Williston, VT
Multimodal Scoping Study on Maple Road

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This scoping study was a collaborative effort of Town of Williston staff, Chittenden County Regional Planning Commission, and Toole Design Group (TDG), who possessed a wealth of combined knowledge and expertise regarding project background, history, local insight, and existing conditions. Their valuable insight and assistance was instrumental in developing the concept alternatives and selecting a preferred alternative.

The preparation of this report has been financed in part through grant[s] from the Federal Highway Administration and Federal Transit Administration, U.S. Department of Transportation, under the State Planning and Research Program, Section 505 [or Metropolitan Planning Program, Section 104(f)] of Title 23, U.S. Code. The contents of this report do not necessarily reflect the official views or policy of the U.S. Department of Transportation.

Contents

1. Introduction

The Chittenden County Regional Planning Commission (CCRPC) and the Town of Williston initiated this scoping study to analyze and evaluate alternatives to address residents' concerns about speeding, cut-through traffic, and desire to improve multimodal safety on Maple Road. Figure 1 shows the location of the study area. In addition to serving residential traffic, Maple Road provides pedestrian access to Williston Central School via a footpath at the end of Village Grove, which can be accessed off Maple Road. As a result, Maple Road is one of several routes for students to walk to the school.

This report summarizes the scoping study process, public participation results, and findings.

1.1. Project Oversight

This scoping study was conducted and coordinated with public involvement through presentations, meetings, and an online survey.

Project meetings and public involvement included the following:

- Kickoff Meeting: October 25, 2017 – Steering Committee members met to discuss project scope, study area limits, review the schedule, and conduct a field visit.
- Local Concerns Meeting: January 11, 2018 – TDG staff facilitated a local concerns meeting. As an outcome of the meeting and site fieldwork, TDG created a project purpose and need statement. Following this, TDG developed concept alternatives for Maple Road in coordination with CCRPC.
- Online Survey: TDG worked with CCRPC to develop an online community survey to gather public feedback on the concept alternatives. The survey was open for responses from April 11, 2018 – April 22, 2018. CCRPC and the Town of Williston distributed the survey to the public.
- Selectboard Hearing: June 5, 2018 – The project team presented the results of the study and the conceptual alternatives before the Town of Williston Selectboard.

1.2. Purpose and Need

CCRPC and the Town of Williston, with the input of community members who attended the local concerns meeting on January 11, 2018, developed the following purpose and needs statement for the project:

Purpose

The purpose of this project is to ensure that the design of Maple Road supports the safe and efficient movement of all modes of transportation, while also retaining the neighborhood character of the road and supporting the needs of its residents.

Need

The need for this project is documented by resident concerns related to:

- Discouraging cut-through traffic
- Lowering vehicle speeds
- Enhancing safety for bicyclists and pedestrians

1.3. Relevant Plans and Studies

The following documents were reviewed and consulted to ensure consistency with this scoping study:

- *2016-2024 Williston Comprehensive Plan* 2017
- *Chittenden County Regional Active Transportation Plan* 2016
- *Chittenden County ECOS Plan* 2013
- *Williston-Essex Network Transportation Study* 2014
- *Williston Road (U.S. Route 2) Multi-Modal Transportation Scoping Study* 2014

