intersection with crosswalks and ADA ramps.	No	Seven Star Rd Intersection at JB Little Road	X				X		No	1.70	5.00	0.60	0.00	**8.48**
11	Washington Street at Main Street intersection Improvements	The existing intersection is very wide open, with wide radii and open curb cuts. This leads to confusing turning maneuvers. The are no marked crosswalks or ADA ramps. This project will tighten the geometry, add ADA ramps and provide two new crosswalks.	No	Washington Street Intersection at Main Street	X	X	X				No	0.84	10.00	1.47	0.00	**8.40**
12	Main Street Bicycle Accommodations	This project is intended to provide a critical on-road connection between the soon to be constructed Groveland Trail and Town Center, the Town Recreation Area and the Town Hall. Bicycle connection will be made via on-road accommodation on Main Street. South of Route 97, the route is locally owned. North of Route 97, Main Street is owned by MassDOT. Therefore so, MassDOT involvement will be required for the northern portion. This proposed route is expected to use three different design treatments: Shared Lane Markings, Contra-Flow Bike Lane, and Bike Lanes. The preferred route is a balance between safety, directness, and rider comfort. **Groveland Community Trail to Gardner Street** - Due to the narrow pavement width along this section it is not possible to accommodate a bike lane without roadway widening. It is therefore recommended to use a shared lane approach for this section involving the addition of supplemental signage and shared lane markings. **Main Street – Gardner Street to Elm Park -** The existing 20 foot (one-way) paved width could be striped to allow for a 5 foot wide northbound contra-flow bike lane while still maintaining a shared travel lane in the southbound direction. The northbound bike lane would be installed on the east side of the road and separated from opposing traffic by a 3 foot wide painted buffer striped with longitudinal and diagonal yellow pavement markings. **North of Elm Park -** Immediately north of the Main Street/Elm Park Intersection, the route will operate as a shared lane in both directions for 250 feet in the northbound direction and 400 feet in the southbound direction. From the Elm Park Intersection to the Groveland Town Offices the existing 32 foot minimum paved width allows for an 11 foot travel lane with 5 foot bike lanes in each direction extending until the end of the route at the Groveland Town Offices.	No	Main Street between Groveland Rail Trail and West Newbury Townline.	X			X			No	3.28	0.00	0.58	10.00	**6.80**
13	School Street Crossing improvement at Ashcroft Terrace	Install an RRFB across School Street at Ashcroft Terrace. A crosswalk and ADA ramps have recently been installed, therefore the improvements would be limited to the proposed beacon, which would increase awareness of the crossing and improve safety. This will also improve pedestrian access to the Bagnall School.	No	School Street intersection at Center Street and Ashcroft Ter.	X		X				No	0.89	0.00	0.70	0.00	**5.00**
14	Rollins Street Radar Speed Feedback Sign	Roadway is heavily traveled by bicyclist and pedestrians. Propose Installing a radar speed feedback signs to reduce drivers speed.	No	Along Rollins Street	X				X		No	3.38	1.00	0.29	1.00	**3.67**
15	Center Street intersection pedestrian improvement - 2 locations	Propose crosswalk with ADA compliant curb ramps at the intersections of Center Street with Washington Street and Center Street with Salem Street. Currently the ramps at both intersections are not ADA compliant.	No	Washington and Salem Street intersections	X	X	X				No	0.33	10.00	0.60	0.00	**3.27**
16	Uptack Rd Pedestrian Access and Accommodation	Proposed new sidewalk along one side of Uptack Road with ADA compliant curb ramps at each crossing. There is currently no sidewalk.	No	Washington Street 15 Uptack Road	X	X	X				No	0.18	10.00	0.31	0.00	**1.80**
17	Elm Park Pedestrian Access and Accommodation	Reconstruct existing sidewalk and install ADA ramp at intersection with Gardner Street. Construct new sidewalk from Gardner street to Elm Park end.	No	From Main Street to Elm Park Dead End	X	X	X				No	0.10	10.00	0.06	0.00	**1.00**
18	Main Street Pedestrian Safety and Access Accommodations - Phase 1	This section of roadway provides 5ft sidewalk and 4ft variable shoulder width on the North-side of the roadway. From the Groveland Rail Trail to Washington Street. Sidewalk reconstruction and vertical granite curbs are proposed to be installed along this segmented sidewalk. It will provide at grade separation between the roadway and the sidewalk while improving pedestrian access.	No	Main Street between Dewhirst Street to Groveland Rail Trail.	X	X	X				No	0.09	10.00	0.00	0.00	**0.90**
19	Seven Star Rd. Pedestrian Access Accommodation - Phase 1	Proposed new sidewalk along one side of Seven Star Road with ADA compliant curb ramps at each crossing. There is currently no sidewalk. This project will help connect pedestrians along Seven Star Road and the neighborhood to the existing pedestrian network in the Town Center.	No	Main Street to Center Street	X	X	X				No	0.07	10.00	0.00	0.00	**0.70**

Project Details			EJ	Complete Streets Location	Complete Streets Needs							Rank		Rank		
Rank	**Project Name**	**Project Description**	**Environmental Justice Population**	**Project Limits**	Safety	ADA Accessibility	Pedestrian Mobility	Bicycle Mobility	Transit Operations and A	Vehicular Operations	Freight Operations	**Will this project be in Coordination with other Communities?** (list, if applicable)	Ped Score	Ped Improved?	Bike Score	Bike Improved?	**Weighted Average**
20	Main Street / Broad Street Pedestrian Access and Accommodation - Northern Location	At the Northern Intersection of Main Street/ Broad Street (at Scotland Yard Estates, provide new crossing of Main Street, including a rectangular rapid flashing beacon. Consider a full realignment of the intersection. Please note that this intersection is within MassDOT jurisdiction.	No	West Main Street to East Main Street	X	X	X					No	0.07	10.00	0.01	0.00	**0.70**
21	Elm Park Upgrades	Propose a new bike/shoulder lanes on the eastern side of Elm Park. Elm Park provides a more bike friendly alternative to School Street.	No	From Main Street to Elm Park Dead End	X		X	X				No	0.10	0.00	0.06	10.00	**0.60**
22	Center Street at Seven Star Rd. Intersection Realignment	Re-align Intersection and install four way stop sign to improve pedestrian safety while crossing.	No	Seven Star Rd Intersection at Center Street	X		X			X		No	0.05	10.00	0.50	0.00	**0.50**
23	King Street Sidewalk Phase 2	Construct a sidewalk from trail terminus at King Street substation to Rocky Woods Road. This will provide additional access to the soon to be constructed Groveland Trail.	No	Groveland Trail Terminus to Rocky Woods Drive	X	X	X					No	0.03	10.00	0.03	0.00	**0.30**
24	King Street-Sidewalk - Phase 3	In concert with the previously proposed sidewalks of King Street and Center Street, this section of sidewalk will help to complete the sidewalk network on the east side of School Street. ADA compliant curb ramps at each crossing.	No	Center Street to Georgetown Townline	X	X	X					No	0.03	10.00	0.03	0.00	**0.30**
25	Washington Street Pedestrian Safety and Access Accommodation	Proposed new sidewalk along one side of Washington Street from Salem Street to Veasey Memorial Park. This will provide access to the resident on Salem Street and Uptack Road, as well as Veasey Memorial Park. Rollins Street with ADA compliant curb ramps at each crossing.	No	Washington Street between Salem Street and Boxford Town Line	X	X	X					No	0.02	10.00	0.00	0.00	**0.20**
26	Seven Star Rd. Pedestrian Access Accommodation - Phase 2	Propose new sidewalk along roadway with ADA compliant curb ramps at each crossing.	No	Center Street to Bare Hill Rd.	X	X	X					No	0.01	10.00	0.32	0.00	**0.10**
27	Salem Street Culvert	Replace culverts at Salem Street including roadway reconstruction. This portion of the project would entail the construction of a sidewalk after replacement of the culvert.	No	East of Hales Court Road.	X					X		No	0.08	0.00	0.01	0.00	**0.00**
28	Wood Street Pedestrian Access and Accommodation	Proposed new sidewalk along one side of Wood Street with ADA compliant curb ramps at each crossing. There is currently no sidewalk. T	No	Seven Star Rd to Dead end	X	X	X					No	0.00	10.00	0.00	0.00	**0.00**
29	Groveland Rail Trail Mile markers	Installation of milemarkers on Groveland Rail Trail	No	Groveland Community Trail			X	X				No					**0.00**
30	Main Street Pedestrian Improvements	Reconstruction of the sidewalk along the river side of Main Street.	No	Gardner Street to Route 97	X	X	X					No					**0.00**
													0.05		0		
31	Bike Storage Installments	Project entails the Installation of bike racks at Elms Park and Pine Recreation Area to facilitate the usage of bicycles in the town center.	No	Elm Park and Pine Recreation Area				X				No	-	0.00	-	10.00	
32	Pedestrian Wayfinding Signage	Install Pedestrian Wayfinding along Town Center Roadways to provide pedestrians with improved guidance.	No	Various Location in Town Center			X					No	-	10.00	-	0.00	
33	Pedestrian /Bicycle Wayfinding Signage	Install Pedestrian / Bicycling Guide Signs in the following areas - Meadow Pond Reservation (Uptack Road), Groveland Town Forest (Off Main Street, Brake Hill Terrace, Wood Street Hilltop Circle and Nichols Way) and the new Center Street Greenway (between Washington Street and School Street).	No	Uptack Road, Main Street, Brake Hill Terrace, Wood Street Hilltop Circle and Nichols Way, Center Street			X	X				No					
34	River Pines Drive Pedestrian and Accessibility Upgrades	Rebuild existing sidewalk and curb ramps. The curbing is crumbling and tree roots are growing through the sidewalks, making it difficult to travel on them. This short segment of the roadway serves the Town Hall, the Langley-Adams Library, the Groveland Police/Fire Department and the Groveland Housing Authority. Therefore safe ASDA compliant pedestrian accommodation is important in the vicinity.	No	Main Street to Groveland Housing Authority Buildings.	X	X	X					No					

