

# VERMONT Safe Routes to SCHOOL



## Albert Bridge School

### Safe Routes to School Travel Plan

Spring 2014



*Prepared with assistance from the VT SRTS Resource Center*

*SafeRoutesVT.org*

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## INTRODUCTION

### The Five E's

SRTS combines many different approaches to make it safer for children to walk and bicycle to school and to increase the number of children doing so.

**Engineering** strategies create safer environments for walking and bicycling to school through improvements to the infrastructure surrounding schools. These improvements focus on reducing motor vehicle speeds and conflicts with pedestrians and bicyclists, and establishing safer and fully accessible crossings, walkways, trails and bikeways.

**Education** programs target children, parents, caregivers and neighbors, teaching how to walk and bicycle safely and informing drivers on how to drive more safely around pedestrians and bicyclists. Education programs can also incorporate health and environment messages.

**Enforcement** strategies increase the safety of children bicycling and walking to school by helping to change unsafe behaviors of drivers, as well as pedestrians and bicyclists. A community approach to enforcement involves students, parents or caregivers, school personnel, crossing guards and law enforcement officers.

**Encouragement** activities promote walking and bicycling to school to children, parents and community members. Events such as Walk to School Day, contests such as a Frequent Walker/Bicyclist challenge, or on-going programs such as a Walking School Bus or Bicycle Train can promote and encourage walking and bicycling as a popular way to get to school.

**Evaluation** is an important component of SRTS programs that can be incorporated into each of the other E's. Collecting information before and after program activities or projects are implemented allow communities to track progress and outcomes, and provide information to guide program development.

*- Excerpted from "Safe Routes to School: A Transportation Legacy", the report of the National Safe Routes to School Task Force*

This Travel Plan represents the work of the Albert Bridge School Safe Routes to School Team. Our school believes that creating and maintaining this Travel Plan is a good way to ensure an on-going Safe Routes to School (SRTS) program.



Safe Routes to School programs adopted by schools like ours across the country have been shown to provide a variety of benefits to their communities. A strong SRTS program can help to:

1. Reduce traffic congestion around our school
2. Reduce costs and need for busing students to school
3. Increase our student's sense of freedom and responsibility
4. Teach students fundamental safety skills
5. Strengthen our sense of community
6. Provide more transportation options for everyone

The SRTS team at Albert Bridge School consists of parents, teachers, and other community stakeholders who have provided input, guidance, and oversight in writing our plan.

The ideas and recommendations developed during this process will guide us in creating a well-balanced approach to building our SRTS program at Albert Bridge School (ABS). Our school team will use this document as a resource to plan our encouragement, education, infrastructure, enforcement, and evaluation efforts with assistance from the VT SRTS Resource Center.

The Vermont Agency of Transportation (VTrans), through the Vermont SRTS Resource Center, has provided technical assistance in producing this plan. With the help of the Resource Center, we have identified infrastructure improvements that would have a positive impact on walking and biking to school. These infrastructure recommendations are considered planning level and will require further engineering analysis to determine feasibility. It is our hope that our recommendations can be the basis for grants and/or improvements initiated by the Town of West Windsor.

Members of the Albert Bridge School SRTS Team	
<b>Jennifer Aldrich</b> Principal	<b>Courtney McKaig</b> Parent Healthy Community Design Advocate Mt. Ascutney Hospital
<b>Jason Rasmussen</b> Planner SWCRPC	<b>Martha Harrison</b> Town Administrator Town of West Windsor
<b>Annalise Ennis</b> Resident and Parent	<b>Deb Shearer</b> Parent
<b>Jean Chick</b> School Nurse	<b>Glenn Seward</b> Selectboard Chairman Town of West Windsor
<b>Mike Spackman</b> Fire Chief & Hwy. Foreman Town of West Windsor	

## TEAM VISION

The SRTS program at ABS aligns with the community's efforts towards promoting active lifestyles through walking, hiking, and biking. The SRTS program goals of combining engineering, education, enforcement, evaluation, and encouragement strategies (also known as the Five E's) to improve the safety and health of students who walk and bike to school, fit our school and town values.

Our vision for ABS (and the surrounding town) is:

- To be a school where more students can safely bicycle and walk to school
- To encourage a more physically active student body reflecting our town's values as an active community
- To build community support and respect of pedestrians and bicyclists both on our roads and on our school grounds
- To develop a regular Walking/Biking School Bus program
- To involve all generations of residents in active transportation
- To develop strong regional partnerships and coordination of SRTS events with schools in surrounding communities

This Travel Plan outlines ABS's intentions for making walking to and from school more sustainable and safer for students and the community. Through our SRTS program we hope to reach 15% (or 13) of our students walking or biking to school during year one and 25% (or 21) of our students walking or biking to school for year two. We believe this goal is attainable through encouraging more walking and biking in town and through educating students on safe walking and biking practices.

Albert Bridge School hopes to engage 100% of its student population through the next year in their Safe Routes to School program.

## ABOUT THIS PLAN

Our SRTS team met three times with the VT SRTS Resource Center to develop and adopt this SRTS Travel Plan. Each meeting provided education on the benefits of SRTS and highlighted successful program components and strategies. The “engineering meeting” included a guided walk audit of the areas around our school. We also discussed education, encouragement, enforcement, and evaluation strategies which helped identify needed and complimentary programs to support proposed engineering strategies.

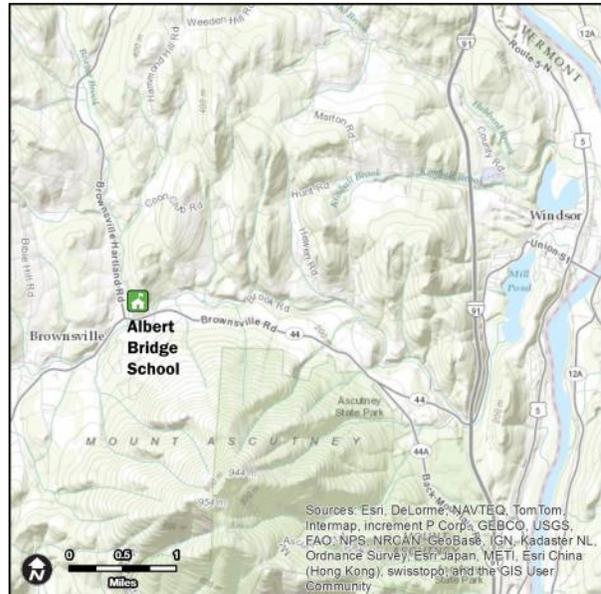
Meeting Date	Content and Outcomes
February 2014	<p><b>Kick-off Meeting: How the VT SRTS Travel Plan Works</b></p> <ul style="list-style-type: none"> <li>- Award of the planning assistance grant</li> <li>- Overview of the planning process</li> </ul> <p><b>Engineering Meeting</b></p> <ul style="list-style-type: none"> <li>- Team visioning</li> <li>- Opportunity and barrier discussions</li> <li>- Walk audit</li> <li>- Observed arrival and dismissal</li> </ul>
March 2014	<p><b>Plan Review</b></p> <ul style="list-style-type: none"> <li>- Reviewed the draft plan</li> <li>- Identified roles and continued steps for non-engineering recommendations</li> </ul>
April 2014	<p><b>Plan Adoption</b></p> <ul style="list-style-type: none"> <li>- Adopted Plan</li> <li>- Discussed continuation of non-infrastructure recommendations</li> </ul>

## TRAVEL PLAN CONTEXT

### ALBERT BRIDGE SCHOOL AND TOWN OF WEST WINDSOR OVERVIEW

Albert Bridge School is located in the village of Brownsville in the Town of West Windsor, VT. West Windsor has a population of approximately 1,100 year-round residents. The small village of Brownsville is focused around the intersection of VT Route 44 and Brownsville-Hartland Road, surrounded by a rural landscape. Its dispersed population, low-density development patterns, hilly terrain, and a general lack of bicycle and pedestrian facilities limit students living in much of the community from easily walking or biking to school.

Albert Bridge School is located on Brownsville-Hartland Road – a Class 2 town road. It is near the intersection of Brownsville-Hartland Road and Vermont Route 44, a state highway and the main road through town. The posted speed limit on both VT Route 44 and Brownsville-Hartland Road is 30 miles per hour through the village.



The SRTS program at Albert Bridge School is a key component in the school’s efforts to improve the health of its students and community as well as to increase awareness of bicycles and pedestrians within town.

Several years ago, the State of Vermont passed Complete Streets legislation which took effect July 1, 2011. Complete Streets policies ensure that state and local transportation agencies consider all users in the design and operation of the right of way to make roads safer and more accessible for everyone regardless of age or ability. Complete Streets policies, working in tandem with the SRTS travel plan, will help to define West Windsor as a walkable, bikeable, and sustainable community.

## CURRENT SCHOOL DEMOGRAPHICS

Albert Bridge School serves the town of West Windsor and has a total of 86 students enrolled for the 2013-2014 school year. Our school serves grades K-6. Albert Bridge School offers busing to all enrolled students. One bus serves this school.

Demographic	Count	Percentage of student body
Free/Reduced Lunch	24	28%
Students with Disabilities	0	0% (cannot disclose)
Limited English proficient students	0	0%
<b>Distance From School</b>		
Students living within 1/4 mile of school	2	2%
Students living within 1/2 mile of school	7	8%
Students living within 1 mile of school	18	21%
Students living within 2 miles of school	46	53%
Students in grades K-3	45	52%
Students in grades 4-6	41	48%

## CURRENT STUDENT TRAVEL MODES

Travel Mode	Walk	Bike	School Bus	Family Vehicle	Carpool	Public Transit	Other
Number of Students (AM)	0%	7%	20%	73%	0%	0%	0%
Number of Students (PM)	0%	5%	32%	65%	0%	0%	0%

Data based on SRTS Student Tally Report administered in May 2013.

## SCHOOL ARRIVAL AND DISMISSAL PROCEDURES

Albert Bridge School relies on policies, practices, and support activities to ensure a safe and orderly process for arrival and dismissal, regardless of how students travel to school. Parents are reminded of these procedures in the student handbook and in newsletters that are mailed to students' homes.

The school day begins at Albert Bridge School at 8:15 am.

Students walking, biking, and travelling by car arrive staggered before school starts – typically between 8:00 am and 8:15 am. The school bus arrives at 8:05 am, dropping students off on the southwest side of school at the front entrance, it then proceeds to the rear of the building and remains there until dismissal. Students remain outside until the morning assembly at 8:15 am.



Students gather outside before the day starts

Students who walk to school typically travel north up Brownsville-Hartland Road and through the parking lot to reach the main entrance, or they walk from the end of the sidewalk on Brownsville-Hartland Road, northward around the rear of the church building and into the school playground. Those students who live south of VT 44 typically walk along the "Trail to Town" and must cross VT 44 to reach Brownsville-Hartland Road. Students travelling by bike may park just south of the school building, between the main parking lot and the church driveway. Students who walk or bike to school require daily permission from their parents to do so.

The parking lot functions as a one-way loop in front of the school for vehicles. Parents dropping off children pull into the south parking lot entrance and park or proceed to the main entry walkway. They then exit the lot via the north driveway.

Dismissal procedures begin at 2:45 pm with all students dismissed at once. Students riding the bus board directly from the door on the north side of the school building. Dismissal continues until approximately 3:00 pm with the remainder of students being dismissed through the side door (facing the playground) to walk, bike, or wait on the playground for their parents to arrive. Parents who pick-up their children need to park and physically pick-up their child from the school. School staff are present at dismissal to ensure that children are behaving properly and safely until they leave the school grounds.

**Arrival**

<b>Travel Mode</b>	<b>Procedure</b>	<b>Time</b>
Walk	Arrive staggered	8:00-8:15 am
Bike	Arrive staggered	8:00-8:15 am
School Bus	Arrives at designated time	8:05 am
Family Vehicle	Arrive staggered	8:00-8:15 am

**Dismissal**

<b>Travel Mode</b>	<b>Procedure</b>	<b>Time</b>
Bus	Dismissed through north side door	2:45 pm
Family Vehicle	Dismissed all at once	2:45 pm
Walk	Dismissed all at once	2:45 pm
Bike	Dismissed all at once	2:45 pm

## EXISTING TRAVEL HABITS

Students travel to Albert Bridge School via Brownsville-Hartland Road either from streets to the north or the south off of VT Route 44. About 15% of the student population lives within a mile of the school and 48% live within two miles. However, the number of students who can walk or bike to school is low due to limited sidewalks and no bicycle facilities near the school. The majority of students may be best served by bike train or walking school bus sites located closer to school. On January 31<sup>st</sup>, 2013, (the day of our safety observation) no students were observed bicycling to school and three students were observed walking to school. Of the six students who regularly walk home from school, three cross Route 44.

A parent survey was conducted from October to December 2013. Of the 86 surveys distributed, 25 were returned. The survey identified the following barriers to walking to school:

- **Speed of traffic along route** (21/25 responses, 84%)
- **Amount of traffic along route** (16/25 responses, 67%)
- **Sidewalks or pathways are not present along entire walking route** (13/25 responses, 52%)
- **Safety of intersections and crossings** (11/25 responses, 44%)
- **Weather or climate** (11/25 responses, 44%)
- **Adults with whom to bike or walk** (10/25 responses, 40%)
- **Distance** (9/25 responses, 36%)
- **Time** (7/25 responses, 28%)
- **Violence or Crime** (6/25 responses, 24%)
- **Child's participation in after school programs** (4/25 responses, 16%)
- **Convenience of driving** (3/25 responses, 12%)
- **School crossing guards are not present at key intersections along walking route** (3/25 responses, 12%)

(Data based on SRTS Parent Survey results administered in October 2013)

Many of the issues in the list above can be addressed with either infrastructure or non-infrastructure strategies (or in some cases both). We kept these concerns in mind when picking the strategies that we want to accomplish.

## KEY ISSUES

The team identified the following barriers to walking and biking to school:

*Issue: A chaotic atmosphere in the school parking lot exists at arrival and dismissal times. Space to separate pedestrians from vehicles is often informal or unclear.*

The volume of vehicular traffic in the school parking lot at arrival and dismissal times, combined with a lack of pedestrian space creates a dangerous atmosphere for pedestrians and bicyclists on and around the school grounds. There are no sidewalks in the parking lot, so students walk around and behind parked cars and are not always visible to drivers. Snow piles in the winter create literal barriers between the playground and parking lot, forcing students to walk into the parking lot to reach the main entrance.