Figure 1: Study Area Map

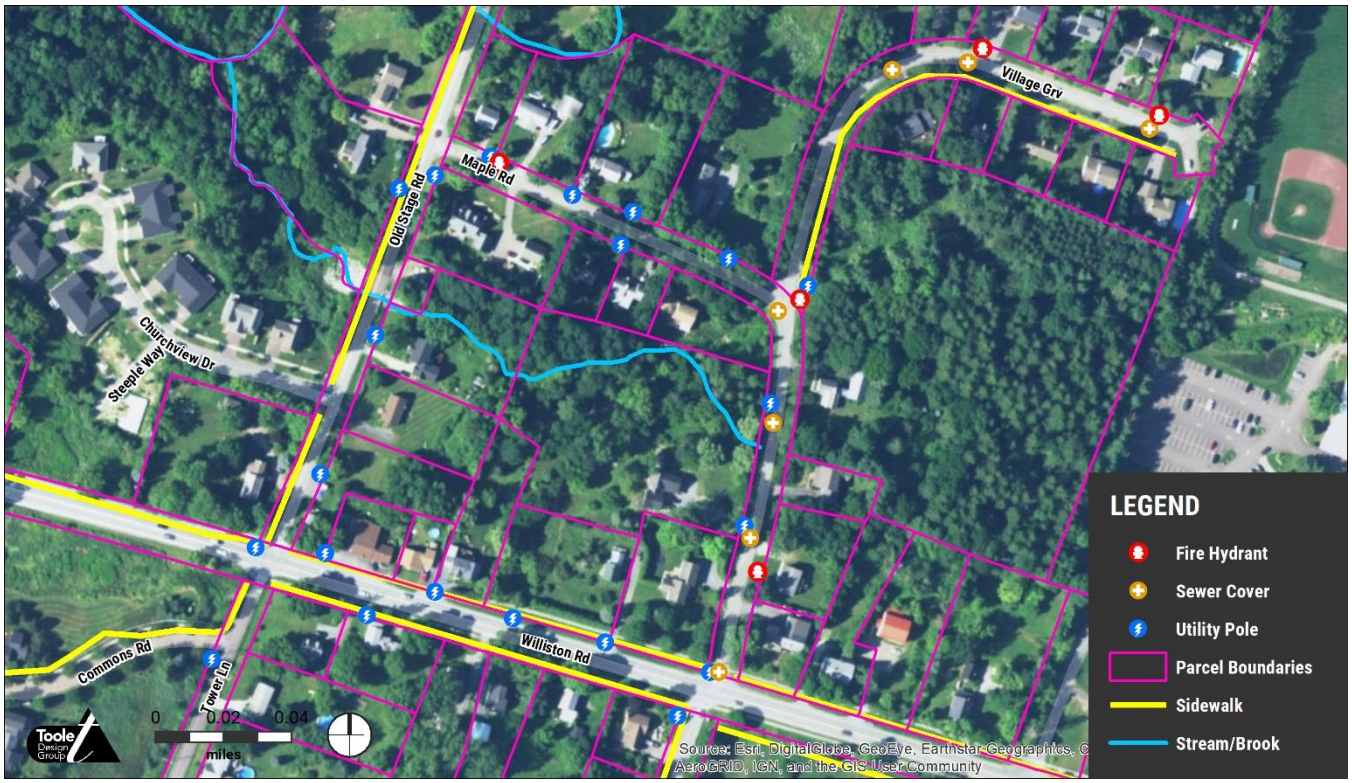

Figure 2: Existing Resources and Built Environment

2. Existing Conditions

This section assesses existing conditions to understand potential impacts of the conceptual alternatives developed as part of this study. Each of the resource types specified in the *VTrans Project Scoping Manual* are addressed below. This section describes:

- Roadway Characteristics
- Land Use
- Natural Resources
  - Water bodies
  - Wetlands
  - Floodplains
  - Agricultural Lands or Soils
  - Rare, Threatened, or Endangered Species
- Built Environment
- Cultural Resources

The base map for this scoping study was provided by the CCRPC. The project team conducted a site visit to document existing conditions. No field survey was performed. Site fieldwork was conducted to field verify topographic features within the project study area, and subsequent fieldwork findings were added to the original base mapping. See Figure 2 for a map of existing resources and built environment in the study area.

2.1. Roadway Characteristics

As shown in Figure 2, Maple Road connects Old Stage Road to U.S. Route 2/Williston Road. Starting at Old Stage Road, Maple Road extends eastward approximately 615 ft., where it bends approximately 90 degrees, terminating at U.S. Route 2/Williston Road approximately 590 ft. to the south. Village Grove is an approximately 900 ft.-long dead-end street extending northward from the bend in Maple Road.

Maple Road is classified by the Vermont Agency of Transportation (VTrans) as a Local road with a posted speed limit of 25 MPH. Within the road classification hierarchy, local roads are designed to provide access to abutting land uses. The Average Annual Daily Traffic (AADT) based on 2016 counts is 135 vehicles.

The existing pavement width of Maple Road is 20 ft. and the pavement is in fair condition with some cracking along the center. Maple Road is two-way and pavement markings are not present on any portion of the road. Refer to Table 1 for roadway characteristics of Maple Road.

Maple Road	
Functional classification	Local
Jurisdiction	Town
Right-of-way width (feet)	3-Rods (49.5 ft.)
Roadway width (feet)	20 ft.
2016 AADT**	135
Posted speed limit	25 MPH
**AADT= Average Annual Daily Traffic	

Table 1: Roadway Characteristics (source: VTrans Route Log Data)

Traffic exiting Maple Road at both Old Stage Road and U.S. Route 2/Williston Road is stop-controlled on the minor approaches. A marked crosswalk across Old Stage Road is located on the north side of the Maple Road intersection, connecting to a sidewalk on the west side of Old Stage Road. At U.S. Route 2/Williston Road, a marked crosswalk crosses the entrance to Maple Road. A sidewalk on the north side of U.S. Route 2/Williston Road provides pedestrian access to Green Mountain Transit bus stops and Williston Village center. The bus stops are served by Green Mountain Transit Route 1V, a low-frequency route that provides five daily weekday trips between Williston Town Hall and downtown Burlington. A sidewalk is also present on the east side of Village Grove. There are no sidewalks or bicycle facilities on Maple Road.

