Sidewalk Replacement Study

Stowe, VT

November 27, 2017

DRAFT REPORT – PUBLIC PRESENTATION

CLD | Fuss & O'Neill
540 Commercial Street • Manchester, NH 03101
ph: 603.668.8223 • fx: 603.668.8802
cld@cldengineers.com • www.cldengineers.com

Connecticut | Maine | Massachusetts | New Hampshire | New York | Rhode Island | Vermont

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Executive Summary

The pedestrian network in Stowe, VT has been a concern to the Town and local residents due to safety issues including sight distance and ice buildup; failing sidewalk materials; and breaks in continuity. The Town's ultimate goal for this project is to provide safe and aesthetically pleasing passage for pedestrians. The project area includes the former Village of Stowe, as well as the sidewalk network that extends outside of the village. Along VT Route 100 (VT-100), the project area begins at the Stowe Public Safety Facility and continues north through the village, ending at the intersection of Maple Street and Cemetery Road. Project limits also include Mountain Road/VT Route 108 (VT-108), from its intersection with VT-100 north to its intersection with Weeks Hill Road and Depot Street extending south to Thomas Lane. The Town of Stowe has identified areas of concern for this study and CLD | Fuss & O'Neill was commissioned to complete this scoping study.

This study evaluates eighteen segments that encompass approximately 15,000 linear feet of sidewalk, as described in the table below.

Sidewalk Segments		
Segment Number	Segment Link	Segment Length
1	South Main Street Southbound Side – Stowe Public Safety Facility to Mac's Market	1330 feet
2	South Main Street Southbound Side – Mac's Market to VT-108	560 feet
3	South Main Street Northbound Side – Masonic Lodge to VT-108	320 feet
4	Main Street Southbound Side – VT-108 to Maple Street	830 feet
5	Main Street Northbound Side – VT-108 through Sunset Street Intersection	910 feet
6	Maple Street – Main Street to Cemetery Road	1375 feet
7	Depot Street East Side – Main Street to Park Place	470 feet
8	Depot Street West Side – Main Street to Park Place	720 feet
9	Depot Street West Side – Park Place to Thomas Lane	1990 feet
10	Park Street East Side – Main Street to Pond Street	340 feet
11	Park Street West Side – Main Street to Park Place	700 feet
12	School Street – Main Street to Stowe Elementary School	930 feet
13	Pond Street – Depot Street to Park Street	280 feet
14	Pond Street – Park Street to School Street	265 feet
15	Park Place	415 feet
16	Sunset Street – Main Street to Pleasant Street	250 feet
17	Mountain Road – Main Street to Bridge	320 feet
18	Mountain Road – Bridge to Weeks Hill Road	2720 feet

There are several areas of sidewalk that have been temporarily repaired due to premature failure. Improvements to the overall sidewalk network are needed due to:

- Uneven existing sidewalk materials posing tripping hazards;
- Different sidewalk materials in use that do not provide continuity;
- Existing sidewalk materials severely deteriorated and requiring significant maintenance;
- Locations of crosswalks that do not provide sufficient visibility;
- Lack of connectivity between sidewalk segments; and
- Inconsistent ADAAG compliance.

This study includes evaluations of existing conditions and potential replacement materials and recommendations to improve safety for both pedestrian and vehicular traffic along each segment. Recommendations for improvements to each segment were formulated with input from Town officials to best meet the needs of the Town of Stowe. These recommendations include:

- Sidewalk and crosswalk materials;
- Sidewalk locations;
- Crosswalk locations;
- Parking evaluations;
- Drainage improvements;
- Lighting;
- Aesthetics; and
- ADAAG compliance.

CLD | Fuss & O'Neill investigated the following sidewalk materials for application on this project:

- Bituminous concrete;
- Portland cement concrete;
- Pavers: granite, clay brick, and concrete;
- Stamped concrete; and
- Combination of sidewalk materials.

To provide a cohesive appearance throughout the project, CLD | Fuss & O'Neill recommends that each sidewalk segment be composed of concrete sidewalk with a simple scored pattern. In the Main Street area, in addition to the scored concrete, accent bands are recommended outside the main pathway of pedestrians; the accent is also recommended in adjacent patio areas to provide a cohesive appearance.

It is recommended that all crosswalks be constructed with inlaid thermoplastic markings in a block pattern to maximize visibility of pedestrians and minimize maintenance costs. All sidewalk ramps should be in conformance with the Americans with Disabilities Act Accessibility Guidelines (ADAAG) standards, including meeting minimum width requirements, maximum slope requirements, and accessible ramps with providing detectable warning surfaces.

Due to the large area covered by this project, the proposed recommendations for each of the segment improvements can be completed independently or combined with adjacent segments. Each segment was evaluated for prioritization based on the following criteria and recommended groupings were provided in order to maximize project efficiency:

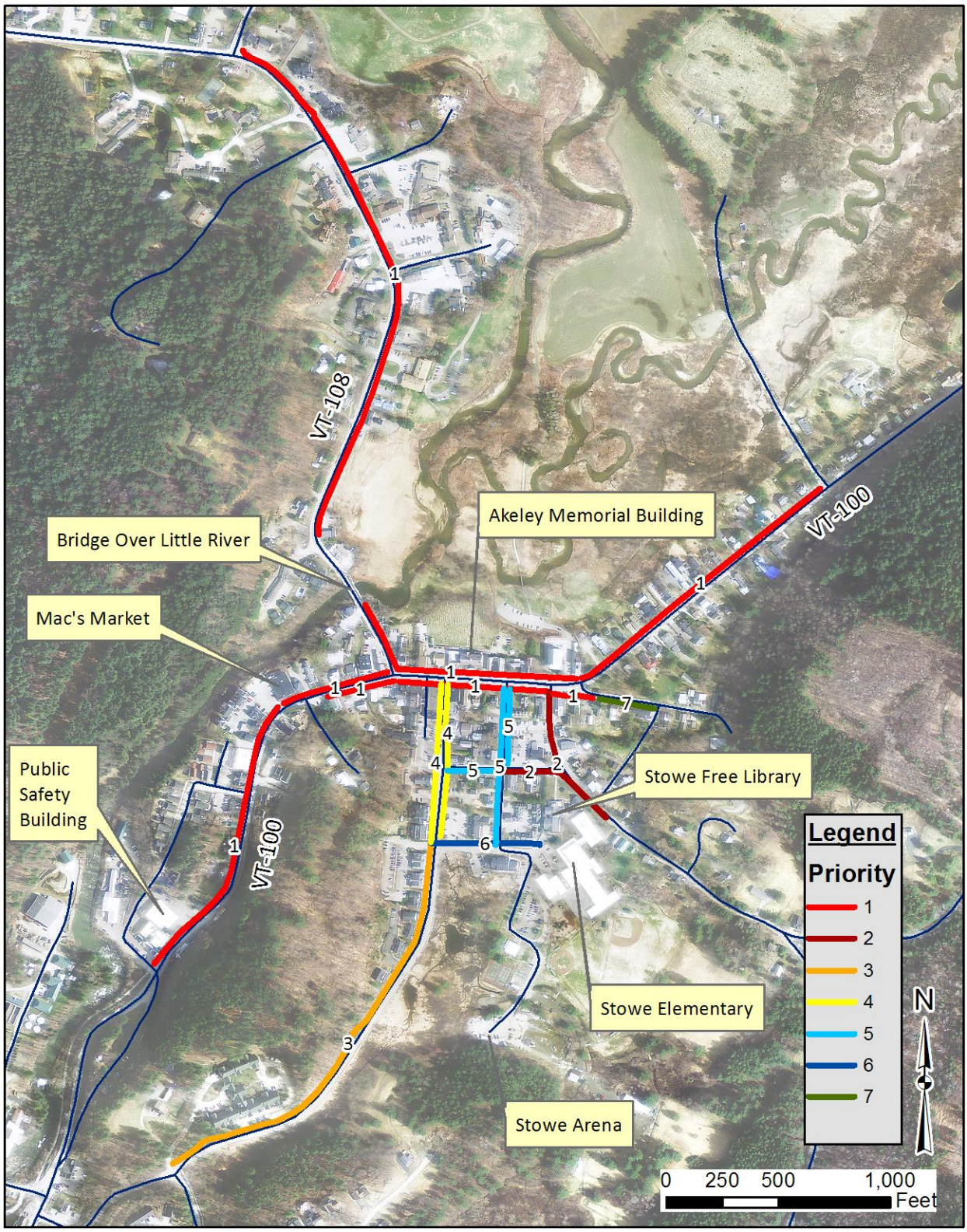
- Safety;
- Segment significance;
- Current condition; and
- Cost.

Sidewalk Project Recommendations		
Project Number	Segments Included	Estimated Project Cost*
1**	1, 2, 3, 4, 5, 6, 17 and 18 (Class I Town Highways)	$2,050,000
2	12 and 14	$450,000
3	9	$550,000
4	7 and 8	$500,000
5	10, 11 and 13	$350,000
6	15	$150,000
7	16	$50,000
	Total Estimated Project Costs:	$4,100,000

* Estimated project cost for sidewalk reconstruction only. This does not include possible Main Street utility relocations, drainage system improvements, or Class I road paving additional costs.

** Project 1 includes all segments adjacent to Class I Roads. VTrans is planning a project to pave the Class I roads in Stowe and it would be preferable to reconstruct the sidewalks in advance of the resurfacing project.

PROJECT AREA MAP - PROJECT PRIORITIZATION



1. Introduction

1.1. Overview

The Town of Stowe has retained CLD | Fuss & O'Neill to conduct a scoping study to investigate and present recommendations for a pedestrian enhancement plan for the village and the surrounding areas. The project includes approximately 15,000 linear feet of sidewalk replacement. This document includes an evaluation of existing conditions and provides recommendations to improve safety for both pedestrian and vehicular traffic while ensuring compliance with Americans with Disabilities Act Accessibility Guidelines (ADAAG) throughout the project area. This study also includes evaluations of sidewalk and crosswalk materials and proposes recommendations to best meet the needs of the Town. Recommendations include, but are not limited to, relocating crosswalks, drainage improvements, location of parking, and lighting along sidewalks. This study will identify logical design projects to aid in project development and implementation.

1.2. Study Area

The project area includes the village area of Stowe, as well as the sidewalk network that extends outside of the village. Along VT Route 100 (VT-100), the project area begins at the Stowe Public Safety Facility and continues north through the village, ending at the intersection of Maple Street and Cemetery Road. Project limits also include VT Route 108 (VT-108), from its intersection with VT-100 north to its intersection with Weeks Hill Road, and Depot Street extending south to Thomas Lane.

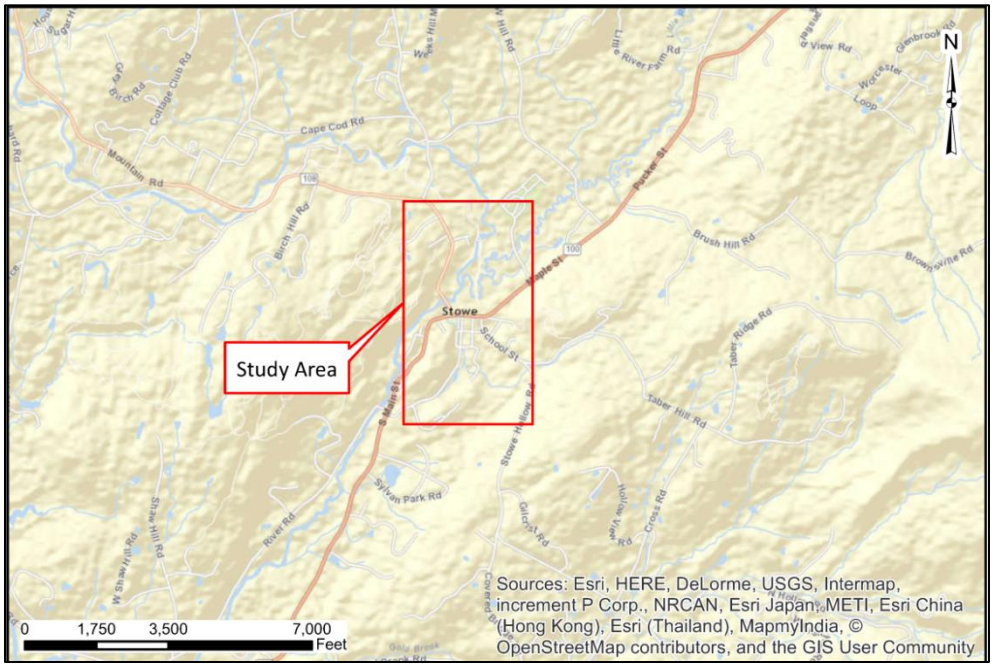


Figure 1: Locus Map

1.3. Purpose and Need

The purpose of this project is to evaluate the condition and functionality of the existing sidewalk network in the village and to develop recommendations for the replacement of sidewalks and enhanced sidewalk materials; location of crosswalks; on-street parking; street lighting and other elements to ensure a safe and efficient pedestrian transportation network.

Improvements to the sidewalk network are needed due to:

- Uneven existing sidewalk materials posing tripping hazards;
- There are several different sidewalk materials in use that do not provide continuity;
- Some existing sidewalk materials are severely deteriorated and require significant maintenance;
- Some locations of crosswalks do not provide sufficient visibility; and
- Inconsistent ADAAG compliance.

1.4. Anticipated Users

As a prominent tourist destination in the State of Vermont, Stowe welcomes a large number of visitors throughout the year to take advantage of the outdoor activities, shopping, and accommodations the town has to offer. Between tourism and the presence of Stowe Elementary School, the Stowe Arena, and other amenities within the village, anticipated users within the study area are both local residents and visitors. Primary modes of transportation include motor vehicles, pedestrians, and bicycles. In addition, the study area includes bus stops serviced by Green Mountain Transit; within the study area, stops are located on Main Street and Mountain Road.

1.4.1. Pedestrians

The village's concentrated layout lends itself to pedestrian traffic. Many areas outside of the village are also within walking distance for most users. Pedestrians exhibit a wide range of needs and characteristics; therefore, pedestrian facilities must accommodate all users regardless of age, physical ability, or reaction time. Any new or altered public sidewalks or street crossings must comply with the ADAAG. Accessible routes of travel should provide connectivity between all streets within the village, and connect to the sidewalk networks that extend outside of the village limits. Vermont Agency of Transportation's (VTrans) *Pedestrian and Bicycle Facility Planning and Design Manual* [1] was used to help evaluate the needs within the study area and recommend improvements. Per the guidelines in Table 1 shown on page 3, all streets within the village should maintain sidewalk on at least one side.

[1] Vermont Agency of Transportation, *Vermont Pedestrian and Bicycle Facility Planning and Design Manual*, 2002

Recommended Walkway Locations	
Commercial centers and downtowns	Both sides of all streets.
Major residential streets	Preferably on both sides.
Local residential streets	Preferably on both sides, but at least one side.
Low-density residential (1-4 units/ac)	Preferably on both sides, but at least one side with appropriate shoulder on other side.
Rural residential (less than 1 unit/ac)	Preferably on one side with appropriate shoulder on other side, but at least a shoulder on both sides.

Source: VTrans' Pedestrian and Bicycle Facility Planning and Design Manual, Table 3-4

Table 1: Recommended Walkway Locations

1.4.2. Bicyclists

Although there are no dedicated bicycle lanes within the village, bicycle traffic is prevalent. The Stowe Recreation Path trailhead and parking lot are located on the north side of Main Street. The Stowe Riverwalk is also located parallel to South Main Street, extending from the intersection of South Main Street and River Road to the Stowe Public Safety Facility. There are established road cycling routes that pass through Stowe on both VT-100 and VT-108 that attract experienced cyclists. Stowe Elementary School, Stowe Free Library, Memorial Park, and the Stowe Arena also attract local bicycle traffic, with users including children and families. Bicyclists of all levels of experience travel through the study area as a means for both transportation and recreation. Bicycle traffic within the study area shares the road with motorists.

1.5. Travel Patterns

Travel within the study area includes travel to the village and travel through the village. VT-100 and VT-108 are heavily traveled routes. Main Street's average annual daily traffic (AADT) in 2012 was 10,700 vehicles. Mountain Road's AADT in 2012 was 7,900 vehicles. More recent traffic counts in 2015 were likely impacted by temporary changes in travel patterns due to construction in the area. A portion of those vehicles traveling through the village are making stops in the village. On-street parking is located on Main Street, Depot Street, School Street, Park Street, and Sunset Street. There is also public parking located off of Depot Street across from Park Place and behind the Stowe Community Church on Main Street. Some businesses within the study area have private parking lots, while others do not and rely on the on-street parking. Insufficient parking has been an ongoing issue within the study area, especially during peak tourist seasons. For destinations within the village, most users need to use public parking and walk to their destination. Most destinations outside of the village have private parking lots to accommodate users.

1.6. Previous Studies

Two previous studies were conducted in 2010, "*Stowe Main Street Sidewalk Investigation and Design*" by Lamoureux & Dickinson Consulting Engineers, Inc. (L&D), and "*Stowe Village Crosswalk Evaluation Memo*" by Resource Systems Group Inc. (RSG).

The "*Stowe Main Street Sidewalk Investigation and Design*" report by L&D evaluated the existing sidewalk construction on Main Street and evaluated possible remedies and replacement materials. The existing conditions evaluation resulted in the following three conclusions:

- "The uneven sidewalk conditions have resulted from unsuitable subbase materials under the concrete pavers."
- "The results of the sieve analysis show the existing subbase material is not suitable for use under the sidewalk surface. It is recommended that all new subbase material be used when the sidewalk is reconstructed."
- "Due to their age and continual deterioration, the existing pavers need to be replaced."

The report then evaluated eight alternatives for replacement surface materials: concrete unit pavers, clay brick unit pavers, permeable unit pavers, colored textured concrete, pervious concrete, concrete, surface colored textured asphalt, and material colored stamped asphalt. The report ultimately made the recommendation of clay brick pavers for the entire sidewalk surface. An updated discussion of sidewalk material options is located in Section 3.1 of this report.

The "*Stowe Village Crosswalk Evaluation Memo*" by RSG evaluated existing crosswalk locations on Main Street and Mountain Road up to the covered bridge. The memo recommended relocating three existing crosswalks on Main Street adjacent to intersecting roads, eliminating mid-block crossings for safety reasons.

CLD | Fuss & O'Neill agrees with the findings of the RSG report, which have been incorporated into the recommendations in this scoping report.

2. Existing Conditions

2.1. Sidewalk Segments

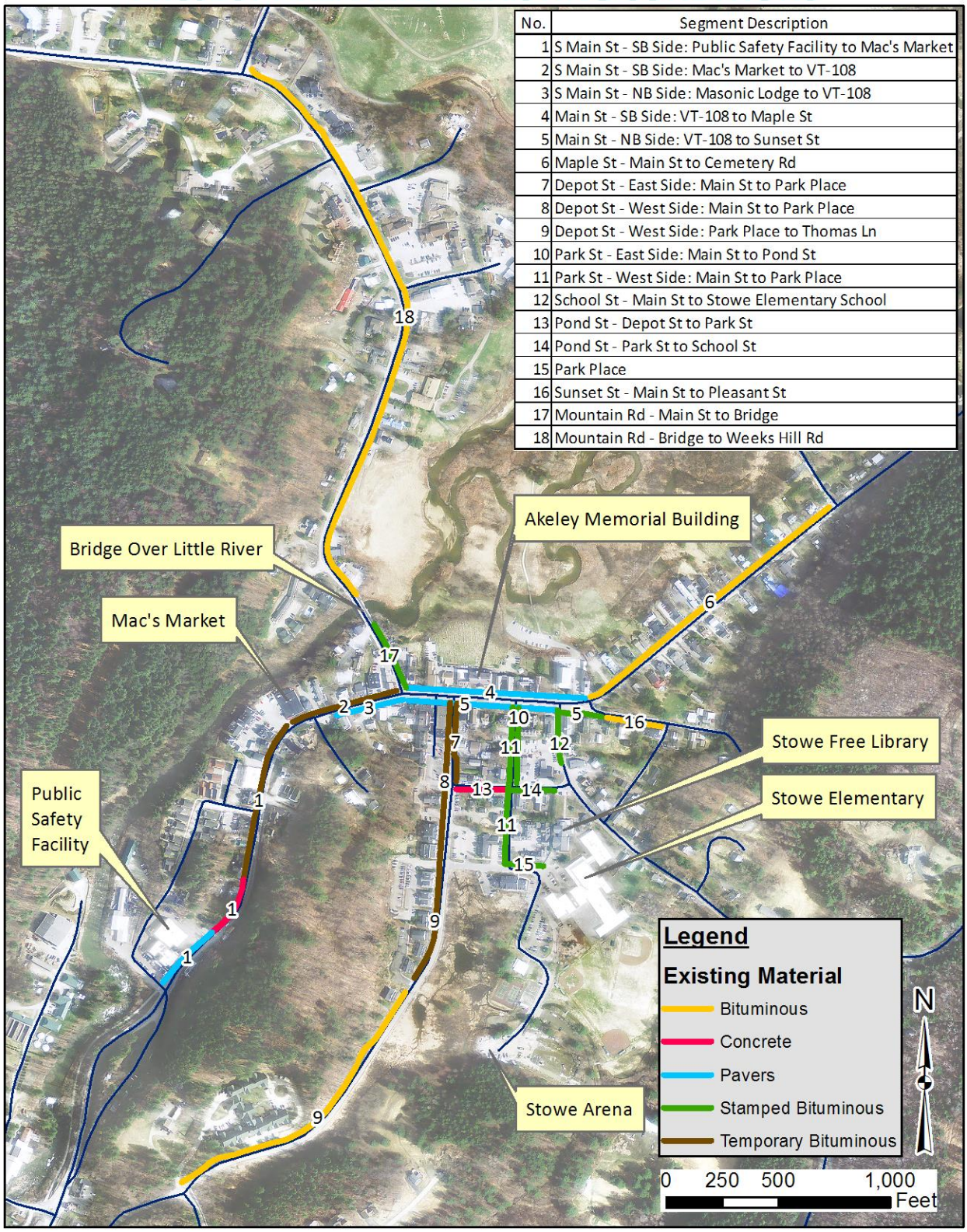
The project area has an extensive sidewalk network in place; however, many of the existing sidewalks have experienced significant deterioration as noted in the L&D report. Many of the existing sidewalks are composed of concrete pavers that have experienced both settling from improper installation and heavy snow removal equipment, as well as deterioration from exposure to weather and deicing salts. In some areas the concrete pavers have been removed and replaced with temporary bituminous sidewalks. Other segments of sidewalk are composed of portland cement concrete or bituminous concrete in varying condition.

The sidewalk network has been divided into 18 segments, as listed below in Table 2 and as shown in Figure 2. Each sidewalk segment is discussed in detail in the following sections of this report.

Sidewalk Segments		
Segment Number	Segment Link	Segment Length
1	South Main Street Southbound Side – Stowe Public Safety Facility to Mac's Market	1330 feet
2	South Main Street Southbound Side – Mac's Market to VT-108	560 feet
3	South Main Street Northbound Side – Masonic Lodge to VT-108	320 feet
4	Main Street Southbound Side – VT-108 to Maple Street	830 feet
5	Main Street Northbound Side – VT-108 through Sunset Street Intersection	910 feet
6	Maple Street – Sunset Street to Cemetery Road	1375 feet
7	Depot Street East Side – Main Street to Park Place	470 feet
8	Depot Street West Side – Main Street to Park Place	720 feet
9	Depot Street West Side – Park Place to Thomas Lane	1990 feet
10	Park Street East Side – Main Street to Pond Street	340 feet
11	Park Street West Side – Main Street to Park Place	700 feet
12	School Street: Main Street to Stowe Elementary School	930 feet
13	Pond Street – Depot Street to Park Street	280 feet
14	Pond Street – Park Street to School Street	265 feet
15	Park Place	415 feet
16	Sunset Street – Main Street to Pleasant Street	250 feet
17	Mountain Road – Main Street to Bridge	320 feet
18	Mountain Road – Bridge to Weeks Hill Road	2720 feet

Table 2: Sidewalk Links

PROJECT AREA MAP - EXISTING CONDITIONS



No.	Segment Description
1	S Main St - SB Side: Public Safety Facility to Mac's Market
2	S Main St - SB Side: Mac's Market to VT-108
3	S Main St - NB Side: Masonic Lodge to VT-108
4	Main St - SB Side: VT-108 to Maple St
5	Main St - NB Side: VT-108 to Sunset St
6	Maple St - Main St to Cemetery Rd
7	Depot St - East Side: Main St to Park Place
8	Depot St - West Side: Main St to Park Place
9	Depot St - West Side: Park Place to Thomas Ln
10	Park St - East Side: Main St to Pond St
11	Park St - West Side: Main St to Park Place
12	School St - Main St to Stowe Elementary School
13	Pond St - Depot St to Park St
14	Pond St - Park St to School St
15	Park Place
16	Sunset St - Main St to Pleasant St
17	Mountain Rd - Main St to Bridge
18	Mountain Rd - Bridge to Weeks Hill Rd

Figure 2: Project Area Map - Existing Condition

2.1.1. South Main Street

Segment 1: South Main Street Southbound Side – Stowe Public Safety Facility to Mac's Market

Segment 1: South Main Street Southbound Side – Stowe Public Safety Facility to Mac's Market	
Sidewalk Material	○ Approx. 150 feet of concrete sidewalk in front of Village Walk Condominiums ○ Temporary bituminous (formerly concrete pavers)
Sidewalk Width	4-6 feet typical
Current Sidewalk Condition	Good
Curbing Material	Granite
Grass Buffer Between Curb and Sidewalk	125-foot section
Sidewalk Connectivity Through Segment	Yes
Crosswalks	○ Industrial driveway - Painted ○ Fire and rescue access for the Stowe Public Safety Facility - Painted ○ Palisades Street north intersection - Temporary bituminous enclosed with flush granite curb
Sidewalk Ramps	○ Concrete ○ Temporary bituminous
Detectable Warning Surface	On concrete sidewalk ramp only
Driveway Crossings	○ Concrete ○ Flush temporary bituminous sidewalk enclosed with flush granite curb
Parking Spaces	No

Table 3: Segment 1 Existing Condition

Beginning at the Stowe Public Safety Facility and heading north, a painted crosswalk across an industrial driveway connects the Riverwalk to the sidewalk to the north which has been recently paved due to the deterioration of the pavers. Just north of the Stowe Public Safety Facility is approximately 150 feet of relatively new concrete sidewalk in front of the Village Walk Condominiums. This sidewalk is set back from the rest of the sidewalk across the driveway. Sidewalk is generally located adjacent to vertical granite curb, but there is a 125-foot-long section in front of two residences north of Village Walk Condominiums with a variable width grass buffer between the curb and sidewalk. There is an additional area with grass buffer in the temporary bituminous sidewalk section between the new concrete section and Mac's Market. At Palisades Street, the crosswalk has very limited visibility to drivers because it consists of flush, temporary

bituminous sidewalk enclosed with flush granite curb on either side. The entrance to Mac's Market is paved and has no defined sidewalk or crosswalk.