No designated space for pedestrians exists around the parking lot

*Issue: There is no designated crossing for pedestrians in town on VT Route 44. This includes where the Trail to Town meets Route 44.*

Students walking to school on the “Trail to Town” whether individually or in walking school buses do not have a designated crossing once they reach Route 44. Installation of a crosswalk was previously explored with VTrans, but limited sight distances due to the curvature of the road prohibited the installation of a crosswalk directly in



There is no crossing in town across Route 44

front of the fire station where the trail is located. The lack of pedestrian facilities on the south side of the road also prohibits the installation of a designated crossing and deters students and residents from walking there.



The existing sidewalk on B-H Road terminates before the school

*Issue: Limited space, topography, and motorist behavior on Brownsville-Hartland Road make it unsafe as a biking or walking route.*

Brownsville-Hartland Road is one of two primary routes in and out of Brownsville.

The posted speed limit on the road through the village is 30 mph and 40 mph on the outskirts. A 2011 Traffic Study conducted by the SWCRPC (at a location .6 miles north of VT 44) showed that the median speed on the road is 40 mph with 85% of drivers travelling at 45 mph or less<sup>1</sup>. The study also determined an annual average daily traffic (AADT) count of 1300. While the road is popular among bicyclists, riding on it is stressful, and accidents between bicyclists and motorists have occurred. The condition of the road is poor, in part due to topography, limited right of way, and Hurricane Irene, which destroyed a portion of the road, making it more treacherous.

*Issue: The speed and amount of traffic on VT Route 44 combined with a lack of connected bike and pedestrian facilities creates a barrier to walking and biking safely in town.*

VT 44 is a primary route through town along with Brownsville-Hartland Road. The posted speed limit in the village is 30 mph and higher outside. The road carries approximately 1500 vehicles per day near the school.<sup>2</sup> This relative frequency of vehicles (as observed in

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<sup>1</sup> This is known as the “85<sup>th</sup> percentile speed” – the speed at or below which 85 percent of vehicles travel, often used to determine posted speed limits. “The 85th percentile speed is used extensively in the field of traffic engineering and safety. Since the majority of drivers are considered reasonable and should be accommodated, some numerical definition for this segment of the driver population is needed. Over time, the 85th percentile driver (or speed) has been used to characterize reasonable and prudent behavior.” US DOT: Federal Highway Administration, *Speed Concepts: Informational Guide*, Sept 2009, p.15.

<sup>2</sup> Based on Annual Average Daily Traffic (AADT) on VT 44 from Rush Meadow Rd. to Hartland Rd. and Hartland Rd. to Brook Rd. Vermont Agency of Transportation, 2012 (*Route Log*) AADTs: *State Highways*, May 2013, p. 41.

comparison with other town roads) and the high speeds which they are observed travelling creates a barrier to crossing and walking or biking on it. There are no pedestrian facilities on the south side of the road. Existing sidewalks on the north side of the road (from Seems Rd. to Brook Rd.) do not provide a designated crossing to destinations on the south side. VT 44 does not have dedicated bicycle facilities and traffic conditions mentioned above along with limited sightlines can make riding stressful.

*Issue: Existing sidewalks on Brownsville-Hartland Road do not connect to the school grounds.*

The existing sidewalk on Brownsville-Hartland Road, near Route 44, ends at the Story Memorial Hall parking lot about 300 feet short of the school grounds. As a result, students must either walk in the roadway without a designated pedestrian facility or cut through the church property and enter the school grounds through the rear. During school months, this route is often covered with snow.

The 1999 West Windsor Pedestrian Master Plan<sup>3</sup> presents a study of this issue, providing two concept alternatives. The town has not yet pursued implementation of a pedestrian connection from Story Memorial Hall to the School due to other budgetary priorities.

## TRAVEL PLAN RECOMMENDATIONS

This Travel Plan is comprised of several sections detailing activities and programs for ABS to implement now and projects for us to develop over time with local officials.

### Non-Engineering Plan

This Travel Plan identifies best practice education, encouragement, enforcement, and evaluation activities and programs suitable for our school. Information on the advantages and considerations for each strategy, and resources to help us implement each, are included in the **Appendix F**.

### 16-Month SRTS Activity Calendar

Our team will pursue a smaller subset of items in the non-engineering plan during the next 16 months. We will review our work periodically, adding additional activities that will build the SRTS program momentum. The Calendar is located in **Appendix A**.

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<sup>3</sup> Southern Windsor County Regional Planning Commission, *West Windsor Pedestrian Master Plan, Feasibility Study for the Town of West Windsor*, April 1999, pp. 4-6.

### Engineering Recommendations

With assistance from the Vermont SRTS Resource Center, we have identified short, medium and long-term engineering treatments to make walking and bicycling to school safer for our students. Engineering Recommendations can be found in **Appendix C**, along with typical Infrastructure recommendations in **Appendix B**.

### Snow Removal Toolkit

Snow, sleet, slush, ice, and rain impact all modes of transportation, and the timely clearance and removal of the elements are essential for the functionality and accessibility of a Safe Routes to School program. A Snow Removal Toolkit can better inform communities about snow removal policies and procedures, providing tools to increase compliance and safety. Snow removal recommendations are located in **Appendix G**.

## NON-ENGINEERING TRAVEL PLAN

We identified a number of activities and programs to promote walking and biking to school. These activities and programs, while grouped by “The Five E’s”, are dependent upon each other for their individual success. We plan to work on our highest priority programs this year, following up with other programs in successive years. We used the timeframe below to determine when to initiate programs:

Type	Short	Medium	Long
Encouragement, Education, Enforcement, Evaluation	<i>What we plan to do this school year</i>	<i>What we plan to do next school year</i>	<i>What we plan to do starting in two years</i>

## EDUCATION STRATEGIES

The education strategies included in our 16-month activity calendar are aimed at providing all students with safe pedestrian walking skills. Our education activities this year include:

- Provide educational materials for parents and residents regarding general safe-driving behaviors via the school newsletter, town website, town meetings, and Front Porch Forum.
- Establish 5<sup>th</sup> grade mentors through Girls on the Run to teach younger students safe walking and riding skills and to help with bike maintenance.
- Incorporate WalkSmart/BikeSmart Vermont! Curriculum into 2014/2015 school year in PE class.
- Continue to offer bike safety education at least every other spring, partnering with Upper Valley Trails Alliance. The curriculum will include general bike safety, including hand signals, bike inspections, and helmet fittings.
- Partner with other schools in the area and request the Bike Smart Trailer from Local Motion in order to supply bikes and equipment needed for on-bike skills training.

## ENCOURAGEMENT STRATEGIES

Encouragement strategies included in our 16-month activity calendar will help students and their parents feel more comfortable and confident about walking and bicycling to school. Our encouragement activities this year will include:

- Host a Vermont Intergenerational Walk and Roll to School Day event on May 7<sup>th</sup>.
- Host monthly Walk to School Days during the spring and fall.
- Establish Walking School Bus and Bike Train routes including remote bus drop off for monthly walk to school days.
- Encourage students to ride the bus and carpool during the winter months when walking and biking is less popular due to weather conditions.
- Distribute free or reduced-cost bicycle helmets to students in need each May.
- Utilize smart boards to track daily attendance and transportation mode throughout the school year.

## ENFORCEMENT STRATEGIES

Our SRTS enforcement strategies are aimed both at changing the behavior of drivers and making the town safer and more secure for students walking to and from school. Our enforcement activities this year will include:

- Work with the Windsor Police Department to address speeding along Brownsville-Hartland Road and Route 44.
- Place a temporary speed trailer/feedback machine at roadside locations near the school.
- Coordinate with local law enforcement on event days.

## EVALUATION STRATEGIES

Evaluation is an important component of our SRTS program. We plan to complete regular in-classroom student tallies and evaluation tools such as the student tally and parent survey forms provided by the National Center for Safe Routes to School (NCSRTS). Parent surveys will help us measure the effectiveness of SRTS efforts over time. We first administered parent surveys in October 2013 and student tallies in May 2013, which provided base line information on student travel behavior and parental perceptions.

We will continue to conduct walk audits on a regular basis to evaluate the existing walking and biking environment as well as monitor the progress of recommended projects.

Other evaluation strategies we will work on after this year are:

- Administer parent surveys annually to capture opinions of new parents and changes in overall parental perceptions.
- Collect student tally data each year to measure progress toward goals.
- Keep the SRTS Travel plan updated and use it as a tool for increased SRTS activities.

Evaluation Tool	Leader	Schedule
Parent Surveys	Jennifer Aldrich & Courtney McKaig	Annually in October
Student Tallies	Jennifer Aldrich & Courtney McKaig	Annually in May
Walk Audits	SRTS Team and students	Annually, within first two months of school

## ENGINEERING TRAVEL PLAN

Our goal for engineering improvements is to enhance the physical environment along walking and biking routes that students use. Engineering improvements generally fall into three categories: providing sidewalks and paths, improving crossings, and implementing infrastructure associated with improving the safety of school drop-off and pick-up practices. Descriptions of typical engineering recommendations can be found in **Appendix B**.

We recognize that infrastructure improvements can take time to complete and are a collaborative effort among Albert Bridge School, the Town of West Windsor and potentially the Vermont Agency of Transportation (VTrans) to implement. The following short, medium, and long-term timeframes are a guide for anticipated project completion, but actual timeframes may vary:

Short term	Within 2 years
Medium term	Within 5 years
Long term	Longer than 5 years

The SRTS team prioritized the infrastructure improvements as high, medium, or low. The factors affecting this ranking include:

- Locations with specific safety concerns
- Locations along existing student walking or bicycling routes, or with a significant number of school family residences

- Locations that are priorities for the school community

Engineering Recommendations for specific locations in the vicinity of Albert Bridge School can be found in **Appendix C**.

## CONSIDERATIONS FOR DESIGN AND FUNDING

### Design

- All infrastructure recommendations in this plan are considered “planning level” and will require further engineering analysis, design, or public input before implementation.
- Recommended changes to existing traffic patterns (adding a signal, adding a stop sign, changing lane patterns, etc.) will require a study to evaluate the potential impact that the recommendation could have on existing traffic conditions.
- Drainage, existing utilities and ADA compliance will need to be evaluated for all recommendations at the time of design. ADA guidelines recommend particular design features to accommodate persons with disabilities. ADA design considerations for curb ramps, sidewalks and paths, include appropriate slopes, landing areas, surface conditions, and use of detectable warning materials for visually impaired pedestrians, among other design features.
- Right-of-way was not evaluated as a part of this project. Recommendations assume that sufficient right-of-way exists or that a method to gain needed right-of-way will be identified as the project progresses.
- VTrans district office staff will be involved in the planning and design process for any recommendation made on the State system.
- All infrastructure recommendations should comply with federal, state, and local standards including the American Association of State Highway and Transportation Officials’ Policy on Geometric Design of Highways and Streets and the Manual on Uniform Traffic Control Devices (MUTCD).
- Refer to the Vermont Pedestrian and Bicycle Facility Planning and Design Manual for guidelines on pedestrian and bicycle accommodations.

## Funding

- A variety of funding sources may be used for the recommendations. For example, projects requiring right-of-way acquisition or existing utilities relocation are not typically eligible with SRTS funds, but may be funded through other sources.

More information on the types of projects eligible for SRTS funding through VTrans can be found online at: [saferoutes.vermont.gov/getting\\_started/funding](http://saferoutes.vermont.gov/getting_started/funding).

## APPENDICES

- A. Non-Infrastructure Strategies Calendar
- B. Typical Infrastructure Recommendations
- C. Location-Specific Engineering Recommendations (Location Key, Recommendations Tables, School Grounds Concept Plan)
- D. Student Population Locator
- E. Student Tally Report, May 2013 & Parent Survey Report, October-December 2013
- F. Non-Engineering Strategies Resource Guide
- G. Infrastructure Strategies Resource Guide
- H. Snow Removal Best Practices
- I. West Windsor Pedestrian Master Plan, 1999

APPENDIX A

NON-INFRASTRUCTURE STRATEGIES CALENDAR





APPENDIX B

TYPICAL INFRASTRUCTURE RECOMMENDATIONS

## APPENDIX B TYPICAL INFRASTRUCTURE RECOMMENDATIONS

The following infrastructure recommendations are typical treatments used in SRTS projects. These recommendations may or may not be included in this travel plan. The basic information is provided to give an overall understanding and implementation guidance on each treatment.

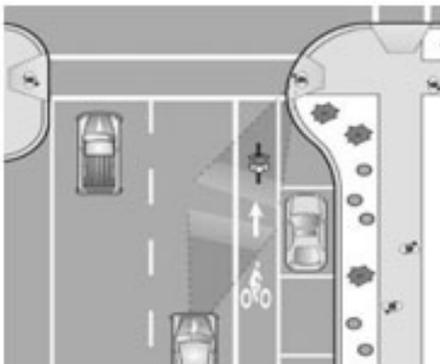


### Rectangular Rapid Flashing Beacons:

Rectangular rapid flashing beacons (RRFB), as shown to the left, are warning beacons used to increase visibility of students and all pedestrians as they cross the roadway at uncontrolled crosswalks. This type of signal is pedestrian-activated, i.e., the signal will only flash if a pedestrian has pushed a button, indicating that they need to cross the street. Any proposed RRFB locations need to meet current guidance provided in the interim approval of the Manual on Uniform Traffic Control Devices (MUTCD). For proposed uncontrolled crosswalks on state maintained roads, VTrans approval and justification are needed.

### Curb Extensions:

Curb extensions, as shown below, are recommended to reduce pedestrian crossing distances (and thus exposure to traffic) and to slow motor vehicle turning speeds at intersections. Curb extensions located along school bus routes should effectively calm traffic, but not impede buses from making the turn. Design considerations should include the appropriate design vehicle, maintenance concerns, and snow plow accommodations depending on the roadway jurisdiction.



### Curb Radius Reductions:

Curb radius reductions are recommended to slow motor vehicle turning speeds and to reduce pedestrian crossing distances (and thus exposure to traffic). Curb radius reductions involve

tightening the motor vehicle turning radius at an intersection, as shown to the left, without extending the curb line into a parking lane. Curb radius reductions located along school bus routes should effectively calm traffic but not impede buses from making the turn. Design considerations for curb radius reductions include the appropriate design vehicle depending on the roadway jurisdiction and ADA compliance.