CCRPC conducted speed and volume studies on the east/west segment in May and November 2015. A subsequent speed and volume study was conducted for the east/west and north/south segments in June 2016. Table 2 and Table 3 contain the results. The results showed higher 85th percentile and average speed on the north/south segment. Overall volume was higher on weekdays when school was in session, and volume was higher on the north/south segment on both schooldays and non-school weekdays.

East/West Segment	
85th Percentile	25 mph
Average Speed	18 mph
* Results are the average of May 2015, November 2015, and June 2016 studies.	

North/South Segment	
85th Percentile	29 mph
Average Speed	23 mph
* Results are from June 2016 study.	

Table 2: Maple Road Speed Study Results

Direction	Average School Weekday Volume	Average Non-School Weekday Volume
Eastbound	71	53
Westbound	66	54
Total	138	107
* Results are from June 2016 study.		

Direction	Average School Weekday Volume	Average Non-School Weekday Volume
Southbound	117	93
Northbound	61	68
Total	178	160
* Results are from June 2016 study.		

Table 3: Maple Road Volume Study Results

Maple Road looking north from U.S. Route 2/ Williston Road

2.2. Land Use

Land use within the study area is primarily single family residential. All of the study area is located within the Village Center Zoning District, making any future development subject to the 2016 Williston Village Master Plan and applicable zoning regulations. The single-family residential character of Maple Road is not likely to change with future development. Parcel boundaries are shown in Figure 2.

2.3. Natural Resources

The following sections document the presence or lack thereof of key natural resources within the study area. All findings are based on State of Vermont geographic information system (GIS) data obtained by CCRPC.

2.3.1. *Water Bodies*

Two streams cross Maple Road. One crosses approximately 440 ft. north of Williston Road, and the other crosses at the intersection of Maple Road and Village Grove. The two streams converge approximately 300 ft. southwest of the intersection of Maple Road and Village Grove, draining in a westward direction as a tributary of Allen Brook. The study area does not contain any groundwater resources or water quality monitoring sites.

2.3.2. Wetlands
The study area does not contain any wetlands.

2.3.3. Floodplains
The study area is in a minimal flood hazard zone.

2.3.4. Agricultural Lands or Soils
Although the study area does include Prime Agricultural Soils of Statewide Importance, it does not include land currently used for agriculture and is unlikely to be used for agriculture in the future.

2.3.5. Rare, Threatened, or Endangered Species
No rare, threatened or endangered species have been identified within the study area.

2.4. Built Environment
The following sections document the presence or lack thereof of built environment features within the study area. All findings are based on State of Vermont GIS data obtained by CCRPC.

2.4.1. Hazardous Waste
There are no parcels containing hazardous waste within the study area.

2.4.2. Utilities
Overhead utility poles are located along the length of Maple Road with varying setbacks from the edge of the paved roadway ranging from approximately 3 – 10 ft. (see Figure 2 for locations). A sewer line runs along the east and north edge of Maple Road and three sewer manhole structures are located along the road. A gas line runs along the west and south edge. A water line runs outside of the public right-of-way along the east and north edge. Finally, three fire hydrants are located on Maple Road, as shown in Figure 2.

2.4.3. Drainage
Maple Road does not feature any curbs or catch basins; stormwater drains directly off the road surface. Village Grove, just north of Maple Road, has vertical concrete curbs on both sides. Two catch basins are located on the east and west side of Village Grove approximately 6 ft. north of the edge-of-pavement of Maple Road; these drain into a storm drain with an outlet about 25 ft. east of the edge of pavement on Village Grove.

2.5. Cultural Resources

2.5.1. Historic and Archeological
This study did not include an archeological resource analysis. However, given that the project area is located within the Williston Village Historic District, which is listed on the National Register of Historic Places, additional archeological review may need to be completed during any potential design phases of this project.

2.5.2. Architectural

The building stock located within the study area consists primarily of single-family residential development.

2.5.3. Section 4(f) and 6(f) properties

There are no Section 4(f) or 6(f) properties within the study area.