Figure 3: Stowe Public Safety Facility Fire and Rescue Access

Segment 2: South Main Street Southbound Side – Mac's Market to VT-108

Segment 2: South Main Street Southbound Side –Mac's Market to VT-108	
Sidewalk Material	Temporary bituminous (formerly concrete pavers)
Sidewalk Width	6 feet typical
Current Sidewalk Condition	Good
Curbing Material	Granite
Grass Buffer Between Curb and Sidewalk	Bump-outs near Mac's Market
Sidewalk Connectivity Through Segment	Yes
Crosswalks	○ Mid-block crossing to Masonic Lodge - Painted ○ VT-108 - Painted
Sidewalk Ramps	Temporary bituminous
Detectable Warning Surface	No
Driveway Crossings	Flush temporary bituminous sidewalk enclosed with flush granite curb
Parking Spaces	4 – In front of Mac's Market, parallel

Table 4: Segment 2 Existing Condition

From Mac's Market, heading north, the sidewalk continues along VT-100. The sidewalk widens out to approximately 9 feet where it is adjacent to a retaining wall in front of Stowe Craft & Design. The mid-block crossing near the Masonic Lodge is located within a driveway. There are concrete paver and brick paver walkways and stairs adjacent to the sidewalk, providing pedestrian access to residences and businesses.

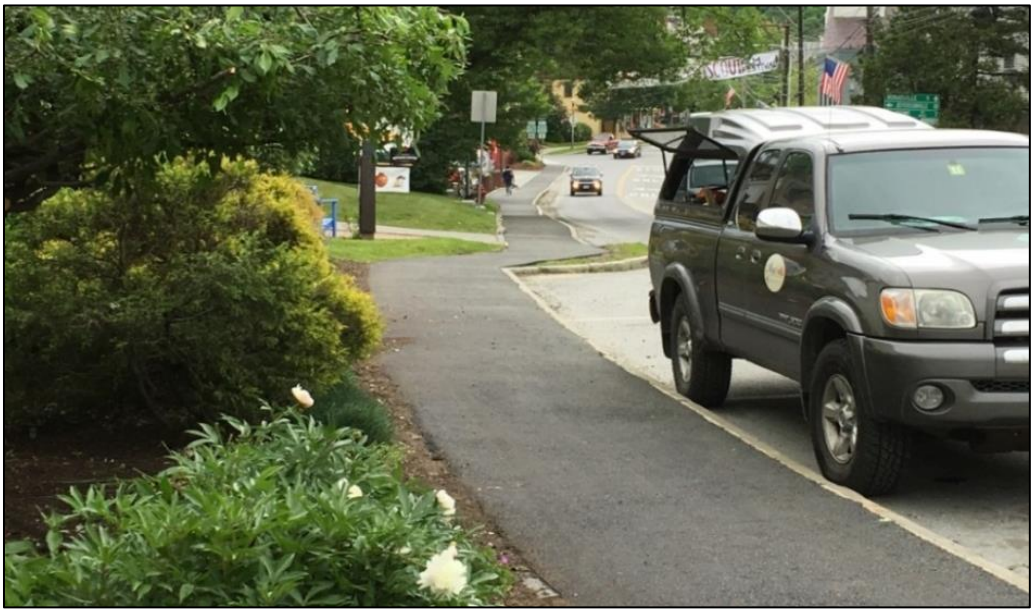


Figure 4: Temporary Bituminous Sidewalk in Front of Mac's Market

Segment 3: South Main Street Northbound Side – Masonic Lodge to VT-108

Segment 3: South Main Street Northbound Side – Masonic Lodge to VT-108	
Sidewalk Material	Concrete pavers
Sidewalk Width	6-8 feet typical
Current Sidewalk Condition	Fair – some deterioration
Curbing Material	Granite
Grass Buffer Between Curb and Sidewalk	No
Sidewalk Connectivity Through Segment	Yes
Crosswalks	Mid-block crossing in front of Masonic Lodge - Painted
Sidewalk Ramps	Concrete pavers
Detectable Warning Surface	No
Driveway Crossings	Flush concrete paver sidewalk enclosed with flush granite curb
Parking Spaces	No

Table 5: Segment 3 Existing Condition

This segment of sidewalk begins at a sidewalk ramp in front of the Masonic Lodge at the mid-block crossing of South Main Street from the southbound side and continues north on South Main Street. The sidewalk widens to approximately 13 feet for approximately 50 feet in front on the Vermont Ski and Snowboard Museum. The sidewalk widens to approximately 20 feet for approximately 55 feet between the Vermont Ski and Snowboard Museum and the Green Mountain Inn. There are stairs and a concrete ramp providing pedestrian access to businesses.

Figure 5: South Main Street from VT-108 Intersection

2.1.2. Main Street

Segment 4: Main Street Southbound Side – VT-108 to Maple Street

Segment 4: Main Street Southbound Side – VT-108 to Maple Street	
Sidewalk Material	○ Concrete pavers ○ Concrete
Sidewalk Width	6 feet typical
Current Sidewalk Condition	○ Concrete pavers – fair, some deterioration ○ Concrete - good
Curbing Material	Granite
Grass Buffer Between Curb and Sidewalk	6 feet typical
Sidewalk Connectivity Through Segment	Yes
Crosswalks	○ West of Akeley Memorial Building - Painted ○ West of Park Street - Painted ○ West of School Street - Painted
Sidewalk Ramps	○ Concrete pavers ○ Concrete
Detectable Warning Surface	At VT-108 crossing
Driveway Crossings	Flush concrete paver sidewalk enclosed with flush granite curb
Parking Spaces	○ 18 standard parallel ○ 1 handicap parallel

Table 6: Segment 4 Existing Condition

This segment of sidewalk begins at a concrete sidewalk ramp at the VT-108 crossing and continues north. In front of the Akeley Memorial Building and a retail building just west of the church, the concrete pavers were recently reset due to settling and are in fair condition. The remainder of the pavers extending east to Maple Street are very deteriorated and are in poor condition. In front of some of the buildings, the concrete pavers extend to the curb, breaking up the grass buffer. There are three painted crosswalks across VT-100 within this segment. The crossings are located at driveway aprons, or concrete paver ramps, with slopes in excess of the ADAAG. The driveway on the east side of the Stowe Community Church is used to access a public parking area for the Stowe Recreation Path with one-way access exiting via the drive on the west side of the church. There are stairs, sidewalk ramps, and in some cases, the sidewalk abuts building entrances, providing pedestrian access to businesses. There is a patio area located in front of the building just east of the Akeley Memorial Building. Many of the striped parking spaces do not meet current VTrans Standards[2] and Vermont State

[2] Vermont Agency of Transportation, *Standard E-193 "Pavement Marking Details"*, 1995

Statute 23 VSA 1104 due to their close proximity to crosswalks and intersecting streets, which limits sight distance and poses a safety concern.

Figure 6: Sidewalk Across Driveway at Akeley Memorial Building

Segment 5: Main Street Northbound Side – VT-108 to Sunset Street

Segment 5: Main Street Northbound Side – VT-108 to Sunset Street	
Sidewalk Material	○ Concrete pavers ○ Stamped bituminous
Sidewalk Width	6-12 feet typical
Current Sidewalk Condition	○ Concrete pavers – poor, significant deterioration ○ Stamped bituminous – good/fair, cracks
Curbing Material	Granite
Grass Buffer Between Curb and Sidewalk	Grass buffer begins across from Akeley Memorial Building and ends at School Street
Sidewalk Connectivity Through Segment	Yes
Crosswalks	○ VT-100: Green Mountain Inn - Painted ○ Green Mountain Inn driveway ○ Depot Street - Painted ○ Park Street - Painted ○ VT-100: West of Akeley Memorial Building - Painted ○ VT-100: West of Park Street - Painted ○ Park Street - Painted ○ VT-100: West of School Street - Painted ○ School Street - Painted
Sidewalk Ramps	○ Concrete pavers ○ Stamped bituminous
Detectable Warning Surface	No
Driveway Crossings	Flush concrete paver sidewalk enclosed with flush granite curb
Parking Spaces	○ 14 standard, parallel ○ 1 handicap, parallel ○ 5 private, perpendicular

Table 7: Segment 5 Existing Condition

This segment of sidewalk is a continuation from Segment 3 and proceeds east. After the sidewalk crosses School Street, the sidewalk is located outside the right-of-way, between vertical curb and the adjacent commercial building. The Town has a sidewalk easement for this section of sidewalk. Each crosswalk is located at concrete paver sidewalk ramps, some of which have slopes that exceed the ADAAG standards. There are stairs providing pedestrian access to adjacent buildings abutting the sidewalk and in some areas the sidewalk directly abuts building entrances. There are patios at some store fronts, some of which are composed of the same concrete pavers as the sidewalk, while others are concrete. Many of these patios are in poor condition.

The perpendicular parking spaces, located between School Street and Sunset Street, create sight distance issues for vehicles exiting School Street. Many of the parallel parking spaces do not meet VTrans Standards[3] and Vermont State Statute 23 VSA 1104 due to their close proximity to crosswalks and intersecting streets.

Figure 7: Concrete Patio Area Adjacent to Depot Street

Figure 8: Crosswalk on Main Street in Front of the Green Mountain Inn

[3] Vermont Agency of Transportation, *Standard E-193 "Pavement Marking Details"*, 1995

2.1.3. Maple Street

Segment 6: Maple Street – Main Street to Cemetery Road

Segment 6: Maple Street - Main Street to Cemetery Road	
Sidewalk Material	Bituminous
Sidewalk Width	4- 6 feet typical
Current Sidewalk Condition	Poor
Curbing Material	None
Grass Buffer Between Curb and Sidewalk	Grass buffer begins approximately 65 feet east of 151 Main Street and continues the duration of the segment
Sidewalk Connectivity Through Segment	Yes
Crosswalks	No
Sidewalk Ramps	No
Detectable Warning Surface	No
Driveway Crossings	Bituminous
Parking Spaces	No

Table 8: Segment 6 Existing Condition

This section maintains sidewalk along the southbound side of VT-100 throughout the segment. Where this segment begins at the bend in VT-100 where Main Street changes to Maple Street, the concrete paver sidewalk on Main Street ends and bituminous sidewalk begins. A grass buffer separates the sidewalk from the roadway and contains a fire hydrant, mailboxes and drainage basins. At the western end of Maple Street, trees behind the sidewalk obstruct the sight line for southbound VT-100 traffic entering the village from Maple Street.

Figure 9: Maple Street Looking North

Figure 10: Maple Street Southbound Approach to the Village

2.1.4. Depot Street

Segment 7: Depot Street East Side – Main Street to Park Place

Segment 7: Depot Street East Side – Main Street to Park Place	
Sidewalk Material	○ Concrete Pavers ○ Temporary bituminous (formerly concrete pavers)
Sidewalk Width	○ <3 feet typical (concrete pavers) ○ 5-6 feet typical (temporary bituminous)
Current Sidewalk Condition	○ Poor (concrete pavers) ○ Good (temporary bituminous)
Curbing Material	Granite
Grass Buffer Between Curb and Sidewalk	Grass bump-out at intersection with Pond Street
Sidewalk Connectivity Through Segment	No
Crosswalks	Mid-block crossing – Painted Pond Street – Painted
Sidewalk Ramps	Temporary bituminous
Detectable Warning Surface	No
Driveway Crossings	Flush temporary bituminous sidewalk enclosed with flush granite curb
Parking Spaces	4 parallel

Table 9: Segment 7 Existing Condition

The east side of Depot Street from Main Street south is very narrow along Shaw's General Store and then crosses a private parking lot without access control. Beyond the parking lot, there is a short section of narrow, non-ADAAG-compliant concrete paver sidewalk around the Sanborn House. The sidewalk does not provide connectivity to the rest of the sidewalk network. Beyond the next driveway, temporary bituminous sidewalk begins and continues to the intersection with Pond Street.

Figure 11: Depot Street East Side Temporary Bituminous Sidewalk

Figure 12: Sanborn House

Segment 8: Depot Street West Side – Main Street to Park Place

Segment 8: Depot Street West Side – Main Street to Park Place	
Sidewalk Material	Temporary bituminous (formerly concrete pavers)
Sidewalk Width	5-6 feet typical
Current Sidewalk Condition	Good
Curbing Material	Granite
Grass Buffer Between Curb and Sidewalk	Grass bump-outs
Sidewalk Connectivity Through Segment	Yes
Crosswalks	Mid-block crossing – Painted
Sidewalk Ramps	Temporary bituminous
Detectable Warning Surface	No
Driveway Crossings	○ Flush temporary bituminous sidewalk enclosed with flush granite curb ○ No treatment at driveway across from Park Place
Parking Spaces	23 parallel

Table 10: Segment 8 Existing Condition

On the northern end of Depot Street, the sidewalk abuts a building which contains a doorway leading to a wheelchair-accessible public restroom. There are multiple walkways connecting the sidewalk to buildings consisting of stamped concrete, bituminous pavement, and flagstone.

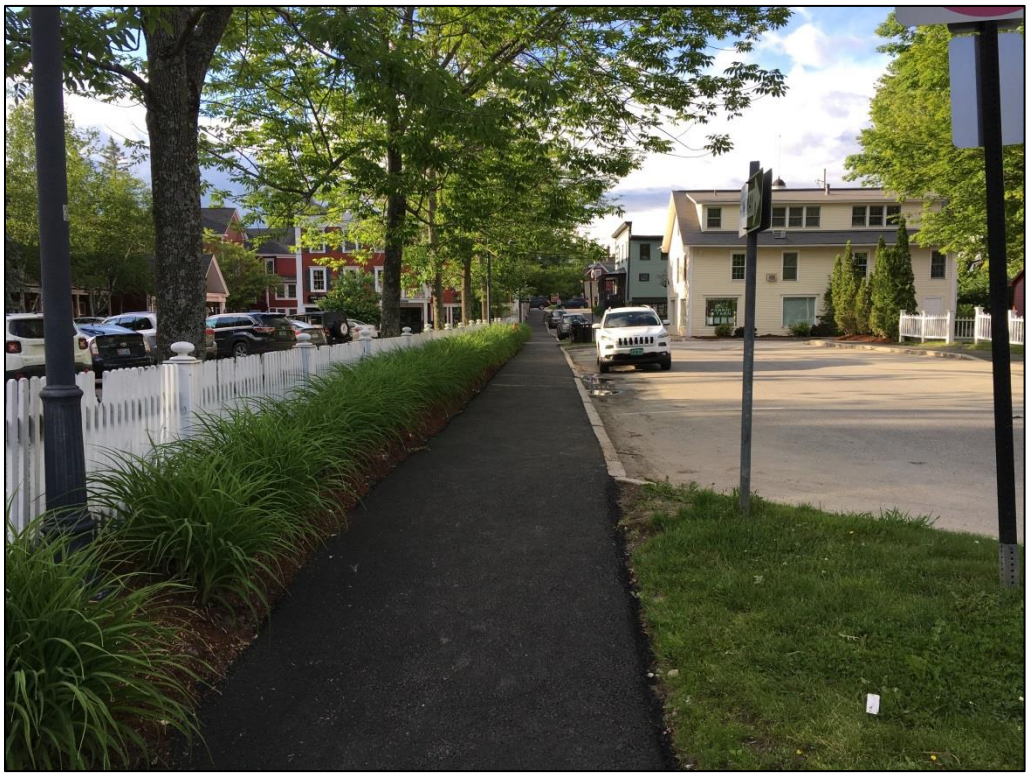


Figure 13: Depot Street West Side Temporary Bituminous Sidewalk

Figure 14: Driveway Across from Park Place on Depot Street

Segment 9: Depot Street West Side – Park Place to Thomas Lane

Segment 9: Depot Street West Side – Park Place to Thomas Lane	
Sidewalk Material	Bituminous
Sidewalk Width	5-6 feet typical
Current Sidewalk Condition	Poor
Curbing Material	None
Grass Buffer Between Curb and Sidewalk	Variable width
Sidewalk Connectivity Through Segment	Yes
Crosswalks	No
Sidewalk Ramps	No
Detectable Warning Surface	No
Driveway Crossings	Bituminous
Parking Spaces	23 parallel

Table 11: Segment 9 Existing Condition

The grass buffer along the limits of the uncurbed bituminous sidewalk section contains drainage features that may have been part of a stormwater permit. Water from the hillside on the far side of the sidewalk drains across the sidewalk and creates icing issues. This is of particular concern due to the presence of Copley Woodlands, a retirement community located off of Thomas Lane. Sidewalk at Depot Street terminates at Thomas Lane, but sidewalk continues south on the east side of Thomas Lane. There is no crosswalk across Depot Street to connect these sidewalks.

Figure 15: Depot Street Drainage Features in Grass Buffer

2.1.5. Park Street

Segment 10: Park Street East Side – Main Street to Pond Street

Segment 10: Park Street East Side – Main Street to Pond Street	
Sidewalk Material	Stamped Bituminous
Sidewalk Width	5-6 feet typical
Current Sidewalk Condition	Fair
Curbing Material	Concrete
Grass Buffer Between Curb and Sidewalk	No
Sidewalk Connectivity Through Segment	Yes
Crosswalks	Pond Street - Painted
Sidewalk Ramps	Stamped bituminous
Detectable Warning Surface	No
Driveway Crossings	Bituminous
Parking Spaces	No

Table 12: Segment 10 Existing Condition

Overhead utilities are located along this segment. There are two utility poles with lighting located within the sidewalk. Stairs are located adjacent to the sidewalk providing pedestrian access to buildings. Two catch basins are located within the crosswalk across Pond Street. The sidewalk on the east side of Park Street ends at its intersection with Pond Street and does not continue to Park Place.

Figure 16: Park Street East Side

Segment 11: Park Street West Side – Main Street to Park Place

Segment 11: Park Street West Side – Main Street to Park Place	
Sidewalk Material	Stamped Bituminous
Sidewalk Width	5-6 feet typical
Current Sidewalk Condition	Fair/Poor
Curbing Material	○ Concrete (Main Street to Pond Street) ○ Granite (Pond Street to Park Place)
Grass Buffer Between Curb and Sidewalk	No
Sidewalk Connectivity Through Segment	Yes
Crosswalks	Pond Street - Painted
Sidewalk Ramps	○ Concrete ○ Stamped bituminous
Detectable Warning Surface	On concrete sidewalk ramp only
Driveway Crossings	Flush stamped bituminous sidewalk with flush granite curb adjacent to the roadway
Parking Spaces	No

Table 13: Segment 11 Existing Condition

There is a concrete sidewalk ramp on the south side of the intersection with Pond Street that is in good condition. There are stamped bituminous walkways and concrete walkways connecting the sidewalk to stairs and building entrances.

Figure 17: Park Street West Side

2.1.6. School Street

Segment 12: School Street – Main Street to Stowe Elementary School

Segment 12: School Street – Main Street to Stowe Elementary School	
Sidewalk Material	Stamped Bituminous
Sidewalk Width	5-6 feet typical
Current Sidewalk Condition	Fair
Curbing Material	Granite
Grass Buffer Between Curb and Sidewalk	No
Sidewalk Connectivity Through Segment	No
Crosswalks	No
Sidewalk Ramps	Stamped bituminous
Detectable Warning Surface	No
Driveway Crossings	Bituminous
Parking Spaces	12 (this includes the parking at the corner of Pond Street)

Table 14: Segment 12 Existing Condition

The sidewalk in this segment is located on the west side of the street. The sidewalk ends at a driveway just north of the intersection of School Street and Pond Street. The throat of the intersection with Pond Street is very wide and there is no existing crosswalk. There is on-street parallel parking south of Pond Street without sidewalk. There is a crosswalk from Pleasant Street across School Street that connects to the sidewalk network within the library and school properties.

On the east side of the street, there is no sidewalk and only one section of vertical granite curb in front of a restaurant. The lack of curb on this side except for this short section has led to drainage issues and caused pavement deterioration. In particular, stormwater from farther south on School Street flows off the pavement and into the gravel driveway for the Stowe Reporter, where erosion is visible.

Figure 18: School Street West Side

Figure 19: Erosion at Stowe Reporter Driveway from Stormwater Runoff

2.1.7. Pond Street

Segment 13: Pond Street – Depot Street to Park Street

Segment 13: Pond Street – Depot Street to Park Street	
Sidewalk Material	Concrete
Sidewalk Width	5-6 feet typical
Current Sidewalk Condition	Good/fair, scaling
Curbing Material	Granite
Grass Buffer Between Curb and Sidewalk	No
Sidewalk Connectivity Through Segment	No
Crosswalks	No
Sidewalk Ramps	Concrete
Detectable Warning Surface	Yes
Driveway Crossings	Flush concrete sidewalk with flush granite curb adjacent to the roadway
Parking Spaces	3 parallel

Table 15: Segment 13 Existing Condition

Sidewalk is only located on the south side of this segment and consists of relatively new concrete sidewalk. Although the sidewalk is relatively new, it is currently experiencing some scaling. A short section of sidewalk wraps around onto Depot Street and ramps down to a gravel parking area on the east side of Depot Street. There are detectable warning surfaces on either side of the driveway apron.

Figure 20: Pond Street – Facing Depot Street

Segment 14: Pond Street – Park Street to School Street

Segment 14: Pond Street – Park Street to School Street	
Sidewalk Material	Stamped bituminous
Sidewalk Width	5 - 6 feet typical
Current Sidewalk Condition	Fair/Poor
Curbing Material	Granite
Grass Buffer Between Curb and Sidewalk	No
Sidewalk Connectivity Through Segment	No
Crosswalks	Pond Street – Painted Park Street – Painted
Sidewalk Ramps	Stamped Bituminous
Detectable Warning Surface	No
Driveway Crossings	Stamped bituminous sidewalk enclosed with flush granite curb
Parking Spaces	○ 5 standard, perpendicular ○ 1 handicap, perpendicular (Parking at the library is included with the School Street Segment)

Table 16: Segment 14 Existing Condition

In this segment, sidewalk is again located only on the south side of the street. The painted crosswalk across Pond Street at Park Street crosses over a drainage basin grate. The west end of this segment connects to the sidewalk network along Park Street and continues down Pond Street to Depot Street.

On the east end of this segment the sidewalk terminates at the roadway side of the perpendicular parking for the Stowe Free Library. The sidewalk does not connect to the sidewalks or walkways on that site. There are stamped bituminous walkways connecting the perpendicular parking area for the library to Stowe Elementary School and other buildings.

Figure 21: Pond Street - Sidewalk Limit at Stowe Free Library Parking

2.1.8. Park Place

Segment 15: Park Place

Segment 15: Park Place	
Sidewalk Material	○ Stamped bituminous ○ Concrete
Sidewalk Width	5 feet typical
Current Sidewalk Condition	Fair/Poor
Curbing Material	Concrete
Grass Buffer Between Curb and Sidewalk	Yes
Sidewalk Connectivity Through Segment	No
Crosswalks	Park Street – Painted To Stowe Elementary School - Painted
Sidewalk Ramps	Stamped Bituminous
Detectable Warning Surface	No
Driveway Crossings	Bituminous
Parking Spaces	No

Table 17: Segment 15 Existing Condition

Between the Stowe Elementary School and Park Street, stamped bituminous sidewalk is located on the north side of the street. Continuing on the north side of the street, between Park Street and Depot Street, concrete sidewalk is set back approximately 20 feet from the roadway on private property. This sidewalk provides access to the adjacent commercial building containing the post office and ends at the corresponding parking lot. There is no sidewalk on Park Place between the parking lot and Depot Street. The grass buffer between Park Street and Depot Street contains trees, landscaping, mailboxes, and signs.

Figure 22: Park Place - Concrete Sidewalk on Private Property

2.1.9. Sunset Street

Segment 16: Sunset Street – Main Street to Pleasant Street

Segment 16: Sunset Street – Main Street to Pleasant Street	
Sidewalk Material	○ Stamped bituminous ○ Bituminous
Sidewalk Width	○ 5-6 feet typical (stamped bituminous) ○ 3-4 feet typical (bituminous)
Current Sidewalk Condition	○ Fair (stamped bituminous) ○ Poor (bituminous)
Curbing Material	○ Granite (stamped bituminous) ○ No (bituminous)
Grass Buffer Between Curb and Sidewalk	○ No (stamped bituminous) ○ Yes (bituminous)
Sidewalk Connectivity Through Segment	Yes
Crosswalks	No
Sidewalk Ramps	Stamped Bituminous
Detectable Warning Surface	No
Driveway Crossings	○ Stamped bituminous ○ Bituminous
Parking Spaces	○ 3 standard, parallel ○ Parking allowed, no markings

Table 18: Segment 16 Existing Condition

Sunset Street is a residential street with sidewalk located only on the south side. Approximately 65 feet beyond the intersection with Main Street, the sidewalk material changes from stamped bituminous adjacent to curb to bituminous with no curb. There is a short segment, approximately 50 feet long, where the bituminous sidewalk is elevated above the roadway with no defined curb. Beyond that point, the sidewalk narrows and a grass buffer separates the sidewalk from the roadway up to Pleasant Street. There are areas where the sidewalk drops off into the grass buffer. Two large trees are located within the grass buffer.

There are three striped on-street parking spaces on the Main Street end of this segment. Beyond the first driveway, there is unstriped on-street parking, with a winter overnight parking restriction.

Figure 23: Sunset Street

2.1.10. Mountain Road

Segment 17: Mountain Road – Main Street to Bridge

Segment 17: Mountain Road – Main Street to Bridge	
Sidewalk Material	○ Stamped bituminous ○ Concrete
Sidewalk Width	5-6 feet typical
Current Sidewalk Condition	○ Fair (stamped bituminous) ○ Good (concrete)
Curbing Material	Granite
Grass Buffer Between Curb and Sidewalk	No
Sidewalk Connectivity Through Segment	Yes
Crosswalks	Mid-block crossing to Stowe Craft and Design - Painted
Sidewalk Ramps	Concrete
Detectable Warning Surface	Yes
Driveway Crossings	○ Stamped bituminous ○ Concrete
Parking Spaces	No

Table 19: Segment 17 Existing Condition

Sidewalk is located on the east side of Mountain Road only. This segment begins at a concrete sidewalk ramp with a detectable warning surface at the Main Street intersection. Proceeding north, stamped bituminous sidewalk extends approximately 160 feet, where concrete sidewalk begins and extends to the bridge over the Little River.

Figure 24: Mountain Road

Segment 18: Mountain Road: Bridge to Weeks Hill Road

Segment 18: Mountain Road: Bridge to Weeks Hill Road	
Sidewalk Material	○ Concrete ○ Bituminous
Sidewalk Width	5-6 feet typical
Current Sidewalk Condition	○ Good (concrete) ○ Poor (bituminous)
Curbing Material	○ Granite ○ 390-foot section uncurbed
Grass Buffer Between Curb and Sidewalk	○ No (concrete) ○ Partial (bituminous)
Sidewalk Connectivity Through Segment	Yes
Crosswalks	○ Mid-block crossing to The Stowe Inn - Painted ○ Dump Road – Painted ○ Mid-block crossing to Creative Consignments (bus stop) - Painted
Sidewalk Ramps	○ Concrete ○ Bituminous
Detectable Warning Surface	On concrete sidewalk ramps only
Driveway Crossings	○ Concrete ○ Bituminous
Parking Spaces	No

Table 20: Segment 18 Existing Condition

Sidewalk is located on the east side of Mountain Road only. The concrete sidewalk continues north from the bridge over the Little River approximately 270 feet, where the sidewalk material changes to bituminous and continues north. The grass buffer along the bituminous sidewalk terminates approximately 340 feet south of Weeks Hill Road. The most deteriorated areas of bituminous sidewalk in this segment were removed and replaced in kind in the Spring of 2017.