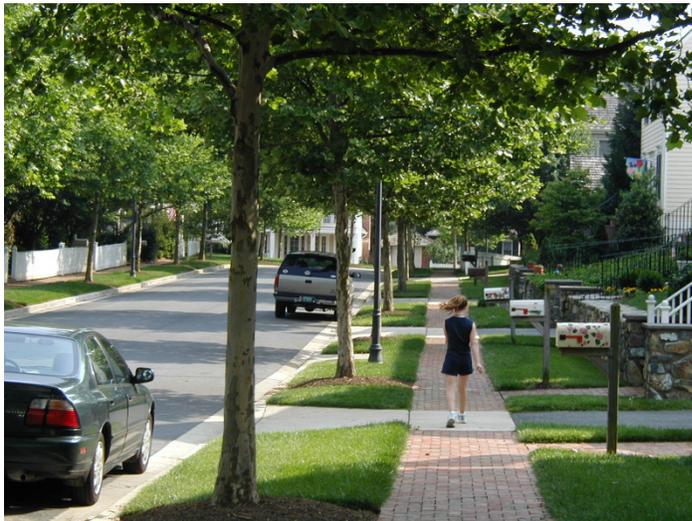
High Visibility Crosswalks:

High visibility crosswalk striping improves the visibility of pedestrians to motorists. Different striping patterns can be used and the most common patterns are variations of the ladder style, shown right. Reflective durable materials should be used to resist decay.



Sidewalks and buffers:

One of our long-term goals is to establish a well-connected sidewalk network throughout the neighborhoods so that families can walk for more of their daily trips, rather than drive. Sidewalks are the most effective when they include a buffer. This buffer increases pedestrian comfort and safety and can also serve as a place for pedestrian “overflow”, especially closer to the school where groups of walkers are largest. Based on Vermont Pedestrian and Bicycle



Facility Planning and Design Manual, the preferred design for sidewalks is a minimum six foot wide sidewalk with a minimum two foot wide buffer for local roadways with curbs. For downtowns and village centers on roadways with curbs, the preferred design for sidewalks is a minimum eight foot wide sidewalk with a minimum four foot wide buffer. For roadways without curbs, the buffer should be a minimum of five feet. Available right of way will impact the ultimate design of the sidewalk.

### School Zone Identification:

School pavement markings are recommended to alert motorists that they are entering a school zone where pedestrians may be present both along and crossing the roadway. New pavement markings can work with existing school zone signs to reinforce the message to motorists about the school zone. The detail provided in the figure below is an excerpt of the MUTCD.



### Speed Feedback Signs:

Communities may use a mobile “speed trailer” that can be placed in locations where motorists exceed the speed limit often enough that passive enforcement is appropriate. Permanently installed feedback signs, shown right, provide ongoing information to motorists about the speed at which they are traveling. SRTS recommended any potential feedback signs be strategically located at main access points.



For towns interested in reducing the speed limit of a roadway, an engineering study needs to be conducted by the town. Approval from VTrans is needed for state maintained roads.

### Pedestrian Refuge Island:

A Pedestrian refuge island, as shown right, may be used to narrow the roadway, reduce motor vehicle speeds, and improve pedestrian crossings. In locations with crosswalks, these islands improve pedestrian safety and access by reducing crossing distances and enable pedestrians to cross roadways in two stages. Pedestrian refuge islands should be used on multi-lane roadways or roadways with insufficient vehicular gaps to pedestrians to safely cross. Prior to design, a gap study should be conducted. Other considerations for pedestrian refuge islands include ADA compliance, maintenance concerns, and snow plow accommodations.



## APPENDIX C

### LOCATION SPECIFIC ENGINEERING RECOMMENDATIONS & KEY

## Appendix C: Location-Specific Engineering Recommendations

Safe Routes to School (SRTS) engineering strategies create safer environments for walking and bicycling to school through improvements to infrastructure in and around school grounds. These improvements focus on reducing motor vehicle speeds and conflicts with pedestrians and bicyclists, as well as establishing safer and fully accessible crossings, walkways, trails, and bikeways.

The following tables provide a summary of the engineering strategies recommended for Albert Bridge School (ABS). These recommendations were developed by Toole Design Group, LLC based on input from the ABS SRTS Team. The tables include an estimate of the amount of time that is likely needed to implement the recommended improvements at each site (Estimated Time Frame). The table also indicates the priority of the proposed improvements at each site for the ABS SRTS Team (Team Priority).

**These recommendations are for planning purposes only and may require further engineering analysis, design, or public input before implementation and shall be in full compliance with the Manual on Uniform Traffic Control Devices for Streets and Highways, (MUTCD) Latest Edition adopted by the state.**

The summary table provided below is followed by information about implementation and a map which shows where the recommendation sites are located in relation to the school.

## Description of Streets with Engineering Recommendations

Street name	AOT Functional Classification	Speed Limit	Surface	Curb
Vermont Route 44	State Highway	30	Asphalt	Both Sides: Seams Rd to Brook Rd
Brownsville-Hartland Road	Class 2	30	Asphalt	None

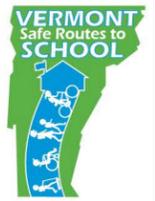
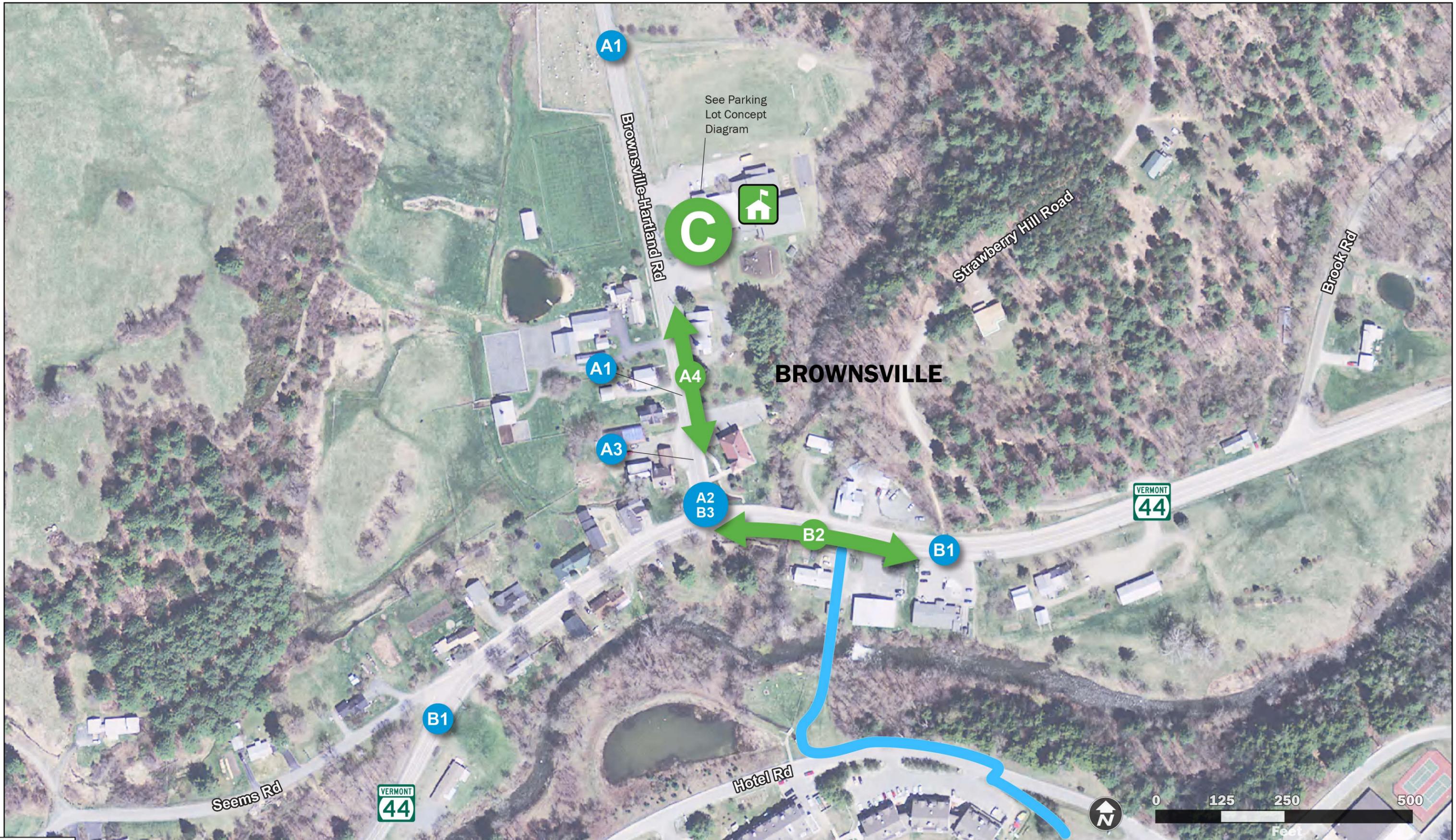
Site	Need	Recommendation	Time Frame	Ranking Factors	Team Priority
<p>A</p> <p>Brownsville-Hartland Road</p> <p>Brownsville-Hartland Road is a two-lane, Class 2 rural road running north-south from Brownsville to Hartland. The speed limit is 30 mph in the village, 40 mph elsewhere. The annual average daily traffic (AADT) is 1300.</p> <p>Near the school, the road is approximately 30-feet wide, and narrows north of the cemetery to 24-26 feet in width.</p>	<p>Brownsville-Hartland Road is the primary means of access to the school grounds.</p> <p>It is a curbless, asphalt-paved street mostly lacking sidewalks and thereby not providing a designated space for pedestrians to access the school grounds.</p> <p>The existing sidewalks near the intersection of VT Route 44 end approximately 300 feet short of the school grounds. The existing crosswalk across Brownsville-Hartland Road connects the staggered ends of the existing sidewalk.</p> <p>The West Windsor Pedestrian Master Plan (1999) identified the pedestrian connection from the end of the existing sidewalk to the school as a needed improvement. The town has not yet implemented either of the proposed alternatives due to budgetary priorities.</p>	<p>A1. Install high-visibility "SCHOOL" pavement markings approximately 200 feet from either side of the school property line on the north and south sides (simultaneous with Rec. B1). Install school zone advance warning signage (S1-1, S4-3P) adjacent to "SCHOOL" pavement markings. Install school zone speed limit signage (S4-3P, R2-1, S4-1P) approximately 100 feet toward the school from advance warning signs. Ensure that the town has a school speed limit ordinance in place before installing this signage.</p>	<p>Short Term</p>	<p><input checked="" type="checkbox"/> <i>Safety concerns.</i></p> <p><input checked="" type="checkbox"/> <i>Existing walking or bicycling routes.</i></p> <p><input checked="" type="checkbox"/> <i>Priorities for the school community.</i></p>	<p>High</p>
		<p>A2. Install a high-visibility, durable, block-pattern crosswalk across Brownsville-Hartland road at the intersection with VT Route 44. Construct ADA-compliant curb ramps with detectable warning surfaces at both ends of the crosswalk.</p>	<p>Short Term</p>		
		<p>A3. Remove the existing non-MUTCD-compliant crosswalk striped diagonally across the road from end to end of the existing sidewalks. Simultaneously remove any warning signage associated with that crosswalk.</p>	<p>Short Term</p>		

Site	Need	Recommendation	Time Frame	Ranking Factors	Team Priority
<p>A (Cont.)</p> <p>Brownsville-Hartland Road</p>		<p>A4. Construct an ADA-compliant sidewalk along the east side of Brownsville-Hartland Road from the end of the existing sidewalk to the school grounds (approx. 300 ft.). See Alternative A in the 1999 West Windsor Pedestrian Master Plan for the preferred concept alternative, maintaining on street parking.</p>	<p>Medium Term</p>	<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> <i>Safety concerns.</i></li> <li><input checked="" type="checkbox"/> <i>Existing walking or bicycling routes.</i></li> <li><input checked="" type="checkbox"/> <i>Priorities for the school community.</i></li> </ul>	<p>High</p>

Site	Need	Recommendation	Time Frame	Ranking Factors	Team Priority
<p>B</p> <p>VT Route 44</p> <p>VT Route 44 is a State Highway running east-west from Windsor to Reading. The speed limit in the village is 30 mph. The annual average daily traffic (AADT) is 1500.</p>	<p>VT Route 44 is the primary road through Brownsville. Existing sidewalks on the north side of the road from Seems Road on the west to Brook Road in the east permit only limited pedestrian activity in town.</p> <p>There are no sidewalks on the south side of the road, therefore pedestrians have limited access to the fire station, general store, and the “Trail to Town” leading to and from the Mt. Ascutney Resort Area. As a result, there are no designated crossings in town along VT Route 44, greatly limiting students’ ability to walk to and from school along this major road.</p>	<p>B1. Remove non-MUTCD-compliant “SCHOOL” pavement markings and signage from VT Route 44 on both sides of the intersection with Brownsville-Hartland Road (simultaneous with Rec. A1).</p>	<p>Short Term</p>	<p><input checked="" type="checkbox"/> <i>Safety concerns.</i></p> <p><input checked="" type="checkbox"/> <i>Existing walking or bicycling routes.</i></p> <p><input checked="" type="checkbox"/> <i>Priorities for the school community.</i></p>	<p>Medium</p>
		<p>B2. Construct an ADA-compliant sidewalk along the south side of VT Route 44 from Brownsville-Hartland Road to the General Store. (approx. 400 ft.). Further study will be required to determine if the existing bridge has sufficient width for a sidewalk. It may be necessary to construct a pedestrian bridge south of the roadway to provide alternative space for pedestrians.</p>	<p>Long Term</p>		
		<p>B3. Install a high-visibility, durable, block-pattern crosswalk across VT Route 44 at the intersection with Brownsville-Hartland Road. Construct ADA-compliant curb ramps with detectable warning surfaces at both ends of the crosswalk. Install MUTCD-compliant warning signage (W11-2 &amp; W16-7P) at the crosswalk.</p>	<p>Long Term</p>		