Appendix C

C.1 TOWN OF GROVELAND COMPLETE STREETS POLICY

Town of Groveland
Board of Selectmen

183 Main Street
Groveland, MA 01834
Tel: 978-556-7207
Fax: 978-469-5000

William F. Dunn, Chair
Edward H. Watson, Vice Chair
Lisa Dube-Carpenter
William G. O'Neil
Michael N. Wood

Selectmen@grovelandma.com

Complete Streets Policy

Effective Date: May 2, 2017
Expiration Date: None
Date Last Revised: April 4, 2016
Selectmen vote to adopt revised policy: May 2, 2017

Whereas, the Town of Groveland has a Master Plan that established a Transportation objective to provide a system of roads, sidewalks, and bridges that are safe and structurally sound; and

Whereas, the Town's zoning bylaws and subdivision regulations include a Land Use goal to revitalize and beautify Groveland that provides an objective to support efforts to move Groveland toward being more pedestrian friendly; and

Whereas, the Town has approved a Rail Trails Project with Mass DOT that is nearing the 25% design phase.

Whereas, the Town is implementing plans to complete a major roadway reconstruction revitalization project on Rt. 97 School and Salem Streets that will include complete street elements, such as bicycle accommodations, pedestrian sidewalk reconstruction inclusive of all necessary handicap accessibility upgrades, ramps and crosswalks and streetscape enhancements;

Now, Therefore, be it resolved by the Board of Selectmen of the Town of Groveland that the attached Complete Street Policy is hereby adopted.

Vision and Purpose

Complete Streets are designed and operated to provide safety and accessibility for all the users of our roadways, trails and transit systems, including pedestrians, bicyclists, transit riders, motorists, commercial vehicles, and emergency vehicles and for people of all ages and of all abilities. Furthermore, Complete Streets principles contribute toward the safety, health, economic viability, and quality of life in a community by providing accessible and efficient connections between home, school, work, recreation and retail destinations by improving the pedestrian and vehicular environments throughout communities. The purpose of Groveland's Complete Streets policy, therefore, is to accommodate all road users by creating a road network that meets the needs of individuals utilizing a variety of transportation modes. It is the intent of the Town of Groveland to formalize the plan, design, operation and maintenance of streets so that they are safe for all users of all ages and abilities as a matter of routine. This

policy directs decision –makers to consistently plan, design, and constructs streets to accommodate all anticipated users including, but not limited to pedestrians, bicyclists, motorists, emergency vehicles, and freight and commercial vehicles.

Core Commitment

The Town of Groveland recognizes that users of various modes of transportation, including, but not limited to, pedestrians, cyclists, transit and school bus riders, motorists, delivery and service personnel, freight haulers, and emergency responders, are legitimate users of streets and deserve safe facilities. "All Users" includes users of all ages and abilities.

The Town of Groveland recognizes that all projects, new, maintenance, or reconstruction, are potential opportunities to apply Complete Streets design principles. The Town will, to the maximum extent practical, design, construct, maintain, and operate all streets to provide for a comprehensive and integrated street network of facilities for people of all ages and abilities.

Complete Streets design recommendations shall be incorporated into all publicly and privately funded projects, as appropriate. All transportation infrastructure and street design projects requiring funding or approval by the Town of Groveland, as well as projects funded by the state and federal government, such as the Chapter 90 funds, Town improvement grants, Transportation Improvement Program (TIP), the MassWorks Infrastructure Program, Community Development Block Grants (CDBG), Capital Funding and other state and federal funds for street and infrastructure design shall adhere to (comply with) the Town of Groveland's Complete Streets Policy. Private developments and related street design components or corresponding street-related components shall adhere to (comply with) the Complete Streets principles. In addition, to the extent practical, state-owned roadways will comply with the Complete Streets resolution, including the design, construction, and maintenance of such roadways within Town boundaries.

Best Practices:

Context Sensitivity: the implementation of tie Policy should reflect and adapt to the context and character of the surrounding built and natural environments and enhance the appearance of such. This Policy recognizes that transportation needs vary and must be balanced in a flexible, safe, and cost effective manner.

Design Standards: The Town of Groveland's Complete Streets policy will focus on developing a connected integrated network that serves all road users. Complete Streets will be integrated into policies, planning and design of all types of public and private projects, including new construction, reconstruction, rehabilitation, repair, and maintenance of transportation facilities on streets and redevelopment projects.

Implementation of the Town of Groveland Complete Streets Policy will be carried out cooperatively within all departments with multi-jurisdictional cooperation, to the greatest extent possible, among private developers, and state, regional and federal agencies.

The Town of Groveland recognizes that "Complete Streets" may be achieved through single elements incorporated into a particular project or incrementally through a series of smaller improvements or maintenance activities over time.

The latest design guidance, standards, and recommendations available will be used in the implementation of Complete Streets including:

- The Massachusetts Department of Transportation Project and Design Handbook

- The latest edition of American Association of State Highway Transportation Officials (AASHTO) A Policy on Geometric Design of Highway and Streets
- The United States Department of Transportation Federal Highway Administration's Manual on Uniform Traffic Design Controls (2009)
- The Architectural Access Board (AAB) 521 CMR Rules and Regulations
- Documents and plans created for Groveland, such as bicycle and pedestrian network plans

Complete Streets implementation and effectiveness should be constantly evaluated for success and opportunities for improvement. The town will develop performance measures to gauge implementation and effectiveness of the policies.

Performance Measures: This policy encourages the evaluation and regular reporting of progress on the implementation and maintenance of Complete Streets. The Town will consider providing an annual report to the Planning Board and Board of Selectmen on transportation projects undertaken within the prior year and planned within the coming year and the extent to which these projects meet the objectives of this policy. The preparation of this annual report will allow the Town of Groveland to meet the annual progress report requirements to the Commonwealth of Massachusetts under the Complete Streets Certification Program.

Implementation:

The Town shall make Complete Streets practices a routine part of everyday operations, shall approach every transportation project and program as an opportunity to improve streets and the transportation network for all users, and shall work in coordination with other departments, agencies, and jurisdictions to achieve Complete Streets.

The Town shall review and either revise or develop proposed revisions to all appropriate planning documents (master plans, open space and recreation plan, etc.), zoning and subdivision codes, laws, procedures, rules, regulations, guidelines, programs, and templates to integrate Complete Streets principles in all Street Projects on streets. A committee of relevant stakeholders designated by the Board of Selectmen will be created to implement this initiative.

The Town shall maintain a comprehensive inventory of pedestrian and bicycle facility infrastructure that will prioritize projects to eliminate gaps in the sidewalk and bikeway network.

The Town will reevaluate Capital Improvement Projects prioritization to encourage implementation of Complete Streets implementation.