Figure 25: Mountain Road Looking South

3. Evaluation of Options

3.1. Sidewalk Materials

Many sidewalk materials have been used in Stowe including concrete pavers, bituminous concrete, stamped and colored bituminous concrete, and portland cement concrete. Concrete pavers were initially used in the village for aesthetics, but experienced significant settling due to heavy snow removal equipment and considerable deterioration from low durability materials and exposure to the elements. Stamped and colored bituminous concrete has cracked and faded; repairs matching patterns and colors are difficult. The recommended sidewalk materials for the village should still be aesthetically pleasing, but also be able to tolerate years of snow plowing and deicing salts.

The most common material options for sidewalk surfaces include unit pavers, concrete, and bituminous. Each material has advantages and disadvantages depending on the application. The characteristics of these materials are discussed in the following sections.

3.1.1. Bituminous Concrete

Bituminous Concrete	
Initial Cost	Low: ○ Low material costs; ○ Low labor costs for installation.
Durability	Low: ○ Lower life expectancy than all other listed materials and more prone to breakage from freeze/thaw cycles, tree roots, and other stresses.
Required Maintenance	No regular maintenance: ○ Maintenance is primarily patching or replacing sections as wear occurs.
Ease of Installation	Easy: ○ No specialty contractor/laborers required.
Ease of Repair	Easy: ○ Can be maintained by Town.
Aesthetics	Low: ○ Considered to be a less aesthetic material and is most often used in areas of non-historic importance.

Table 21: Bituminous Concrete Sidewalk

Bituminous concrete is the least expensive option, but has the shortest life cycle and is the least visually appealing material.

3.1.2. Portland Cement Concrete

Portland Cement Concrete	
Initial Cost	Medium: ○ Medium material costs; ○ Medium/Low labor costs for installation.
Durability	Medium: ○ Resistant to breakage due to freeze/thaw cycles and tree roots; ○ Unlikely to settle the way pavers do; ○ More likely to deteriorate from deicing salts than natural materials such as granite or clay bricks.
Required Maintenance	No regular maintenance: ○ Damaged sections can be cut out and patched.
Ease of Installation	Easy: ○ No specialty contractor/laborers required.
Ease of Repair	Easy: ○ Can be maintained by Town.
Aesthetics	Medium: ○ Too much concrete can create an urban/industrial look.

Table 22: Portland Cement Concrete Sidewalk

Portland cement concrete (concrete) sidewalks are less expensive than unit pavers, but more expensive than bituminous concrete sidewalks. Concrete is a widely used sidewalk surface material due to its durability and ability to provide a smooth and consistent surface for pedestrians. To avoid an urban/industrial look, CLD | Fuss & O'Neill would recommend incorporating a simple scored pattern on the sidewalk as shown in Figure 26 for all concrete sidewalks. This pattern incorporates the expansion joints for a more visually appealing finish.

Figure 26: Scored Pattern

3.1.3. Pavers: Granite, Clay Brick, or Concrete

Pavers Granite / Clay Brick / Concrete	
Initial Cost	High: ○ Medium to high material costs; ○ High labor costs for installation; ○ Additional cost for a proper base beneath the pavers.
Durability	High *with proper installation*: ○ Require a strong base to avoid settlement, as already experienced by the Town; ○ Granite is resistant to the long-term effects of weathering, aging and can withstand extremely cold weather; ○ Concrete pavers are more likely to deteriorate from deicing salts; ○ Bricks are able to withstand weathering, but are less able to withstand heavy loads such as snow removal equipment.
Required Maintenance	Varies: ○ Granite pavers are maintenance-free, slip resistant with thermal finish; ○ Concrete pavers must be cleaned and sealed to maintain the color; ○ Bricks are considered a maintenance-free material.
Ease of Installation	Difficult: ○ Labor-intensive installation; ○ Skilled laborers are required to lay patterns; ○ The more intricate the pattern, the more time required for installation and the higher the cost.
Ease of Repair	Easy: ○ Individual pavers can be replaced in kind; ○ Can be maintained by the Town.
Aesthetics	High: ○ Pavers are used primarily for aesthetics.

Table 23: Paver Sidewalk

Pavers are considered among the most aesthetically pleasing sidewalk material options; these can be granite, clay brick, or concrete. As experienced by the Town of Stowe, concrete pavers often shift and break, causing tripping hazards and nonconformance

with ADAAG standards. Using a base of bituminous concrete or portland cement concrete for pavers provides a more durable and uniform base to reduce the likelihood of settlement; this significantly adds to the cost of paver sidewalks.

3.1.4. Stamped Concrete

Stamped Portland Cement Concrete	
Initial Cost	Medium/High: ○ Medium to high material costs; ○ High labor costs for installation.
Durability	Medium: ○ More likely to deteriorate from deicing salts than natural materials such as granite or clay bricks.
Required Maintenance	No regular maintenance: ○ Resistant to breakage due to freeze/thaw cycles and tree roots; ○ Unlikely to settle the way pavers do; ○ Damaged sections can be cut out and patched (skilled laborers required); ○ If colors are used, sealing is recommended to help maintain the colors.
Ease of Installation	Difficult: ○ Labor-intensive installation; ○ Skilled laborers are required to lay patterns; ○ The more intricate the pattern, the more time required for installation and the higher the cost; ○ Surface colors require skilled workers apply the proper finish.
Ease of Repair	Difficult: ○ Repairs require patching - color matching of the new concrete to the old is very difficult; ○ Not easily repaired by Town forces.
Aesthetics	High/Medium: ○ Combines the benefits of concrete with the aesthetics of pavers.

Table 24: Stamped Concrete Sidewalk

Stamped concrete has comparable visual appeal to pavers and is intended to mimic the look of pavers while providing the durability of concrete sidewalks. Due to the costs of installation and maintenance, it is not necessarily a cost-effective option for an entire sidewalk network, but can be used as an accent to improve the aesthetic appeal of a more basic sidewalk material.

3.2. Combined Sidewalk Materials

Many localities have experienced difficulties selecting sidewalk materials that are affordable, sufficiently durable, and aesthetically appealing. One option is to combine the durability of a concrete sidewalk with the aesthetics of pavers by using concrete sidewalk with accents of another material. Concrete sidewalk is installed in high pedestrian traffic areas of the sidewalk and a decorative accent is placed in areas where there is typically less pedestrian traffic, usually against the curbline and/or against buildings. Bulb-outs and plaza areas are also good locations for these accents. The options considered and discussed for decorative accents include: brick, granite, and stamped concrete. Each surface has advantages and disadvantages which are discussed in detail in the following sections.

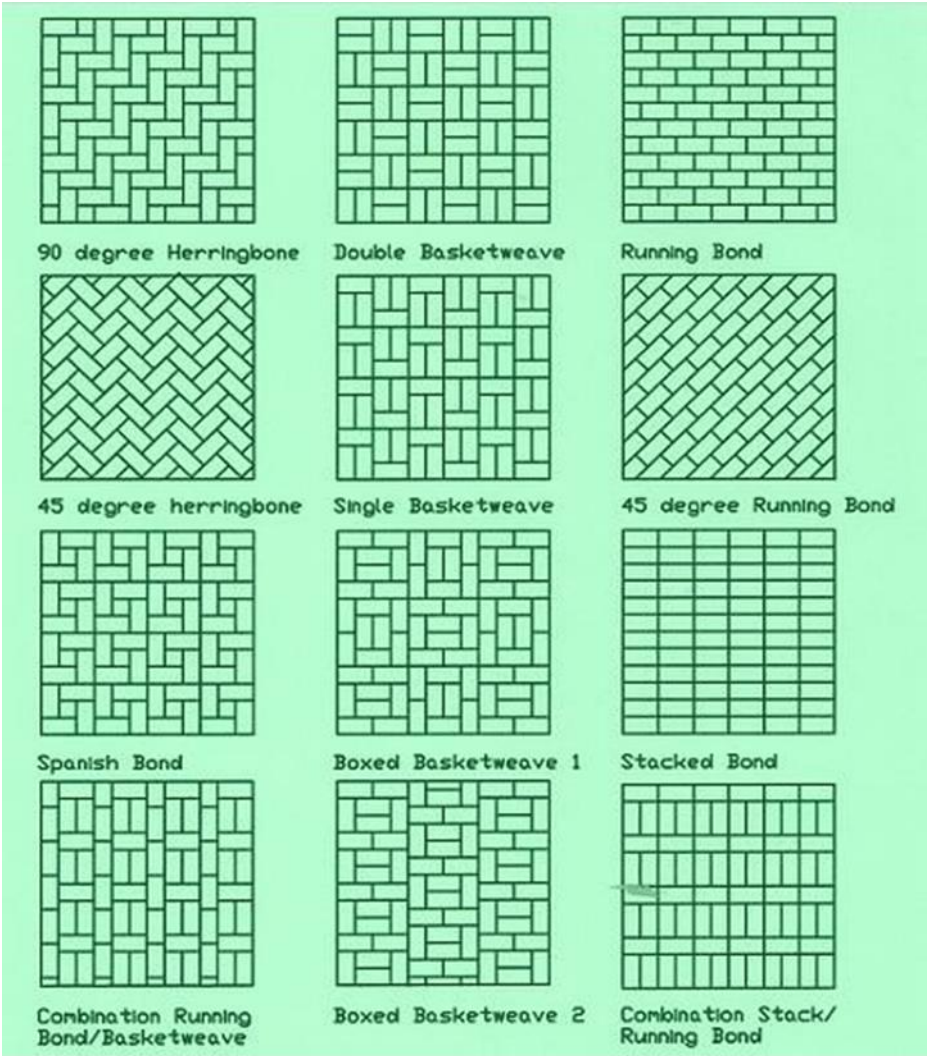
Figure 27: Sample of Accent Combined with Concrete

3.2.1. Clay Brick Accent

Clay Brick Accent	
Initial Cost	Medium/High: ○ Medium material costs; ○ Medium/high labor costs for installation; ○ Additional cost for a bituminous or concrete base beneath the pavers.
Durability	Medium *with proper installation*: ○ Require a strong base to avoid settlement issues; ○ Time-tested to withstand weathering; ○ Less able to withstand heavy loads such as snow removal equipment.
Required Maintenance	No regular maintenance: ○ If damage occurs individual bricks can be replaced.
Ease of Installation	Difficult: ○ Labor-intensive installation; ○ Skilled laborers are required to lay patterns; ○ More intricate patterns require more time for installation and have higher costs.
Ease of Repair	Easy: ○ Individual bricks can be replaced in kind as long as settling is not an issue; ○ Can be maintained by the Town.
Aesthetics	High: ○ Bricks are used primarily for aesthetics.

Table 25: Clay Brick Accents

Clay brick is the most traditional accent with a lower upfront cost than granite. The durability and longevity of bricks is dependent on a suitable base and proper initial installation. As discussed in the 2010 report "*Stowe Main Street Sidewalk Investigation and Design*", test pits discovered that many of the existing concrete unit pavers are placed over a layer of sand. The accents would need to be placed on a layer of either concrete or bituminous concrete, over a gravel base to help prevent shifting and breaking.



Source: www.oregonbrick.com

Figure 28: Sample Brick Patterns

3.2.2. Concrete Paver Accent

Concrete Paver Accent	
Initial Cost	Low/Medium: ○ Low material costs; ○ Medium/high labor costs for installation; ○ Additional cost for a proper base beneath the pavers.
Durability	Low *with proper installation*: ○ Require a strong base to avoid settlement issues; ○ More likely to deteriorate from deicing salts than natural materials such as granite or clay bricks.
Required Maintenance	○ Colored concrete products need to be cleaned and sealed to maintain the color; ○ If damage occurs individual pavers can be replaced.
Ease of Installation	Difficult: ○ Labor-intensive installation; ○ Skilled laborers are required to lay patterns; ○ More intricate patterns require more time for installation and have higher costs.
Ease of Repair	Easy: ○ Individual pavers can be replaced in kind as long as settling is not an issue; ○ Can be maintained by the Town.
Aesthetics	Medium/High: ○ Pavers are used primary for aesthetics; ○ Concrete pavers aesthetics will decrease with time.

Table 26: Concrete Paver Accents

A less expensive alternative to clay bricks are concrete unit pavers designed to look like clay bricks. Concrete pavers will have the same drawbacks as clay bricks but whereas bricks may chip or crack over time, concrete pavers are more likely to erode and fade with time even with proper installation. Advantages of concrete pavers over clay bricks include ease of installation due to the uniformity of pavers as well as ease of trimming to fit edges.

3.2.3. Granite Paver Accent

Granite Paver Accent	
Initial Cost	High: ○ High material costs; ○ Medium/high labor costs for installation; ○ Additional cost for a proper base beneath the pavers.
Durability	High *with proper installation*: ○ Granite pavers require a strong base to avoid settlement issues; ○ Granite is resistant to the long term; effects of weathering and aging; can withstand extremely cold weather.
Required Maintenance	No regular maintenance: ○ Damaged individual granite pavers can be replaced.
Ease of Installation	Difficult: ○ Labor-intensive installation; ○ Skilled laborers are required to lay patterns; ○ More intricate patterns require more time for installation and have higher costs.
Ease of Repair	Easy: ○ Individual granite pavers can be replaced in kind as long as settling is not an issue ○ Can be maintained by Town.
Aesthetics	High: ○ Granite pavers are used primarily for aesthetics.

Table 27: Granite Paver Accents

Granite is more expensive than brick but is a much more durable material. Unlike brick, granite will not fade and is resistant to the long-term effects of weathering.

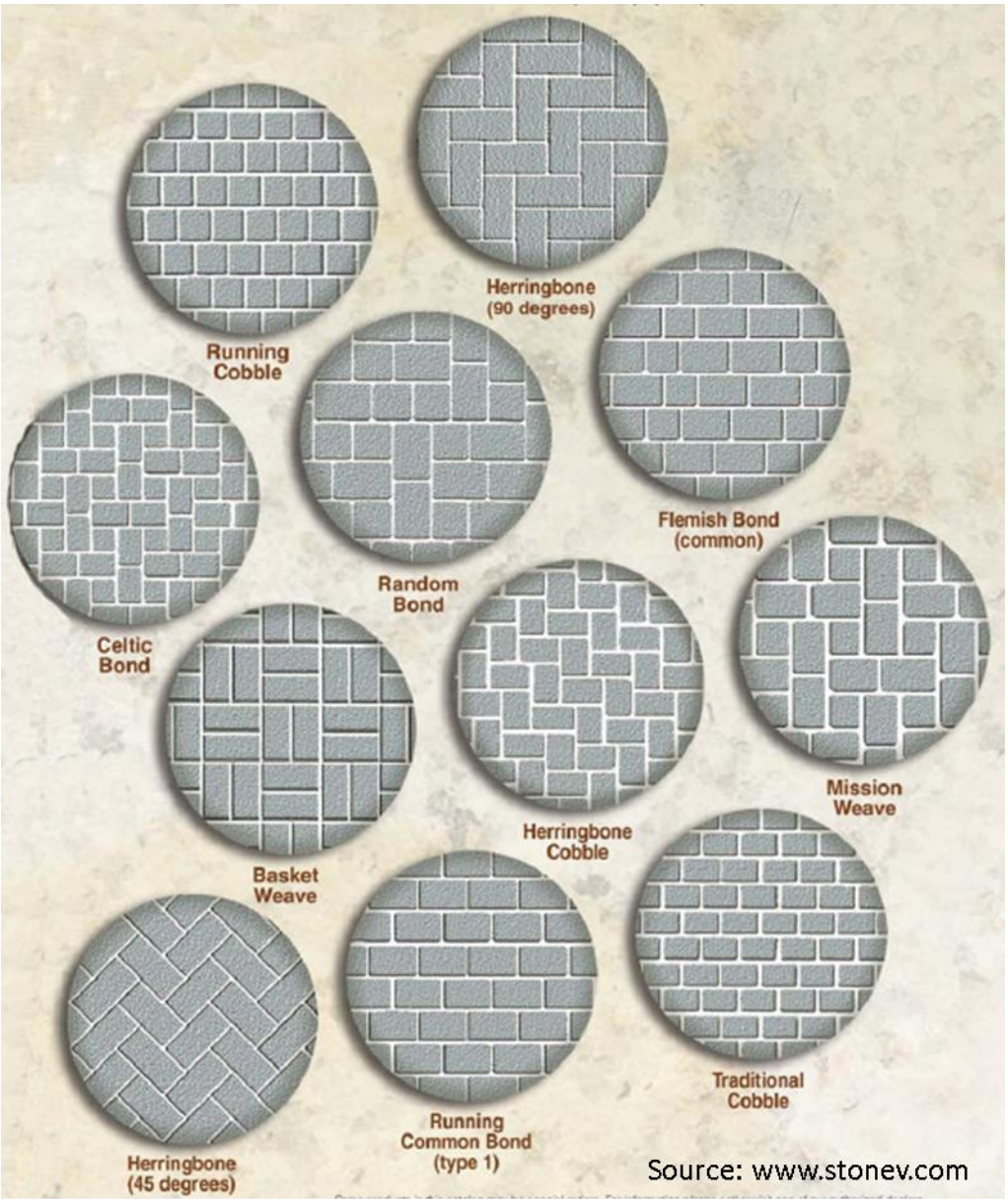


Figure 29: Sample Granite Patterns

3.2.4. Stamped Concrete Accent

Stamped Concrete Accent	
Initial Cost	Medium/Low: ○ Cost is dependent on intricacy of the color and pattern; ○ Low material costs for concrete, adding colors increases the cost; ○ Medium base cost for labor, adding surface colors and intricate patterns increases labor costs.
Durability	Medium/High: ○ Should be cleaned and sealed to maintain color and prevent staining; ○ Without regular maintenance may crack, fade and stain; ○ More likely to deteriorate from deicing salts than natural materials.
Required Maintenance	○ Needs to be cleaned and sealed to maintain color and prevent staining.
Ease of Installation	Moderate/Difficult: ○ Skilled laborers are required to stamp patterns; ○ More intricate patterns require more time for installation and have higher costs; ○ Adding surface colors required skilled workers for the proper finish.
Ease of Repair	Difficult: ○ Repairs require patching - color matching of the new concrete to the old is very difficult; ○ This is not a repair that would easily be completed by the Town.
Aesthetics	Medium/High: ○ Combines the benefits of concrete with the aesthetics of pavers.

Table 28: Stamped Concrete Accents

Stamped concrete has a multitude of pattern and color. A significant advantage to stamped concrete in conjunction with concrete sidewalk is that it will expand and contract, settle, and age uniformly. The upfront cost of stamped concrete is often much lower than pavers and the labor is less intensive than its counterparts, depending on the complexity of the pattern. The primary disadvantage to stamped concrete is the

difficulty of matching color and pattern during repairs. CLD | Fuss & O'Neill would recommend a finish similar to Finish G from Figure 30.

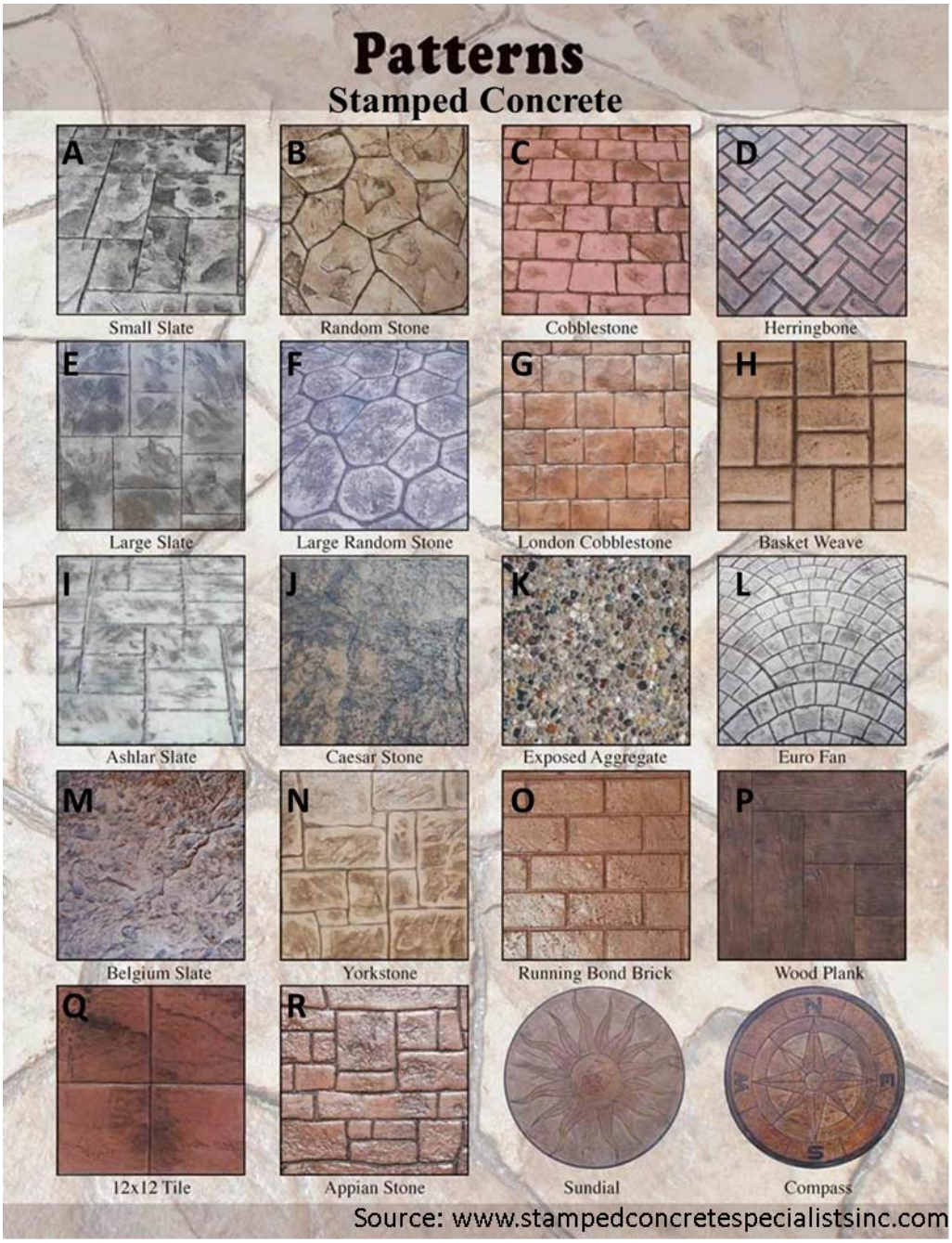
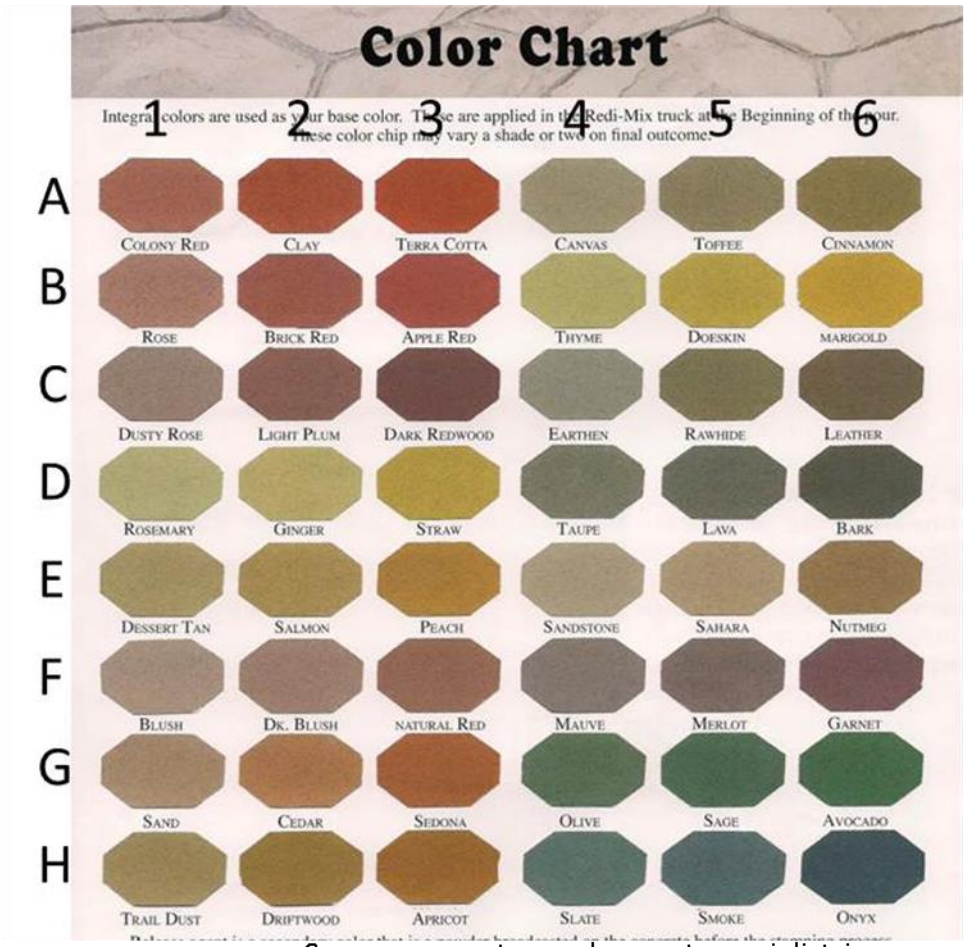


Figure 30: Stamped Concrete Sample Patterns

Individual manufacturers will have their own colors but a sample color chart is shown in Figure 31. There are typically two options for coloring concrete: integral colors and surface treatments.

Integral colors are mixed into the concrete and surface treatments are done after the concrete has been placed. There are a few disadvantages to integral colors including cost, which is typically 10%-30% higher than the cost of concrete because the entire batch is colored. With integral pigments, the color is throughout the slab and if there is surface wear the color will be the same beneath. The pigments in integral coloring are also said to be chemically stable and are not supposed to fade over time from weather and ultraviolet light[4]; however, without regular sealing this is not always the case. Integral color provides no variations in color; therefore, it is sometimes used in conjunction with surface treatments to create layers of colors that give the appearance of a more natural stone variation.



Source: www.stampedconcretespecialistsinc.com

Figure 31: Sample Integral Color Chart

[4]Concrete Network, *Advantages of Integral Color*, Retrieved from http://www.concretenetwork.com/products-integral-color/advantages.html

Surface colors may be achieved through a variety of treatments including: color hardeners, dyes, and stains. Color hardeners are popular for a more natural look because of the color variations created with this hand-applied process. The final surface has a higher density than the rest of the concrete due to the minerals used to achieve the colors. A drawback to this treatment is that it can be messy because the color is a powder that is spread over the surface; this treatment may require adjacent buildings and landscaping to be protected.

Concrete stains are limited primarily to earthy tones, while newer dyes can be used for more vibrant color options. See Figure 32. Acid stains work by penetrating the surface and reacting chemically with the hydrated lime in the concrete[5]. Acid stains produce a more natural finish because the concrete will not take the stain in a uniform manner; thereby, creating a more natural inconsistent color variation. Although these products are limited to natural colors, this is an excellent application for Main Street.