Site	Need	Recommendation	Time Frame	Ranking Factors	Team Priority
<p>C</p> <p>School Grounds</p> <p>The school grounds are composed of several key elements: a side parking lot for long-term parking, typically of faculty and staff; a front parking lot providing short-term visitor parking; a central island adjacent to Brownsville-Hartland Road which forms a one-way loop for student pickup and drop-off; and the front playground/walkway adjacent to the building main entrance.</p>	<p>With the exception of the main school walkway adjacent to the front play area, there are no designated pedestrian walkways on the school grounds.</p> <p>At arrival and dismissal times, the parking lot environment is chaotic due to the number of parent vehicles and lack of clearly defined space where vehicles and pedestrians should travel. Pedestrians must often navigate behind and around parked vehicles in order to reach a safe walking location.</p> <p>In addition to the engineering improvements listed here, arrival and dismissal policy changes may need to be implemented in order to accommodate new circulation patterns.</p>	<p>C1. Extend the rear parking lot north by approximately 18' and stripe a second row of about 15 parking spaces. Extend the eastern edge of the rear parking lot to accommodate bus storage or park the bus in another location when not in use.</p>	<p>Medium Term</p>	<p><input checked="" type="checkbox"/> <i>Safety concerns.</i></p> <p><input checked="" type="checkbox"/> <i>Existing walking or bicycling routes.</i></p> <p><input checked="" type="checkbox"/> <i>Priorities for the school community.</i></p>	<p>High</p>
		<p>C2. Designate the first and last parking spaces adjacent to the school in the rear parking lot as handicapped-only parking.</p>	<p>Medium Term</p>		
		<p>C3. Install parking stops around the south and east edges of the parking lot to create an expanded play area and at-grade walkway in front of the school. Decrease the width of the entry drive to approximately 20' to provide room for one travel lane and for active loading along the new play area. Organize students to paint the play area and further distinguish it from vehicular traffic.</p>	<p>Medium Term</p>		
		<p>C4. Install parking stops along the front of the school building to create an 8' at-grade walkway extending from the existing front walkway to the rear parking lot.</p>	<p>Medium Term</p>		
		<p>6</p>			

Site	Need	Recommendation	Time Frame	Ranking Factors	Team Priority
C  School Grounds (cont.)		C5. Designate the area along the newly installed parking stops as an active loading zone during arrival and dismissal. Install “NO PARKING/ ACTIVE LOADING ONLY DURING ARRIVAL AND DISMISSAL HOURS” and “NO IDLING” signage there. Allow curbside parking here during off-hours.	Medium Term	<input checked="" type="checkbox"/> <i>Safety concerns.</i>  <input checked="" type="checkbox"/> <i>Existing walking or bicycling routes.</i>  <input checked="" type="checkbox"/> <i>Priorities for the school community.</i>	High
		C6. Install “NO PARKING” signage along the center island in the front parking lot. Plant the perimeter of the island with shrubs to prevent parking on the grass.	Medium Term		
		C7. Relocate the AM & PM bus stop to the end of the walkway in-front of the school building in order to accommodate the new parent circulation pattern.	Medium Term		
		C8. Construct curbed, ADA-compliant sidewalks along the south and east sides of the parking lot (following the proposed parking stop edge (Rec. C3)) to connect the proposed sidewalk on Brownsville-Hartland Road (Rec. A4) to the existing school entry walkway.	Long Term		



# Albert Bridge School Location Key

Brownsville, VT  
Spring 2014

## Legend

- School Location
- Segment Improvement
- Existing Off-Street Path
- Intersection/Spot Improvement



C1. Expand rear parking lot

C2. Designate accessible parking spaces

C7. Relocate bus stop

C5. Define Restricted Parking Zone

C6. Define No Parking Zone

C4. Create walkway

C3. Create walkway and play area

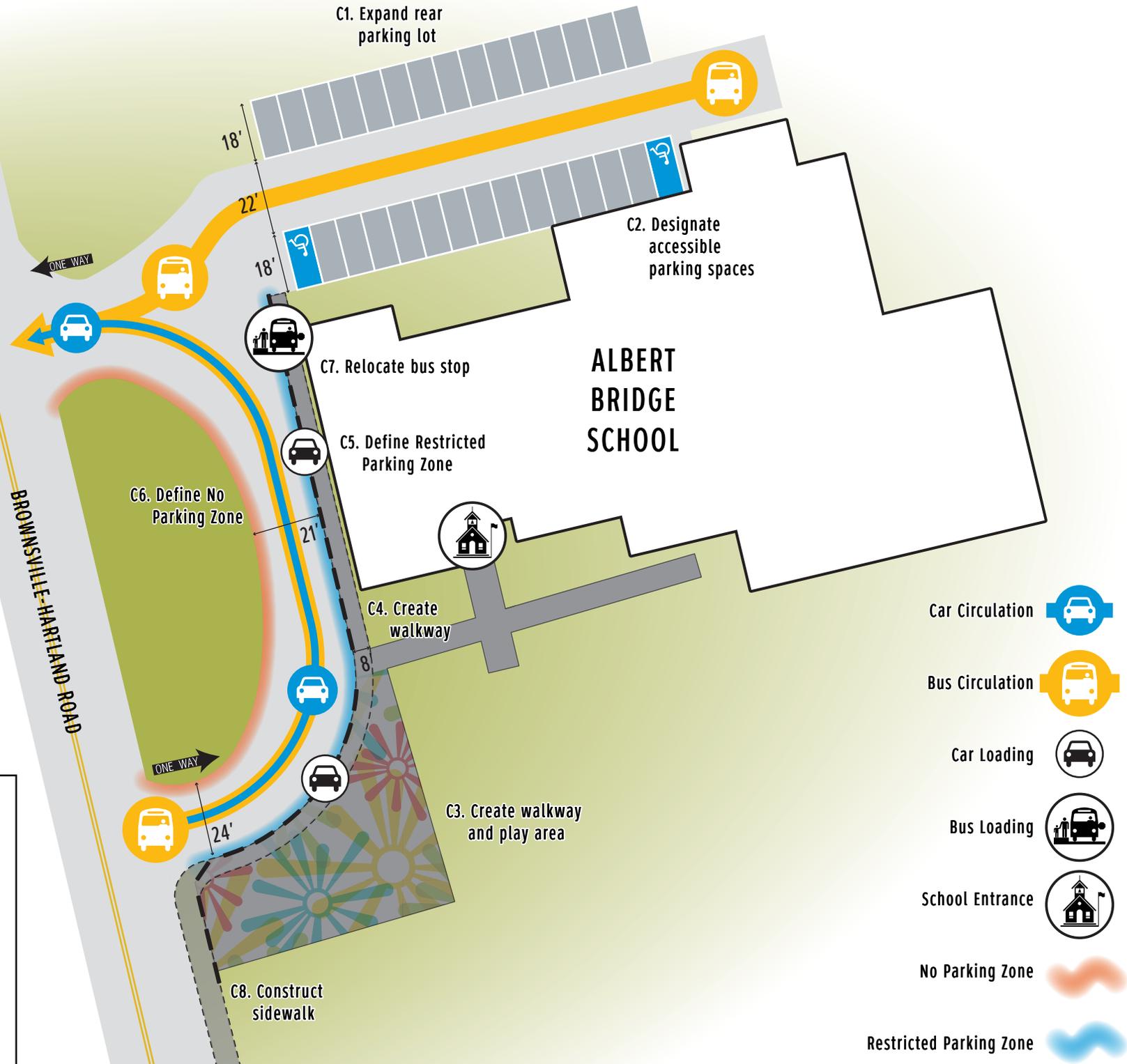
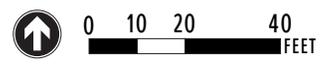
C8. Construct sidewalk

ALBERT BRIDGE SCHOOL

BROWNSVILLE-HARLAND ROAD

- Car Circulation 
- Bus Circulation 
- Car Loading 
- Bus Loading 
- School Entrance 
- No Parking Zone 
- Restricted Parking Zone 

ALBERT BRIDGE SCHOOL  
TRAVEL PLAN  
APPENDIX C  
SITE C  
PROPOSED  
IMPROVEMENTS ON  
SCHOOL GROUNDS  
SPRING 2014

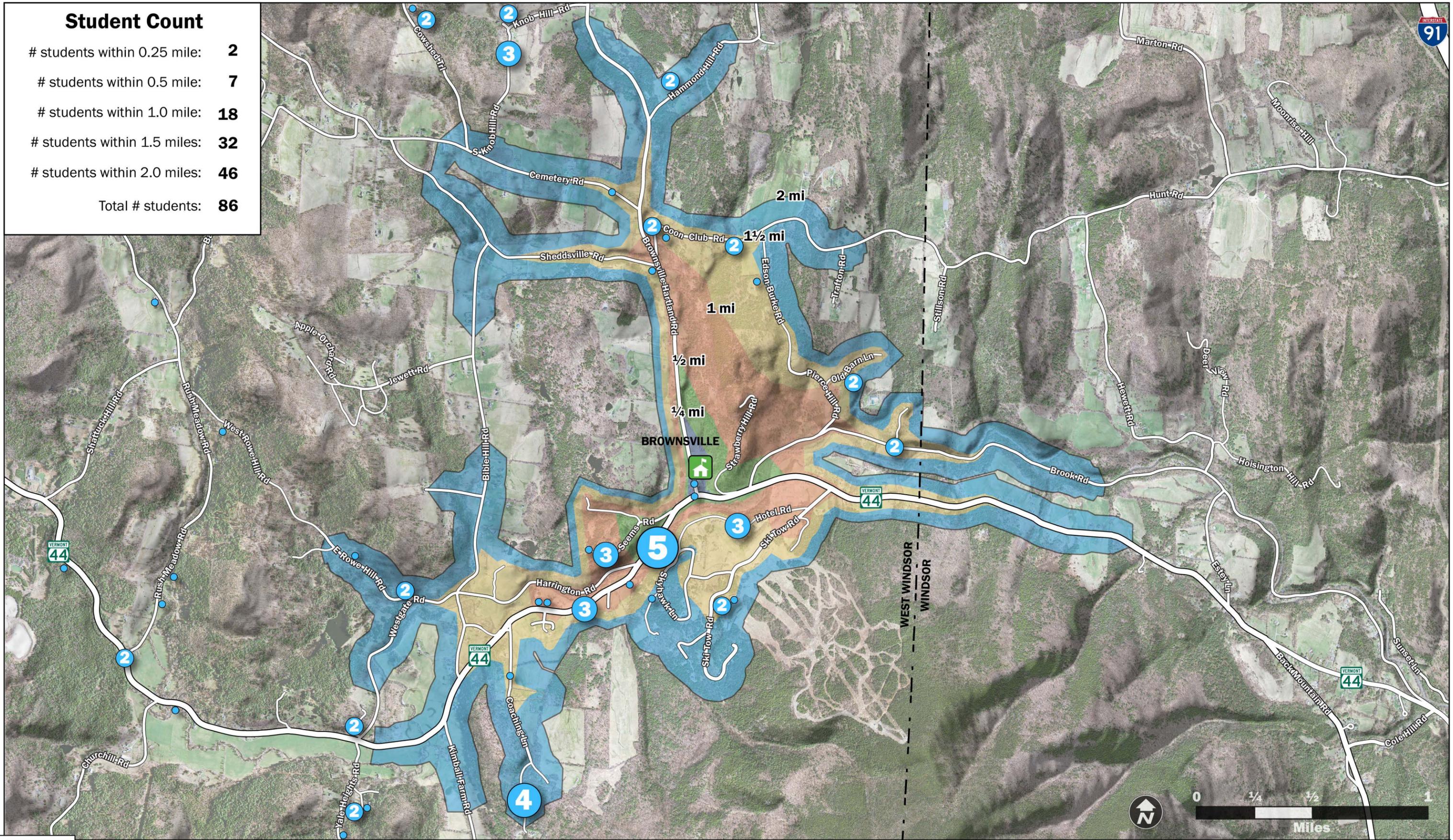


APPENDIX D

STUDENT POPULATION LOCATOR

# Student Count

# students within 0.25 mile:	<b>2</b>
# students within 0.5 mile:	<b>7</b>
# students within 1.0 mile:	<b>18</b>
# students within 1.5 miles:	<b>32</b>
# students within 2.0 miles:	<b>46</b>
Total # students:	<b>86</b>



## Albert Bridge School Student Locator

Brownsville, VT  
Winter 2013

### Legend

-  School Location
-  Student Residence
-  Multiple Students' Residence
-  Travel Distance to School 1/4 mile to 2 miles



APPENDIX E

STUDENT TALLY (MAY 2013) & PARENT SURVEY (OCT-DEC 2013) REPORTS

# Student Travel Tally Report: One School in One Data Collection Period

**School Name:** Albert Bridge School

**Set ID:** 12636

**School Group:** Albert Bridge School

**Month and Year Collected:** May 2013

**School Enrollment:** 86

**Date Report Generated:** 10/15/2013

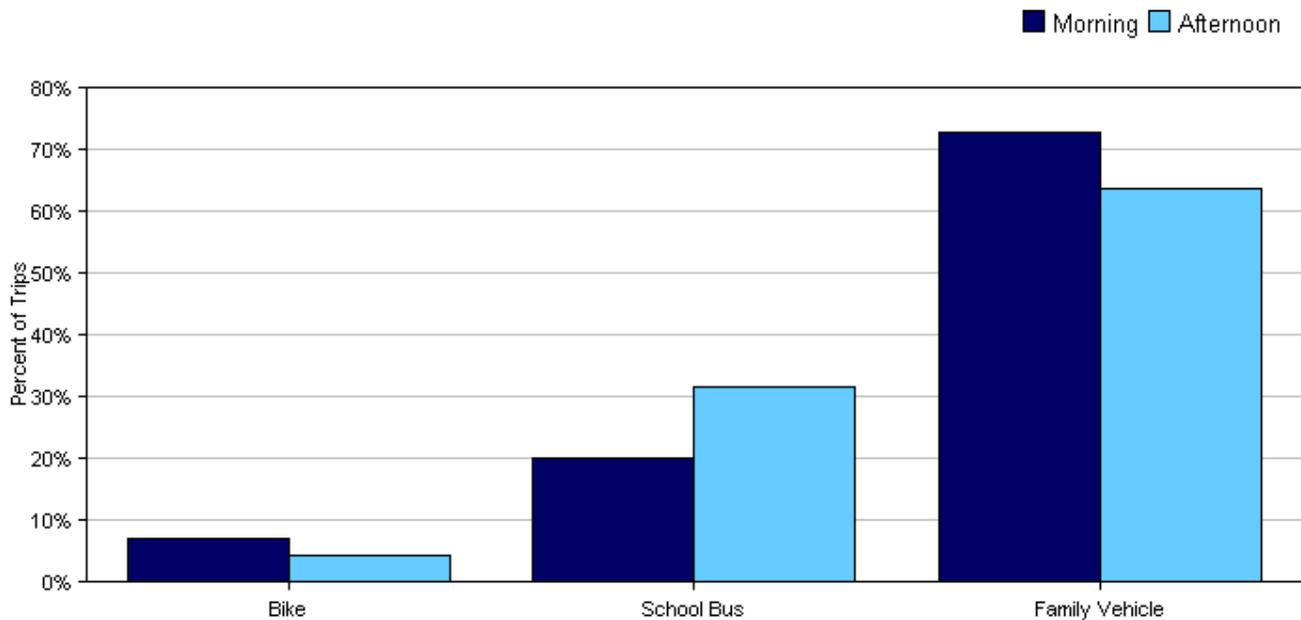
**% of Students reached by SRTS activities:**

**Tags:**

**Number of Classrooms  
Included in Report:** 1

This report contains information from parents about their children's trip to and from school. The data used in this report were collected using the in-class Student Travel Tally questionnaire from the National Center for Safe Routes to School.