3. Concept Alternatives Analysis

Five conceptual alternatives were developed in consideration of existing conditions, the purpose and needs statement, and feedback gathered from the community. The appendix includes roll plans of each alternative. The following sections provide an evaluation for each conceptual alternative, an evaluation matrix, and opinion of probable constructions costs.

3.1. Description of Concept Alternatives

The following sections describe each alternative developed for Maple Road.

3.1.1. Alternative 1A: Sidewalk North Side

Alternative 1A is the first of two options that feature a sidewalk along the length of Maple Road. In Alternative 1A, the sidewalk is located on the north side on Maple Road between Old Stage Road and Village Grove. Between Village Grove and Williston Road, the sidewalk is on the east side. The project team evaluated the feasibility of a sidewalk on the west side between Village Grove and Williston Road and determined that is would pose significantly higher impacts to grading and utilities. Therefore, the team did not pursue that option.

The sidewalk is envisioned as having a raised curb, though it could also be constructed to be flush with the roadway to minimize the potential costs of a new drainage system and grading of landscaped areas outside of the existing limits of the roadway. The following are the advantages and disadvantages of Alternative 1A:

- Advantages:
  - Provides a separated space for pedestrians
- Disadvantages:
  - May require regrading and the removal of trees, plantings and other objects near the road edge
  - Does not provide separate space for bicyclists
  - May not reduce traffic speed or cut-through traffic

Figure 3: Photo Simulation of Alternative 1A

3.1.2. Alternative 1B: Sidewalk South Side

Alternative 1B is the second of two options that feature a sidewalk along the length of Maple Road. In Alternative 1B, the sidewalk is located on the south side of Maple Road between Old Stage Road and Village Grove. Between Village Grove and Williston Road, the sidewalk is on the east side, the same as Alternative 1A.

The sidewalk is envisioned as having a raised curb, though it could also be constructed to be flush with the roadway to minimize the potential costs of a new drainage system and grading…. The following are the advantages and disadvantages of Alternative 1B:

- Advantages:
  - Provides a separated space for pedestrians
- Disadvantages:
  - May require regrading and the removal of trees, plantings and other objects near the road edge
  - Does not provide separate space for bicyclists
  - May not reduce traffic speed or cut-through traffic

Figure 4: Photo Simulation of Alternative 1B

3.1.3. Alternative 2: Speed Humps

Alternative 2 proposes the addition of speed humps and associated signage and pavement markings on Maple Road. Speed humps are common type of traffic calming device consisting of a 3 – 3.5-inch-tall asphalt mound that spans the width of the roadway. Speed humps are a proven technique for addressing vehicle speed issues, effectively slowing vehicles speeds to 20 – 23 mph. However, they can raise concerns that must be carefully considered before implementation. These concerns can include emergency response time, noise, property values, and winter maintenance.

Impact to emergency response times is a justifiable concern that requires careful planning and coordination with emergency responders to ensure response times remain within acceptable limits. Considering that Maple Road is a local street, emergency vehicles would likely avoid it except to respond to a call on Maple Road or Village Grove. For calls on either street, the impact may be negligible considering that they are short streets and emergency vehicles would already be decelerating to reach their destination when encountering a speed hump.

Residents sometimes have concerns over how proposed traffic calming may affect their property values or increase noise levels. Studies have found no relationship between traffic calming devices and a reduction in property value.[1] Studies have found that traffic calming devices actually reduce noise through the reduction of operating speeds. However, this reduction can be periodically offset by the noise of braking and accelerating at some devices. The project team took care to site proposed speed humps as far from dwellings as possible while remaining within the bounds of acceptable distance from one another.

Winter maintenance is a concern in communities such as Williston that can receive considerable snowfall. Surveys of communities that have installed traffic calming devices have found that they do not prevent snow removal, nor do they leave residual snow and ice, damage plows, or suffer damage themselves, but may add to workload and expense.[2] Snow plow blades may need to be outfitted with rubber tips, rollers or metal extensions to ensure that damage is not incurred on the traffic calming device or plow blade during snow and ice removal.