Source: www.kemiko.com

Figure 32: Sample Concrete Stain Colors

[5] Concrete Network, *Acid-Based* Stains, Retrieved from http://www.concretenetwork.com/products-stains/acid.html

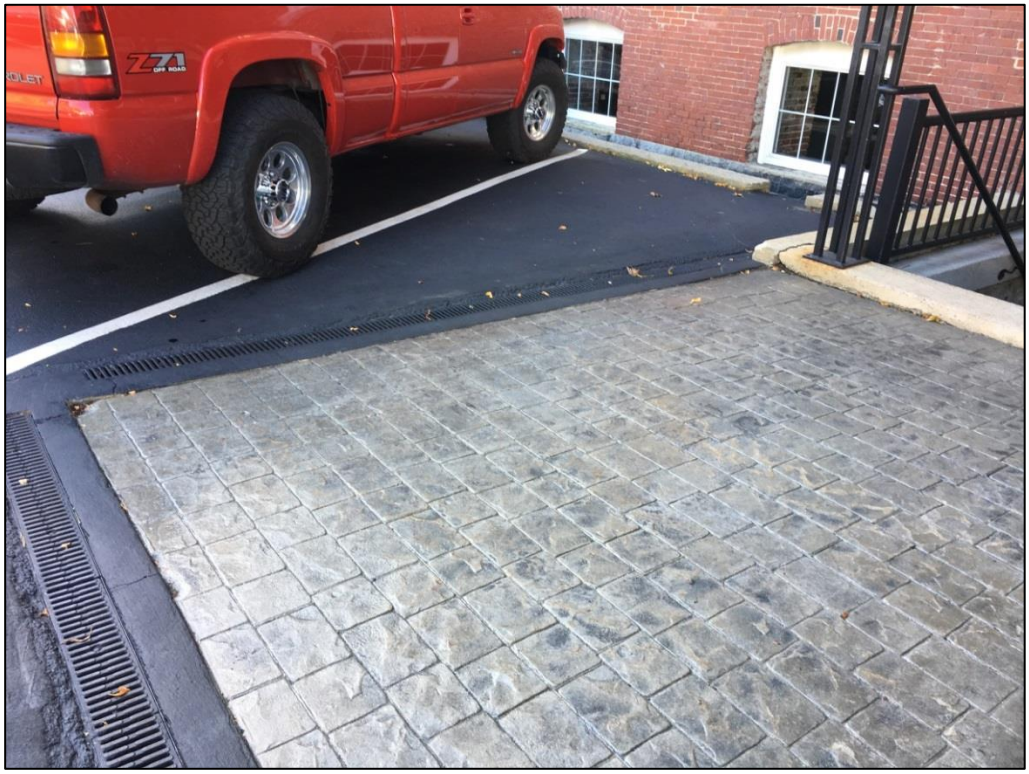


Figure 33: Stamped Concrete with Stained Finish

3.3. Crosswalk Materials

Crosswalk material options were also reviewed by this study. In the village, where high traffic volumes and aesthetics are a concern, decorative crosswalks consistent with the recommended sidewalk material were considered.

Option 1

Option 1 considered brick pavers with granite edging, similar to what is currently used in the village at driveways. Experience with time and cost to maintain these crosswalks, which can shift and break under vehicular traffic, helped determine that this would not be an appropriate application.

Option 2

Option 2 considered stamped asphalt decorative crosswalks. Once stamped, the entire crosswalk area is typically covered with either paint, epoxy resin, thermoplastic, or if the pavement is new, inlay tape can be used. Paint is generally the least expensive, but requires the most maintenance. Epoxy resin experiences improved durability over paint, but is more expensive. Thermoplastic is a durable material due to its thickness, but the extra thickness makes it more vulnerable to damage from snow plow blades. Thermoplastic material can also experience traction problems when wet. Imprinted crosswalks, although aesthetically pleasing, require frequent maintenance to ensure the crosswalk retains consistent coloring, particularly in high traffic volume areas.

Option 3

Crosswalks consisting of white pavement markings have been found to provide the highest level of visibility for pedestrians and lower maintenance costs than any other materials. Due to both the high volumes of vehicles and pedestrians in Stowe, inlaid painted crosswalks using thermoplastic markings that are set into the pavement are an appropriate application to reduce wear from snow plows. This type of crosswalk will maximize safety for pedestrians and minimize construction and maintenance costs for the Town.

Research, noted by the Federal Highway Administration (FHWA)[6], has determined that block pattern markings (referred to by FHWA as continental), as shown in Figure 34, are the most visible to motorists. In addition to their visibility, the markings can be spaced to avoid the wheel path of vehicles.

[6] Federal Highway Administration, *Designing Sidewalks and Trails for Access*, 2001

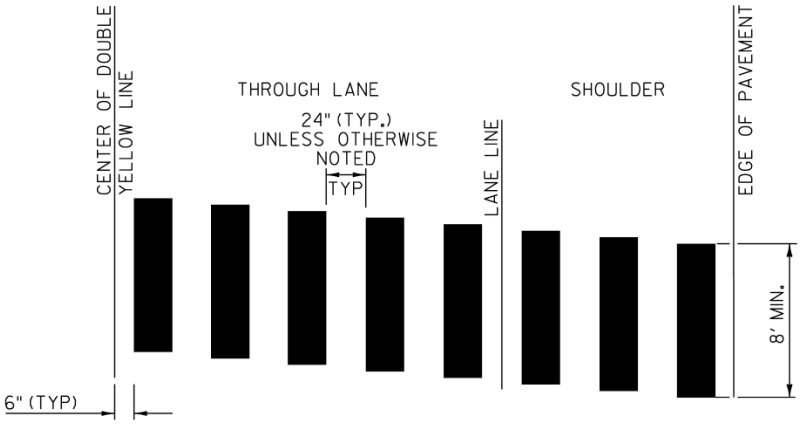


Figure 34: Block Pattern Crosswalk (Continental)

<u>Option 4</u>

In recent years, another type of stamped asphalt crosswalk has been developed that has significantly improved durability over the type discussed in Option 2. These inlaid crosswalks have a pattern pressed into the pavement, but instead of the color being applied to the entire crosswalk surface, the color is applied only in the depressed areas. Because the color is recessed below the surface, wear from tires and snow plows is greatly reduced. The inlaid crosswalks have improved visibility when compared with brick pavers or imprinted crosswalks due to the contrast between the uncolored asphalt and the colored pattern. The patterns in this type of crosswalk can be customized to reflect the style and culture of the Town of Stowe. This material has better slip resistance than the thermoplastic pavement markings described in Option 3, although it is more expensive to install.

Figure 35: Customized Inlaid Crosswalk

CLD| Fuss & O'Neill recommend either Option 3, inlaid thermoplastic block markings or Option 4, customized inlaid crosswalks. Both of these materials would meet the needs of the Town. We recommend the Town undertake a visioning process to identify a community-guided plan for aesthetics that incorporated Stowe's historic, artistic, and recreational culture.

In the concept plans, the crosswalks in all locations are represented with block pattern pavement markings as placeholders.

3.4. Lighting

The existing lights along the southbound side of Main Street are decorative ornamental lighting but are not energy efficient. The lights along the northbound side of Main Street are cobra heads mounted to the existing utility poles, which are included in the Town's utility relocation plan and therefore will need to be replaced with ground-mounted lights. CLD | Fuss & O'Neill's recommendation is to replace the cobra head lights on the northbound and southbound side of Main Street with energy-efficient light-emitting diodes (LEDs). The lights along Depot Street are in poor condition and should be replaced with the same style of energy-efficient lights as Main Street. This would also be an ideal time to consider the lighting on any other sections of the village, especially near the library and Stowe Elementary School. Incorporating the same lighting throughout the village will create a more cohesive look.

Figure 36: Sample LED Light Fixture

Figure 37: Light Fixture on Main Street

4. Recommendations

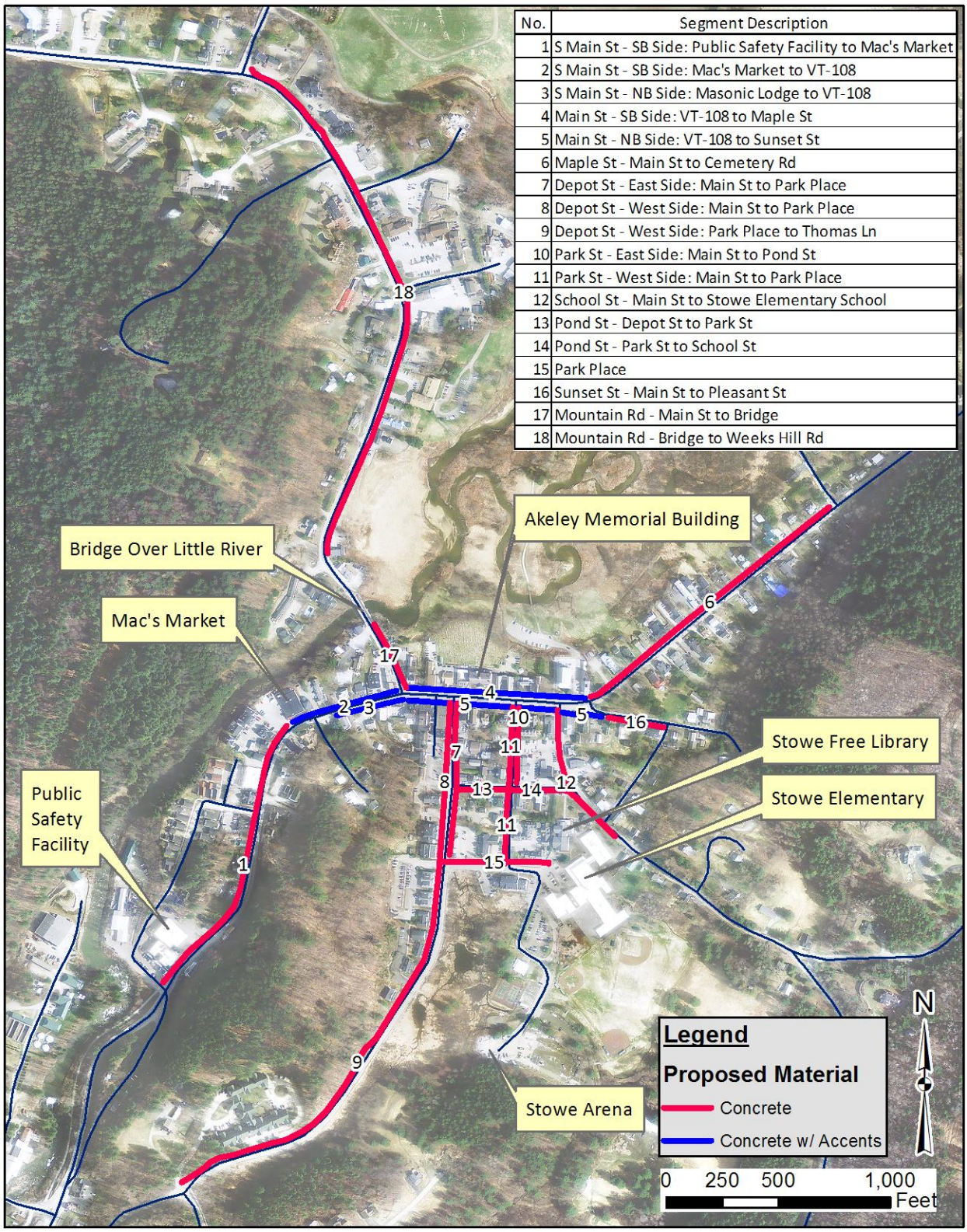
4.1. Overview

Recommendations have been developed for each of the sidewalk segments discussed in Section 2 of this report. CLD | Fuss & O'Neill recommends that each sidewalk segment be composed of scored concrete sidewalk to provide a cohesive appearance. Generally, the sidewalks should be constructed as 5-inch concrete sidewalks over a base of 8 inches of fine graded crushed gravel. Where the sidewalk crosses commercial driveways, the sidewalk should be constructed of 8-inch concrete sidewalk over the same 8-inch base of crushed gravel to prevent breakage from heavy vehicles. On Main Street and a few areas adjacent to Main Street, the sidewalk should have paver or stamped concrete accents to increase aesthetic appeal. Proposed sidewalk should have a minimum width of 6 feet, unless existing constraints such as a building necessitate a narrower sidewalk. In areas of high pedestrian traffic, such as Main Street, wider sidewalks are recommended.

It is recommended that all crosswalks be constructed with inlaid thermoplastic markings in a block pattern to maximize visibility of pedestrians and minimize maintenance costs. It is also recommended that all sidewalk ramps be brought in conformance with ADAAG standards, including meeting maximum slope requirements and providing detectable warning surfaces. Existing granite curbing that meets VTrans' standards does not require replacement; however, the curbing adjacent to substandard sidewalk ramps, as well as curbing in the areas where the edge of the roadway is inconsistent, will need to be reset. It is also recommended that any concrete curb be replaced with granite curbing for consistency and durability when adjacent sidewalks are replaced. Wherever curbing is to be reset, replaced, or new pavement markings are recommended, it is also recommended that the roadway be overlaid with pavement to prevent deterioration of the roadway from an exposed seam and to provide a fresh surface for markings. Proposed lighting is recommended to be LED, ground-mounted fixtures.

These recommendations provide a consistent aesthetic for pedestrian facilities throughout the project area. The recommended sidewalk materials balance visual appeal and durability and will prevent the recurrence of the settling issues the Town's sidewalks have experienced in the past.

PROJECT AREA MAP - PROPOSED CONDITIONS



No.	Segment Description
1	S Main St - SB Side: Public Safety Facility to Mac's Market
2	S Main St - SB Side: Mac's Market to VT-108
3	S Main St - NB Side: Masonic Lodge to VT-108
4	Main St - SB Side: VT-108 to Maple St
5	Main St - NB Side: VT-108 to Sunset St
6	Maple St - Main St to Cemetery Rd
7	Depot St - East Side: Main St to Park Place
8	Depot St - West Side: Main St to Park Place
9	Depot St - West Side: Park Place to Thomas Ln
10	Park St - East Side: Main St to Pond St
11	Park St - West Side: Main St to Park Place
12	School St - Main St to Stowe Elementary School
13	Pond St - Depot St to Park St
14	Pond St - Park St to School St
15	Park Place
16	Sunset St - Main St to Pleasant St
17	Mountain Rd - Main St to Bridge
18	Mountain Rd - Bridge to Weeks Hill Rd

Figure 38: Project Area Map - Proposed Condition

4.2. Segment Recommendations

4.2.1. South Main Street

Segment 1: South Main Street Southbound Side – Stowe Public Safety Facility to Mac's Market

Segment 1: South Main Street Southbound Side – Stowe Public Safety Facility to Mac's Market	
Recommendations	
Proposed Sidewalk Material	Scored concrete
Sidewalk Width	6 feet
Sidewalk Length	1,330 feet
Sidewalk Relocation	○ Eliminate grass buffer in front of residences ○ Replace sidewalk in front of Village Walk at consistent offset
Reset/Replace Curb	Yes
Overlay Pavement	Yes (Class I VTrans Project)
New Sidewalk Ramps with Detectable Warning Surface Needed	2
Commercial Driveway Crossings	2 including Public Safety Emergency Vehicle Access
Crosswalks	Palisades Street intersection
Drainage Improvements	No
Proposed Number of Parking Spaces	None
Net Parking Spaces	0
Replace Lighting	No
Special Conditions	○ Timber retaining wall in front of house 246 that encroaches within the right-of-way and 6-foot sidewalk width. Reset curb to 15 feet offset from centerline to improve the sidewalk width in this area. ○ Sign within the right-of-way to be relocated near Palisades Street (North).
Other Potential Town Projects in the Vicinity	○ The Town would like to remove of remaining portion of the original cast iron water main and concrete pavement. ○ The Town would like to add curb to the northbound side of the road; drainage implications.

Table 29: Segment 1 Proposed Condition

There is a variable-width grass buffer between the curb and sidewalk in front of two houses just south of the northern intersection with Palisades Street as shown in Figure 39. CLD | Fuss & O'Neill recommends eliminating this buffer and relocating the sidewalk adjacent to the curb throughout Segment 1, thus providing a larger functional front lawn for these properties and creating a more uniform appearance along the road. The curb should be set at a constant offset from the roadway centerline, starting at 15-feet near the Stowe Public Safety Facility and widening to 16-feet at Palisades Street (North) to more closely match the existing curb and sidewalk location. This new curb location allows for a 6-foot sidewalk along the entire length of this segment and provides an undeviating appearance along the road. There are two business signs located in close proximity to the sidewalk that will interfere with sidewalk construction and will need to be relocated.

This segment of South Main Street is scheduled to be overlaid with the proposed state project for paving Class I Town Highways in 2020. The portion of this segment from Palisades Street (South) to Palisades Street (North) has the last remaining portion of the original cast iron water main and concrete pavement. It is recommended that this section of the water main be replaced and the original concrete pavement be removed under a separate project prior to this sidewalk and paving project. In addition, the Town would like to place curb on the northbound side of South Main Street, beginning at the Stowe Public Safety Facility and extending to the sidewalk in front of the Masonic Lodge. This work would require additional drainage analysis.

Figure 39: Grass Buffer on South Main Street

Figure 40: Timber Retaining Wall

Figure 41: Signs within the Right-of-Way

Segment 2: South Main Street Southbound Side – Mac's Market to VT-108

Segment 2: South Main Street Southbound Side – Mac's Market to VT-108	
Recommendations	
Proposed Sidewalk Material	○ Scored concrete ○ Accent band at existing retaining wall
Sidewalk Width	6 feet typical, 8 feet in front of retaining wall
Sidewalk Length	560 feet
Sidewalk Relocation	Move curb and sidewalk in front of Mac's Market
Reset/Replace Curb	Yes
Overlay Pavement	Yes (Class I VTrans Project)
New Sidewalk Ramps with Detectable Warning Surface Needed	2
Commercial Driveway Crossings	4
Crosswalks	○ Mid-block to Masonic Lodge ○ VT-108 intersection
Drainage Improvements	Yes
Proposed Number of Parking Spaces	4
Net Parking Spaces	0
Replace Lighting	No
Special Conditions	None
Other Potential Town Projects in the Vicinity	Drainage improvements to replace outfall

Table 30: Segment 2 Proposed Condition

There are grass buffers between the sidewalk and curb in front of Mac's Market that should be removed and the sidewalk should be installed adjacent to the curb along the road as shown in Figure 45. Coordination should be done with Mac's Market to determine the desired material between the sidewalk and parking lot. Drainage improvements included in this project comprise adding a catch basin in the parking area bump-out. Drainage improvements along the eastern portion of this segment are required to eliminate an existing outlet not in the Town's control. The improvements to replace the outlet would be completed in a separate project.

A new sidewalk ramp would be needed in order to keep the mid-block crosswalk across South Main Street by the Masonic Lodge. Due to the location of a commercial driveway and the need to provide a safe landing for pedestrians, the driveway opening will need to be reduced to provide a ramp for the crosswalk. There is an existing sight distance issue on the northbound side of Main Street due to the geometry of the road at this location. A way to reduce the safety concerns of a mid-block crossing would be to include additional safety options such as additional signing for pedestrian safety and an actuated flashing pedestrian beacon.

An alternative to the mid-block pedestrian crossing is providing a crosswalk at the intersection with VT-108, as shown in Figure 46. Although intersection crossings are usually a safer alternative than mid-block crosswalk, it should be considered that this would make the sidewalk to the Masonic Lodge a dead-end segment. These conditions encourage jaywalking at this location as pedestrians are unlikely to travel back to the intersection to cross if they are intending to continue south. A way to reduce this safety concern as well as encourage the majority of pedestrian traffic to cross at the intersection would be to include both crosswalks.

Figure 42: Bump-Out at Mac's Market

Segment 3: South Main Street Northbound Side – Masonic Lodge to VT-108

Segment 3: South Main Street Northbound Side – Masonic Lodge to VT-108	
Recommendations	
Proposed Sidewalk Material	○ Scored concrete ○ Accent area at seating area across from VT-108
Sidewalk Width	6 feet
Sidewalk Length	320 feet
Sidewalk Relocation	No
Reset/Replace Curb	Yes
Overlay Pavement	Yes (Class I VTrans Project)
New Sidewalk Ramps with Detectable Warning Surface Needed	1
Commercial Driveway Crossings	3
Crosswalks	Mid-block to Masonic Lodge
Drainage Improvements	Yes
Proposed Number of Parking Spaces	2
Net Parking Spaces	0
Replace Lighting	No
Special Conditions	None
Other Potential Town Projects in the Vicinity	None

Table 31: Segment 3 Proposed Condition

In order to keep the mid-block crossing, the crosswalk in front of the Masonic Lodge will need to be shifted to the west to provide the shortest available pedestrian crossing and a safer termination of the crosswalk to the other side of VT-100. To make this crossing safer for pedestrians, sight hindering objects will need to be relocated or removed including the utility pole, mailboxes, and trees. A catch basin would be required adjacent to the Von Bargen's Jewelry driveway to resolve ongoing drainage issues at this location.

An alternative to the mid-block pedestrian crossing is providing a crosswalk at the intersection with VT-108, as shown in Figure 46. As discussed in Segment 2, it should be considered that this would make the sidewalk to the Masonic Lodge a dead-end segment. These conditions may encourage jaywalking at this location as pedestrians are unlikely to travel back to the intersection to cross if they are intending to continue south, the crossing at VT-108 would alleviate this concern.

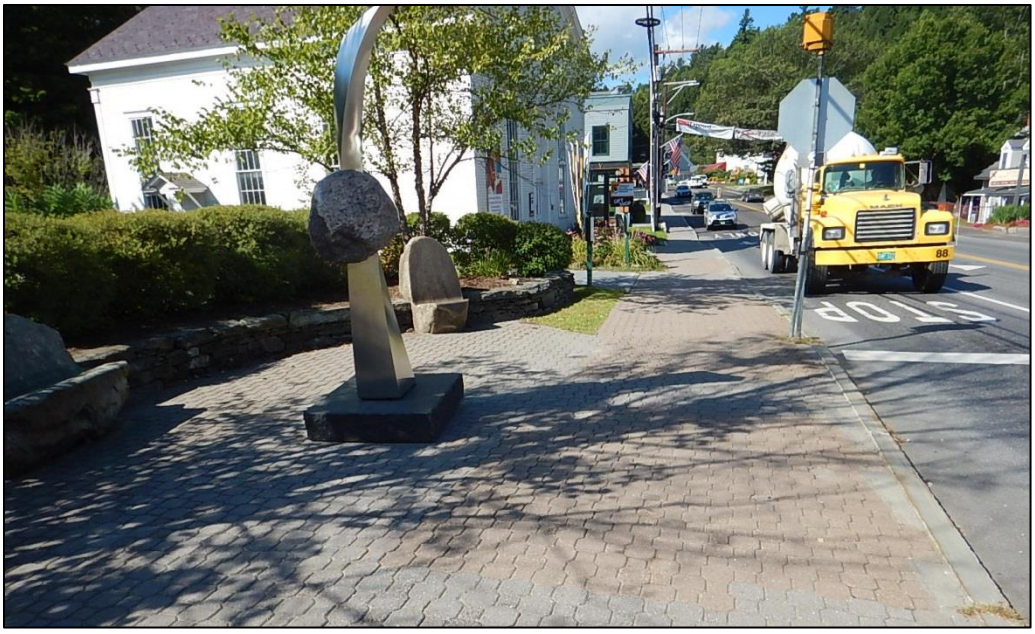


Figure 43: Seating Area at VT-108 Intersection

FIGURE 44
SEGMENT 1: SOUTH MAIN STREET
STOWE PUBLIC SAFETY FACILITY TO PALISADES ST

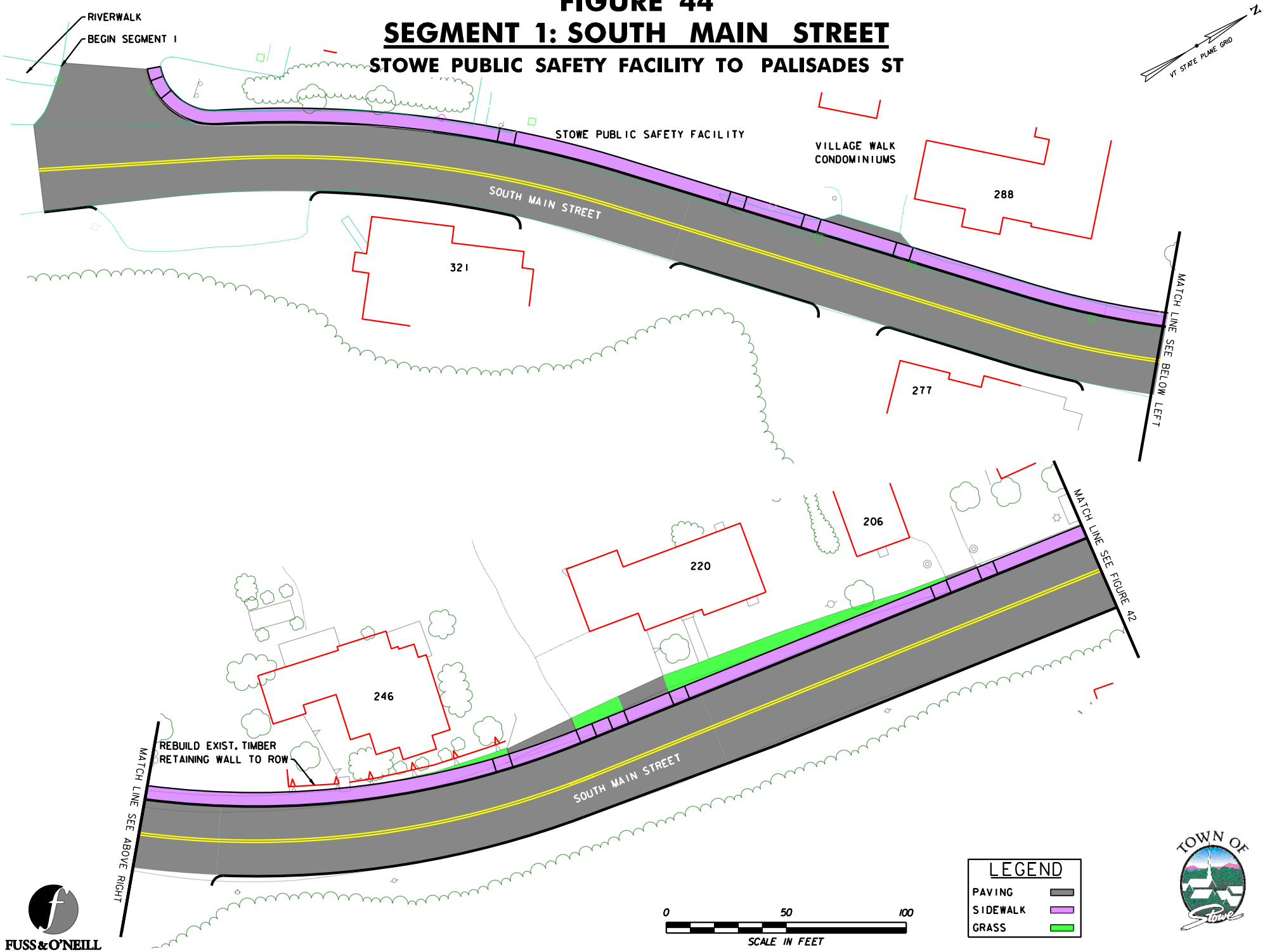
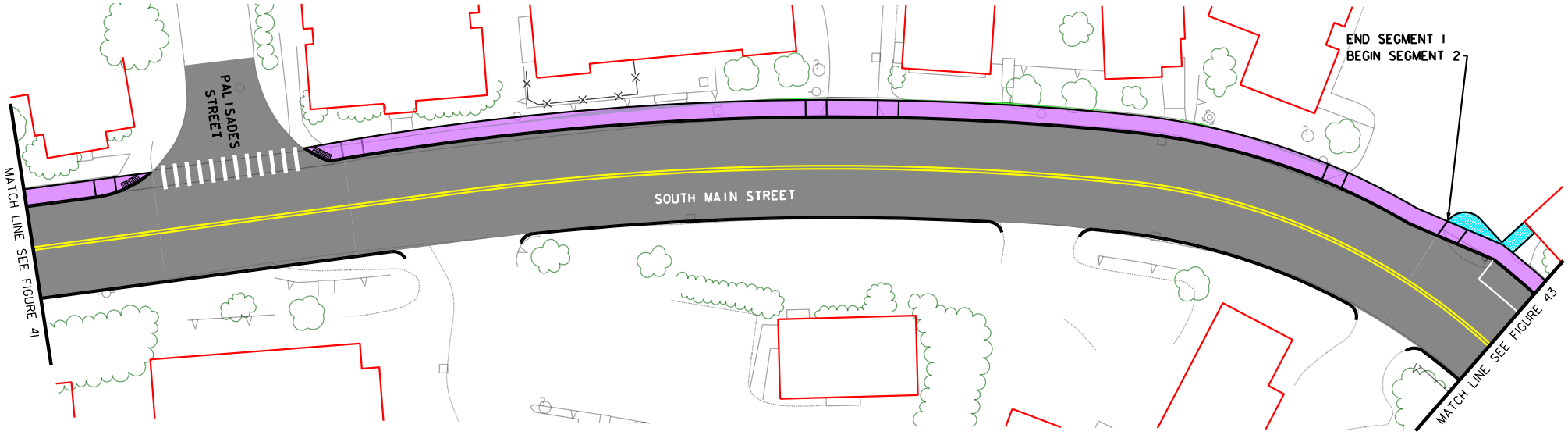