## Morning and Afternoon Travel Mode Comparison

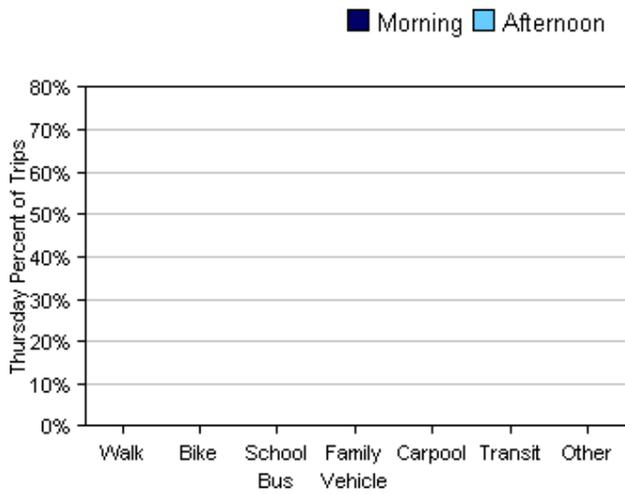
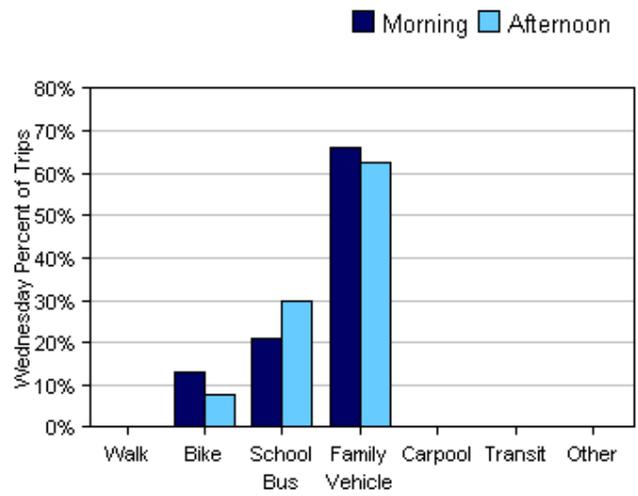
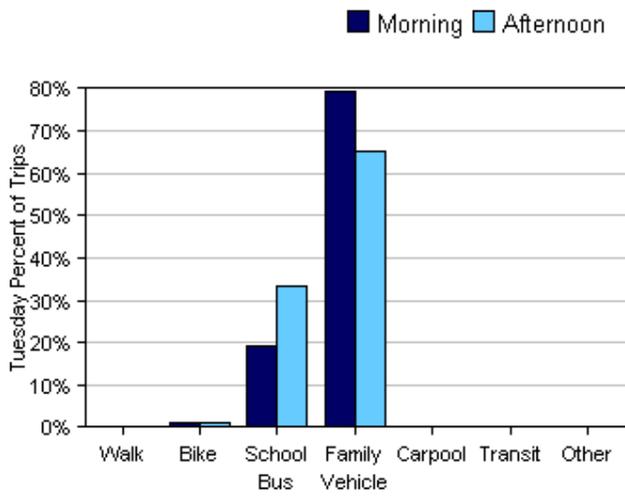


## Morning and Afternoon Travel Mode Comparison

	Number of Trips	Walk	Bike	School Bus	Family Vehicle	Carpool	Transit	Other
Morning	155	0%	7%	20%	73%	0%	0%	0%
Afternoon	155	0%	5%	32%	64%	0%	0%	0%

Percentages may not total 100% due to rounding.

## Morning and Afternoon Travel Mode Comparison by Day

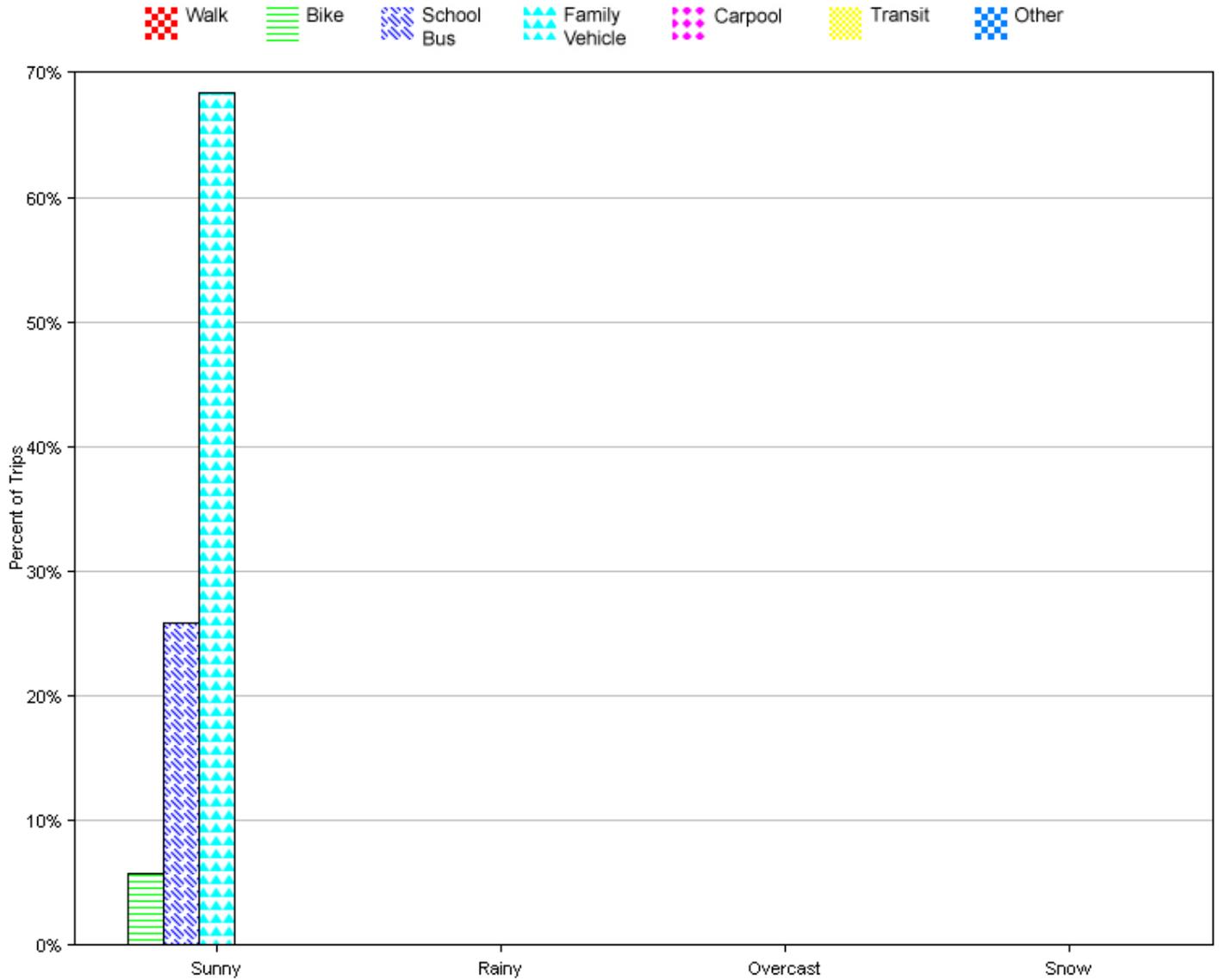


## Morning and Afternoon Travel Mode Comparison by Day

	Number of Trips	Walk	Bike	School Bus	Family Vehicle	Carpool	Transit	Other
Tuesday AM	78	0%	1%	19%	79%	0%	0%	0%
Tuesday PM	78	0%	1%	33%	65%	0%	0%	0%
Wednesday AM	77	0%	13%	21%	66%	0%	0%	0%
Wednesday PM	77	0%	8%	30%	62%	0%	0%	0%
Thursday AM		0%	0%	0%	0%	0%	0%	0%
Thursday PM		0%	0%	0%	0%	0%	0%	0%

Percentages may not total 100% due to rounding.

## Travel Mode by Weather Conditions



## Travel Mode by Weather Condition

Weather Condition	Number of Trips	Walk	Bike	School Bus	Family Vehicle	Carpool	Transit	Other
Sunny	310	0%	6%	26%	68%	0%	0%	0%
Rainy	0	0%	0%	0%	0%	0%	0%	0%
Overcast	0	0%	0%	0%	0%	0%	0%	0%
Snow	0	0%	0%	0%	0%	0%	0%	0%

Percentages may not total 100% due to rounding.

## Parent Survey Report: One School in One Data Collection Period

**School Name:** Albert Bridge School

**Set ID:** 10448

**School Group:** Albert Bridge School

**Month and Year Collected:** October 2013

**School Enrollment:** 86

**Date Report Generated:** 12/11/2013

**% Range of Students Involved in SRTS:** 76-100%

**Tags:**

**Number of Questionnaires Distributed:** 86

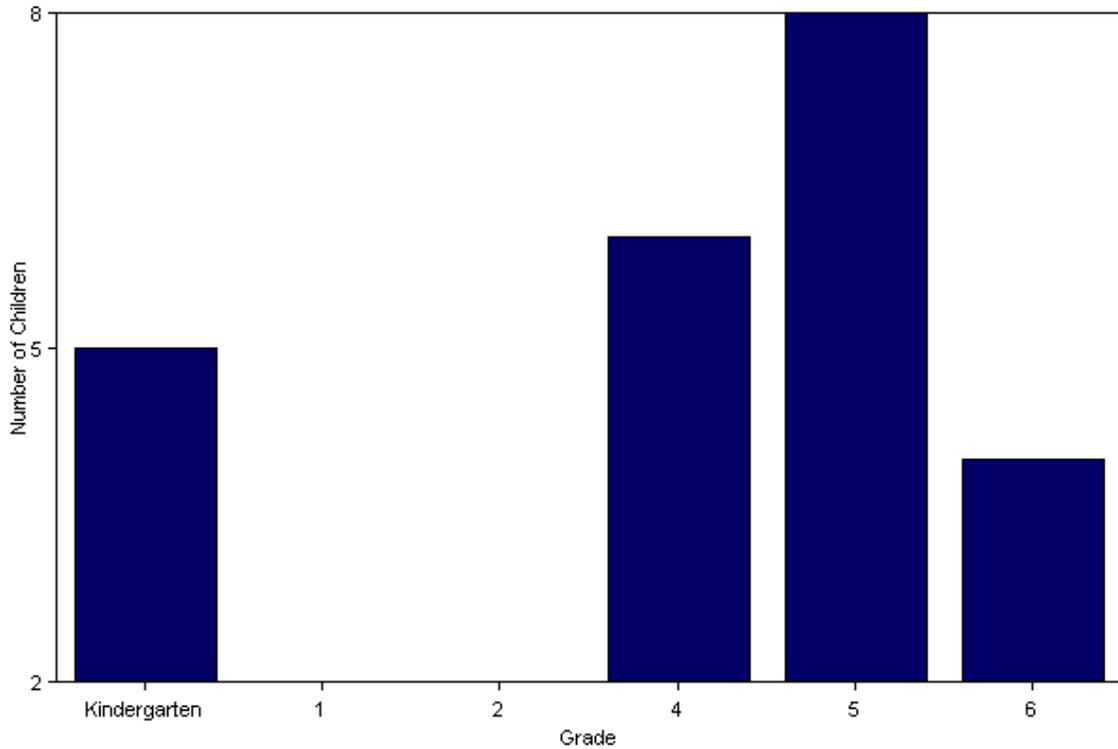
**Number of Questionnaires**

**Analyzed for Report:** 27

This report contains information from parents about their children's trip to and from school. The report also reflects parents' perceptions regarding whether walking and bicycling to school is appropriate for their child. The data used in this report were collected using the Survey about Walking and Biking to School for Parents form from the National Center for Safe Routes to School.

\*\*Because less than 30 questionnaires are included in this report, each graph and table display counts rather than percentage information.