The Town will train pertinent town staff and decision-makers on the content of Complete Streets principles and best practices for implementing policy through workshops and other appropriate means.

The Town will utilize inter-department coordination to promote the most responsible and efficient use of resources for activities within the public way.

The Town will seek out appropriate sources of funding and grants for Complete Streets policies, including by participating in the new Commonwealth of Massachusetts Complete Streets certification program.

Complete Streets Policy - Approved on May 2, 2016

Groveland Board of Selectmen

Lisa Dube-Carpenter

William G. O'Neil

William F. Dunn

Edward H. Watson

Michael N. Wood

Appendix D

D.1 TOWN OF GROVELAND CRASH INFORMATION

SEGMENT CRASH RATE WORKSHEET

CITY/TOWN : Groveland

COUNT DATE : 2017

DISTRICT : x

~ SEGMENT DATA ~

ROADWAY NAME: Salem Street

START POINT:

END POINT:

FUNCTIONAL CLASSIFICATION OF ROADWAY Minor Arterial

ROADWAY DIAGRAM (LABEL ROADWAY AND CROSS STREETS)

North

AVERAGE DAILY TRAFFIC

SEGMENT LENGTH IN MILES (**L**): **1.8**

AVERAGE DAILY TRAFFIC VOLUME (**V**): 5,242

TOTAL # OF CRASHES:	11	# OF YEARS :	3	AVERAGE # OF CRASHES PER YEAR (**A**) :	**3.67**

CRASH RATE CALCULATION : **1.06**

RATE = (A * 1,000,000) / (L * V * 365)

Comments :

Project Title & Date:

SEGMENT CRASH RATE WORKSHEET

CITY/TOWN : Groveland COUNT DATE : 2017

DISTRICT : x

~ SEGMENT DATA ~

ROADWAY NAME: Main Street

START POINT West Newbury town line

END POINT: Elm park bypass (97)

FUNCTIONAL CLASSIFICATION OF ROADWAY: Principal-Arterial

ROADWAY DIAGRAM (LABEL ROADWAY AND CROSS STREETS)

West

AVERAGE DAILY TRAFFIC

SEGMENT LENGTH IN MILES (**L**):	**1.7**
AVERAGE DAILY TRAFFIC VOLUME (**V**):	6,115

TOTAL # OF CRASHES:	33	# OF YEARS :	3	AVERAGE # OF CRASHES PER YEAR (**A**) :	**11.00**

CRASH RATE CALCULATION : **2.90**

$$\text{RATE} = \frac{(A * 1{,}000{,}000)}{(L * V * 365)}$$

Comments :

Project Title & Date:

SEGMENT CRASH RATE WORKSHEET

CITY/TOWN : Groveland COUNT DATE : 2017

DISTRICT : x

~ SEGMENT DATA ~

ROADWAY NAME: School Street

START POINT Gardner Street

END POINT: Georgetown Town line

FUNCTIONAL CLASSIFICATION OF ROADWA Principal Arterial

ROADWAY DIAGRAM (LABEL ROADWAY AND CROSS STREETS)

South

AVERAGE DAILY TRAFFIC

SEGMENT LENGTH IN MILES (**L**): **1.9**

AVERAGE DAILY TRAFFIC VOLUME (**V**): 11,308

TOTAL # OF CRASHES:	32	# OF YEARS :	3	AVERAGE # OF CRASHES PER YEAR (**A**) :	**10.67**

CRASH RATE CALCULATION : **1.36** RATE = (A * 1,000,000) / (L * V * 365)

Comments :

Project Title & Date:

SEGMENT CRASH RATE WORKSHEET

CITY/TOWN : Groveland COUNT DATE : 2017

DISTRICT : x

~ SEGMENT DATA ~

ROADWAY NAME: Salem Street

START POINT Norwell Town Line

END POINT: Route 53/Washington Street

FUNCTIONAL CLASSIFICATION OF ROADWA Principal - Arterial

ROADWAY DIAGRAM (LABEL ROADWAY AND CROSS STREETS)

North

AVERAGE DAILY TRAFFIC

SEGMENT LENGTH IN MILES (**L**): **0.6**

AVERAGE DAILY TRAFFIC VOLUME (**V**): 14,387

TOTAL # OF CRASHES:	24	# OF YEARS :	3	AVERAGE # OF CRASHES PER YEAR (**A**) :	**8.00**

CRASH RATE **2.54** RATE = (A * 1,000,000) / (L * V * 365)

Comments :

Project Title & Date:

SEGMENT CRASH RATE WORKSHEET

CITY/TOWN : Groveland COUNT DATE : 2017

DISTRICT : x

~ SEGMENT DATA ~

ROADWAY NAME: Elm Park Bypass

START POINT:

END POINT:

FUNCTIONAL CLASSIFICATION OF ROADWA Urban Collector

ROADWAY DIAGRAM (LABEL ROADWAY AND CROSS STREETS)

North

AVERAGE DAILY TRAFFIC

SEGMENT LENGTH IN MILES (**L**): **0.3**

AVERAGE DAILY TRAFFIC VOLUME (**V**): 13,422

TOTAL # OF CRASHES:	5	# OF YEARS :	3	AVERAGE # OF CRASHES PER YEAR (**A**) :	**1.67**

CRASH RATE **1.13** RATE = (A * 1,000,000) / (L * V * 365)

Comments :

Project Title & Date:

SEGMENT CRASH RATE WORKSHEET

CITY/TOWN : Groveland COUNT DATE : 2017

DISTRICT : x

~ SEGMENT DATA ~

ROADWAY NAME: Center Street

START POINT:

END POINT:

FUNCTIONAL CLASSIFICATION OF ROADWA Major Collector

ROADWAY DIAGRAM (LABEL ROADWAY AND CROSS STREETS)

North

AVERAGE DAILY TRAFFIC

SEGMENT LENGTH IN MILES (**L**): **3**

AVERAGE DAILY TRAFFIC VOLUME (**V**): 811

TOTAL # OF CRASHES:	7	# OF YEARS :	3	AVERAGE # OF CRASHES PER YEAR (**A**) :	**2.33**

CRASH RATE **2.63** RATE = (A * 1,000,000) / (L * V * 365)

Comments :

Project Title & Date:

SEGMENT CRASH RATE WORKSHEET

CITY/TOWN : Groveland COUNT DATE : 2017

DISTRICT : x

~ SEGMENT DATA ~

ROADWAY NAME: Gradner Street

START POINT:

END POINT:

FUNCTIONAL CLASSIFICATION OF ROADWA Major Collector

ROADWAY DIAGRAM (LABEL ROADWAY AND CROSS STREETS)

North

AVERAGE DAILY TRAFFIC

SEGMENT LENGTH IN MILES (**L**): **0.3**

AVERAGE DAILY TRAFFIC VOLUME (**V**): 1,939

TOTAL # OF CRASHES:	3	# OF YEARS :	3	AVERAGE # OF CRASHES PER YEAR (**A**) :	**1.00**

CRASH RATE **4.71** RATE = (A * 1,000,000) / (L * V * 365)

Comments :

Project Title & Date:

SEGMENT CRASH RATE WORKSHEET

CITY/TOWN : Groveland COUNT DATE : 2017

DISTRICT : 5

~ SEGMENT DATA ~

ROADWAY NAME: King Street

START POINT:

END POINT:

FUNCTIONAL CLASSIFICATION OF ROADWA Major Collector

ROADWAY DIAGRAM (LABEL ROADWAY AND CROSS STREETS)

North

AVERAGE DAILY TRAFFIC

SEGMENT LENGTH IN MILES (**L**): **2.4**

AVERAGE DAILY TRAFFIC VOLUME (**V**): 1,477

TOTAL # OF CRASHES:	3	# OF YEARS :	3	AVERAGE # OF CRASHES PER YEAR (**A**) :	**1.00**

CRASH RATE **0.77** RATE = (A * 1,000,000) / (L * V * 365)

Comments :

Project Title & Date:

SEGMENT CRASH RATE WORKSHEET

CITY/TOWN : Groveland COUNT DATE : 2017

DISTRICT : x

~ SEGMENT DATA ~

ROADWAY NAME: Main Street

START POINT x

END POINT: x

FUNCTIONAL CLASSIFICATION OF ROADWA Minor Arterial

ROADWAY DIAGRAM (LABEL ROADWAY AND CROSS STREETS)