FIGURE 45
SEGMENTS 1 & 2: SOUTH MAIN STREET
PALISADES STREET TO MAC'S MARKET



LEGEND

PAVING	
SIDEWALK	
GRASS	
ACCENT	

0 50 100
SCALE IN FEET

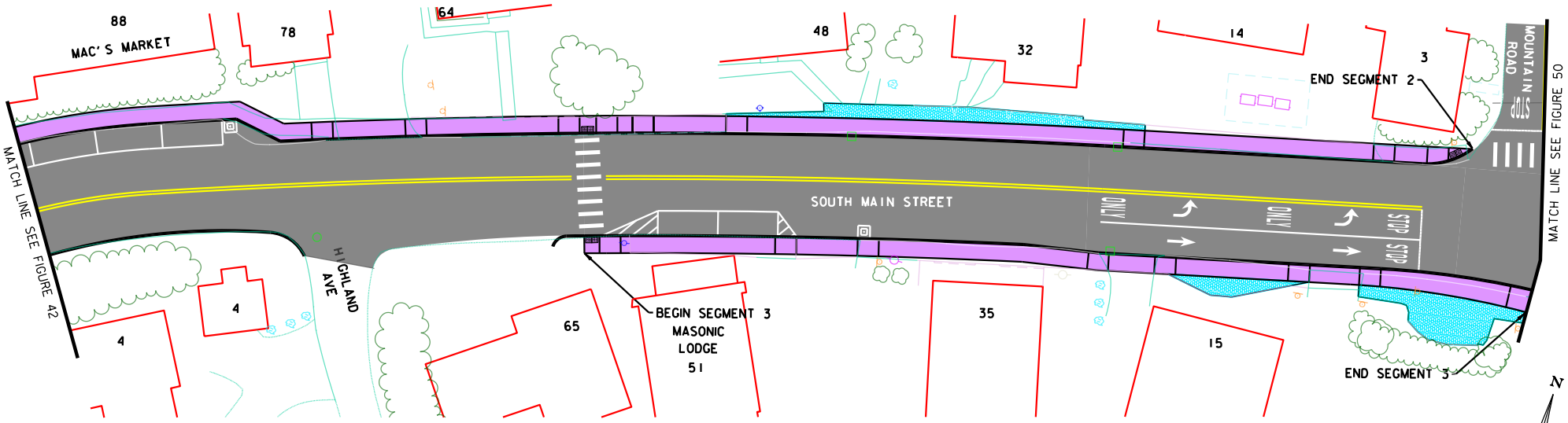
FUSS & O'NEILL

TOWN OF Stowe

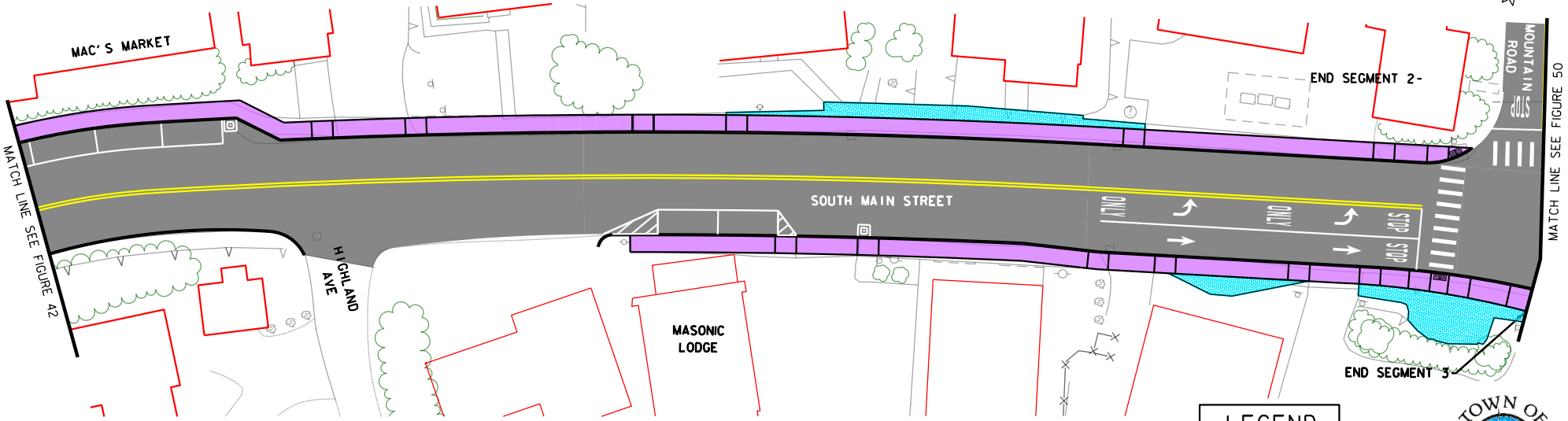
FIGURE 46

SEGMENTS 2 & 3: SOUTH MAIN STREET

MAC'S MARKET TO VT 108



SEGMENTS 2 & 3: SOUTH MAIN STREET ALTERNATIVE



N

VT STATE PLANE GRID

LEGEND

- PAVING
- SIDEWALK
- GRASS
- ACCENT

0 50 100

SCALE IN FEET

FUSS & O'NEILL

TOWN OF Stowe

4.2.2. Main Street

The RSG "Stowe Village Crosswalk Evaluation Memo" recommended that the crosswalks along Main Street should be relocated to intersections. CLD | Fuss & O'Neill reviewed these findings and concurs with the relocations as recommended. Many of the current crossings utilize driveway aprons and are not ADAAG-compliant. At a minimum, these locations would need to be adjusted away from the driveways to provide ADAAG-compliant crossings with proper slopes on the ramps, detectable warning devices, and a protected landing for pedestrians to wait to cross. The parking layouts shown in the RSG report do not meet current VTrans parking standards for offsets from driveways[7]. There is no crash history to support the need for the full offset; therefore, it is CLD | Fuss & O'Neill's recommendation to reduce the standard 20-foot offset between parking and driveways to a minimum of 10 feet to maximize parking.

Segment 4: Main Street Southbound Side – VT-108 to Maple Street

Segment 4: Main Street Southbound Side – VT-108 to Maple Street	
Recommendations	
Proposed Sidewalk Material	○ Scored concrete ○ Accent bands
Sidewalk Width	8 feet total
Sidewalk Length	830 feet
Sidewalk Relocation	No
Reset/Replace Curb	Yes
Overlay Pavement	Yes (Class I VTrans Project)
New Sidewalk Ramps with Detectable Warning Surface Needed	4
Commercial Driveway Crossings	6
Crosswalks	N/A (Crosswalks included in Segment 5)
Drainage Improvements	No
Proposed Number of Parking Spaces	14
Net Parking Spaces	-5
Replace Lighting	Convert fixtures to LED
Special Conditions	○ Remove discontinued drive apron across from Park Street. ○ Existing trees are severely stressed and should be replaced.
Other Potential Town Projects in the Vicinity	None

Table 32: Segment 4 Proposed Condition

[7] Vermont Agency of Transportation, *Standard E-193 "Pavement Marking Details"*, 1995

The grass buffer between the sidewalk and curb requires maintenance and the street trees are severely stressed under the existing conditions. There may be an opportunity to consider replacing the grass buffer and trees with a lower maintenance option, including replacing the grass with additional accent areas and planting the trees in tree pits with structural soil. The town is also considering replacing existing street lighting.

Many businesses have patio areas adjacent to the sidewalk and paver walkways that continue to the curb. CLD | Fuss & O'Neill's suggestion would be to eliminate the walkways to the curb in order to encourage pedestrians to use the provided crosswalks, as shown in Figure 47. The patios are constructed of the same pavers as the existing sidewalk; therefore, replacing them concurrent with the sidewalk would be most cost-effective and provide the most aesthetically consistent outcome. Coordination between the Town and business owners is recommended to determine the treatment and funding for patio replacements.

Figure 47: Walkway to Curb

There is a discontinued driveway apron across from Park Street that should be eliminated as it no longer functions as a driveway and encourages pedestrians to cross Main Street at an unsanctioned location, as shown in Figure 48. This area should be replaced with grass to match the treatment east of it.

Figure 48: Discontinued Driveway Apron

Using the new crosswalk locations and utilizing the full VTrans parking standard offsets, the number of parking spaces available on the north side of Main Street would be reduced from nineteen to nine spaces. By eliminating the 20-foot offset to driveways and using the 20-foot offset only from crosswalks, fourteen parking spaces would be available. This is a reduction from the current nineteen spaces on the north side of the road; this is due to substandard existing parking space dimensions as well as the relocations of the crosswalks.

Figure 49: Plaza Area in Front of Akeley Memorial Building

Segment 5: Main Street Northbound Side – VT-108 through Sunset Street Intersection

Segment 5: Main Street Northbound Side – VT-108 through Sunset Street Intersection	
Recommendations	
Proposed Sidewalk Material	○ Scored concrete ○ Accent band
Sidewalk Width	8 feet total
Sidewalk Length	910 feet
Sidewalk Relocation	No
Reset/Replace Curb	Yes
Overlay Pavement	Yes (Class I VTrans Project)
New Sidewalk Ramps with Detectable Warning Surface Needed	9
Commercial Driveway Crossings	1
Crosswalks	8 (4 across Main St and 4 across side streets)
Drainage Improvements	No
Proposed Number of Parking Spaces	13 (does not include 5 spaces in front of Black Cap Coffee)
Net Parking Spaces	-2
Replace Lighting	Convert fixtures to LED or add ornamental light fixtures similar to southbound side if Main Street overhead utility relocation is undertaken.
Special Conditions	Construct sidewalk/curb extension at School Street
Other Potential Town Projects in the Vicinity	New primary conduit runs under sidewalk anticipated for fiber utilities if Main Street overhead utility relocation is undertaken.

Table 33: Segment 5 Proposed Condition

The existing grass buffer can be maintained, however there may be an opportunity to consider replacing it with a lower maintenance option as discussed in Segment 4. The crosswalks across the side roads to the south of Main Street should be shifted to be adjacent to the Main Street curbline in order to improve sight distance for vehicles on the side roads. It was observed that vehicles are pulling beyond the crosswalk in order to safely turn onto Main Street; therefore blocking pedestrian access, as shown in Figure 50. ADAAG-compliant ramps will need to be provided at the new crosswalk locations.

Figure 50: Crosswalk and Perpendicular Parking at Black Cap Coffee/School Street Intersection

The new crosswalk locations, which use VTrans standards, would reduce the number of parking spaces available on the south side of Main Street from fifteen to nine spaces. By eliminating the 20-foot offset to driveways and using the 20-foot offset only from crosswalks, thirteen parking spaces would be available. To increase available parking, angled parking was investigated between Depot Street and School Street by eliminating the grass buffer, but the existing buffer width was insufficient to support this design option.

An alternative crosswalk location has been provided across Main Street at the Depot Street location. This crosswalk eliminates direct pedestrian access to the Stowe Area Association (information center), providing in its place two parallel parking spaces for vehicular access to the information center. This crosswalk has to be angled in order to meet the required offsets between crosswalks and driveways on the north side. Additionally, due to the VTrans offsets between crosswalks and parking spaces this alternative reduces the proposed parallel parking spaces in this segment from 13 to 12. Due to the angled crosswalk and reduction of parking spaces this alternative is not recommended.

A few businesses have patio areas adjacent to the sidewalk. The patios are concrete and some areas have been recently repaired due to deterioration. Coordination between the Town and business owners is recommended to determine the treatment and funding for patio replacements.

Figure 51: Business Patio Area

Sight distance for vehicles turning onto Main Street from School Street is deficient due to the parking on Main Street in front of Black Cap Coffee and the location of the stop bar. Both the stop bar and the crosswalk are located where drivers cannot safely turn without pulling forward and blocking the crosswalk. This causes a safety issue for both pedestrians and drivers. It is recommended that a curb extension with sidewalk be constructed to allow pedestrians to cross School Street adjacent to Main Street at a location beyond the parked vehicles. By reconfiguring the intersection of Sunset Street and Main Street in this way, utilizing perpendicular parking, four spaces are possible in front of the business and two parallel spaces would replace the existing parallel parking spaces on Sunset. However, the existing safety issues of traffic baking out of these spaces in the vicinity of the intersection would remain.

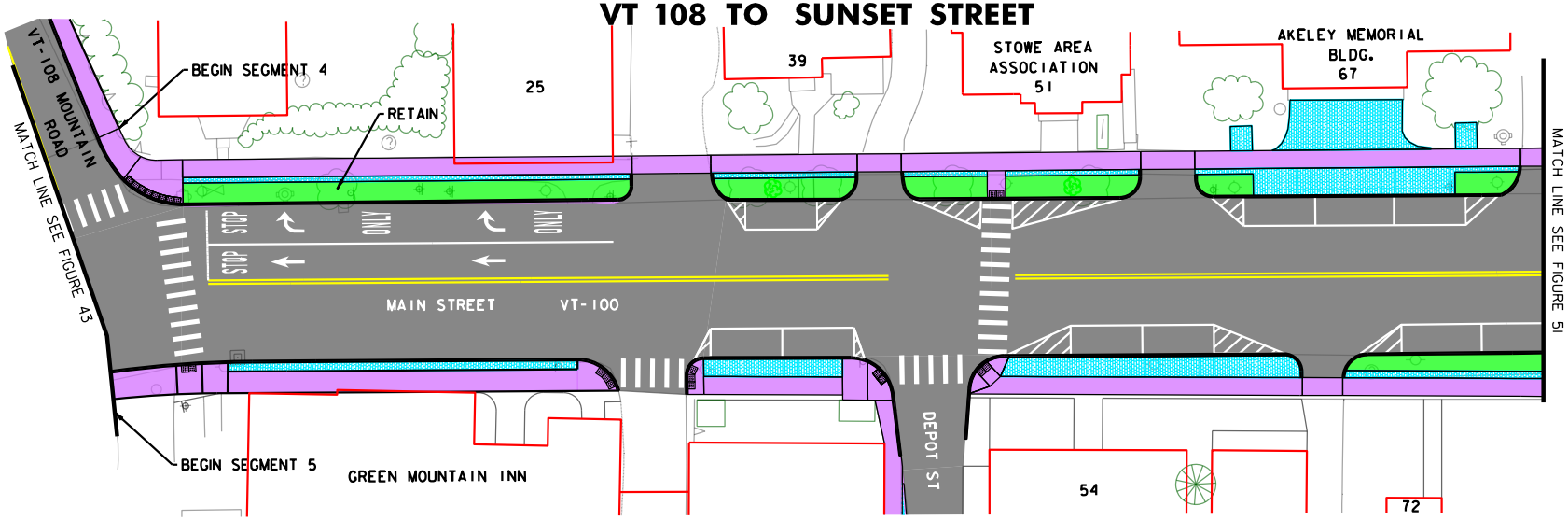
Alternatively providing parallel parking in front of Black Cap Coffee provides better flow for pedestrian traffic and relocates the parking and sidewalk within the right-of-way. This configuration provides five parallel parking spaces. CLD | Fuss & O'Neill recommends using parallel parking in front of the Black Cap Coffee business and continuing the scored concrete sidewalk beyond the intersection to the end of the parallel parking, as shown in Figure 53. Coordination with the business owner will be required as the existing sidewalk and a portion of the parking stalls are on private property. The Town has an easement for the sidewalk and the existing parking is believed to be substantially in the right-of-way.

Figure 52: Parking at Black Cap Coffee

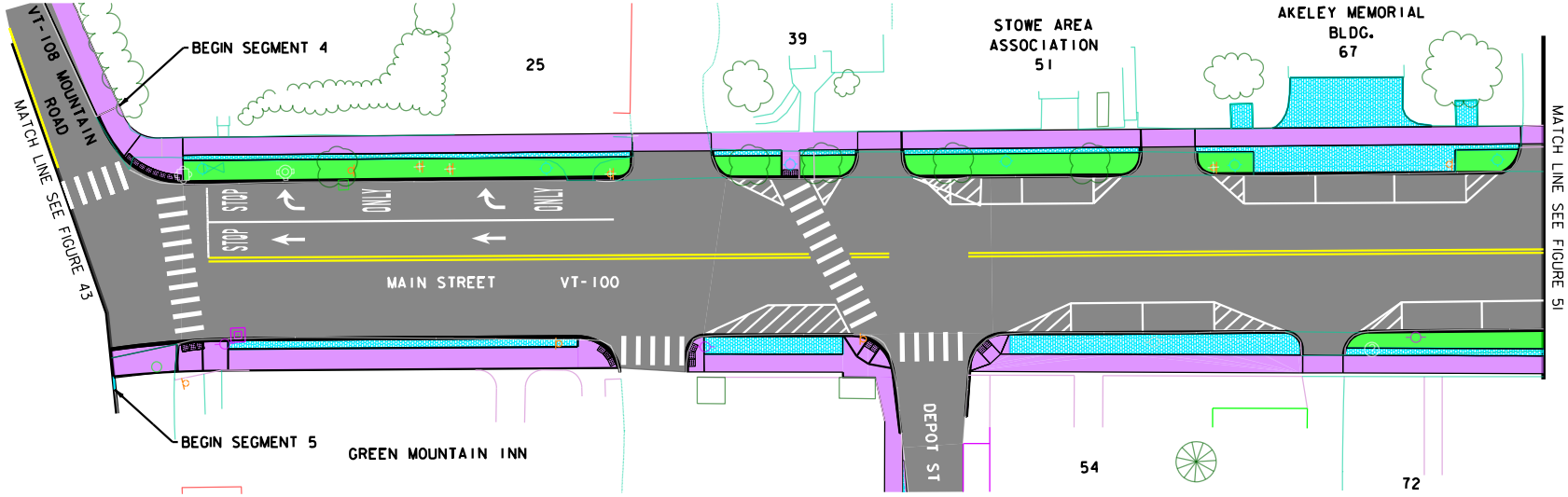
FIGURE 53

SEGMENTS 4 & 5: MAIN STREET

VT 108 TO SUNSET STREET



SEGMENTS 4 & 5: MAIN STREET ALTERNATIVE



LEGEND

- PAVING
- SIDEWALK
- GRASS
- ACCENT

0 50 100

SCALE IN FEET

N

VT STATE PLANE GRID

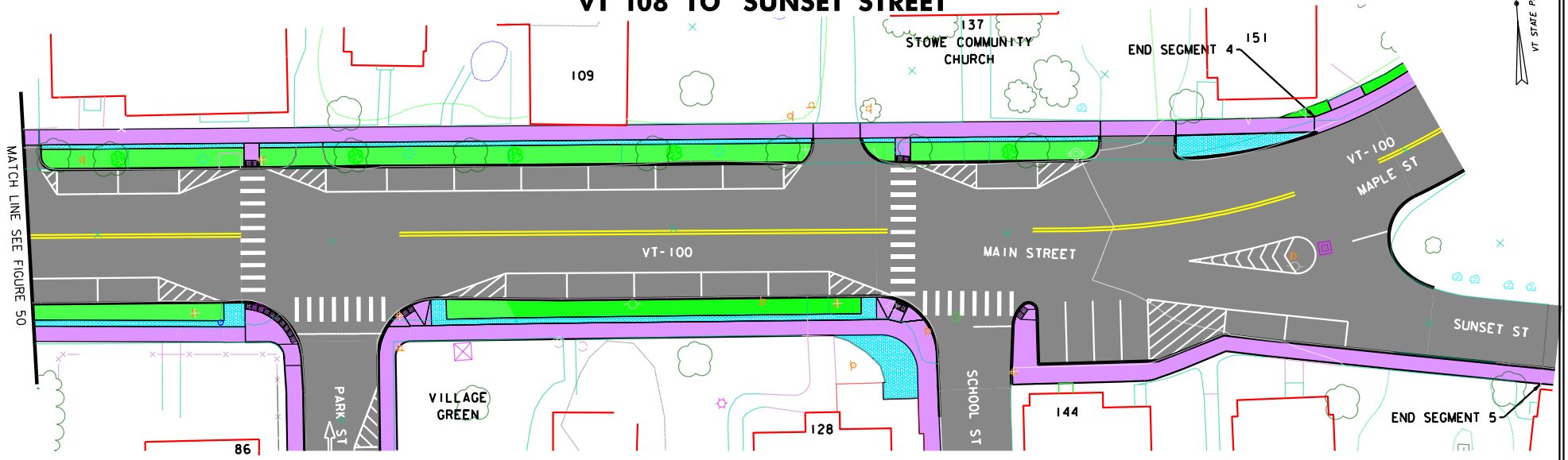
FUSS & O'NEILL

TOWN OF STOWE

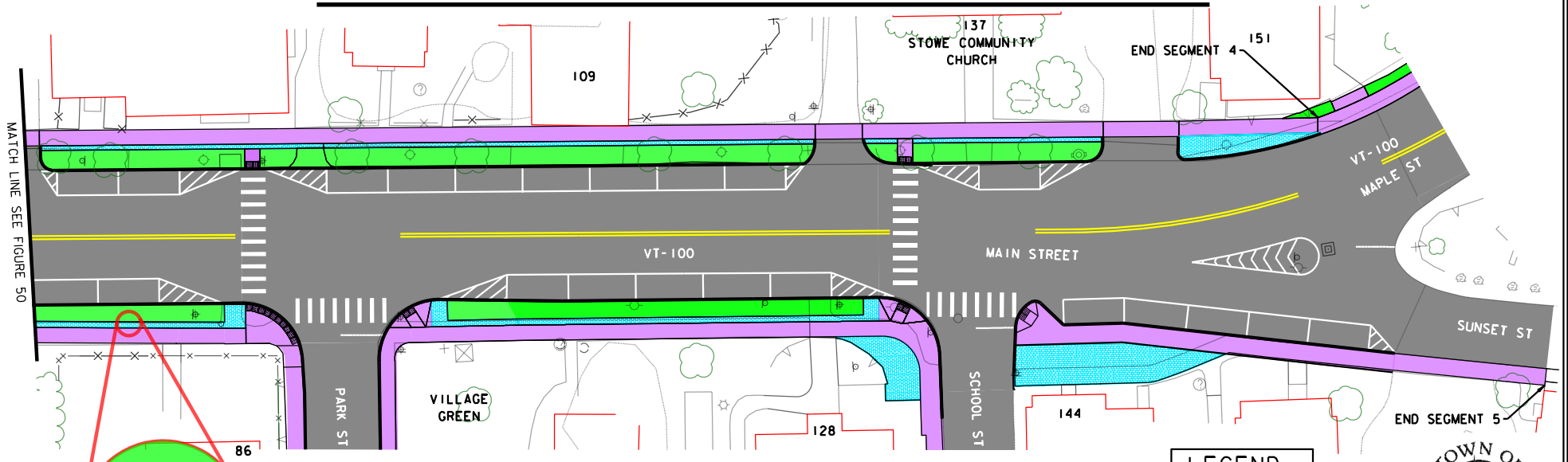
FIGURE 54

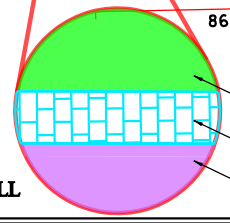
SEGMENTS 4 & 5: MAIN STREET

VT 108 TO SUNSET STREET



SEGMENTS 4 & 5: MAIN STREET ALTERNATIVE





FUSS & O'NEILL

0 50 100
SCALE IN FEET

LEGEND
- PAVING
- SIDEWALK
- GRASS
- ACCENT

TOWN OF Stowe

4.2.3. Maple Street

Segment 6: Maple Street – Main Street to Cemetery Road

Segment 6: Maple Street – Main Street to Cemetery Road	
Recommendations	
Proposed Sidewalk Material	Scored concrete
Sidewalk Width	5 feet with parking/6 feet without parking
Sidewalk Length	1,375 feet
Sidewalk Relocation	Yes: ○ Without parking: 3-foot grass buffer between new curb and sidewalk ○ With Parking: eliminate grass buffer, sidewalk adjacent to curb
Reset/Replace Curb	Install new curb
Overlay Pavement	Yes (Class I VTrans Project)
New Sidewalk Ramps with Detectable Warning Surface Needed	1
Commercial Driveway Crossings	2
Crosswalks	None
Drainage Improvements	Yes
Proposed Number of Parking Spaces	○ Without Parking: 0 ○ With Parking:22
Net Parking Spaces	○ Without Parking: 0 ○ With Parking:+22
Replace Lighting	No
Special Conditions	○ Both Alternatives: Trim or remove evergreen trees at curve near Main Street. ○ With Parking: Widen roadway to accommodate on-street parking. Some increased right-of-way and/or sidewalk easement may be required.
Other Potential Town Projects in the Vicinity	The Town would like to add curb to the northbound side of the road.

Table 34: Segment 6 Proposed Condition

CLD | Fuss & O'Neill recommends Maple Street be widened to allow for on-street parallel parking. To accommodate this, the grass buffer between the sidewalk and the roadway should be eliminated and granite curb should be placed directly adjacent to the sidewalk. There is an existing closed drainage system on Maple Street that would need to be modified to accommodate the new curb. This existing system appears to collect water from a similarly sized drainage area as the recommended improvements. The exact area of new impervious surface will need to be determined during the design

phase. It is anticipated that permitting can be done under the Municipal Roads General Permit.

The addition of parking would require mailboxes to be rotated ninety degrees and located in the sidewalk in the no parking zones adjacent to driveways. The Town could also coordinate with the post office to determine if a walking postal route would be appropriate in this area.