Grade levels of children represented in survey



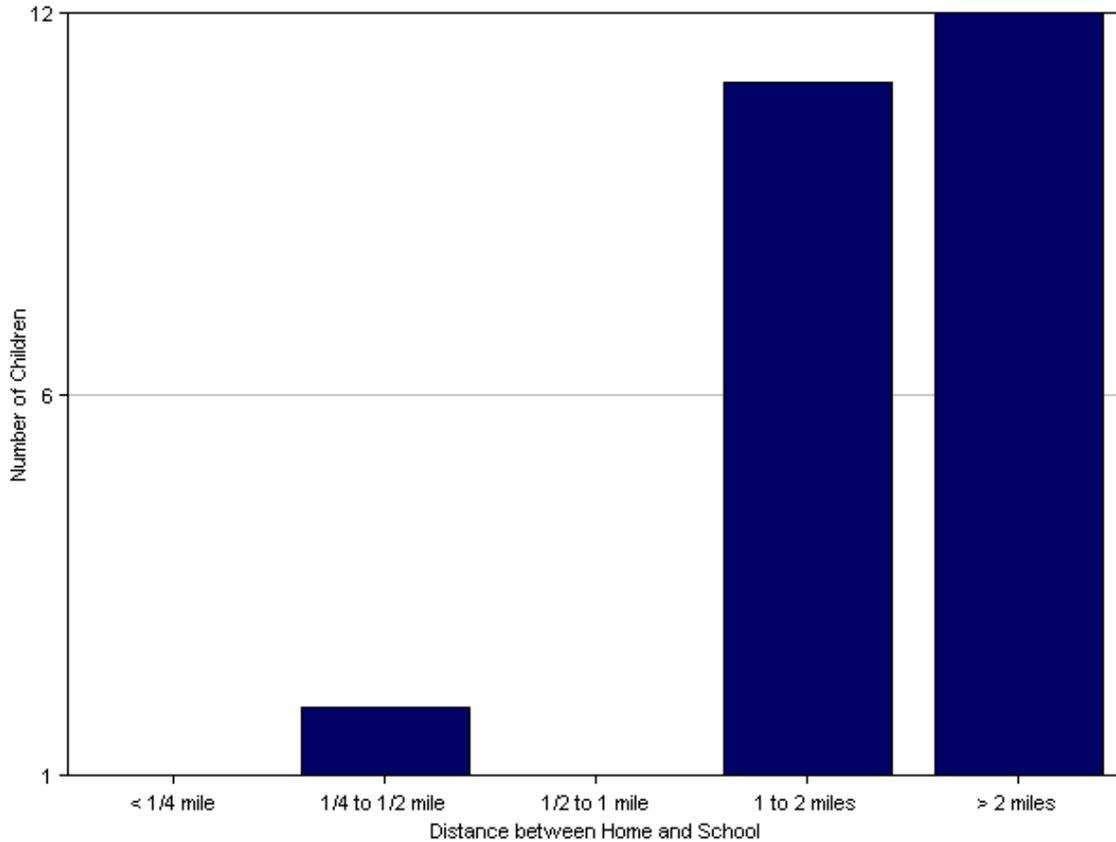
Grade levels of children represented in survey

Grade in School	Responses per grade
	Number
Kindergarten	5
1	2
2	2
4	6
5	8
6	4

No response: 0

Numbers rather than percents are displayed because the number of respondents for this question was less than 30.

### Parent estimate of distance from child's home to school



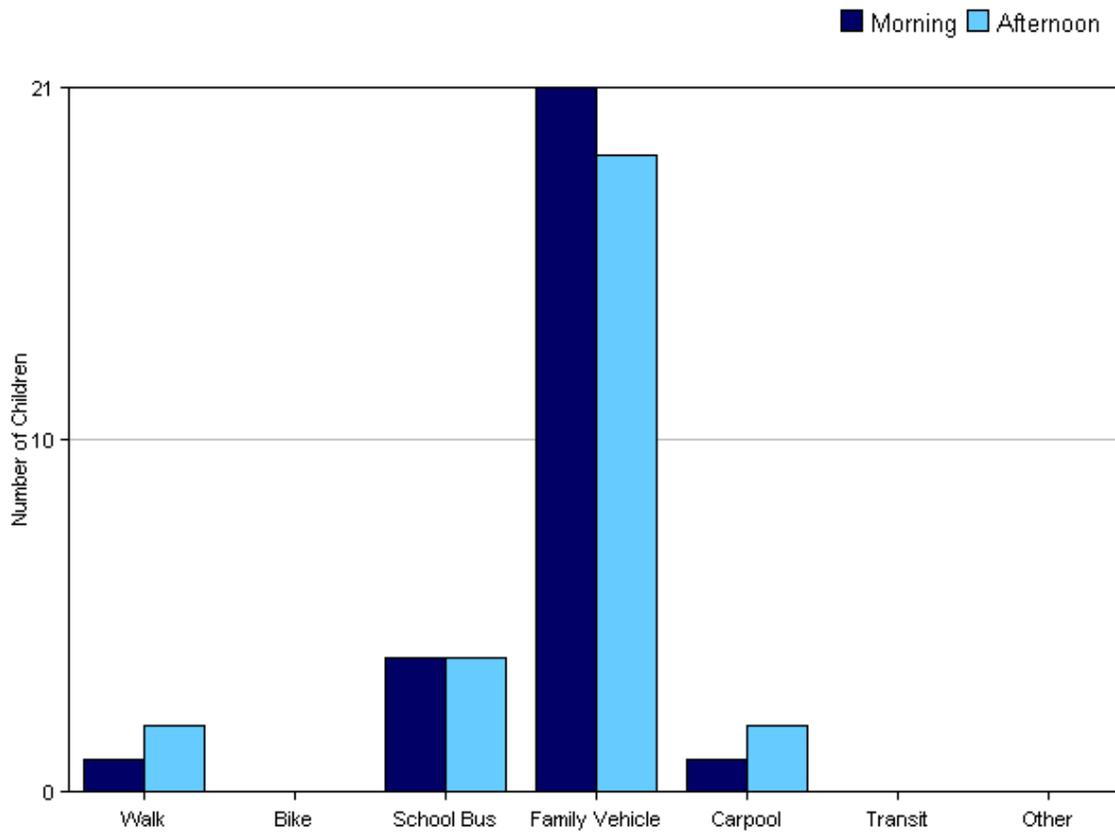
### Parent estimate of distance from child's home to school

Distance between home and school	Number of children
Less than 1/4 mile	1
1/4 mile up to 1/2 mile	2
1/2 mile up to 1 mile	1
1 mile up to 2 miles	11
More than 2 miles	12

Don't know or No response: 0

Numbers rather than percents are displayed because the number of respondents for this question was less than 30.

### Typical mode of arrival at and departure from school



### Typical mode of arrival at and departure from school

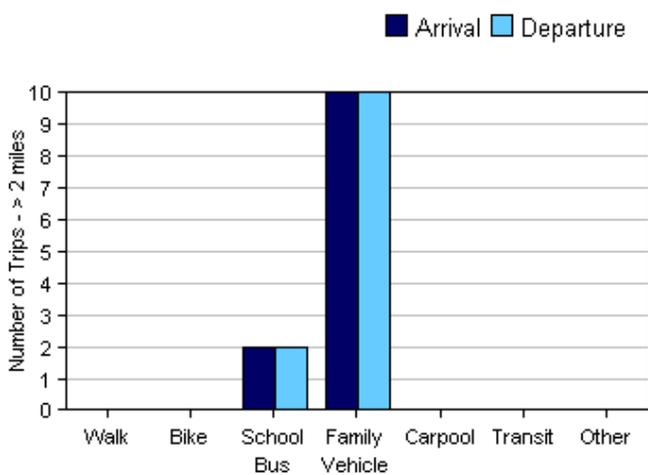
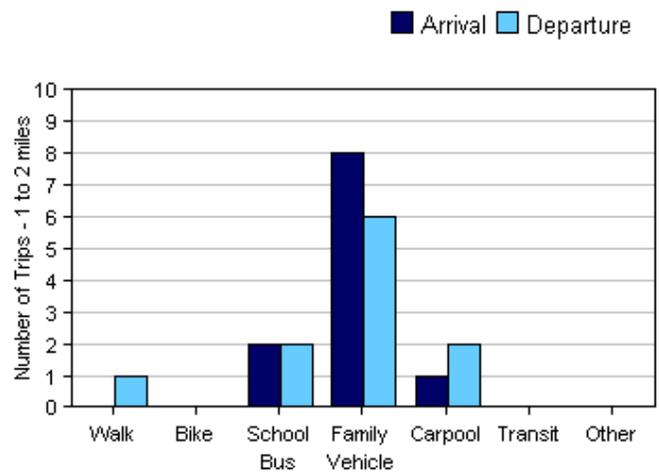
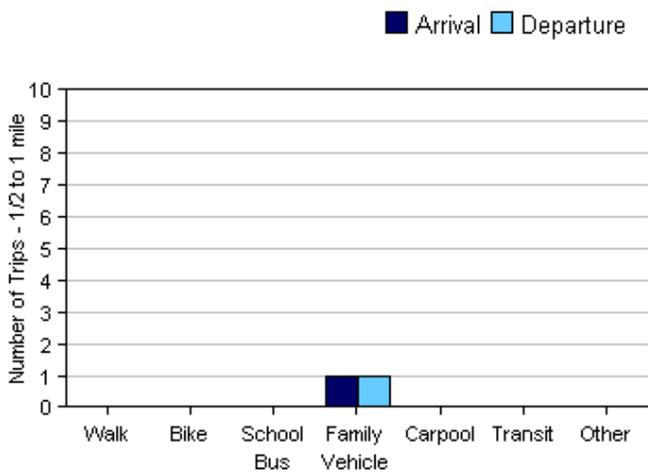
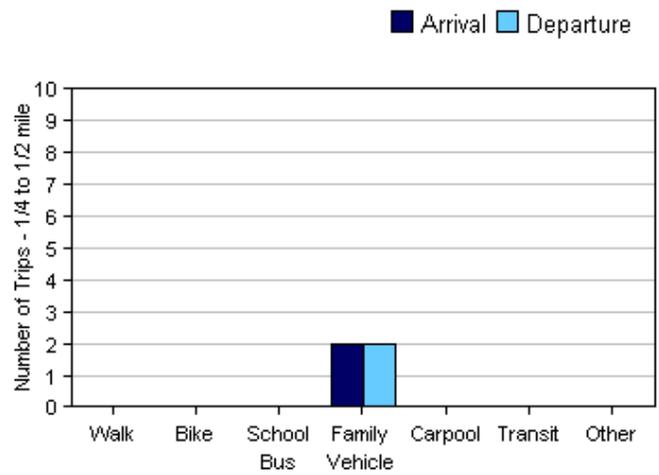
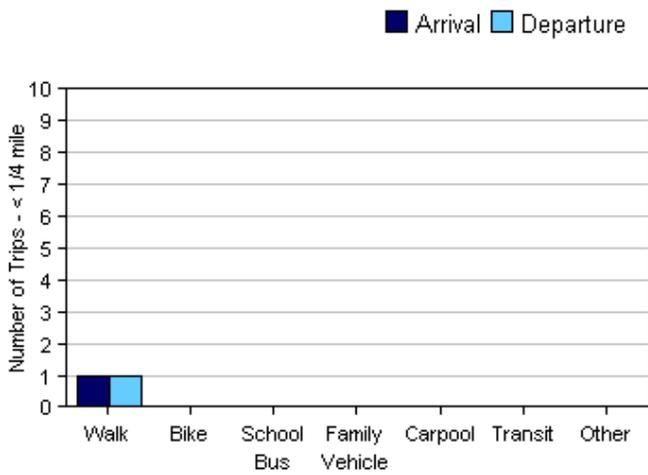
Time of Trip	Number of Trips	Walk	Bike	School Bus	Family Vehicle	Carpool	Transit	Other
Morning	27	1	0	4	21	1	0	0
Afternoon	27	2	0	4	19	2	0	0

No Response Morning: 0

No Response Afternoon: 0

Numbers rather than percents are displayed because the number of respondents for this question was less than 30.

# Typical mode of school arrival and departure by distance child lives from school



## Typical mode of school arrival and departure by distance child lives from school

### School Arrival

Distance	Number within Distance	Walk	Bike	School Bus	Family Vehicle	Carpool	Transit	Other
Less than 1/4 mile	1	1	0	0	0	0	0	0
1/4 mile up to 1/2 mile	2	0	0	0	2	0	0	0
1/2 mile up to 1 mile	1	0	0	0	1	0	0	0
1 mile up to 2 miles	11	0	0	2	8	1	0	0
More than 2 miles	12	0	0	2	10	0	0	0

Don't know or No response: 0

Numbers rather than percents are displayed because the number of respondents for this question was less than 30.

### School Departure

Distance	Number within Distance	Walk	Bike	School Bus	Family Vehicle	Carpool	Transit	Other
Less than 1/4 mile	1	1	0	0	0	0	0	0
1/4 mile up to 1/2 mile	2	0	0	0	2	0	0	0
1/2 mile up to 1 mile	1	0	0	0	1	0	0	0
1 mile up to 2 miles	11	1	0	2	6	2	0	0
More than 2 miles	12	0	0	2	10	0	0	0

Don't know or No response: 0

Numbers rather than percents are displayed because the number of respondents for this question was less than 30.

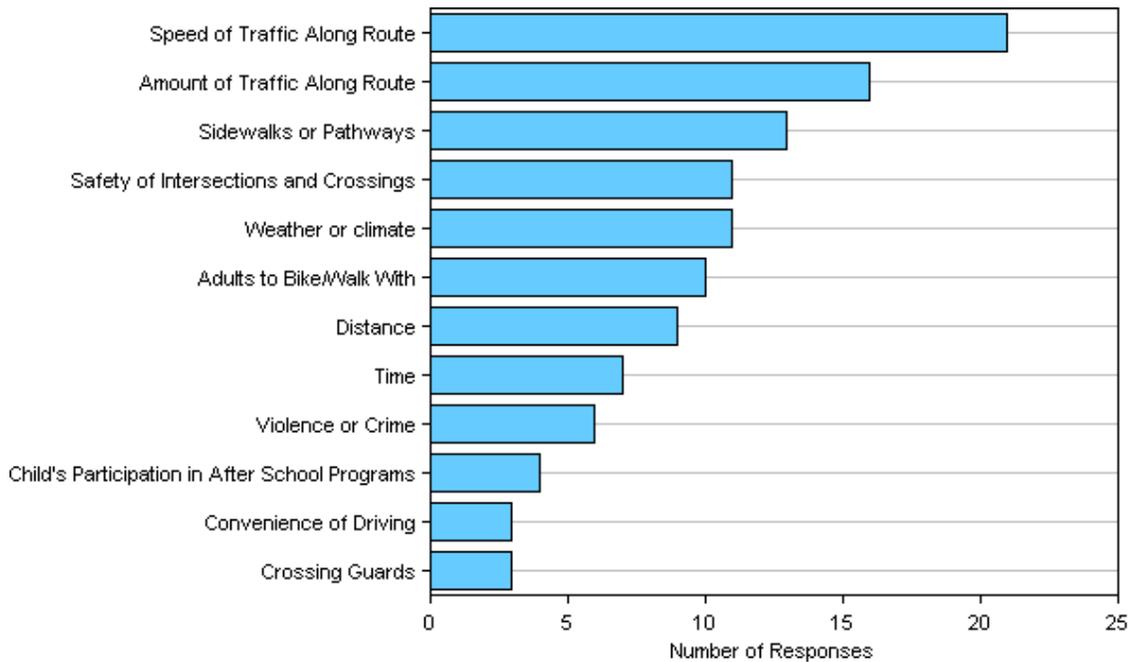
Number of children who have asked for permission to walk or bike to/from school by distance they live from school

Asked Permission?	Number of Children	Less than 1/4 mile	1/4 mile up to 1/2 mile	1/2 mile up to 1 mile	1 mile up to 2 miles	More than 2 miles
Yes	17	1	2	1	7	6
No	10	0	0	0	4	6

Don't know or No response: 0

Numbers rather than percents are displayed because the number of respondents for this question was less than 30.