North

AVERAGE DAILY TRAFFIC

SEGMENT LENGTH IN MILES (**L**): **2.9**

AVERAGE DAILY TRAFFIC VOLUME (**V**): 2,858

TOTAL # OF CRASHES:	7	# OF YEARS :	3	AVERAGE # OF CRASHES PER YEAR (**A**) :	**2.33**

CRASH RATE **0.77** RATE = (A * 1,000,000) / (L * V * 365)

Comments :

Project Title & Date:

SEGMENT CRASH RATE WORKSHEET

CITY/TOWN : Groveland COUNT DATE : 2017

DISTRICT : x

~ SEGMENT DATA ~

ROADWAY NAME: Washington Street

START POINT:

END POINT:

FUNCTIONAL CLASSIFICATION OF ROADWA Minor Arterial

ROADWAY DIAGRAM (LABEL ROADWAY AND CROSS STREETS)

North

AVERAGE DAILY TRAFFIC

SEGMENT LENGTH IN MILES (**L**): **1.6**

AVERAGE DAILY TRAFFIC VOLUME (**V**): 2,199

TOTAL # OF CRASHES:	2	# OF YEARS :	3	AVERAGE # OF CRASHES PER YEAR (**A**) :	**0.67**

CRASH RATE CALCULATION : **0.52**

RATE = $\frac{(A * 1{,}000{,}000)}{(L * V * 365)}$

Comments :

Project Title & Date:

Appendix E

E.1 COST ESTIMATES

July 2019

PRELIMINARY ESTIMATE
ENGINEERS ESTIMATE OF QUANTITIES
179410809
Groveland

KING STREET DOWNTOWN SIDEWALK - PHASE 1

PREPARED BY: STANTEC

No. Ramps 4 SW Length 5300 LF

ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
102.1	TREE TRIMMING	EA	0	$3,000.00	$0.00
120.1	UNCLASSIFIED EXCAVATION	CY	760	$40.00	$30,400.00
151.	GRAVEL BORROW	CY	760	$44.50	$33,820.00
170.62	FINE GRADING AND COMPACTING	SY	4,520	$8.00	$36,160.00
201.	CATCH BASIN	EA	1	$5,000.00	$5,000.00
220.3	DRAINAGE STRUCTURE CHANGE IN TYPE	EA	0	$800.00	$0.00
358.2	GATE BOX ADJUSTED SIDEWALK	EA	2	$220.00	$440.00
431.1	HIGH EARLY STRENGTH CONCRETE	CY	430	$200.00	$86,000.00
504.	GRANITE CURB VA-4 - STRAIGHT	FT	5,306	$44.00	$233,464.00
504.1	GRANITE CURB VA-4 - CURVED	FT	6	$50.00	$300.00
580.	CURB REMOVED AND RESET	FT	210	$30.00	$6,300.00
701.	CONCRETE SIDEWALK	SY	4,220	$65.00	$274,300.00
701.2	CEMENT CONCRETE WHEELCHAIR RAMP	SY	90	$95.00	$8,550.00
734.	SIGN REMOVED AND RESET	EA	14	$500.00	$7,000.00
866.106	6 INCH REFLECTORIZED WHITE LINE (THERMOPLASTIC)	LF	0	$0.70	$0.00
866.11	12 INCH REFLECTORIZED WHITE LINE (THERMOPLASTIC)	LF	320	$1.00	$320.00
					$722,054.00
			25% CONTINGENCY		**$180,513.50**
			Police Details 10%		$72,205.40
					$974,772.90
			SAY	**$975,000**	

UNIT PRICES BASED ON MASSDOT WEBSITE FOR DISTRICT 4

July 2019

PRELIMINARY ESTIMATE
ENGINEERS ESTIMATE OF QUANTITIES
179410809
Groveland

MAIN STREET PEDESTRIAN ACCESS ACCOMODATION-PHASE 2

PREPARED BY: STANTEC

No. Ramps 0 SW Length 5300 LF

ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
102.1	TREE TRIMMING	EA	0	$3,000.00	$0.00
120.1	UNCLASSIFIED EXCAVATION	CY	730	$40.00	$29,200.00
151.	GRAVEL BORROW	CY	730	$44.50	$32,485.00
170.62	FINE GRADING AND COMPACTING	SY	4,330	$8.00	$34,640.00
201.	CATCH BASIN	EA	0	$5,000.00	$0.00
220.3	DRAINAGE STRUCTURE CHANGE IN TYPE	EA	0	$800.00	$0.00
358.2	GATE BOX ADJUSTED SIDEWALK	EA	0	$220.00	$0.00
431.1	HIGH EARLY STRENGTH CONCRETE	CY	420	$200.00	$84,000.00
504.	GRANITE CURB VA-4 - STRAIGHT	FT	5,300	$44.00	$233,200.00
504.1	GRANITE CURB VA-4 - CURVED	FT	0	$50.00	$0.00
580.	CURB REMOVED AND RESET	FT	0	$30.00	$0.00
701.	CONCRETE SIDEWALK	SY	4,130	$65.00	$268,450.00
701.2	CEMENT CONCRETE WHEELCHAIR RAMP	SY	0	$95.00	$0.00
734.	SIGN REMOVED AND RESET	EA	14	$500.00	$7,000.00
866.106	6 INCH REFLECTORIZED WHITE LINE (THERMOPLASTIC)	LF	0	$0.70	$0.00
866.11	12 INCH REFLECTORIZED WHITE LINE (THERMOPLASTIC)	LF	0	$1.00	$0.00
					$688,975.00
			25% CONTINGENCY		**$172,243.75**
			Police Details 10%		$68,897.50
					$930,116.25
			SAY	**$931,000**	

UNIT PRICES BASED ON MASSDOT WEBSITE FOR DISTRICT 4

July 2019

PRELIMINARY ESTIMATE
ENGINEERS ESTIMATE OF QUANTITIES
179410809
Groveland

ROLLINS STREET PEDESTRIAN ACCESS AND ACCOMODATION

PREPARED BY: STANTEC

No. Ramps 3 SW Length 3700 LF

ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
102.1	TREE TRIMMING	EA	0	$3,000.00	$0.00
120.1	UNCLASSIFIED EXCAVATION	CY	530	$40.00	$21,200.00
151.	GRAVEL BORROW	CY	530	$44.50	$23,585.00
170.62	FINE GRADING AND COMPACTING	SY	3,170	$8.00	$25,360.00
201.	CATCH BASIN	EA	3	$5,000.00	$15,000.00
220.3	DRAINAGE STRUCTURE CHANGE IN TYPE	EA	0	$800.00	$0.00
358.2	GATE BOX ADJUSTED SIDEWALK	EA	1	$220.00	$220.00
431.1	HIGH EARLY STRENGTH CONCRETE	CY	310	$200.00	$62,000.00
504.	GRANITE CURB VA-4 - STRAIGHT	FT	3,706	$44.00	$163,064.00
504.1	GRANITE CURB VA-4 - CURVED	FT	6	$50.00	$300.00
580.	CURB REMOVED AND RESET	FT	160	$30.00	$4,800.00
701.	CONCRETE SIDEWALK	SY	2,950	$65.00	$191,750.00
701.2	CEMENT CONCRETE WHEELCHAIR RAMP	SY	70	$95.00	$6,650.00
734.	SIGN REMOVED AND RESET	EA	10	$500.00	$5,000.00
866.106	6 INCH REFLECTORIZED WHITE LINE (THERMOPLASTIC)	LF	0	$0.70	$0.00
866.11	12 INCH REFLECTORIZED WHITE LINE (THERMOPLASTIC)	LF	240	$1.00	$240.00
					$519,169.00
			25% CONTINGENCY		**$129,792.25**
			Police Details 10%		$51,916.90
					$700,878.15
			SAY	**$701,000**	