A significant concern along this segment is that vehicles heading south on Maple Street enter the village at unsafe speeds. Physical elements and visual cues were considered to reduce speed; however, due to maintenance concerns, bump-outs are not recommended. The addition of parallel on-street parking is considered the most advantageous speed reduction measure by narrowing the field of view. The additional parking would help reduce traffic speed, and help offset the loss of parking spaces on Main Street. Providing VTrans' standard 20-foot buffers between a parking stall and driveways, 22 parking spaces can be added between Cemetery Road and the southern end of Maple Street. If the standard 20-foot buffers to driveways were not provided, an additional 20 spaces could be provided for a total of 42 parking spaces on Maple Street. Due to the travel speeds of vehicles on Maple Street and the impact on sight distance the reduced buffers would have, it is recommended that standard 20-foot buffers be implemented for safety.

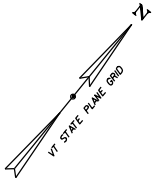
Figure 55: Maple Street Looking Southbound

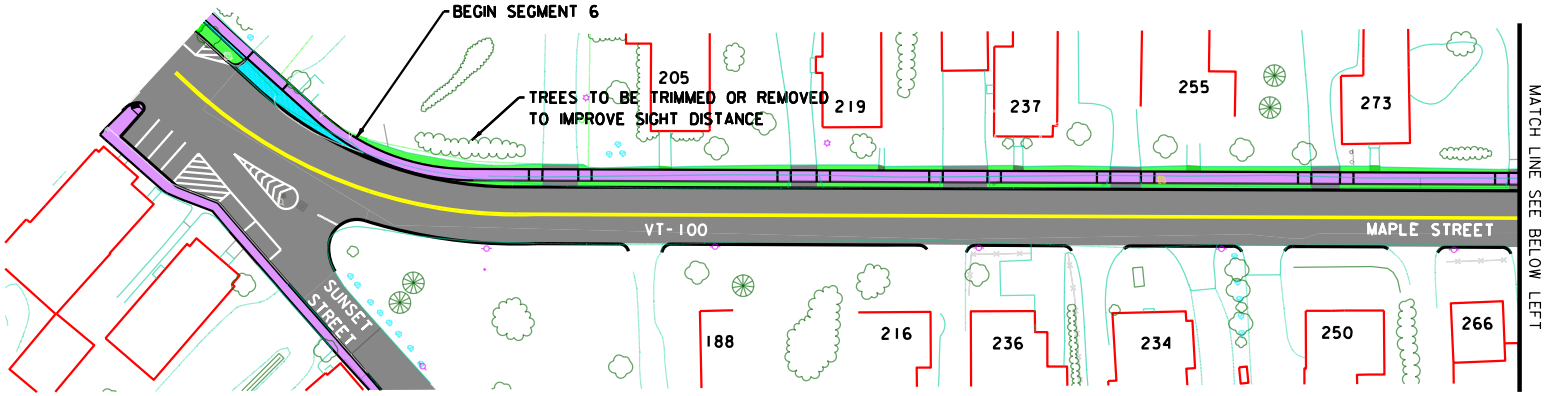
The existing roadway is 29 to 30 feet wide, and with parking, the pavement width available to traffic would be reduced to 24 feet.

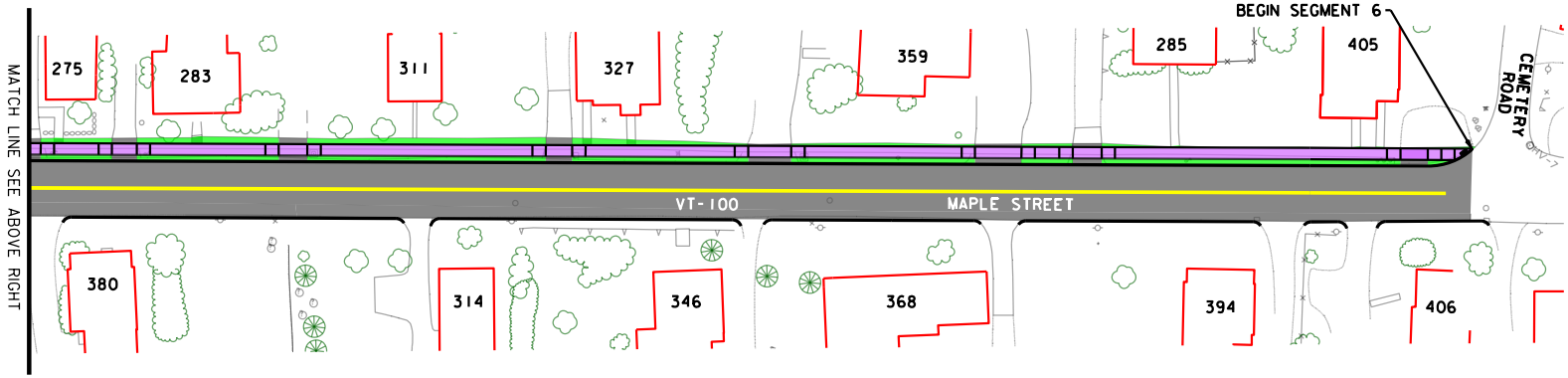
Trimming or removing the evergreen trees located at the southern end of Maple Street where VT-100 turns and becomes Main Street would improve the sight distance and safety of the roadway by making the village more visible to approaching vehicles.

Alternatively, on-street parking could be eliminated in this segment and the curb and sidewalk set a constant 15-foot offset from centerline, as shown in Figure 56. This alternative does not provide the speed reduction cues that on-street parking would provide but the curb and adjacent sidewalk will help extend the village feel to this area. Vehicles are parking between the roadway and sidewalk in the existing condition; this alternative does not address this parking issue, which will only be exacerbated with the reduction of Main Street parking. Therefore, this is not the recommended alternative.

FIGURE 56
SEGMENT 6: MAPLE STREET
MAIN STREET TO CEMETERY ROAD







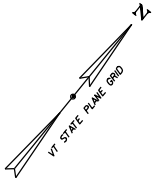
FUSS & O'NEILL

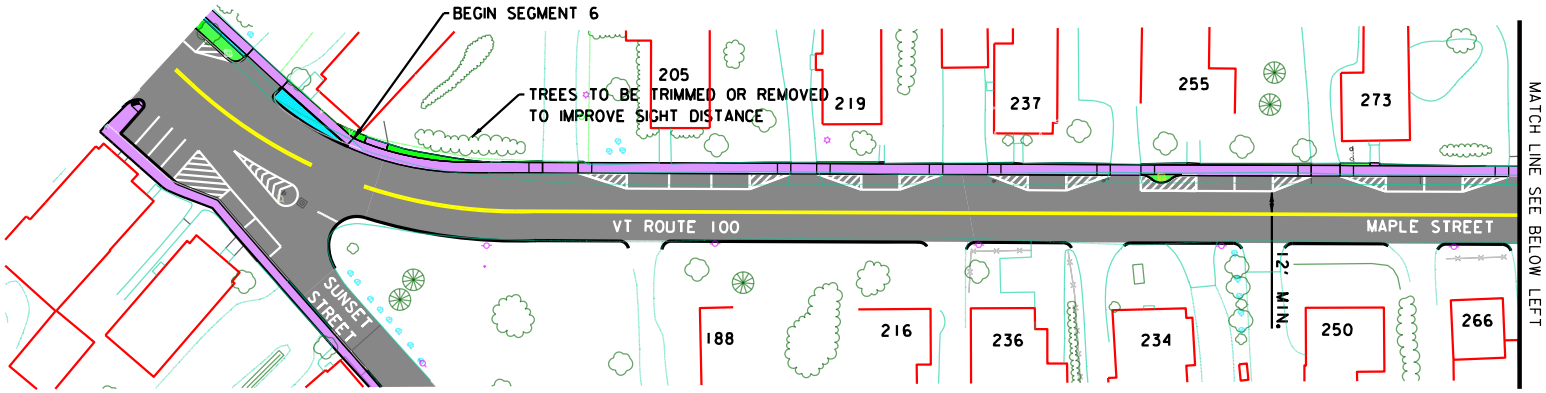
0 100 200
SCALE IN FEET

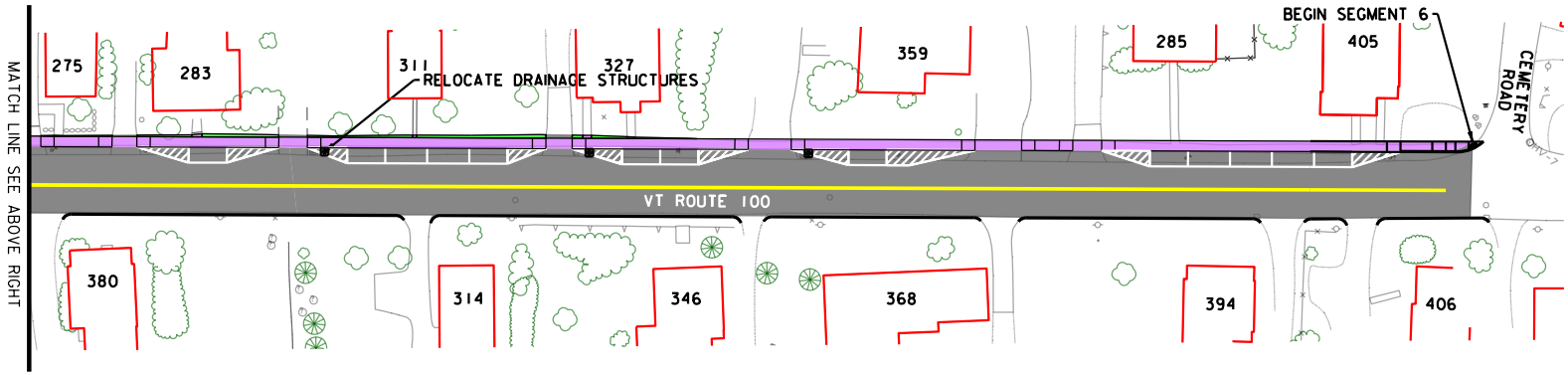
LEGEND
- PAVING
- SIDEWALK
- GRASS
- ACCENT

TOWN OF Stowe

FIGURE 57
SEGMENT 6: MAPLE STREET ALTERNATIVE
MAIN STREET TO CEMETERY ROAD







LEGEND

PAVING	
SIDEWALK	
GRASS	
ACCENT	

0 100 200
SCALE IN FEET

FUSS & O'NEILL

TOWN OF Stowe

4.2.4. Depot Street

Segment 7: Depot Street East Side – Main Street to Park Place

Segment 7: Depot Street East Side – Main Street to Park Place	
Recommendations	
Proposed Sidewalk Material	○ Scored concrete ○ Accent concrete (at Sanborn House)
Sidewalk Width	6 feet, 3 feet at Sanborn House
Sidewalk Length	470 feet
Sidewalk Relocation	No – new section to be added
Reset/Replace Curb	Yes
Overlay Pavement	Yes
New Sidewalk Ramps with Detectable Warning Surface Needed	4
Commercial Driveway Crossings	1
Crosswalks	2
Drainage Improvements	No
Proposed Number of Parking Spaces	2
Net Parking Spaces	-2
Replace Lighting	No
Special Conditions	None
Other Potential Town Projects in the Vicinity	None

Table 35: Segment 7 Proposed Condition

The northernmost segment of sidewalk on the east side of Depot Street is located along the west side of the Sanborn House building. This section of sidewalk is substandard in width and does not provide access for the disabled. This sidewalk should be widened to the ADAAG minimum of 3 feet and a sidewalk ramp should be constructed on the southern approach.

The bump-out near Pond Street could be removed and replaced with striping for ease of plowing, but we recommend leaving it in place, as it provides approaching drivers a clear indication of the one-way street and provides space for Do Not Enter signs. Maintenance will be required to keep the tree from blocking signage.

The sidewalk should be continued to Park Place on the east side of Depot Street for connectivity to the sidewalk network. This is especially crucial as the post office is along this corridor.

Figure 58: Substandard Sidewalk Section at Sanborn House

Segment 8: Depot Street West Side – Main Street to Park Place

Segment 8: Depot Street West Side – Main Street to Park Place	
Recommendations	
Proposed Sidewalk Material	○ Scored concrete ○ Accent area (at bump-out only)
Sidewalk Width	6 feet
Sidewalk Length	720 feet
Sidewalk Relocation	Only at bump-out near Main Street
Reset/Replace Curb	Yes
Overlay Pavement	Yes
New Sidewalk Ramps with Detectable Warning Surface Needed	3
Commercial Driveway Crossings	2
Crosswalks	2 (across Depot Street mid-block and at Pond Street intersection)
Drainage Improvements	No
Proposed Number of Parking Spaces	21
Net Parking Spaces	-2
Replace Lighting	No
Special Conditions	None
Other Potential Town Projects in the Vicinity	The Town would like to replace the water main under separate project.

Table 36: Segment 8 Proposed Condition

It is recommended that the bump-out near Main Street be adjusted to allow easier traffic movements and the grass buffer be replaced with accent concrete, as shown in Figure 59. An additional crosswalk across Depot Street at Pond Street should be added to improve the pedestrian network continuity. To best serve the pedestrian traffic, the crosswalk should be placed on the south side of the intersection to serve the parking on the southeast corner of the Pond Street intersection. It is recommended that the fire hydrant behind the parking be relocated closer near the mid-block crosswalk to allow striping of two additional parking spaces.

Figure 59: Existing Grass Buffer to be Replaced with Accented Concrete

Segment 9: Depot Street West Side – Park Place to Thomas Lane

Segment 9: Depot Street West Side – Park Place to Thomas Lane	
Recommendations	
Proposed Sidewalk Material	Scored concrete
Sidewalk Width	6 feet
Sidewalk Length	1,250 feet
Sidewalk Relocation	Yes; move sidewalk adjacent to curb
Reset/Replace Curb	Install new curb
Pavement	Full-depth reconstruction of road recommended by the Town
New Sidewalk Ramps with Detectable Warning Surface Needed	1
Commercial Driveway Crossings	1
Crosswalks	1
Drainage Improvements	Yes
Proposed Number of Parking Spaces	21
Net Parking Spaces	-2
Replace Lighting	Yes
Special Conditions	Existing stormwater discharge permit will need to be amended.
Other Potential Town Projects in the Vicinity	The Town would like to replace the water main under separate project.

Table 37: Segment 9 Proposed Condition

Vertical granite curb should be installed adjacent to the existing edge of pavement and the sidewalk should be relocated adjacent to this curb. The existing drainage system and the associated stormwater permit will need to be modified for the new location; this work will include extending, removing, and adjusting the drainage ditch, pipes, and catch basins that convey the runoff from the hillside to the west under the proposed sidewalk and Depot Street. The existing pipes will need to be evaluated for damage and capacity in order to ensure the system will properly function. The stormwater discharge permit will need to be amended during the final design process.

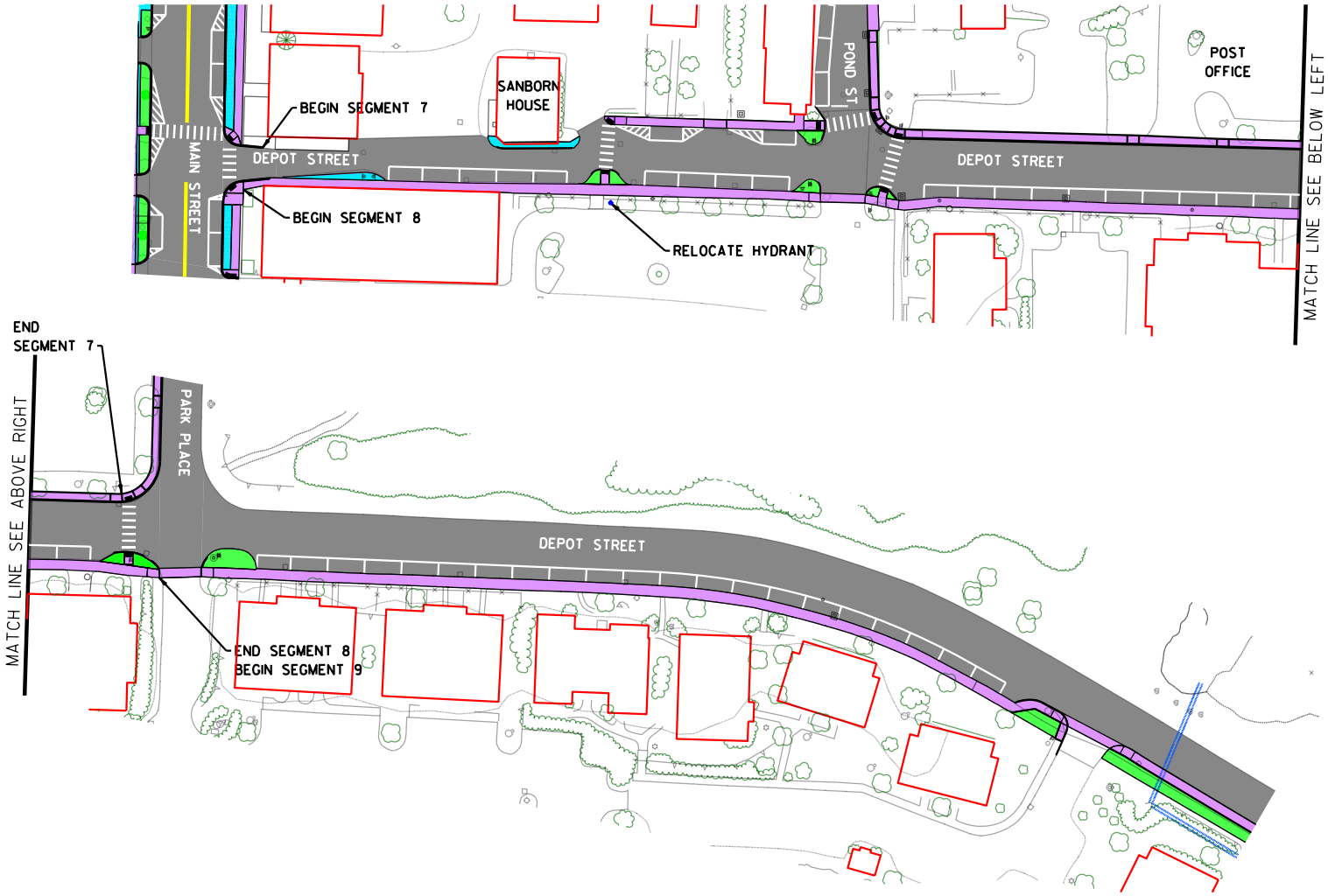
The existing street lights along the existing sidewalk will need to be replaced and located behind the new sidewalk.

Figure 60: Sidewalk and Ditch to be Relocated

FIGURE 61

SEGMENTS 7, 8 & 9: DEPOT STREET

MAIN STREET TO PARK PLACE



LEGEND

- PAVING
- SIDEWALK
- GRASS
- ACCENT

0 100 200

SCALE IN FEET

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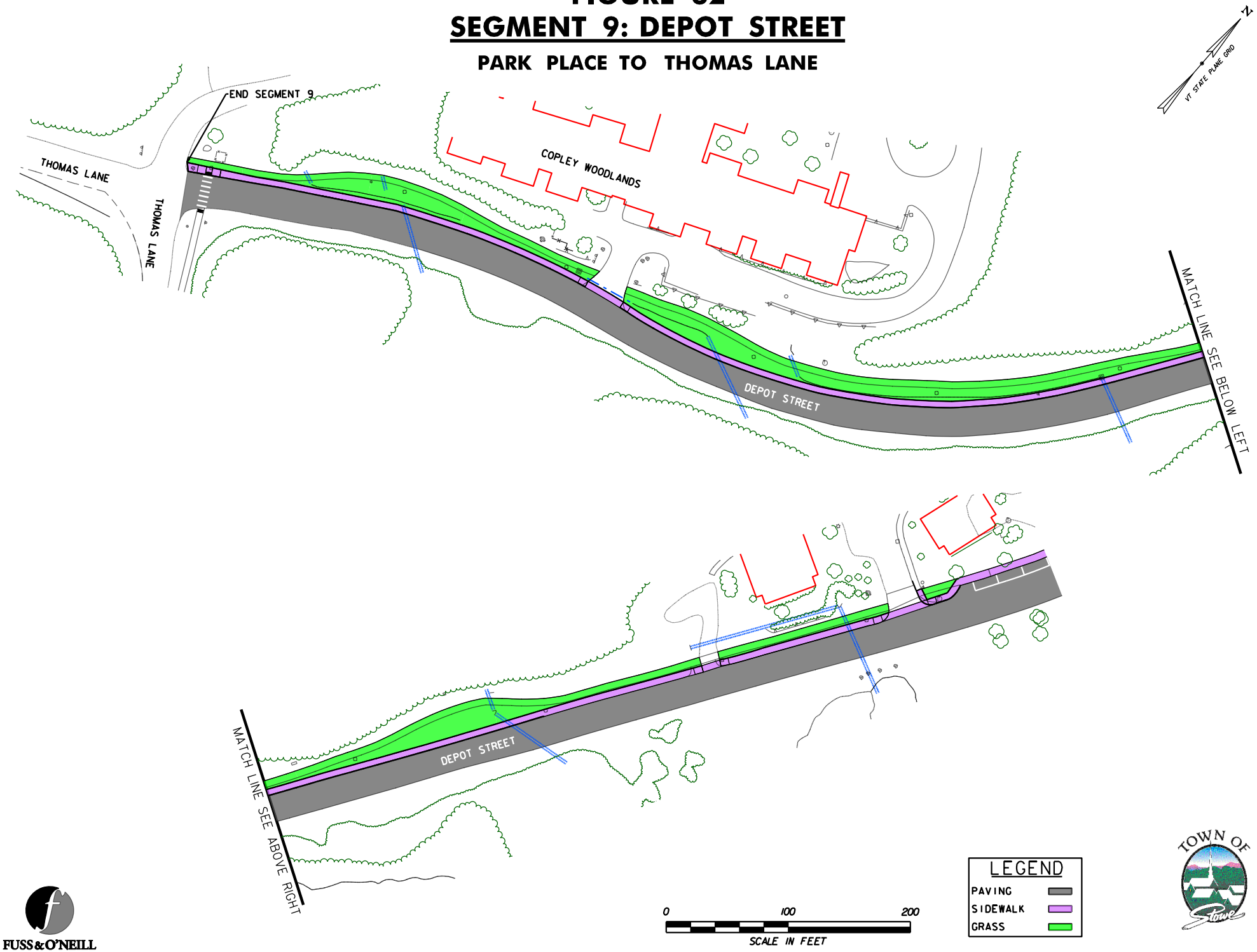
TOWN OF Stowe

FIGURE 62
SEGMENT 9: DEPOT STREET
PARK PLACE TO THOMAS LANE



4.2.5. Park Street

Segment 10: Park Street East Side – Main Street to Pond Street

Segment 10: Park Street East Side – Main Street to Pond Street	
Recommendations	
Proposed Sidewalk Material	Scored concrete
Sidewalk Width	5 feet
Sidewalk Length	340 feet
Sidewalk Relocation	No
Reset/Replace Curb	Yes
Overlay Pavement	Yes
New Sidewalk Ramps with Detectable Warning Surface Needed	1
Commercial Driveway Crossings	1
Crosswalks	1
Drainage Improvements	Yes
Proposed Number of Parking Spaces	10 (Stowe added this parking 2017)
Net Parking Spaces	+10 (Stowe added this parking 2017)
Replace Lighting	No
Special Conditions	None
Other Potential Town Projects in Vicinity	None

Table 38: Segment 10 Proposed Condition

Segment 11: Park Street West Side – Main Street to Park Place

Segment 11: Park Street West Side – Main Street to Park Place	
Recommendations	
Proposed Sidewalk Material	Scored concrete
Sidewalk Width	5 feet
Sidewalk Length	700 feet
Sidewalk Relocation	No
Reset/Replace Curb	Yes
Overlay Pavement	Yes
New Sidewalk Ramps with Detectable Warning Surface Needed	2
Commercial Driveway Crossings	1
Crosswalks	1
Drainage Improvements	Yes
Proposed Number of Parking Spaces	0
Net Parking Spaces	0
Replace Lighting	No
Special Conditions	None
Other Potential Town Projects in Vicinity	None

Table 39: Segment 11 Proposed Condition

The recommended improvements for Main Street reduce the number of on-street parking spaces available to residents and visitors. It is recognized that parking is already in great demand in the village and additional parking was considered wherever possible. The northern block of Park Street was considered as a location for additional on-street parking, due to the proximity to Main Street. The right-of-way available on Park Street does not allow for two-way traffic, sidewalks on both sides, and parking. A proposed option was to convert Park Street to a one-way street for the block between Pond Street and Main Street. The one-way would run south to north, the opposite direction as Depot Street. On-street parking for this option would be on the east side, as it has the fewest driveways and therefore maximizes parking. Ten parking spaces could be added with this layout. Due to the complexities involved with changing a roadway from a two-way to a one-way, Stowe has run a trial with Park Street as one-way and has received positive feedback. The Town adopted this layout in 2017.

An alternative option considered was to remove the sidewalk on one side and widen the roadway to accommodate the extra width needed for parking. The east side of the street has utility poles in the sidewalk and abuts multiple businesses. The combination of high utility relocation costs and anticipated pushback from business owners make this option less desirable. Ten parking spaces could be added on the east side if the sidewalk was removed. The west side is the better option for sidewalk removal, but would

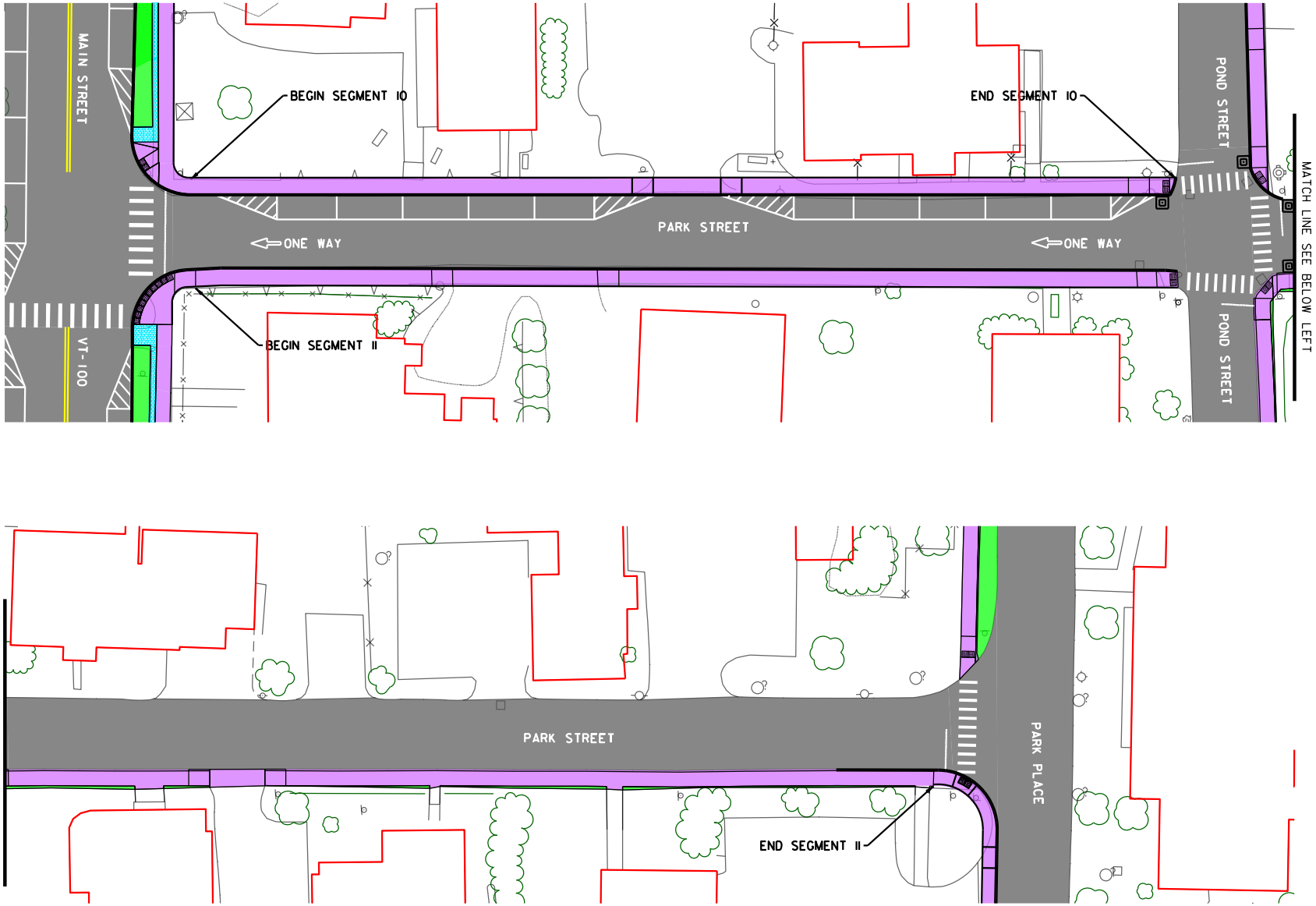
eliminate sidewalk access to a commercial building and multiple residences. The southern block of Park Street has sidewalk on the west side only, so pedestrians would need to cross both Pond Street and Park Street to continue on Park Street. Eight parking spaces could be added on the west side if the sidewalk was removed. The disruption to the sidewalk network by removing sidewalk on either side of Park Street would be greater than the benefit received to create parking.