Issues reported to affect the decision to not allow a child to walk or bike to/from school by parents of children who do not walk or bike to/from school



Issues reported to affect the decision to allow a child to walk or bike to/from school by parents of children who already walk or bike to/from school

Issue	Child does not walk/bike to school	Child walks/bikes to school
Speed of Traffic Along Route	21	0
Amount of Traffic Along Route	16	0
Sidewalks or Pathways	13	0
Safety of Intersections and Crossings	11	0
Weather or climate	11	0
Adults to Bike/Walk With	10	0
Distance	9	0
Time	7	0
Violence or Crime	6	0
Child's Participation in After School Programs	4	0
Convenience of Driving	3	0
Crossing Guards	3	0
<b>Number of Respondents per Category</b>	<b>25</b>	<b>0</b>

No response: 2

Note:

--Factors are listed from most to least influential for the 'Child does not walk/bike to school' group.

Parents' opinions about how much their child's school encourages or discourages walking and biking to/from school

Level of support	Number of children
Strongly Encourages	2
Encourages	9
Neither	16
Discourages	0
Strongly Discourages	0

Parents' opinions about how much fun walking and biking to/from school is for their child

Level of fun	Number of children
Very Fun	7
Fun	8
Neutral	11
Boring	0
Very Boring	0

Parents' opinions about how healthy walking and biking to/from school is for their child

How healthy	Number of children
Very Healthy	17
Healthy	5
Neutral	4
Unhealthy	0
Very Unhealthy	0

## Comments Section

SurveyID	Comment
1093111	Once you leave the "town" of Brownsville and get on the out skirts there is no safe way to walk or bike with your children
1093119	We just moved to a new house that is closer to the school. However our old house was further and I would not have considered walking or riding from our house until she was older. Because of lack of side walk and lack of shoulders on the roads. As a jogger they scare me just on my own.
1093210	I feel too isolated to let my child bike to school alone. I would feel better if she could do it with other people, even other kids.
1093403	We would walk or bike more with better sidewalks, wider shoulders!
1093624	I feel we live in a very safe area for kids to walk and bike to school. I just think that most kids that attend ABS don't live within walking/biking distance, and in my household there isn't enough time in the morning to be able to walk or bike.
1093117	I wish hartland Brownsville road had white lines painted on it.
1099226	Another deterrent for my children wanting to bike home from school is it is all up hill.
1089287	Would like the school bus to stop at our house. It is a half mile walk to the location my child could get on the bus at the intersection of Cemetery Road and Cowshed Trail.
1093115	The road is busy, with little room to pull off the road and sharp drop offs.
1093116	Distance and safety are issues for me in whether or not I allow my child to walk by herself to school. We live a little too far; however, she does walk from school to my business in the afternoon.
1099312	Would like the bus to stop at our house after our daughter starts first grade next year. The current bus stop is 3/4 mile away from our house down an uninhabited road. Thank you.
1099228	We live too far from school for our daughter to walk or ride her bicycle. Currently, the school bus does not pick up or drop off on our road. If this were the case, we would have her ride the bus. At this point, our only option is to drop off and pick up in our family vehicle.

APPENDIX F

NON-ENGINEERING STRATEGIES RESOURCE GUIDE

NON-ENGINEERING STRATEGIES RESOURCE GUIDE

Strategy	E's	Advantages	Considerations	Resources
<p><b>Walking and Biking Safety Curriculum and/or Assembly</b></p> <p>These lessons can be held in the fall to promote Walk to School Day. Guest speakers teach the students pedestrian and bicycle safety skills that they can use when walking and biking to school.</p> <p>Instruction as a part of school curriculum is also vital to ensuring on-going learning of bicycle and pedestrian safety and development of skills.</p>	<p>Education, Encouragement</p>	<ul style="list-style-type: none"> <li>• Assures all children learn bicycle and pedestrian safety skills</li> <li>• Establishes habits that benefit children throughout their lives, regardless of whether they currently walk or bike to school</li> <li>• Establishes consistent messages for young pedestrians and bicyclists</li> <li>• Provides a refresher for parents if take home materials are provided in conjunction with the assembly. It's never too late to correct bad habits.</li> <li>• Events can make learning fun, and help strengthen community ties with event organizers and participants.</li> </ul>	<ul style="list-style-type: none"> <li>• Best taught using a combination of methods, including one-time instruction (e.g. assemblies), multi-lesson classroom curricula, and skills practice (e.g. bicycle safety fairs).</li> <li>• Requires able and willing instructors</li> <li>• Should be age-appropriate</li> <li>• Bicycle safety education may require an outside instructor, e.g. a police officer.</li> </ul>	<ul style="list-style-type: none"> <li>• Walk Smart/Bike Smart Vermont! <a href="http://healthandlearning.org/documents/WalkSmartBikeSmartFINAL2008_001.pdf">http://healthandlearning.org/documents/WalkSmartBikeSmartFINAL2008_001.pdf</a></li> <li>• National Highway Traffic Safety Administration Pedestrian Safety Lessons <a href="http://www.nhtsa.gov/ChildPedestrianSafetyCurriculum">http://www.nhtsa.gov/ChildPedestrianSafetyCurriculum</a></li> <li>• WalktoSchool.org - Classroom activities that encourage walking and biking. <a href="http://www.walktoschool.org/eventideas/classroom.cfm">www.walktoschool.org/eventideas/classroom.cfm</a></li> <li>• Willie Whistle - The National Highway Traffic Safety Association has created a video to help teach children pedestrian safety skills. <a href="http://www.nhtsa.gov/people/injury/willie/willie.zip">http://www.nhtsa.gov/people/injury/willie/willie.zip</a></li> <li>• See Partner Resource CD for more materials</li> </ul>

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<p><b>Continue to Participate in Walk to School Day</b></p> <p>Walk to School Day is a one-day event that celebrates walking and biking to school.</p> <p>Generally this event is scheduled for the first full week in October along with Vermont Walk and Roll to School Day in May. Why not use this strategy multiple times a year?</p>	<p style="text-align: center;"><b>Education, Encouragement</b></p>	<ul style="list-style-type: none"> <li>• Excellent kick-off event for Safe Routes to School program</li> <li>• Generates enthusiasm for walking and biking</li> <li>• Way to raise community awareness about safety issues</li> <li>• Can be as simple as a few kids and parents meeting to walk to school or very elaborate celebrations</li> <li>• Can be folded into studies of international cultures as it is an international event</li> <li>• Date is flexible- to be counted by the National Center for Safe Routes to school the event need only take place before Dec 1.</li> </ul>	<ul style="list-style-type: none"> <li>• Preparations for elaborate celebrations must begin several months in advance to allow time to identify partners, plan activities, and promote the event</li> <li>• Should provide bicycle and pedestrian safety information to children and parents</li> <li>• International Walk to School Day takes place in October but some schools organize multiple Walk to School Day (or “Walk and Roll Day”) events over the course of the school year (e.g. one in the fall and one in the spring).</li> </ul>	<ul style="list-style-type: none"> <li>• U.S. Walk to School Day website (provides resources and event registration): <a href="http://www.walktoschool.org">www.walktoschool.org</a></li> <li>• International Walk to School Day website: <a href="http://www.iwalktoschool.org/">www.iwalktoschool.org/</a></li> <li>• Plan and promote your Walk to School Day event <a href="http://saferoutes.vermont.gov/sites/saferoutes/files/PDFs/How%20To%20-%20Special%20Events.pdf">http://saferoutes.vermont.gov/sites/saferoutes/files/PDFs/How%20To%20-%20Special%20Events.pdf</a></li> <li>• Include students when it is too far or unsafe <a href="http://saferoutes.vermont.gov/sites/saferoutes/files/Including%20Students%20When%20It%20s%20Too%20Far%20or%20Unsafe%20VT.pdf">http://saferoutes.vermont.gov/sites/saferoutes/files/Including%20Students%20When%20It%20s%20Too%20Far%20or%20Unsafe%20VT.pdf</a></li> <li>• See Partner Resource CD for more materials</li> </ul>
<p><b>Frequent Walker/Bicyclist Program or Walking Wednesdays</b></p> <p>Track and reward students who walk and bicycle to school. Can be an individual competition or a competition among classes.</p>	<p style="text-align: center;"><b>Encouragement</b></p>	<ul style="list-style-type: none"> <li>• Provides positive reinforcement for walking and bicycling.</li> <li>• Children respond to incentives.</li> <li>• Can include all students.</li> <li>• Can include walking and bicycling beyond the trip to school.</li> </ul>	<ul style="list-style-type: none"> <li>• Necessary to identify a coordinator.</li> <li>• Establish a simple record-keeping system.</li> <li>• Establish age-appropriate goals.</li> <li>• Consider giving rewards to parents as well, since parents are often involved in the commute to school.</li> </ul>	<ul style="list-style-type: none"> <li>• Frequent Walker Punch card template <a href="http://saferoutes.vermont.gov/sites/saferoutes/files/PDFs/VT_SRTS_Punchcard_v2_110825-1.png">http://saferoutes.vermont.gov/sites/saferoutes/files/PDFs/VT_SRTS_Punchcard_v2_110825-1.png</a></li> <li>• Vermont Challenge: Walk Across America <a href="http://saferoutes.vermont.gov/sites/saferoutes/files/PDFs/The%20VT%20Challenge%20-%20Walk%20Across%20Vermont%21.pdf">http://saferoutes.vermont.gov/sites/saferoutes/files/PDFs/The%20VT%20Challenge%20-%20Walk%20Across%20Vermont%21.pdf</a></li> <li>• Tips for creating a walking and bicycling route map <a href="http://saferoutes.vermont.gov/sites/saferoutes/files/PDFs/Tips%20for%20Creating%20Walking%20and%20Bicycling%20Route%20Maps.pdf">http://saferoutes.vermont.gov/sites/saferoutes/files/PDFs/Tips%20for%20Creating%20Walking%20and%20Bicycling%20Route%20Maps.pdf</a></li> <li>• See Partner Resource CD for more materials</li> </ul>

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<p><b>Traffic Enforcement (Staff)</b></p> <p>This can be an ongoing program for school staff. This could work well in conjunction with PBIS.</p>	<p><b>Education, Enforcement, Encouragement</b></p>	<ul style="list-style-type: none"> <li>• Crossing guards play an important role in helping children cross the street at key locations, reminding drivers of the presence of pedestrians, and making parents feel more comfortable about letting their children walk and bicycle to school.</li> <li>• Staff and crossing guards can also reward students with Paws of Praise in order to reinforce positive behavior.</li> </ul>	<ul style="list-style-type: none"> <li>• Requires some training and coordination with crossing guards</li> </ul>	<ul style="list-style-type: none"> <li>• Adult School Crossing Guard Guidelines (NCSRTS) <a href="http://guide.saferoutesinfo.org/crossing_guard/pdf/crossing_guard_guidelines_web.pdf">http://guide.saferoutesinfo.org/crossing_guard/pdf/crossing_guard_guidelines_web.pdf</a></li> <li>• Florida School Crossing Guard Training Guidelines <a href="http://saferoutesinfo.org/program-tools/florida-school-crossing-guard-training-guidelines">http://saferoutesinfo.org/program-tools/florida-school-crossing-guard-training-guidelines</a></li> <li>• Lessons from Florida's Crossing Guard Program <a href="http://saferoutesinfo.org/events-and-training/srts-webinars/lessons-floridas-crossing-guard-program">http://saferoutesinfo.org/events-and-training/srts-webinars/lessons-floridas-crossing-guard-program</a></li> <li>• See Partner Resource CD for more materials</li> </ul>