UNIT PRICES BASED ON MASSDOT WEBSITE FOR DISTRICT 4

July 2019

PRELIMINARY ESTIMATE
ENGINEERS ESTIMATE OF QUANTITIES
179410809
Groveland

GARRISON STREET PEDESTRIAN ACCESS ACCOMODATION

PREPARED BY: STANTEC

No. Ramps 4 SW Length 1600 LF

ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
102.1	TREE TRIMMING	EA	0	$3,000.00	$0.00
120.1	UNCLASSIFIED EXCAVATION	CY	250	$40.00	$10,000.00
151.	GRAVEL BORROW	CY	250	$44.50	$11,125.00
170.62	FINE GRADING AND COMPACTING	SY	1,500	$8.00	$12,000.00
201.	CATCH BASIN	EA	1	$5,000.00	$5,000.00
220.3	DRAINAGE STRUCTURE CHANGE IN TYPE	EA	0	$800.00	$0.00
358.2	GATE BOX ADJUSTED SIDEWALK	EA	2	$220.00	$440.00
431.1	HIGH EARLY STRENGTH CONCRETE	CY	150	$200.00	$30,000.00
504.	GRANITE CURB VA-4 - STRAIGHT	FT	1,606	$44.00	$70,664.00
504.1	GRANITE CURB VA-4 - CURVED	FT	6	$50.00	$300.00
580.	CURB REMOVED AND RESET	FT	210	$30.00	$6,300.00
701.	CONCRETE SIDEWALK	SY	1,340	$65.00	$87,100.00
701.2	CEMENT CONCRETE WHEELCHAIR RAMP	SY	90	$95.00	$8,550.00
734.	SIGN REMOVED AND RESET	EA	5	$500.00	$2,500.00
866.106	6 INCH REFLECTORIZED WHITE LINE (THERMOPLASTIC)	LF	0	$0.70	$0.00
866.11	12 INCH REFLECTORIZED WHITE LINE (THERMOPLASTIC)	LF	320	$1.00	$320.00
					$244,299.00
			25% CONTINGENCY		**$61,074.75**
			Police Details 10%		$24,429.90
					$329,803.65
			SAY	**$330,000**	

UNIT PRICES BASED ON MASSDOT WEBSITE FOR DISTRICT 4

July 2019

PRELIMINARY ESTIMATE
ENGINEERS ESTIMATE OF QUANTITIES
179410809
Groveland

MAIN STREET CROSSING AND ADA IMPROVEMENTS

PREPARED BY: STANTEC

No. Ramps 17 0 SW Length LF

ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
102.1	TREE TRIMMING	EA	0	$3,000.00	$0.00
120.1	UNCLASSIFIED EXCAVATION	CY	140	$40.00	$5,600.00
151.	GRAVEL BORROW	CY	140	$44.50	$6,230.00
170.62	FINE GRADING AND COMPACTING	SY	790	$8.00	$6,320.00
201.	CATCH BASIN	EA	7	$5,000.00	$35,000.00
220.3	DRAINAGE STRUCTURE CHANGE IN TYPE	EA	0	$800.00	$0.00
358.2	GATE BOX ADJUSTED SIDEWALK	EA	5	$220.00	$1,100.00
431.1	HIGH EARLY STRENGTH CONCRETE	CY	70	$200.00	$14,000.00
504.	GRANITE CURB VA-4 - STRAIGHT	FT	6	$44.00	$264.00
504.1	GRANITE CURB VA-4 - CURVED	FT	6	$50.00	$300.00
580.	CURB REMOVED AND RESET	FT	880	$30.00	$26,400.00
701.	CONCRETE SIDEWALK	SY	400	$65.00	$26,000.00
701.2	CEMENT CONCRETE WHEELCHAIR RAMP	SY	360	$95.00	$34,200.00
734.	SIGN REMOVED AND RESET	EA	2	$500.00	$1,000.00
866.106	6 INCH REFLECTORIZED WHITE LINE (THERMOPLASTIC)	LF	0	$0.70	$0.00
866.11	12 INCH REFLECTORIZED WHITE LINE (THERMOPLASTIC)	LF	1,360	$1.00	$1,360.00
					$157,774.00
			25% CONTINGENCY		**$39,443.50**
			Police Details 10%		$15,777.40
					$212,994.90
			SAY	**$213,000**	

UNIT PRICES BASED ON MASSDOT WEBSITE FOR DISTRICT 4

July 2019

PRELIMINARY ESTIMATE
ENGINEERS ESTIMATE OF QUANTITIES
179410809
Groveland

SCHOOL STREET PHASE 2

PREPARED BY: STANTEC

No. Ramps 19 SW Length 4800 LF

ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
102.1	TREE TRIMMING	EA	0	$3,000.00	$0.00
120.1	UNCLASSIFIED EXCAVATION	CY	800	$40.00	$32,000.00
151.	GRAVEL BORROW	CY	800	$44.50	$35,600.00
170.62	FINE GRADING AND COMPACTING	SY	4,800	$8.00	$38,400.00
201.	CATCH BASIN	EA	12	$5,000.00	$60,000.00
220.3	DRAINAGE STRUCTURE CHANGE IN TYPE	EA	0	$800.00	$0.00
358.2	GATE BOX ADJUSTED SIDEWALK	EA	5	$220.00	$1,100.00
431.1	HIGH EARLY STRENGTH CONCRETE	CY	460	$200.00	$92,000.00
504.	GRANITE CURB VA-4 - STRAIGHT	FT	4,806	$44.00	$211,464.00
504.1	GRANITE CURB VA-4 - CURVED	FT	6	$50.00	$300.00
580.	CURB REMOVED AND RESET	FT	980	$30.00	$29,400.00
701.	CONCRETE SIDEWALK	SY	4,180	$65.00	$271,700.00
701.2	CEMENT CONCRETE WHEELCHAIR RAMP	SY	400	$95.00	$38,000.00
734.	SIGN REMOVED AND RESET	EA	14	$500.00	$7,000.00
866.106	6 INCH REFLECTORIZED WHITE LINE (THERMOPLASTIC)	LF	9,600	$0.70	$6,720.00
866.11	12 INCH REFLECTORIZED WHITE LINE (THERMOPLASTIC)	LF	1,520	$1.00	$1,520.00
					$825,204.00
			25% CONTINGENCY		**$206,301.00**
			Police Details 10%		$82,520.40
					$1,114,025.40
			SAY	**$1,115,000**	

UNIT PRICES BASED ON MASSDOT WEBSITE FOR DISTRICT 4

July 2019

PRELIMINARY ESTIMATE
ENGINEERS ESTIMATE OF QUANTITIES
179410809
Groveland

CENTER SREET PEDESTRIAN ACCESS ACCOMODATION PHASE 1

PREPARED BY: STANTEC

No. Ramps 7 SW Length 6336 LF

ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
102.1	TREE TRIMMING	EA	0	$3,000.00	$0.00
120.1	UNCLASSIFIED EXCAVATION	CY	920	$40.00	$36,800.00
151.	GRAVEL BORROW	CY	920	$44.50	$40,940.00
170.62	FINE GRADING AND COMPACTING	SY	5,500	$8.00	$44,000.00
201.	CATCH BASIN	EA	2	$5,000.00	$10,000.00
220.3	DRAINAGE STRUCTURE CHANGE IN TYPE	EA	0	$800.00	$0.00
358.2	GATE BOX ADJUSTED SIDEWALK	EA	2	$220.00	$440.00
431.1	HIGH EARLY STRENGTH CONCRETE	CY	530	$200.00	$106,000.00
504.	GRANITE CURB VA-4 - STRAIGHT	FT	6,342	$44.00	$279,048.00
504.1	GRANITE CURB VA-4 - CURVED	FT	6	$50.00	$300.00
580.	CURB REMOVED AND RESET	FT	370	$30.00	$11,100.00
701.	CONCRETE SIDEWALK	SY	5,100	$65.00	$331,500.00
701.2	CEMENT CONCRETE WHEELCHAIR RAMP	SY	150	$95.00	$14,250.00
734.	SIGN REMOVED AND RESET	EA	17	$500.00	$8,500.00
866.106	6 INCH REFLECTORIZED WHITE LINE (THERMOPLASTIC)	LF	0	$0.70	$0.00
866.11	12 INCH REFLECTORIZED WHITE LINE (THERMOPLASTIC)	LF	560	$1.00	$560.00
					$883,438.00
			25% CONTINGENCY		**$220,859.50**
			Police Details 10%		$88,343.80
					$1,192,641.30
			SAY	**$1,193,000**	