[1] *Guidelines for the Design and Application of Speed Humps and Speed Tables, A Recommended Practice of the Institute of Transportation Engineers*, ITE, 2011

[2] *Traffic Calming State of the Practice*, Reid Ewing, ITE 1999

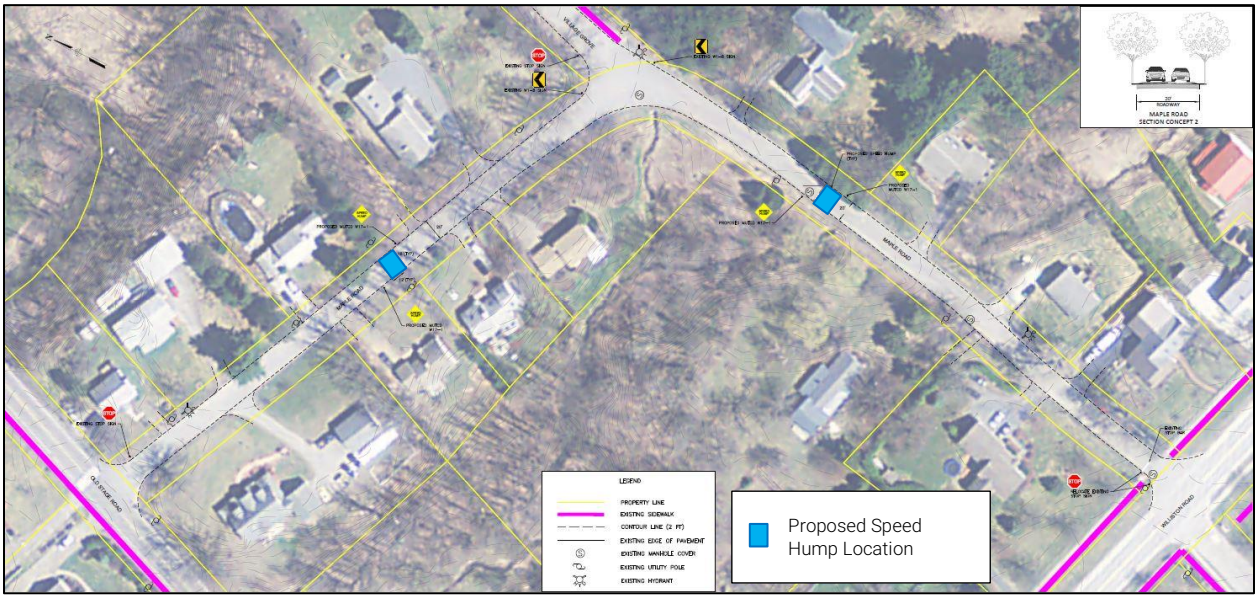

Figure 5: Location of Proposed Speed Humps on Maple Road

Alternative 2 proposes one speed hump between Williston Road and Village Grove and one between Village Grove and Old Stage Road. See Figure 5 for an illustration. The following are the advantages and disadvantages of Alternative 2:

- Advantages:
  - Effectively reduces traffic speeds
  - May reduce cut-through traffic
  - Resulting speed and volume reductions may improve conditions for pedestrians and bicyclists sharing the road with vehicles
  - Does not impact objects outside the current road edge
- Disadvantages:
  - Vehicle acceleration and deceleration noise may increase near speed humps

3.1.4. Alternative 3: Advisory Shoulders

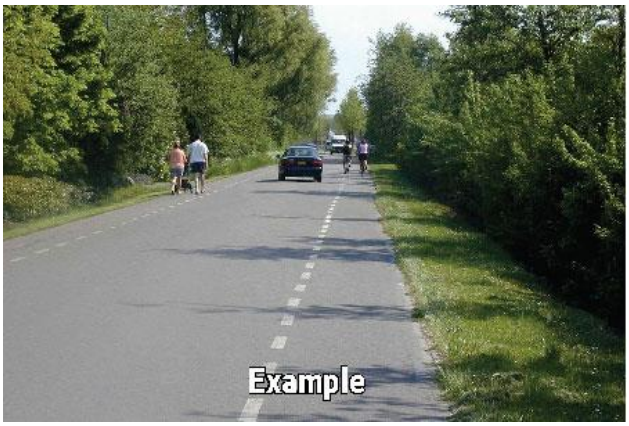

Figure 6: Example of a Typical Application of Advisory Shoulders

Alternative 3 proposes advisory shoulders and associated signage for Maple Road. Advisory shoulders provide a space for pedestrian and bicycle operation on roads that are otherwise too narrow for marked shoulders. Roads with advisory shoulders feature a center bidirectional travel lane that motorists use to pass pedestrians and bicyclists. Similarly, bicyclists would use the center travel lane to pass pedestrians in the shoulder. When encountering oncoming traffic, motorists may pull into the shoulders to proceed unencumbered provided bicyclists are not

present. Pedestrians and bicyclists are allowed to travel outside of the shoulders and may prefer to when there are no motor vehicles present.