CLD | Fuss & O'Neill concurs with Stowe's implementation of the one-way option with on-street parking on the east side; this balances the pedestrian needs with the high demand for parking to access the village.

There are existing drainage grates located within the crosswalks at the intersection of Park Street and Pond Street, as shown in Figure 63; the catch basins should be relocated outside the crosswalks. Additional drainage structures may be required at the intersection.

Figure 63: Drainage Grates in Crosswalk

FIGURE 64
SEGMENTS 10 & 11: PARK STREET
MAIN STREET TO PARK PLACE



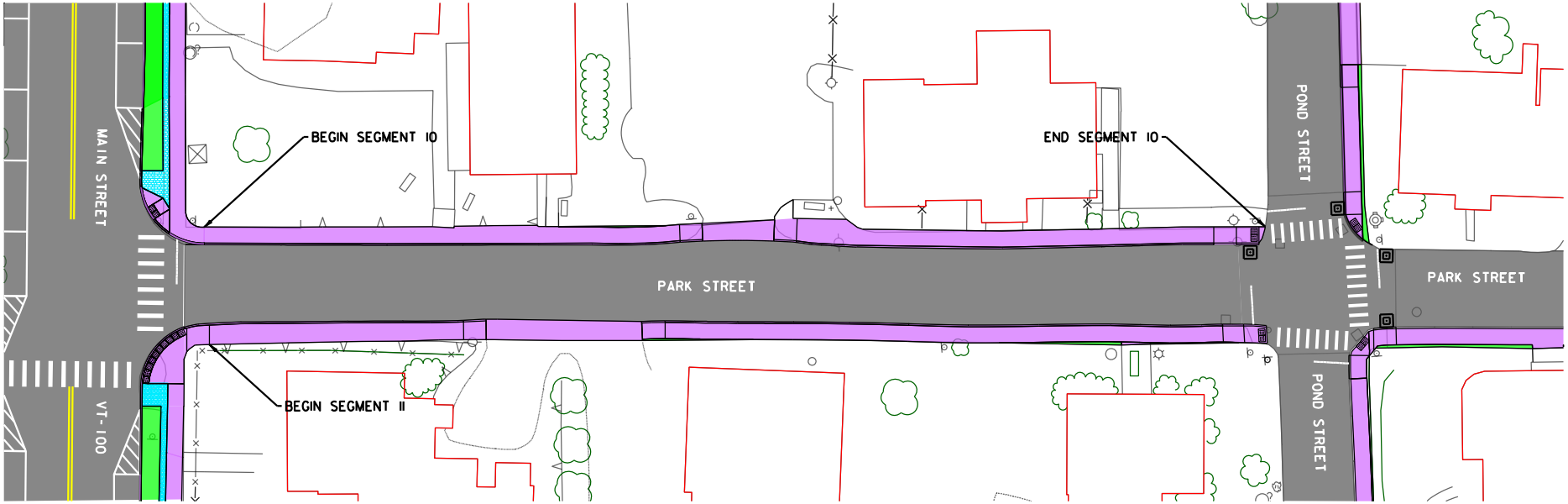
FUSS & O'NEILL

TOWN OF STOWE

FIGURE 65

SEGMENTS 10 & 11: PARK STREET ALTERNATIVE

MAIN STREET TO POND STREET
NO PARKING AND TWO-WAY TRAVEL



LEGEND

- PAVING
- SIDEWALK
- GRASS
- ACCENT

0 50 100

SCALE IN FEET

FUSS & O'NEILL

TOWN OF STOWE

4.2.6. School Street

Segment 12: School Street – Main Street to Stowe Elementary School

Segment 12: School Street – Main Street to Stowe Elementary School	
Recommendations	
Proposed Sidewalk Material	Scored concrete
Sidewalk Width	5 feet
Sidewalk Length	930 feet
Sidewalk Relocation	Yes
Reset/Replace Curb	Yes
Overlay Pavement	Yes
New Sidewalk Ramps with Detectable Warning Surface Needed	5
Commercial Driveway Crossings	2
Crosswalks	2
Drainage Improvements	Yes
Proposed Number of Parking Spaces	18 (1 handicap)
Net Parking Spaces	+6
Replace Lighting	No
Special Conditions	○ New sidewalk at corner of School Street and Pond Street ○ New sidewalk adjacent to library and school ○ New curb and drainage structure on east side near Stowe Reporter ○ New curb ramp at Pleasant Street
Other Potential Town Projects in Vicinity	None

Table 40: Segment 12 Proposed Condition

A study was completed by CLD in 2009 for the intersection of School Street and Pond Street and some of the conceptual plan developed through that study was incorporated into the recommended layout, although angled parking has been eliminated from the recommended improvements. The recommended improvements provide connectivity between School Street, Pond Street, the library, and the Stowe Elementary School. It also provides a defined pedestrian route from the parking spaces located on School Street. The new layout increases the number of parallel parking spaces on School Street from five to thirteen. Sidewalk work on Pond Street at the intersection is included with the School Street work, as it should be completed with the intersection improvements.

The parking in front of the library on Pond Street has been reduced from seven parking spaces to five, including a handicap parking space. This reduction is to accommodate the sidewalk adjacent to the parking.

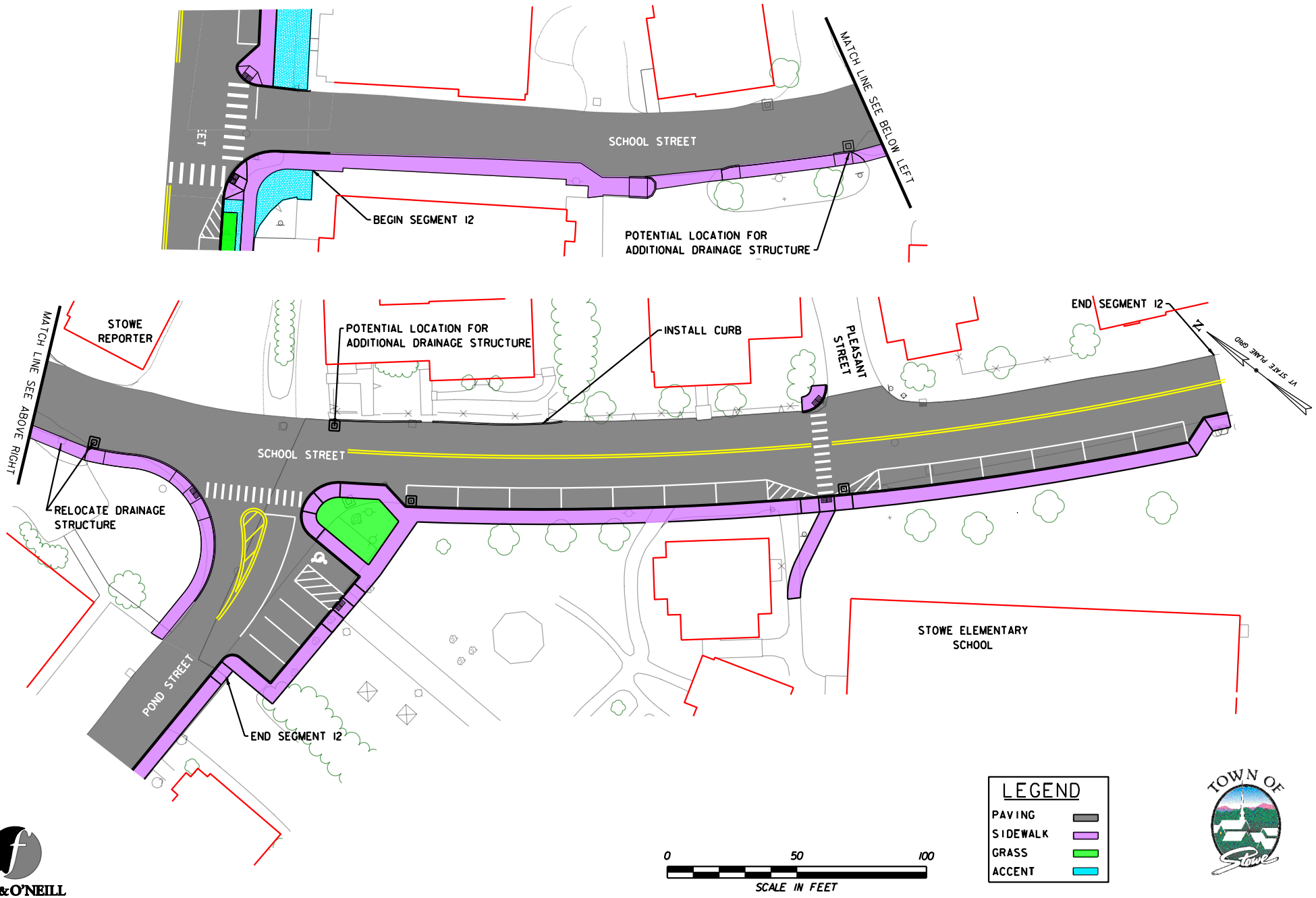
The lack of a defined edge of pavement and curbing on the east side of School Street has created a drainage concern. It is recommended that curb be installed along the eastern edge of pavement to help direct water to the existing closed drainage system along the edge of pavement. Additional drainage structures adjacent to driveway openings may be beneficial. The pavement structure of School Street has experienced settling and cracking that exacerbates the drainage issue. The Town is considering a roadway reconstruction project that would include a comprehensive drainage review.

Figure 66: Intersection of School Street and Pond Street

FIGURE 67

SEGMENT 12: SCHOOL STREET

MAIN STREET TO STOWE ELEMENTARY SCHOOL



4.2.7. Pond Street

Segment 13: Pond Street – Depot Street to Park Street

Segment 13: Pond Street – Depot Street to Park Street	
Recommendations	
Proposed Sidewalk Material	Scored concrete
Sidewalk Width	5 feet
Sidewalk Length	280 feet
Sidewalk Relocation	No
Reset/Replace Curb	No
Overlay Pavement	Yes
New Sidewalk Ramps with Detectable Warning Surface Needed	2
Commercial Driveway Crossings	1
Crosswalks	2
Drainage Improvements	No
Proposed Number of Parking Spaces	0
Net Parking Spaces	0
Replace Lighting	No
Special Conditions	None
Other Potential Town Projects in Vicinity	None

Table 41: Segment 13 Proposed Condition

This section of sidewalk is experiencing some scaling and spalling, but it is in satisfactory condition and meets ADAAG standards; therefore, it is a lower priority than some of the surrounding sections. The existing sidewalk should be replaced in kind along this segment with scored concrete sidewalk.

Figure 68: Pond Street Looking Toward Depot Street

Segment 14: Pond Street – Park Street to School Street

Segment 14: Pond Street – Park Street to School Street	
Recommendations	
Proposed Sidewalk Material	Scored concrete
Sidewalk Width	6 feet
Sidewalk Length	175 feet
Sidewalk Relocation	No
Reset/Replace Curb	No
Overlay Pavement	Yes
New Sidewalk Ramps with Detectable Warning Surface Needed	1
Commercial Driveway Crossings	2
Crosswalks	1
Drainage Improvements	Yes
Proposed Number of Parking Spaces	3
Net Parking Spaces	0
Replace Lighting	No
Special Conditions	○ New sidewalk proposed to connect south side sidewalk to library (included with School Street). ○ Narrowing and channelizing of Pond Street at School Street (included with School Street).
Other Potential Town Projects in Vicinity	None

Table 42: Segment 14 Proposed Condition

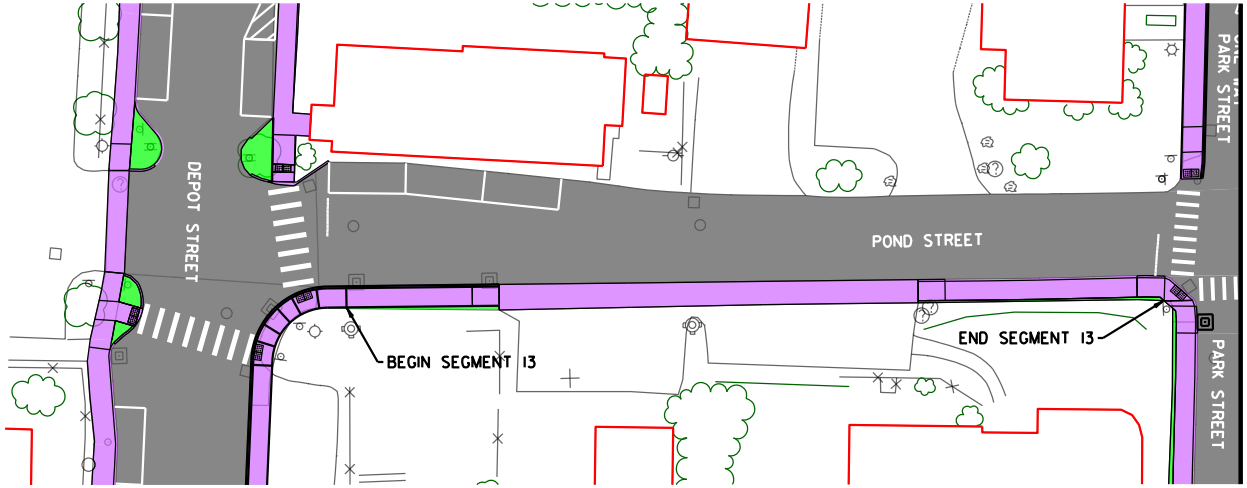
The sidewalk on the south side of Pond Street that ends at the Stowe Free Library parking area should be extended to connect to the library walkway, and continue to School Street. Sidewalk work at the School Street intersection is included with School Street work, as it should be done with the intersection improvements. See discussion of Segment 12: School Street for further discussion of the intersection.

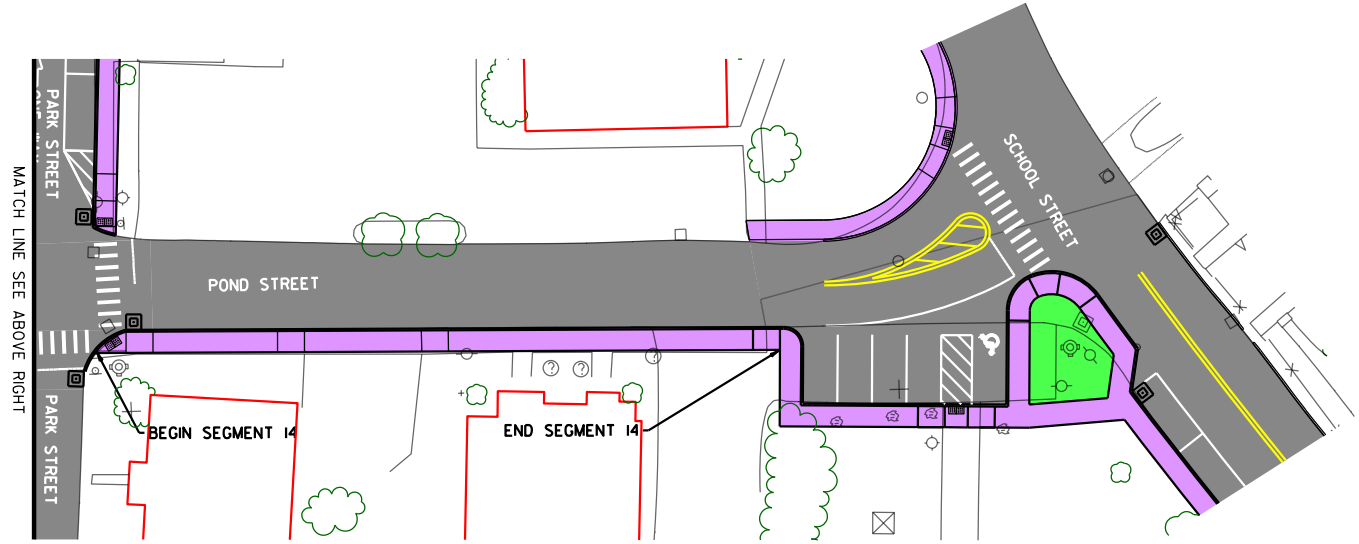
Figure 69: Pond Street Looking Toward School Street

FIGURE 70

SEGMENTS 13 & 14: POND STREET

DEPOT STREET TO SCHOOL STREET





N

VT STATE PLANE GRID

0 50 100

SCALE IN FEET

LEGEND

PAVING

SIDEWALK

GRASS

FUSS & O'NEILL

TOWN OF Stowe

4.2.8. Park Place

Segment 15: Park Place

Segment 15: Park Place	
Recommendations	
Proposed Sidewalk Material	Scored concrete
Sidewalk Width	5 feet
Sidewalk Length	415 feet
Sidewalk Relocation	New sidewalk along north side between Depot Street and Park Street
Reset/Replace Curb	Yes
Overlay Pavement	Yes
New Sidewalk Ramps with Detectable Warning Surface Needed	5
Commercial Driveway Crossings	2
Crosswalks	2
Drainage Improvements	No
Proposed Number of Parking Spaces	0
Net Parking Spaces	0
Replace Lighting	No
Special Conditions	Move curbline and narrow roadway to 24 feet to build new sidewalk between Depot Street and Park Street.
Other Potential Town Projects in Vicinity	None

Table 43: Segment 15 Proposed Condition

Between Park Street and Depot Street, the existing sidewalk is offset approximately 20 feet from the edge of pavement on private property and does not connect to Depot Street, terminating at the post office parking lot. It is recommended that a sidewalk be added on the north side of Park Place to connect the pedestrian network within the right-of-way, including connecting to the recommended new sidewalk on the east side of Depot Street. Constructing the sidewalk at the existing edge of pavement would require the removal of 2 to 4 trees located in front of the post office and parking lot and the relocation of the sign for the post office. To minimize the impacts to the adjacent property, it is recommended that a 24-foot roadway be used; this would reduce the Park Place roadway width from the current 25 feet, as shown on Figure 72. This will likely require removal of trees and sign relocation but it provides a better balance of the needs of pedestrian and vehicular traffic.

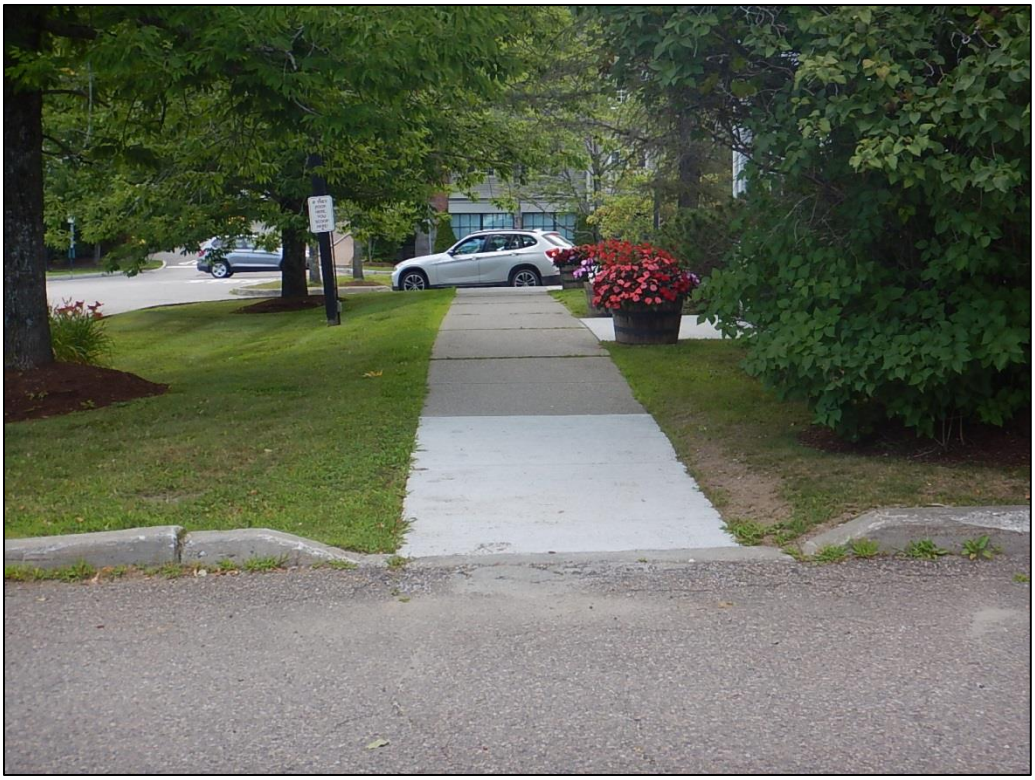
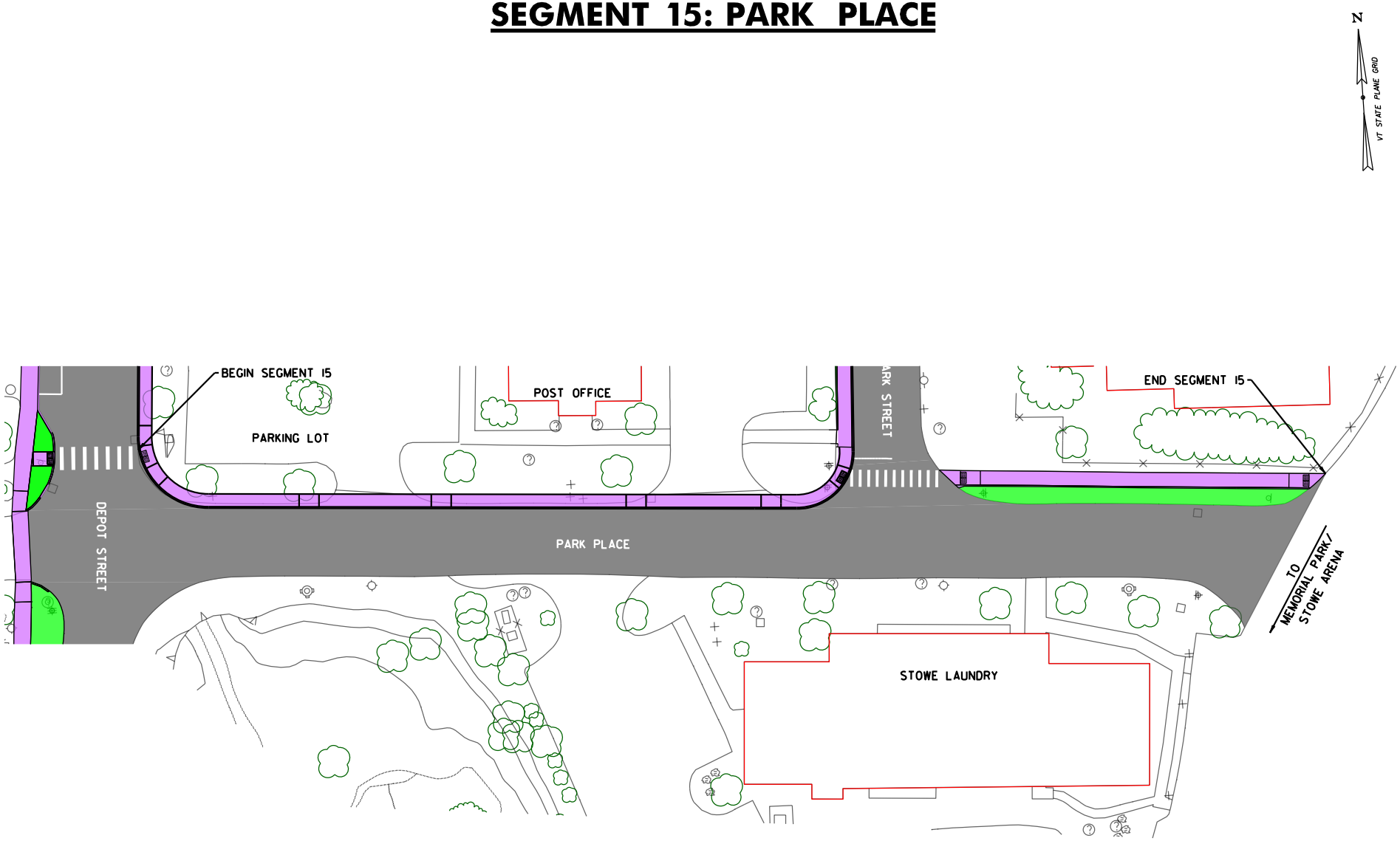


Figure 71: Sidewalk in Front of Post Office

FIGURE 72
SEGMENT 15: PARK PLACE



LEGEND

- PAVING
- SIDEWALK
- GRASS
- 8" SIDEWALK
- ACCENT

0 50 100
SCALE IN FEET

FUSS & O'NEILL

TOWN OF Stowe

4.2.9. Sunset Street

Segment 16: Sunset Street – Main Street Intersection to Pleasant Street

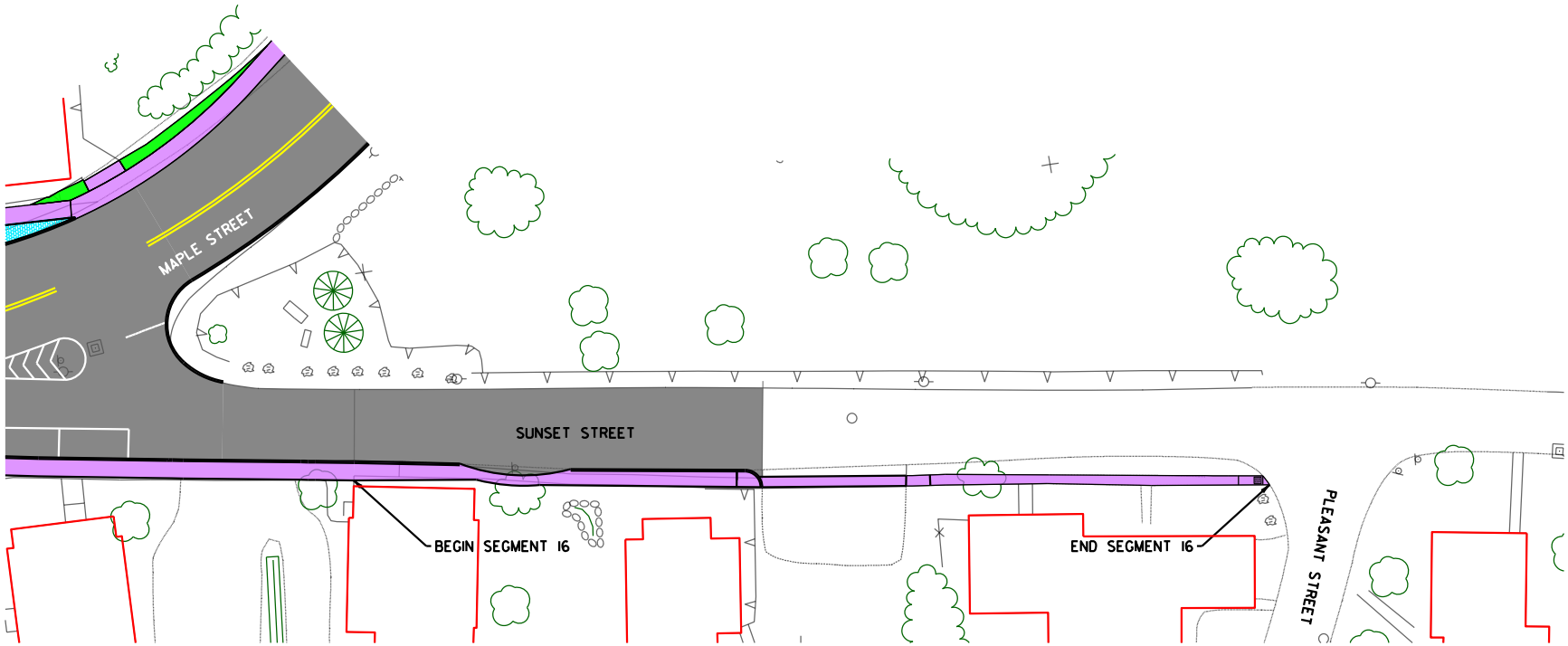
Segment 16: Sunset Street – Main Street Intersection to Pleasant Street	
Recommendations	
Proposed Sidewalk Material	Concrete
Sidewalk Width	3 feet without curb/5 feet with curb
Sidewalk Length	265 feet
Sidewalk Relocation	No
Reset/Replace Curb	Install new curb
Overlay Pavement	No
New Sidewalk Ramps with Detectable Warning Surface Needed	1
Commercial Driveway Crossings	0
Crosswalks	0
Drainage Improvements	No
Proposed Number of Parking Spaces	0
Net Parking Spaces	0
Replace Lighting	No
Special Conditions	None
Other Potential Town Projects in Vicinity	None

Table 44: Segment 16 Proposed Condition

The existing bituminous sidewalk should be replaced with concrete sidewalk in its existing location from the end of the parking to Pleasant Street. CLD | Fuss & O'Neill recommends a 5-foot sidewalk where there is curb and a 3-foot sidewalk. The curb is only recommended where sidewalk is adjacent to the roadway. This is a low-volume pedestrian traffic area and the possible impacts to the maple trees between the existing sidewalk and road outweigh the need for a full 5-foot sidewalk for the full length.