UNIT PRICES BASED ON MASSDOT WEBSITE FOR DISTRICT 4

July 2019

PRELIMINARY ESTIMATE
ENGINEERS ESTIMATE OF QUANTITIES
179410809
Groveland

CENTER SREET PEDESTRIAN ACCESS ACCOMODATION PHASE 2

PREPARED BY: STANTEC

No. Ramps 8 SW Length 6336 LF

ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
102.1	TREE TRIMMING	EA	50	$3,000.00	$150,000.00
120.1	UNCLASSIFIED EXCAVATION	CY	930	$40.00	$37,200.00
151.	GRAVEL BORROW	CY	930	$44.50	$41,385.00
170.62	FINE GRADING AND COMPACTING	SY	5,550	$8.00	$44,400.00
201.	CATCH BASIN	EA	4	$5,000.00	$20,000.00
220.3	DRAINAGE STRUCTURE CHANGE IN TYPE	EA	0	$800.00	$0.00
358.2	GATE BOX ADJUSTED SIDEWALK	EA	3	$220.00	$660.00
431.1	HIGH EARLY STRENGTH CONCRETE	CY	530	$200.00	$106,000.00
504.	GRANITE CURB VA-4 - STRAIGHT	FT	6,342	$44.00	$279,048.00
504.1	GRANITE CURB VA-4 - CURVED	FT	6	$50.00	$300.00
580.	CURB REMOVED AND RESET	FT	420	$30.00	$12,600.00
701.	CONCRETE SIDEWALK	SY	5,120	$65.00	$332,800.00
701.2	CEMENT CONCRETE WHEELCHAIR RAMP	SY	170	$95.00	$16,150.00
734.	SIGN REMOVED AND RESET	EA	17	$500.00	$8,500.00
866.106	6 INCH REFLECTORIZED WHITE LINE (THERMOPLASTIC)	LF	0	$0.70	$0.00
866.11	12 INCH REFLECTORIZED WHITE LINE (THERMOPLASTIC)	LF	640	$1.00	$640.00
					$1,049,683.00
			25% CONTINGENCY		**$262,420.75**
			Police Details 10%		$104,968.30
					$1,417,072.05
			SAY	**$1,418,000**	

UNIT PRICES BASED ON MASSDOT WEBSITE FOR DISTRICT 4

July 2019

PRELIMINARY ESTIMATE
ENGINEERS ESTIMATE OF QUANTITIES
179410809
Groveland

CENTER STREET INTERSECTION IMPROVEMENT (Washington and Salem)

PREPARED BY: STANTEC

No. Ramps 4 0 SW Length LF

ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
102.1	TREE TRIMMING	EA	0	$3,000.00	$0.00
120.1	UNCLASSIFIED EXCAVATION	CY	40	$40.00	$1,600.00
151.	GRAVEL BORROW	CY	40	$44.50	$1,780.00
170.62	FINE GRADING AND COMPACTING	SY	190	$8.00	$1,520.00
201.	CATCH BASIN	EA	3	$5,000.00	$15,000.00
220.3	DRAINAGE STRUCTURE CHANGE IN TYPE	EA	0	$800.00	$0.00
358.2	GATE BOX ADJUSTED SIDEWALK	EA	2	$220.00	$440.00
431.1	HIGH EARLY STRENGTH CONCRETE	CY	20	$200.00	$4,000.00
504.	GRANITE CURB VA-4 - STRAIGHT	FT	6	$44.00	$264.00
504.1	GRANITE CURB VA-4 - CURVED	FT	6	$50.00	$300.00
580.	CURB REMOVED AND RESET	FT	210	$30.00	$6,300.00
701.	CONCRETE SIDEWALK	SY	100	$65.00	$6,500.00
701.2	CEMENT CONCRETE WHEELCHAIR RAMP	SY	90	$95.00	$8,550.00
734.	SIGN REMOVED AND RESET	EA	1	$500.00	$500.00
866.106	6 INCH REFLECTORIZED WHITE LINE (THERMOPLASTIC)	LF	0	$0.70	$0.00
866.11	12 INCH REFLECTORIZED WHITE LINE (THERMOPLASTIC)	LF	320	$1.00	$320.00
					$47,074.00
			25% CONTINGENCY		**$11,768.50**
			Police Details 10%		$4,707.40
					$63,549.90
			SAY	**$64,000**	

UNIT PRICES BASED ON MASSDOT WEBSITE FOR DISTRICT 4

July 2019

PRELIMINARY ESTIMATE
ENGINEERS ESTIMATE OF QUANTITIES
179410809
Groveland

WASHINGTON STREET/MAIN STREET INTERSECTION IMPROVEMENTS

PREPARED BY: STANTEC

			SW Length
No. Ramps	2	150	LF

ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
102.1	TREE TRIMMING	EA	0	$3,000.00	$0.00
120.1	UNCLASSIFIED EXCAVATION	CY	40	$40.00	$1,600.00
151.	GRAVEL BORROW	CY	40	$44.50	$1,780.00
170.62	FINE GRADING AND COMPACTING	SY	220	$8.00	$1,760.00
201.	CATCH BASIN	EA	2	$5,000.00	$10,000.00
220.3	DRAINAGE STRUCTURE CHANGE IN TYPE	EA	0	$800.00	$0.00
358.2	GATE BOX ADJUSTED SIDEWALK	EA	1	$220.00	$220.00
431.1	HIGH EARLY STRENGTH CONCRETE	CY	30	$200.00	$6,000.00
504.	GRANITE CURB VA-4 - STRAIGHT	FT	156	$44.00	$6,864.00
504.1	GRANITE CURB VA-4 - CURVED	FT	6	$50.00	$300.00
580.	CURB REMOVED AND RESET	FT	110	$30.00	$3,300.00
701.	CONCRETE SIDEWALK	SY	170	$65.00	$11,050.00
701.2	CEMENT CONCRETE WHEELCHAIR RAMP	SY	50	$95.00	$4,750.00
734.	SIGN REMOVED AND RESET	EA	1	$500.00	$500.00
866.106	6 INCH REFLECTORIZED WHITE LINE (THERMOPLASTIC)	LF	1,200	$0.70	$840.00
866.11	12 INCH REFLECTORIZED WHITE LINE (THERMOPLASTIC)	LF	160	$1.00	$160.00
					$49,124.00
			25% CONTINGENCY		**$12,281.00**
			Police Details 10%		$4,912.40
					$66,317.40
			SAY	**$67,000**	

UNIT PRICES BASED ON MASSDOT WEBSITE FOR DISTRICT 4

July 2019

PRELIMINARY ESTIMATE
ENGINEERS ESTIMATE OF QUANTITIES
179410809
Groveland

UPTACK RD. PEDESTRIAN ACCESS AND ACCOMODATION

PREPARED BY: STANTEC

No. Ramps 2 SW Length 5200 LF

ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
102.1	TREE TRIMMING	EA	0	$3,000.00	$0.00
120.1	UNCLASSIFIED EXCAVATION	CY	730	$40.00	$29,200.00
151.	GRAVEL BORROW	CY	730	$44.50	$32,485.00
170.62	FINE GRADING AND COMPACTING	SY	4,340	$8.00	$34,720.00
201.	CATCH BASIN	EA	7	$5,000.00	$35,000.00
220.3	DRAINAGE STRUCTURE CHANGE IN TYPE	EA	0	$800.00	$0.00
358.2	GATE BOX ADJUSTED SIDEWALK	EA	1	$220.00	$220.00
431.1	HIGH EARLY STRENGTH CONCRETE	CY	420	$200.00	$84,000.00
504.	GRANITE CURB VA-4 - STRAIGHT	FT	5,206	$44.00	$229,064.00
504.1	GRANITE CURB VA-4 - CURVED	FT	6	$50.00	$300.00
580.	CURB REMOVED AND RESET	FT	110	$30.00	$3,300.00
701.	CONCRETE SIDEWALK	SY	4,100	$65.00	$266,500.00
701.2	CEMENT CONCRETE WHEELCHAIR RAMP	SY	50	$95.00	$4,750.00
734.	SIGN REMOVED AND RESET	EA	14	$500.00	$7,000.00
866.106	6 INCH REFLECTORIZED WHITE LINE (THERMOPLASTIC)	LF	0	$0.70	$0.00
866.11	12 INCH REFLECTORIZED WHITE LINE (THERMOPLASTIC)	LF	160	$1.00	$160.00
					$726,699.00
			25% CONTINGENCY		**$181,674.75**
			Police Details 10%		$72,669.90
					$981,043.65
			SAY	**$982,000**	