Additional pavement markings proposed in Alternative 3 include:

- A double yellow centerline and shared lane markings on the approaches to Old Stage Road and Williston Road to visually separate traffic streams
- Shared lane markings at the approach to Village Grove to indicate where bicyclists should position themselves laterally in the roadway
- A striped curb extension on the southwest corner of the bend at Village Grove to encourage slower vehicle speeds.

See the appendix for a roll plan of Alternative 3 which shows the proposed pavement markings and signage.

The following are the advantages and disadvantages of Alternative 3:

- Advantages:
    - Creates a visually separate operating space for pedestrians and bicyclists
    - Does not require construction or impact to objects outside the current road edge
- Disadvantages:
    - May not reduce traffic speed or cut-through traffic
    - Given the relative novelty of advisory shoulders, additional signage and public messaging may be desired to educate users

Advisory shoulders are currently considered experimental and require an approved Request to Experiment (RTE) from Federal Highway Administration. The speed and volume of traffic on Maple Road falls below the maximum criteria for advisory shoulders and therefore it may be a suitable candidate for such experimentation. FHWA has approved numerous advisory shoulder RTEs across the country recently, which is promising for this project. Advisory shoulders intended for use by pedestrians must meet accessibility guidelines. Slopes and grades must be evaluated to determine feasibility.

3.1.5. Alternative 4: No-Build

Alternative 4 proposes to leave Maple Road in its present condition. This "no-build" option would have the following advantages and disadvantages:

- Advantages:
    - Retains neighborhood character
    - Does not impact any trees, plantings and other objects near the road edge
- Disadvantages:
    - Does not address resident concerns regarding traffic speed or cut-through traffic

3.2. Analysis of Community Survey

Following the local concerns meeting, the project team developed an online survey to gather community feedback on Alternatives 1 – 3. Respondents were asked whether or not they reside in Williston and if so, if they live on Maple Road. Following this, each alternative was presented with a text description and a photo simulation or example photo of the treatment type. Then, respondents were asked to rate each alternative on a scale with the following options: "Strongly Like," "Like," "Neither like nor dislike," "Dislike," and "Strongly Dislike." Finally, respondents were given the option to provide open ended feedback. The following describes the results of the survey:

- 39 total responses of which 33 were complete
- 95% of respondents were residents of Williston and of those, 51% live on Maple Road
- Among all respondents, preferences for each alternative were roughly split down the middle. Alternative 2 had the highest number of strong likes, while Alternative 3 had the highest number of strong dislikes. See Figure 7.
- Maple Road residents favored Alternative 2 over all other options; it was the only alternative to achieve greater than 50% favorability. Alternative 1A was the least favorable alternative among Maple Road residents. See Figure 9.
- Residents of Williston who do not live on Maple Road exhibited higher favorability for Alternatives 1A, 1B, and 3 and less favorability for Alternative 2. See Figure 8.
- Among text responses, the following themes emerged:
    - Four Maple Road residents expressed preference for a no-build option
    - The question of whether a sidewalk is located on the north or south side between Old Stage Road and Village Grove could cause disagreement between Maple Road residents
    - Concern regarding responsibility for sidewalk maintenance
    - Pedestrians may still walk in the roadway even with a sidewalk