Figure 73: Tree on Sunset Street

FIGURE 74
SEGMENT 16: SUNSET STREET
MAIN STREET TO PLEASANT STREET



N
VT STATE PLANE GRID

LEGEND
PAVING
SIDEWALK
GRASS
BRICK

0 50 100
SCALE IN FEET

FUSS & O'NEILL

TOWN OF Stowe

4.2.10. Mountain Road

Segment 17: Mountain Road – Main Street to Bridge

Segment 17: Mountain Road – Main Street to Bridge	
Recommendations	
Proposed Sidewalk Material	Scored concrete and accent band; match into concrete installed with bridge project.
Sidewalk Width	5 feet
Sidewalk Length	320 feet
Sidewalk Relocation	No
Reset/Replace Curb	No
Overlay Pavement	Yes (Class I VTrans Projects)
New Sidewalk Ramps with Detectable Warning Surface Needed	1 (on far side of VT-108 at mid-block crosswalk)
Commercial Driveway Crossings	1
Crosswalks	1
Drainage Improvements	No
Proposed Number of Parking Spaces	0
Net Parking Spaces	0
Replace Lighting	No
Special Conditions	Build ramp and sidewalk on far side of VT-108 for pedestrian access to Straw Corner Shops.
Other Potential Town Projects in Vicinity	None

Table 45: Segment 17 Proposed Condition

The existing concrete sidewalk constructed with the recent bridge replacement project should remain. A sidewalk ramp and landing should be installed on the opposite side of the painted crosswalk near the entrance to Straw Corner Shops to accept pedestrians using the crosswalk and separate them from vehicles entering and exiting the commercial parking area. Pedestrian warning signs should be added at this location

Figure 75: Crosswalk to Straw Corner Shops

Segment 18: Mountain Road – Bridge to Weeks Hill Road

Segment 18: Mountain Road – Bridge to Weeks Hill Road	
Recommendations	
Proposed Sidewalk Material	Scored concrete
Sidewalk Width	6 feet
Sidewalk Length	2,720 feet
Sidewalk Relocation	No
Reset/Replace Curb	No
Overlay Pavement	Yes (Class I VTrans Project)
New Sidewalk Ramps with Detectable Warning Surface Needed	6
Commercial Driveway Crossings	15
Crosswalks	3
Drainage Improvements	No
Proposed Number of Parking Spaces	0
Net Parking Spaces	0
Replace Lighting	No
Special Conditions	○ Construct new ramp and sidewalk on west side near bus stop. ○ Relocate guardrail behind sidewalk
Other Potential Town Projects In Vicinity	Drainage improvement and new primary outlet

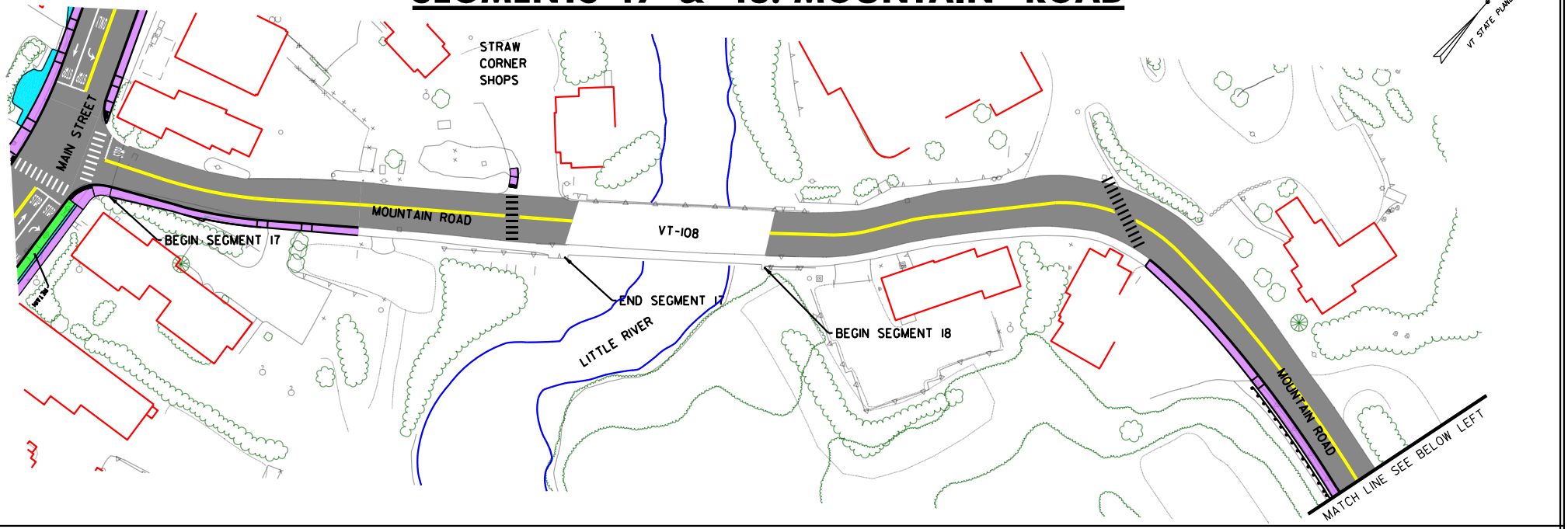
Table 46: Segment 18 Proposed Condition

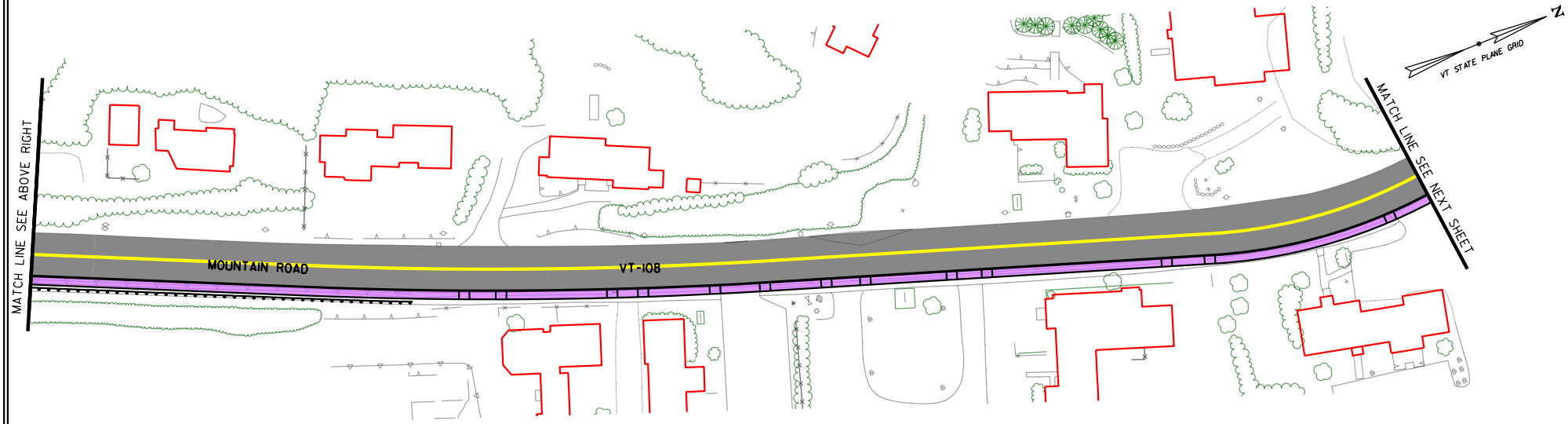
The new concrete sidewalk adjacent to the new bridge over the Little River should remain. There is a crosswalk at the northern end of this new sidewalk to the Stowe Inn. North of Dump Road, there is an existing crosswalk leading to a bus stop on the west side of Mountain Road that terminates in a grassed area without a sidewalk or a ramp, as shown in Figure 76. A sidewalk ramp and short segment of sidewalk should be installed to provide pedestrians and wheelchairs refuge from vehicular traffic and a safe space to wait for the bus.

The existing guardrail located between the edge of pavement and the sidewalk will be relocated behind the sidewalk. It is also recommended that the existing grass panel be eliminated and the proposed sidewalk moved adjacent to the curb. All mid-block crosswalks should include pedestrian warning signs to increase visibility.

Figure 76: Crosswalk to Bus Stop

FIGURE 77
SEGMENTS 17 & 18: MOUNTAIN ROAD





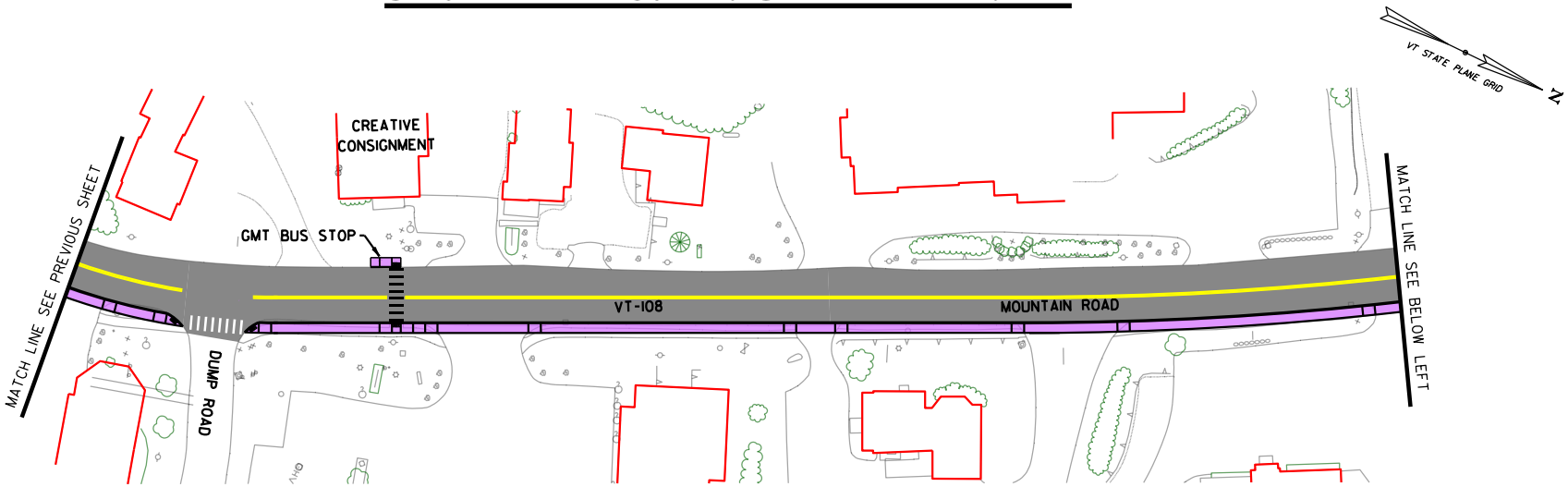
FUSS & O'NEILL

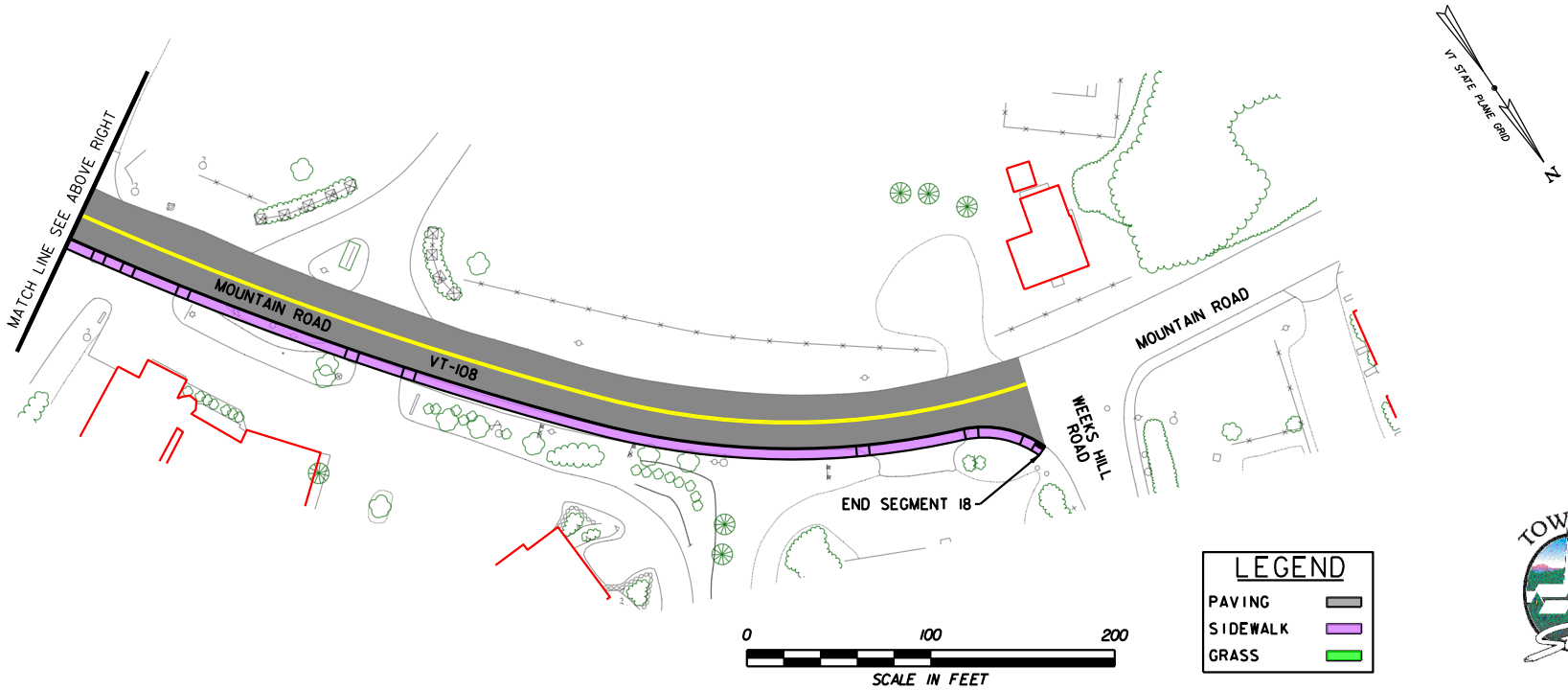
0 100 200
SCALE IN FEET

LEGEND
- PAVING
- SIDEWALK
- GRASS
- ACCENT

TOWN OF Stowe

FIGURE 78
SEGMENT 18: MOUNTAIN ROAD





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TOWN OF Stowe

4.3. Project Prioritization

Due to the size of the pedestrian network and the many segments evaluated, proposed recommendations for segments can be completed independently or grouped. Each of the segments was evaluated for prioritization based on safety, segment significance, current condition, and cost, then a project number was assigned. These projects combine segment improvements and are grouped to maximize efficiency and provide balance and are shown in Figure 79. The segments in Table 47 are listed in order of the project to which they are assigned. Safety evaluations were made based on identified safety concerns, providing continuity in the pedestrian network, and improving accessibility. Segment significance considered the visibility of the segment and pedestrian demand. Table 47 also includes cost estimates for each segment. Table 48 summarizes the projects and lists the total costs for each.

Project Number	Segment	Safety Concern	Segment Significance	Current Condition	Cost
1	Segment 1: South Main Street Southbound Side – Stowe Public Safety Facility to Mac's Market	Low	Medium	Good	$250,000
1	Segment 2: South Main Street Southbound Side – Mac's Market to VT-108	Low	Medium	Good	$100,000
1	Segment 3: South Main Street Northbound Side – Masonic Lodge to VT-108	Low	Medium	Fair	$100,000
1	Segment 4: Main Street Southbound Side – VT-108 to Maple Street	Low/ Mid	High	Fair	$200,000
1	Segment 5: Main Street Northbound Side – VT-108 to Sunset Street Intersection	Mid/ High	High	Fair	$200,000
1	Segment 6: Maple Street: Main Street to Cemetery Road	Low	Medium	Poor	$650,000
1	Segment 17: Mountain Road: Main Street to Bridge	Low	High	Stamped Bituminous: Fair Concrete: Good	$100,000

Project Number	Segment	Safety Concern	Segment Significance	Current Condition	Cost
1	Segment 18: Mountain Road: Bridge to Weeks Hill Road	Low	Low	Concrete: Good Bituminous: Poor	$450,000
2	Segment 12: School Street: Main Street to Stowe Elementary School	High	Medium	Fair	$350,000
2	Segment 14: Pond Street – Park Street to School Street	Mid	Medium	Fair/Poor	$100,000
3	Segment 9: Depot Street West Side – Park Place to Thomas Lane	High	Medium	Temp. Bituminous: Good Bituminous: Poor	$550,000
4	Segment 7: Depot Street East Side – Main Street to Park Place	Mid	Medium	Pavers: Fair Temp. Bituminous: Good	$150,000
4	Segment 8: Depot Street West Side – Main Street to Park Place	Low	Medium	Good	$350,000
5	Segment 10: Park Street East Side – Main Street to Pond Street	Low	Medium	Fair	$100,000
5	Segment 11: Park Street West Side – Main Street to Park Place	Low	Medium	Fair/Poor	$150,000
5	Segment 13: Pond Street – Depot Street to Park Street	Low	Medium	Good	$100,000
6	Segment 15: Park Place	Mid	Low	Fair/Poor	$150,000
7	Segment 16: Sunset Street: Main Street to Pleasant Street	Low	Low	Poor	$50,000

Table 47: Project Prioritization

PROJECT AREA MAP - PROJECT PRIORITIZATION

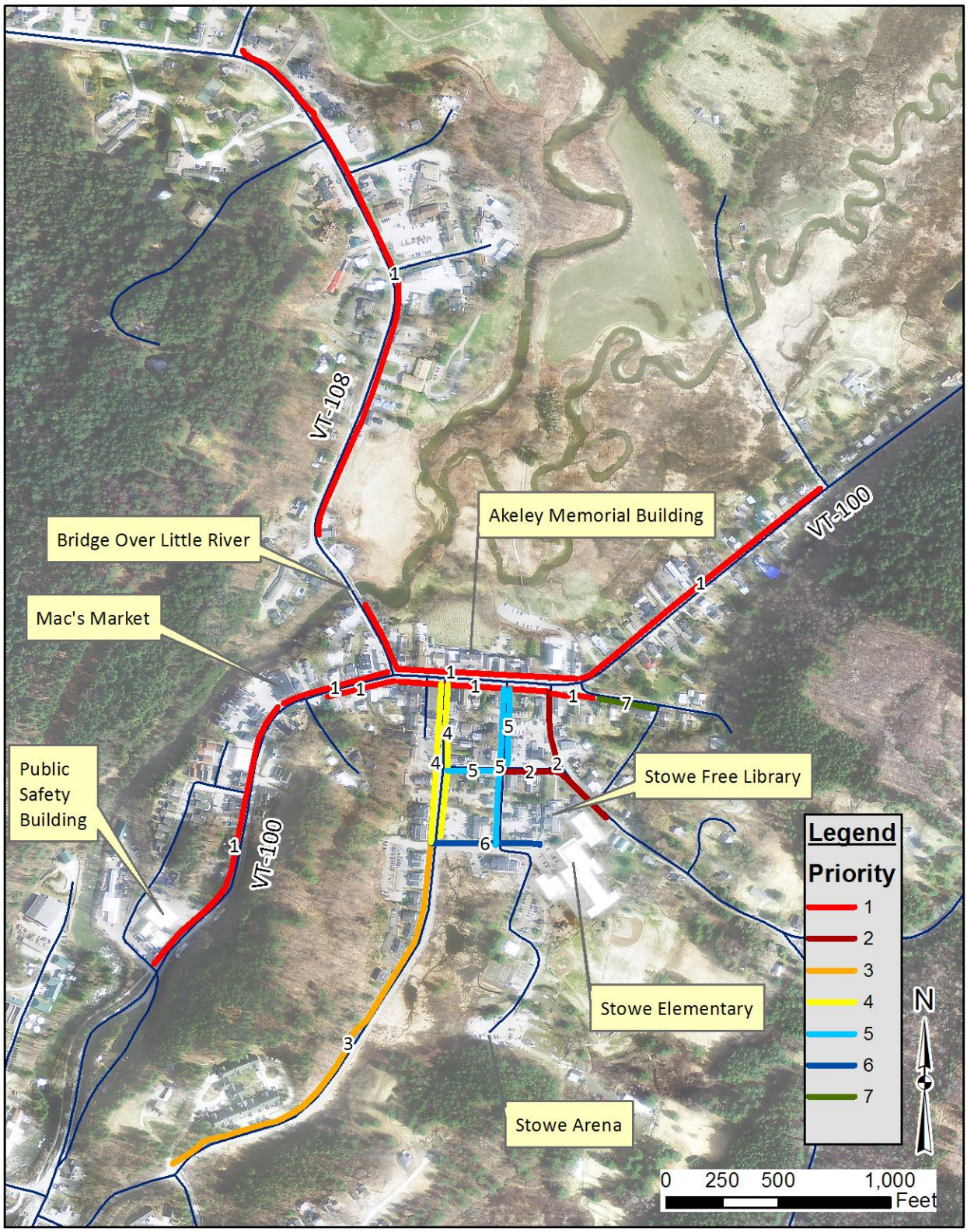

Figure 79: Project Area Map - Project Prioritization

Sidewalk Project Recommendations		
Project Number	Segments Included	Project Cost
1	1, 2, 3, 4, 5, 6, 17 and 18	$2,050,000
2	12 and 14	$450,000
3	9	$550,000
4	7 and 8	$500,000
5	10, 11 and 13	$350,000
6	15	$150,000
7	16	$50,000

Table 48: Sidewalk Project Recommendations

Project 1: Segments 1-6 and 17-18

The first priority group consists of Segments 1 through 6, 17, and 18 which comprise all of the Class I roads, which includes VT-100 and VT-108 that are anticipated to be paved in an upcoming VTrans resurfacing project. Main Street is the heart of Stowe and is especially important for tourism. Although this is the most complex and expensive segment, it has the highest pedestrian traffic volume. South Main Street was included in this group because it provides connectivity to the Lower Village, the northern segments experience a moderate amount of pedestrian traffic, and it includes accented concrete sidewalk. Due to the reduction in parking along Main Street, CLD | Fuss & O'Neill recommends including the Maple Street improvements with Main Street; the additional on-street parking on Maple Street will more than offset the reductions on Main Street. Segments 17 and 18 are included because these are well traveled routes as the connector between the village and the businesses on Mountain Road. Completing Segments 1-6 and 17-8 together will provide a cohesive project with the Class I overlay project that VTrans is undertaking in 2020.

Project 2: Segments 12 and 14

Segments 12 and 14, School Street and Pond Street between Park Street and School Street, are the next most critical sidewalk links. There is an existing discontinuity in the sidewalk network on School Street approaching Pond Street that shows clear evidence of pedestrian traffic and leads to both the Stowe Free Library and Stowe Elementary School. The intersection where these streets meet will be reconfigured and it is logical to group these segments together for construction.

Project 3: Segment 9

Segment 9, the southern segment of Depot Street, is a higher priority due to the safety concern from icing on the sidewalk. This is especially important because this is the pedestrian access from Copley Woodlands to the village.

Project 4: Segments 7 and 8

The sidewalk in Segments 7 and 8 on Depot Street between Main Street and Park Place has been temporarily repaired with bituminous sidewalk. These repairs, although a good provisional solution, will not withstand many Vermont winters and should be replaced before the temporary sidewalk deteriorates.

Project 5: Segments 10, 11 and 13

The improvements to Park Street for Segments 10 and 11 would complete the sidewalk segments adjacent to Main Street and improve the visual appeal of an area used for special events. Segment 13 is continuous with the Park Street improvements and completes the improvements on Pond Street.

Project 6: Segment 15

Completing the recommendations for Segment 15, Park Place would improve the connectivity of the sidewalk network in the village area. This segment would improve pedestrian access to the Post Office and Stowe Elementary School.

Project 7: Segment 16

Segment 16, Sunset Street, has the least urgency for completion. The sidewalk is in a low-volume pedestrian and vehicular traffic area. Any sidewalk replacement in this area risks damage to the street trees, which may be more desirable to residents than improvements to the sidewalk.