UNIT PRICES BASED ON MASSDOT WEBSITE FOR DISTRICT 4

July 2019

PRELIMINARY ESTIMATE
ENGINEERS ESTIMATE OF QUANTITIES
179410809
Groveland

ELM PARK PEDESTRIAN ACCESS AND ACCOMODATION

PREPARED BY: STANTEC

No. Ramps 7 SW Length 1130 LF

ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
102.1	TREE TRIMMING	EA	0	$3,000.00	$0.00
120.1	UNCLASSIFIED EXCAVATION	CY	210	$40.00	$8,400.00
151.	GRAVEL BORROW	CY	210	$44.50	$9,345.00
170.62	FINE GRADING AND COMPACTING	SY	1,250	$8.00	$10,000.00
201.	CATCH BASIN	EA	0	$5,000.00	$0.00
220.3	DRAINAGE STRUCTURE CHANGE IN TYPE	EA	0	$800.00	$0.00
358.2	GATE BOX ADJUSTED SIDEWALK	EA	2	$220.00	$440.00
431.1	HIGH EARLY STRENGTH CONCRETE	CY	120	$200.00	$24,000.00
504.	GRANITE CURB VA-4 - STRAIGHT	FT	1,136	$44.00	$49,984.00
504.1	GRANITE CURB VA-4 - CURVED	FT	6	$50.00	$300.00
580.	CURB REMOVED AND RESET	FT	370	$30.00	$11,100.00
701.	CONCRETE SIDEWALK	SY	1,050	$65.00	$68,250.00
701.2	CEMENT CONCRETE WHEELCHAIR RAMP	SY	150	$95.00	$14,250.00
734.	SIGN REMOVED AND RESET	EA	4	$500.00	$2,000.00
866.106	6 INCH REFLECTORIZED WHITE LINE (THERMOPLASTIC)	LF	0	$0.70	$0.00
866.11	12 INCH REFLECTORIZED WHITE LINE (THERMOPLASTIC)	LF	560	$1.00	$560.00
					$198,629.00
			25% CONTINGENCY		**$49,657.25**
			Police Details 10%		$19,862.90
					$268,149.15
			SAY	**$269,000**	

UNIT PRICES BASED ON MASSDOT WEBSITE FOR DISTRICT 4

July 2019

PRELIMINARY ESTIMATE
ENGINEERS ESTIMATE OF QUANTITIES
179410809
Groveland

MAIN STREET PEDESTRIAN ACCESS ACCOMODATION- PHASE 1

PREPARED BY: STANTEC

No. Ramps 2 SW Length 2112 LF

ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
102.1	TREE TRIMMING	EA	0	$3,000.00	$0.00
120.1	UNCLASSIFIED EXCAVATION	CY	310	$40.00	$12,400.00
151.	GRAVEL BORROW	CY	310	$44.50	$13,795.00
170.62	FINE GRADING AND COMPACTING	SY	1,820	$8.00	$14,560.00
201.	CATCH BASIN	EA	2	$5,000.00	$10,000.00
220.3	DRAINAGE STRUCTURE CHANGE IN TYPE	EA	0	$800.00	$0.00
358.2	GATE BOX ADJUSTED SIDEWALK	EA	1	$220.00	$220.00
431.1	HIGH EARLY STRENGTH CONCRETE	CY	180	$200.00	$36,000.00
504.	GRANITE CURB VA-4 - STRAIGHT	FT	2,118	$44.00	$93,192.00
504.1	GRANITE CURB VA-4 - CURVED	FT	6	$50.00	$300.00
580.	CURB REMOVED AND RESET	FT	110	$30.00	$3,300.00
701.	CONCRETE SIDEWALK	SY	1,690	$65.00	$109,850.00
701.2	CEMENT CONCRETE WHEELCHAIR RAMP	SY	50	$95.00	$4,750.00
734.	SIGN REMOVED AND RESET	EA	6	$500.00	$3,000.00
866.106	6 INCH REFLECTORIZED WHITE LINE (THERMOPLASTIC)	LF	0	$0.70	$0.00
866.11	12 INCH REFLECTORIZED WHITE LINE (THERMOPLASTIC)	LF	160	$1.00	$160.00
					$301,527.00
			25% CONTINGENCY		**$75,381.75**
			Police Details 10%		$30,152.70
					$407,061.45
			SAY	**$408,000**	

UNIT PRICES BASED ON MASSDOT WEBSITE FOR DISTRICT 4

July 2019

PRELIMINARY ESTIMATE
ENGINEERS ESTIMATE OF QUANTITIES
179410809
Groveland

SEVEN STAR RD. PEDESTRIAN ACCESS ACCOMODATION PHASE 1

PREPARED BY: STANTEC

No. Ramps 6 SW Length 5300 LF

ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
102.1	TREE TRIMMING	EA	0	$3,000.00	$0.00
120.1	UNCLASSIFIED EXCAVATION	CY	770	$40.00	$30,800.00
151.	GRAVEL BORROW	CY	770	$44.50	$34,265.00
170.62	FINE GRADING AND COMPACTING	SY	4,610	$8.00	$36,880.00
201.	CATCH BASIN	EA	6	$5,000.00	$30,000.00
220.3	DRAINAGE STRUCTURE CHANGE IN TYPE	EA	0	$800.00	$0.00
358.2	GATE BOX ADJUSTED SIDEWALK	EA	2	$220.00	$440.00
431.1	HIGH EARLY STRENGTH CONCRETE	CY	440	$200.00	$88,000.00
504.	GRANITE CURB VA-4 - STRAIGHT	FT	5,306	$44.00	$233,464.00
504.1	GRANITE CURB VA-4 - CURVED	FT	6	$50.00	$300.00
580.	CURB REMOVED AND RESET	FT	310	$30.00	$9,300.00
701.	CONCRETE SIDEWALK	SY	4,270	$65.00	$277,550.00
701.2	CEMENT CONCRETE WHEELCHAIR RAMP	SY	130	$95.00	$12,350.00
734.	SIGN REMOVED AND RESET	EA	14	$500.00	$7,000.00
866.106	6 INCH REFLECTORIZED WHITE LINE (THERMOPLASTIC)	LF	0	$0.70	$0.00
866.11	12 INCH REFLECTORIZED WHITE LINE (THERMOPLASTIC)	LF	480	$1.00	$480.00
					$760,829.00
			25% CONTINGENCY		**$190,207.25**
			Police Details 10%		$76,082.90
					$1,027,119.15
			SAY	**$1,028,000**	

UNIT PRICES BASED ON MASSDOT WEBSITE FOR DISTRICT 4

July 2019

PRELIMINARY ESTIMATE
ENGINEERS ESTIMATE OF QUANTITIES
179410809
Groveland

ELM PARK UPGRADES

PREPARED BY: STANTEC

No. Ramps 0 0 SW Length LF

ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
102.1	TREE TRIMMING	EA	2	$3,000.00	$6,000.00
120.1	UNCLASSIFIED EXCAVATION	CY	0	$40.00	$0.00
151.	GRAVEL BORROW	CY	0	$44.50	$0.00
170.62	FINE GRADING AND COMPACTING	SY	0	$8.00	$0.00
201.	CATCH BASIN	EA	2	$5,000.00	$10,000.00
220.3	DRAINAGE STRUCTURE CHANGE IN TYPE	EA	0	$800.00	$0.00
358.2	GATE BOX ADJUSTED SIDEWALK	EA	0	$220.00	$0.00
431.1	HIGH EARLY STRENGTH CONCRETE	CY	0	$200.00	$0.00
504.	GRANITE CURB VA-4 - STRAIGHT	FT	0	$44.00	$0.00
504.1	GRANITE CURB VA-4 - CURVED	FT	0	$50.00	$0.00
580.	CURB REMOVED AND RESET	FT	0	$30.00	$0.00
701.	CONCRETE SIDEWALK	SY	0	$65.00	$0.00
701.2	CEMENT CONCRETE WHEELCHAIR RAMP	SY	0	$95.00	$0.00
734.	SIGN REMOVED AND RESET	EA	0	$500.00	$0.00
866.106	6 INCH REFLECTORIZED WHITE LINE (THERMOPLASTIC)	LF	1,800	$0.70	$1,260.00
866.11	12 INCH REFLECTORIZED WHITE LINE (THERMOPLASTIC)	LF	0	$1.00	$0.00
					$17,260.00
			25% CONTINGENCY		**$4,315.00**
			Police Details 10%		$1,726.00
					$23,301.00
			SAY	**$24,000**	