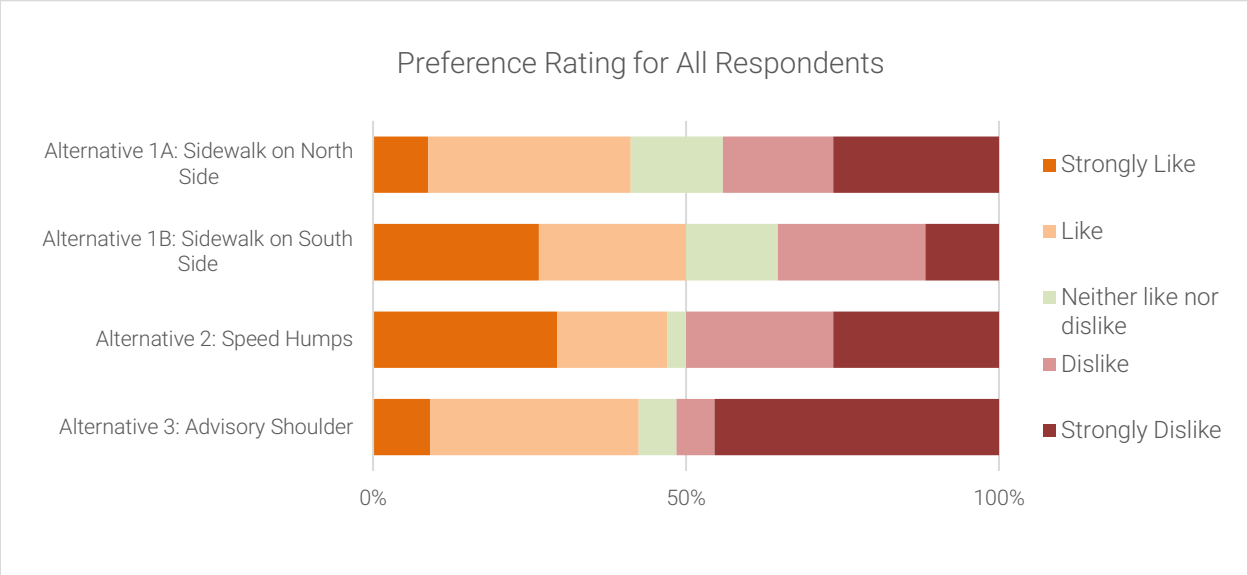

Figure 7: Preference Rating for All Respondents

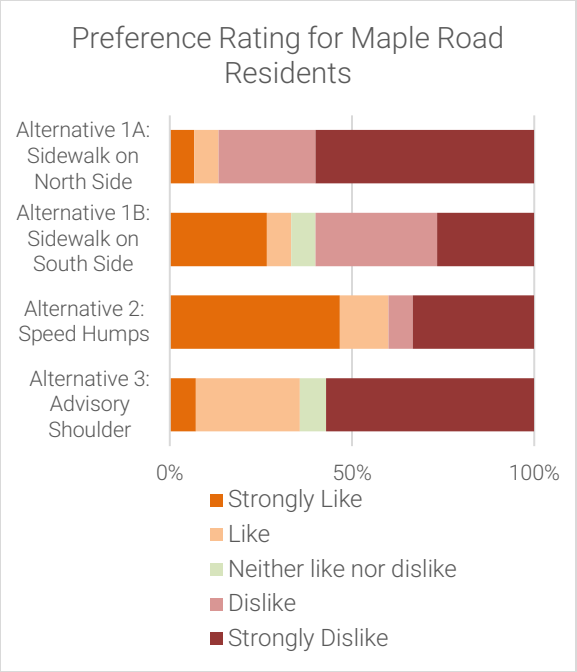

Figure 9: Preference Ratings for Maple Road Residents

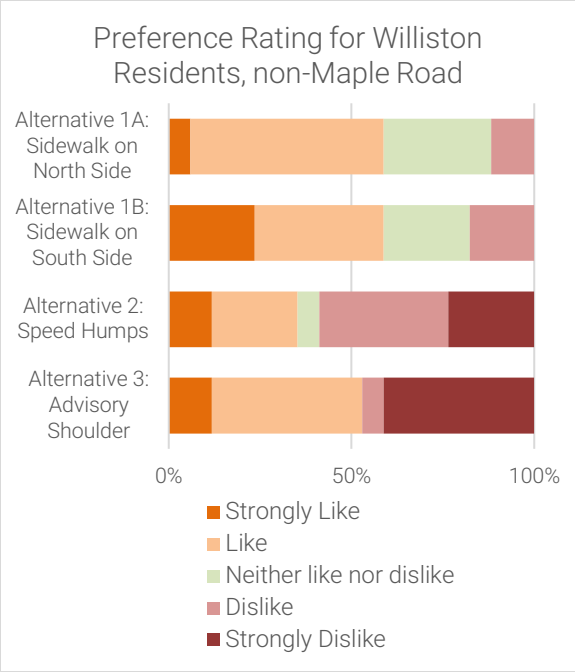

Figure 8: Preference Rating for Williston Residents, non-Maple Road

3.3. Alternatives Comparison Matrix and Opinion of Probable Construction Cost

The anticipated costs, resource impacts, and permit requirements for each alternative are summarized in Table 4. The opinion of probable construction costs for each alternative includes engineering, construction, and construction administration. The cost estimate does not include potential environmental permitting, easement or property acquisition.

Table 4: Alternatives Comparison Matrix and Opinion of Probable Construction Cost

Item	Alternative 1A - Sidewalk (North Side Alignment)	Alternative 1B - Sidewalk (South Side Alignment)	Alternative 2 - Traffic Calming with Speed Humps	Alternative 3 - Advisory Shoulders	Alternative 4 - No Build
Construction Characteristics					
Length	1,173 FT	1,230 LF	N/A	992 LF	N/A
Facility Width	5 FT	5 FT	N/A	5 FT (both sides)	N/A
Buffer Width	N/A	N/A	N/A	N/A	N/A
Surface	Concrete	Concrete	Bituminous Concrete	Bituminous Concrete	N/A
Terrain	Rolling natural slopes	Rolling natural slopes	Rolling natural slopes	Rolling natural slopes	Rolling natural slopes
Potential Impacts					
Property Impacts	No	No	No	No	No
Utility Impacts-Aerial	Possible	No	No	No	No
Utility Impacts-Underground	Possible	Possible	No	No	No
Archeological Impacts	Additional review recommended during design phase	Additional review recommended during design phase	No	No	No
Historic Property Impacts	Additional review recommended during design phase	Additional review recommended during design phase	No	No	No
Trees-Removed/Replaced	Yes	Yes	No	No	No
Mailboxes - Removed/Replaced	No	Yes	No	No	No
Right-of-Way Impacts	Possible	Possible	No	No	No

Item	Alternative 1A - Sidewalk (North Side Alignment)	Alternative 1B - Sidewalk (South Side Alignment)	Alternative 2 - Traffic Calming with Speed Humps	Alternative 3 - Advisory Shoulders	Alternative 4 - No Build
Class 2 Wetland Impacts	No	No	No	No	No
Alignment with Purpose and Needs Statement					
Discourages Cut-Through Traffic	Low	Low	High	Medium	N/A
Lowers Vehicles Speeds	Low	Low	High	Medium	N/A
Enhances Safety for Pedestrians	High	High	Medium	Medium	N/A
Enhances Safety for Bicyclists	Low	Low	High	Medium	N/A
Retains Neighborhood Character	Low	Low	Medium	Medium	High
Permits					
ACT 250	No	No	No	No	N/A
NEPA	Categorical Exclusion	Categorical Exclusion	Categorical Exclusion	Categorical Exclusion	N/A
404 COE Wetlands (<3,000 SF Impact-Category 1: Self Verification	No	No	No	No	N/A
ANR Wetlands	No	No	No	No	N/A
Stream Alteration	No	No	No	No	N/A
Stormwater Discharge	Yes	Yes	No	No	N/A
Construction General	Yes	Yes	Yes	Yes	N/A
Archeology-Phase 1B	Additional review recommended during design phase	Additional review recommended during design phase	Additional review recommended during design phase	No	N/A
Section 106 / Historic	Additional review recommended	Additional review recommended	Additional review recommended	No	N/A

Item	Alternative 1A - Sidewalk (North Side Alignment)	Alternative 1B - Sidewalk (South Side Alignment)	Alternative 2 - Traffic Calming with Speed Humps	Alternative 3 - Advisory Shoulders	Alternative 4 - No Build
	during design phase	during design phase	during design phase		
Prime Agricultural Soils	Yes	Yes	Yes	Yes	N/A
Rare, Threatened, Endangered Species	No	No	No	No	N/A
Opinion of Probable Construction Costs					
Conceptual Cost Estimate	$310,000	$320,000	$50,000	$40,000	N/A

3.4. Preferred Concept Design Alternative

Based on an evaluation of existing conditions, design impacts, and input received from the community, the project team identified Alternative 4 as the recommended preferred alternative.

Alternative 4 was selected based on the following considerations:

- The vehicle speed and volume data evaluated for this study do not in of themselves suggest the need for any modifications to the current roadway design or operations.
- Maple Road residents strongly disfavored Alternatives 1A and 1B, and did not exhibit strong support for Alternatives 2 and 3.
- Alternatives 1 – 3 would have significant impacts on neighborhood character that do not appear to be justified by existing traffic conditions.
- There is no recent history of crashes on Maple Road.

While this study does not recommend any roadway design modifications, it is recommended that the Town of Williston consider strategic landscaping at the corner of Maple Road and Village Grove to improve visibility. In particular, the Town may consider trimming or removing vegetation at the southwest corner of the intersection so that drivers traveling eastbound/southbound may have better visibility of pedestrians, bicyclists, and vehicles approach in the opposite direction.

4. Project Summary

The Williston, VT Multimodal Scoping Study on Maple Road was prepared at the request of the CCRPC and the Town of Williston to analyze existing conditions and evaluate concept alternatives to address the issues identified in the purpose and needs statement. This report presents the existing conditions data, conceptual design alternatives, a preferred conceptual design alternative, and opinion of probable construction costs for the project study area.