UNIT PRICES BASED ON MASSDOT WEBSITE FOR DISTRICT 4

July 2019

PRELIMINARY ESTIMATE
ENGINEERS ESTIMATE OF QUANTITIES
179410809
Groveland

KING STREET SIDEWALK -PHASE 2

PREPARED BY: STANTEC

No. Ramps 2 | SW Length 6400 LF

ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
102.1	TREE TRIMMING	EA	0	$3,000.00	$0.00
120.1	UNCLASSIFIED EXCAVATION	CY	890	$40.00	$35,600.00
151.	GRAVEL BORROW	CY	890	$44.50	$39,605.00
170.62	FINE GRADING AND COMPACTING	SY	5,320	$8.00	$42,560.00
201.	CATCH BASIN	EA	2	$5,000.00	$10,000.00
220.3	DRAINAGE STRUCTURE CHANGE IN TYPE	EA	0	$800.00	$0.00
358.2	GATE BOX ADJUSTED SIDEWALK	EA	1	$220.00	$220.00
431.1	HIGH EARLY STRENGTH CONCRETE	CY	510	$200.00	$102,000.00
504.	GRANITE CURB VA-4 - STRAIGHT	FT	6,406	$44.00	$281,864.00
504.1	GRANITE CURB VA-4 - CURVED	FT	6	$50.00	$300.00
580.	CURB REMOVED AND RESET	FT	110	$30.00	$3,300.00
701.	CONCRETE SIDEWALK	SY	5,030	$65.00	$326,950.00
701.2	CEMENT CONCRETE WHEELCHAIR RAMP	SY	50	$95.00	$4,750.00
734.	SIGN REMOVED AND RESET	EA	17	$500.00	$8,500.00
866.106	6 INCH REFLECTORIZED WHITE LINE (THERMOPLASTIC)	LF	0	$0.70	$0.00
866.11	12 INCH REFLECTORIZED WHITE LINE (THERMOPLASTIC)	LF	160	$1.00	$160.00
					$855,809.00
			25% CONTINGENCY		**$213,952.25**
			Police Details 10%		$85,580.90
					$1,155,342.15
			SAY	**$1,156,000**	

UNIT PRICES BASED ON MASSDOT WEBSITE FOR DISTRICT 4

July 2019

PRELIMINARY ESTIMATE
ENGINEERS ESTIMATE OF QUANTITIES
179410809
Groveland

WASHINGTON STREET PEDESTRIAN ACCESS ACCOMOMDATION

PREPARED BY: STANTEC

No. Ramps 4 SW Length 4800 LF

ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
102.1	TREE TRIMMING	EA	0	$3,000.00	$0.00
120.1	UNCLASSIFIED EXCAVATION	CY	690	$40.00	$27,600.00
151.	GRAVEL BORROW	CY	690	$44.50	$30,705.00
170.62	FINE GRADING AND COMPACTING	SY	4,110	$8.00	$32,880.00
201.	CATCH BASIN	EA	0	$5,000.00	$0.00
220.3	DRAINAGE STRUCTURE CHANGE IN TYPE	EA	0	$800.00	$0.00
358.2	GATE BOX ADJUSTED SIDEWALK	EA	2	$220.00	$440.00
431.1	HIGH EARLY STRENGTH CONCRETE	CY	400	$200.00	$80,000.00
504.	GRANITE CURB VA-4 - STRAIGHT	FT	4,806	$44.00	$211,464.00
504.1	GRANITE CURB VA-4 - CURVED	FT	6	$50.00	$300.00
580.	CURB REMOVED AND RESET	FT	210	$30.00	$6,300.00
701.	CONCRETE SIDEWALK	SY	3,830	$65.00	$248,950.00
701.2	CEMENT CONCRETE WHEELCHAIR RAMP	SY	90	$95.00	$8,550.00
734.	SIGN REMOVED AND RESET	EA	13	$500.00	$6,500.00
866.106	6 INCH REFLECTORIZED WHITE LINE (THERMOPLASTIC)	LF	0	$0.70	$0.00
866.11	12 INCH REFLECTORIZED WHITE LINE (THERMOPLASTIC)	LF	320	$1.00	$320.00
					$654,009.00
			25% CONTINGENCY		**$163,502.25**
			Police Details 10%		$65,400.90
					$882,912.15
			SAY	**$883,000**	

UNIT PRICES BASED ON MASSDOT WEBSITE FOR DISTRICT 4

July 2019

PRELIMINARY ESTIMATE
ENGINEERS ESTIMATE OF QUANTITIES
179410809
Groveland

SEVEN STAR RD. PEDESTRIAN ACCESS ACCOMODATION PHASE 2

PREPARED BY: STANTEC

No. Ramps 2 SW Length 5300 LF

ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
102.1	TREE TRIMMING	EA	0	$3,000.00	$0.00
120.1	UNCLASSIFIED EXCAVATION	CY	740	$40.00	$29,600.00
151.	GRAVEL BORROW	CY	740	$44.50	$32,930.00
170.62	FINE GRADING AND COMPACTING	SY	4,430	$8.00	$35,440.00
201.	CATCH BASIN	EA	1	$5,000.00	$5,000.00
220.3	DRAINAGE STRUCTURE CHANGE IN TYPE	EA	0	$800.00	$0.00
358.2	GATE BOX ADJUSTED SIDEWALK	EA	1	$220.00	$220.00
431.1	HIGH EARLY STRENGTH CONCRETE	CY	430	$200.00	$86,000.00
504.	GRANITE CURB VA-4 - STRAIGHT	FT	5,306	$44.00	$233,464.00
504.1	GRANITE CURB VA-4 - CURVED	FT	6	$50.00	$300.00
580.	CURB REMOVED AND RESET	FT	110	$30.00	$3,300.00
701.	CONCRETE SIDEWALK	SY	4,170	$65.00	$271,050.00
701.2	CEMENT CONCRETE WHEELCHAIR RAMP	SY	50	$95.00	$4,750.00
734.	SIGN REMOVED AND RESET	EA	14	$500.00	$7,000.00
866.106	6 INCH REFLECTORIZED WHITE LINE (THERMOPLASTIC)	LF	0	$0.70	$0.00
866.11	12 INCH REFLECTORIZED WHITE LINE (THERMOPLASTIC)	LF	160	$1.00	$160.00
					$709,214.00
			25% CONTINGENCY		**$177,303.50**
			Police Details 10%		$70,921.40
					$957,438.90
			SAY	**$958,000**	

UNIT PRICES BASED ON MASSDOT WEBSITE FOR DISTRICT 4

July 2019

PRELIMINARY ESTIMATE
ENGINEERS ESTIMATE OF QUANTITIES
179410809
Groveland

WOOD STREET PEDESTRIAN AND ACCOMODATION

PREPARED BY: STANTEC

No. Ramps 2 SW Length 4250 LF

ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
102.1	TREE TRIMMING	EA	0	$3,000.00	$0.00
120.1	UNCLASSIFIED EXCAVATION	CY	600	$40.00	$24,000.00
151.	GRAVEL BORROW	CY	600	$44.50	$26,700.00
170.62	FINE GRADING AND COMPACTING	SY	3,570	$8.00	$28,560.00
201.	CATCH BASIN	EA	2	$5,000.00	$10,000.00
220.3	DRAINAGE STRUCTURE CHANGE IN TYPE	EA	0	$800.00	$0.00
358.2	GATE BOX ADJUSTED SIDEWALK	EA	1	$220.00	$220.00
431.1	HIGH EARLY STRENGTH CONCRETE	CY	340	$200.00	$68,000.00
504.	GRANITE CURB VA-4 - STRAIGHT	FT	4,256	$44.00	$187,264.00
504.1	GRANITE CURB VA-4 - CURVED	FT	6	$50.00	$300.00
580.	CURB REMOVED AND RESET	FT	110	$30.00	$3,300.00
701.	CONCRETE SIDEWALK	SY	3,360	$65.00	$218,400.00
701.2	CEMENT CONCRETE WHEELCHAIR RAMP	SY	50	$95.00	$4,750.00
734.	SIGN REMOVED AND RESET	EA	11	$500.00	$5,500.00
866.106	6 INCH REFLECTORIZED WHITE LINE (THERMOPLASTIC)	LF	0	$0.70	$0.00
866.11	12 INCH REFLECTORIZED WHITE LINE (THERMOPLASTIC)	LF	160	$1.00	$160.00
					$577,154.00
			25% CONTINGENCY		**$144,288.50**
			Police Details 10%		$57,715.40
					$779,157.90
			SAY	**$780,000**	

UNIT PRICES BASED ON MASSDOT WEBSITE FOR DISTRICT 4