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<p><b>Bicycle Safety Fair</b></p> <p>This is a single-day event that promotes bicycle safety. At the bicycle safety fair, students can borrow bicycles or bring their own.</p>	<b>Education, Encouragement</b>	<ul style="list-style-type: none"> <li>• Events such as bike safety fairs make learning fun and can help strengthen community ties with event organizers and participants.</li> <li>• At the bicycle safety fair students learn safety skills such as how to properly wear a helmet and how to behave while bike riding. The bicycle safety fair can also have a closed “test course” for the students to ride along. This helps the students to practice in a safe environment and gain confidence in their decision-making skills.</li> <li>• Possible partners for this include the Caledonia County Sheriff’s Department or Kingdom Trails.</li> </ul>	<ul style="list-style-type: none"> <li>• Requires able and willing instructors</li> <li>• Should be age-appropriate</li> <li>• Bicycle safety education may require an outside instructor, e.g. a police officer.</li> <li>• These events require planning and materials to share with students</li> </ul>	<ul style="list-style-type: none"> <li>• Teaching a Bicycle Safety Fair in Vermont <a href="http://www.vtbikeped.org/what/VT_Safety_Fair_Curriculum.pdf">http://www.vtbikeped.org/what/VT_Safety_Fair_Curriculum.pdf</a></li> <li>• Bicycling Life page on bicycle safety fairs: <a href="http://www.bicyclinglife.com/SafetySkills/BicycleRodeo.htm">http://www.bicyclinglife.com/SafetySkills/BicycleRodeo.htm</a></li> <li>• An organizer’s guide to bicycle safety fairs <a href="http://www.bike.cornell.edu/pdfs/Bike_Rodeo_404.2.pdf">http://www.bike.cornell.edu/pdfs/Bike_Rodeo_404.2.pdf</a></li> <li>• Easy steps to properly fit a bicycle helmet <a href="http://www.nhtsa.gov/people/injury/pedbimot/bike/EasyStepsWeb/">http://www.nhtsa.gov/people/injury/pedbimot/bike/EasyStepsWeb/</a></li> </ul>
<p><b>Walk Audit/Parent Surveys / Student tallies</b></p> <p>The team will meet annually (ideally in August before school starts) to review the accomplishments from the previous year and set new goals for the upcoming school year.</p>	<b>Evaluation</b>	<ul style="list-style-type: none"> <li>• Establishes baseline information on student travel behavior and perceived barriers to walking and biking</li> <li>• Helps determine existing needs</li> <li>• Helps determine success of SRTS efforts and identify needed adjustments</li> </ul>	<ul style="list-style-type: none"> <li>• Best to conduct initial surveys before SRTS measures have been implemented</li> <li>• Requires teacher buy-in and administrative organization</li> <li>• Getting parents to fill out and return surveys can be a challenge. Follow up is necessary. Consider a contest among classes for highest rate of return.</li> </ul>	<ul style="list-style-type: none"> <li>• Student In-Class Travel Tally Form: <a href="http://www.saferoutesinfo.org/resources/evaluation_student-in-class-travel-talley.cfm">http://www.saferoutesinfo.org/resources/evaluation_student-in-class-travel-talley.cfm</a></li> <li>• Parent Survey Form: <a href="http://www.saferoutesinfo.org/resources/evaluation_parent-survey.cfm">http://www.saferoutesinfo.org/resources/evaluation_parent-survey.cfm</a></li> <li>• Instructions for Survey Administration: <a href="http://www.saferoutesinfo.org/resources/evaluation_instructions.cfm">http://www.saferoutesinfo.org/resources/evaluation_instructions.cfm</a></li> <li>• Instructions for Data Entry: <a href="http://www.saferoutesinfo.org/resources/evaluation_cover-sheets.cfm">http://www.saferoutesinfo.org/resources/evaluation_cover-sheets.cfm</a></li> </ul>

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<p><b>Walking School Buses/ Bicycle Trains</b></p> <p>Walking school buses and bicycle trains are adult supervised groups of students walking and/or bicycling to school.</p>	<p><b>Education, Encouragement</b></p>	<ul style="list-style-type: none"> <li>• Adult supervision on the walk to school</li> <li>• Can be loosely structured or highly organized</li> <li>• Can include a meeting point in a parking lot so children and parents who must drive can participate.</li> <li>• Adults can rotate who will lead each time.</li> </ul>	<ul style="list-style-type: none"> <li>• Need to identify routes where conditions support walking and there is sufficient demand for supervised walking</li> <li>• Requires parents willing to walk with children and learn about how Walking school buses are organized and conducted.</li> <li>• More organized structure requires considerable planning</li> </ul>	<ul style="list-style-type: none"> <li>• How to start a walking school bus or bike train <a href="http://guide.saferoutesinfo.org/walking_school_bus/pdf/wsb_guide.pdf">http://guide.saferoutesinfo.org/walking_school_bus/pdf/wsb_guide.pdf</a></li> </ul>
<p><b>Drive Safe Campaigns</b></p> <p>Some parents are not aware of how their driving behavior can put walking students at risk. This teaches parents how their unsafe driving habits can put their children in danger.</p>	<p><b>Education</b></p>	<ul style="list-style-type: none"> <li>• Has the ability to effect positive change in the community and around the school</li> <li>• Improves the safety of the walking environment</li> <li>• Good drivers can help to set the example for good behavior. This is especially true for helping to control speeds.</li> </ul>	<ul style="list-style-type: none"> <li>• This requires a person to organize and administer the campaign.</li> <li>• May not be effective at schools where parent/teacher organizations are weak</li> <li>• Law enforcement officers would be great at speaking at the campaign events. Sometimes, due to their heavy schedules that can be difficult to pin down.</li> <li>• A good way to contact parents is at back to school night and PTA meetings. Starting at the beginning of the year helps to prevent bad habits from starting. Law enforcement officers (or other teachers) can hold a brief assembly to explain the dangers of unsafe driving in school areas.</li> <li>• Law enforcement officers can provide a demonstration of how difficult it is to quickly stop a moving vehicle at 50, 40 and 30 mph. The National Center has information on how the speed of the vehicle can affect the severity of injury that the pedestrian experiences in a crash.</li> </ul>	<ul style="list-style-type: none"> <li>• Driving Around Schools: Keeping Children Safe <a href="http://apps.saferoutesinfo.org/lawenforcement/resources/driving_tips.cfm">http://apps.saferoutesinfo.org/lawenforcement/resources/driving_tips.cfm</a></li> <li>• Parents, Avoid Becoming a Traffic Hazard <a href="http://www.aaamidaatlantic.com/FetchFile.ashx?id=e55bfa26-a70d-4e17-afde-073b86cc9975">http://www.aaamidaatlantic.com/FetchFile.ashx?id=e55bfa26-a70d-4e17-afde-073b86cc9975</a></li> </ul>

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<p><b>Crossing Guard Appreciation Day</b></p> <p>Crossing guards help our children cross the road safely in the mornings and afternoons, in all weather conditions. Remind them that you appreciate their service and dedication. Students can create thank you cards that they deliver themselves during their walks home, or teachers and administrators can honor them formally during a school assembly.</p>	<p><b>Encouragement</b></p>	<ul style="list-style-type: none"> <li>• Maintains a positive relationship between the crossing guards and the school/community.</li> <li>• Can inspire crossing guards to continue to be reliable, safety figures.</li> <li>• Creates an opportunity to remind students why it is important to practice safe walking skills.</li> </ul>	<ul style="list-style-type: none"> <li>• Requires coordination between the crossing guards, school administrators and school instructors.</li> <li>• May require materials to create the thank-you cards.</li> <li>• Is most effective with newsletter and in-school announcements.</li> <li>• Relatively inexpensive strategy</li> </ul>	<ul style="list-style-type: none"> <li>• Active Transportation Alliance webpage for Crossing Guard Appreciation Day <a href="http://www.activetrans.org/crossingguard">http://www.activetrans.org/crossingguard</a></li> </ul>

APPENDIX G

INFRASTRUCTURE STRATEGIES RESOURCE GUIDE

Strategy	Advantages	Considerations	Resources	Actions
<p><b>Wide Paved Shoulders</b></p> <p>Wide paved shoulders are created by striping a roadway to provide space for a shoulder and a travel way for motor vehicles. Wide paved shoulders can be created by adding pavement to one or both sides of the paved roadway or by narrowing travel lanes.</p> <p>Current Vermont State Standards recommend ten-foot minimum travel lanes for state and local roads.</p>	<ul style="list-style-type: none"> <li>• Provide room for pedestrians when there is no sidewalk or other facility.</li> <li>• Provide a clear space for bicyclists that is separated from the motor vehicle travel way.</li> <li>• Research has shown that by narrowing travel lanes, motor vehicle speeds might also be reduced.</li> </ul>	<ul style="list-style-type: none"> <li>• Lane markings need to be bright and maintained to clearly delineate the motor vehicle travel lane. When lane markings fade, the travelway for motor vehicles appears to be wider, which tends to encourage motorists to travel at higher speeds.</li> <li>• When adding pavement to widen the roadway and accommodate shoulders, the base material for the shoulder needs to be integrated well with the base material under the existing road to minimize the potential for pavement cracking and settling that would create hazardous conditions for bicyclists and motorist.</li> <li>• The <i>Vermont State Standards</i> provide detailed information on appropriate travel lane and paved shoulder widths for different classifications of state roads. These standards also provide a guide for appropriate lane and shoulder widths for town roads.</li> <li>• Other considerations include right-of-way, drainage, grading, existing signs and structures, and utilities.</li> </ul>	<ul style="list-style-type: none"> <li>• Vermont State Standards  <a href="http://www.aot.state.vt.us/progdev/standards/statabta.htm">http://www.aot.state.vt.us/progdev/standards/statabta.htm</a> </li> </ul>	<ul style="list-style-type: none"> <li>• For town roads, start with discussions with the appropriate, Selectboard, Board of Trustees, or City Council (municipal legislators) and town officials, such as road commissioner and/or town engineer to determine the municipality’s policies on travel lanes widths. Provide background information on the benefits of narrower travel lanes for speed reduction and safer conditions for pedestrians and bicyclists.</li> <li>• Review shoulder widening proposals with municipal officials. If sufficient pavement exists, suggest conducting an experiment with temporary striping to provide wider shoulders.</li> <li>• Follow up the experiment with feedback and request for comments from municipal officials and community.</li> </ul>

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<p><b>Speed Feedback Signs</b></p> <p>Speed feedback signs, either temporary or permanent, show motorists how fast they are traveling as calculated by radar.</p>	<ul style="list-style-type: none"> <li>• Speed feedback signs tend to slow motorists and remind motorists of the posted speed limits.</li> </ul>	<ul style="list-style-type: none"> <li>• Speed feedback signs on state roads must follow the State’s placement guidelines for state roads. Installing a feedback sign requires a highway access permit from the State.</li> <li>• Permanent signs may be appropriate at school zones; elsewhere temporary signs, set up for short periods at various locations, can be more effective.</li> <li>• Speed feedback signs, including those installed through VTrans funded projects on state roads, require a maintenance and care agreement with the local municipality.</li> </ul>	<ul style="list-style-type: none"> <li>• <i>Guidelines for the Use of Radar Speed Feedback Signs on the State Highway System</i> <a href="http://www.aot.state.vt.us/documents/3014_Guidelines_on_the_Use_of_Radar_Speed_Feedback_Signs.pdf">http://www.aot.state.vt.us/documents/3014_Guidelines_on_the_Use_of_Radar_Speed_Feedback_Signs.pdf</a></li> <li>• <i>Classification of Vermont Roads</i> <a href="http://maps.vermont.gov/imf/sites/ANR_NATRESViewer/jsp/">http://maps.vermont.gov/imf/sites/ANR_NATRESViewer/jsp/</a></li> </ul>	<ul style="list-style-type: none"> <li>• Review the State’s speed feedback sign guidelines to be sure the proposed location is acceptable.</li> <li>• Contact the municipality to determine the appropriate person to contact regarding the placement of speed feedback signs, either temporary or permanent. Check with the local police or sheriff to see if they have a portable trailer that can be used on a temporary basis as a trial.</li> <li>• Contact the responsible party to understand their process for the placement of speed feedback signs and whether the sign should be temporary or permanent. Follow the process for installation of the speed feedback sign.</li> <li>• If a temporary feedback sign was installed, review the results with the municipality to determine if it has been successful. If successful, suggest the municipality install a permanent speed feedback sign.</li> <li>• Permanent feedback signs are an eligible use for SRTS funds. Check with the regional planning commission about this and other potential funding sources.</li> </ul>

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<p><b>High-visibility Crosswalks</b></p> <p>High-visibility crosswalks are roadway markings designating a location for pedestrians to cross a roadway.</p> <p>High-visibility crosswalks are typically in locations that are convenient to pedestrians and visible to motorists. High-visibility crosswalks must be installed with reflective durable material.</p>	<ul style="list-style-type: none"> <li>• Crosswalks provide notification to both pedestrians and motorists to where pedestrians may be crossing the roadway.</li> <li>• Pedestrians have the right-of-way when in a crosswalk and motorists are supposed to stop their vehicles until the pedestrian has cleared the roadway.</li> </ul>	<ul style="list-style-type: none"> <li>• Pedestrians should assume that a motorist may not see them or stop.</li> <li>• Crosswalks should have a receiving facility, such as a path, sidewalk, or adequate shoulder for use by pedestrians on either end.</li> <li>• Crosswalks may be marked with different striping patterns but the most common pattern is the ladder style. Further considerations may be needed for crosswalks at unsignalized intersections and at mid-block locations to determine if the crosswalk is warranted.</li> <li>• Crosswalks are not appropriate for every location as they may give the pedestrian a perceived sense of safety that may not exist.</li> </ul>	<ul style="list-style-type: none"> <li>• <i>Vermont Pedestrian and Bicycle Facility Planning and Design Manual</i> <a href="http://www.aot.state.vt.us/progdev/Sections/LTF%20Info/BikePedTOC.html">http://www.aot.state.vt.us/progdev/Sections/LTF%20Info/BikePedTOC.html</a></li> <li>• <i>Vermont's Guidelines for the Installation of Crosswalk Markings and Pedestrian Signing at Marked and Unmarked Crossings</i> <a href="http://www.aot.state.vt.us/progdev/Sections/highway%20info/DocumentsRoadwayPages/TrafficOpsCrosswalk%20Guidelines%202004.pdf">http://www.aot.state.vt.us/progdev/Sections/highway%20info/DocumentsRoadwayPages/TrafficOpsCrosswalk%20Guidelines%202004.pdf</a><i>Safety Effects of Marked Versus Unmarked Crosswalks at Uncontrolled Locations</i> <a href="http://www.fhwa.dot.gov/publications/research/safety/04100/04100.pdf">http://www.fhwa.dot.gov/publications/research/safety/04100/04100.pdf</a></li> <li>• <i>Classification of Vermont Roads</i> <a href="http://maps.vermont.gov/imf/sites/ANR_NATRESViewer/jsp/">http://maps.vermont.gov/imf/sites/ANR_NATRESViewer/jsp/</a></li> </ul>	<ul style="list-style-type: none"> <li>• For all classifications of roadways, state and local, consult with the regional planning commission about the appropriateness of the proposed location for a crosswalk.</li> <li>• Follow-up with the municipal road commissioner, planner, or engineer to seek their guidance and support.</li> <li>• For non-state roads, after gaining appropriate endorsements, work with the appropriate local official or employee to get the high-visibility crosswalk installed in the proper and safe location.</li> <li>• For state roads, work with the regional planning commission to get a formal study to determine if a crosswalk is warranted and safe.</li> </ul>

	Advantages	Considerations	Resources	Actions
<p><b>Shared-use Paths</b></p> <p>Shared-use paths are separate facilities for non-motorized users such as bicyclists and pedestrians. Typically these facilities have their own right-of-way rather than sharing a right-of-way with a roadway.</p>	<ul style="list-style-type: none"> <li>• Provides a safe place for non-motorized users that are typically separated from motor vehicles.</li> <li>• Shared-use paths appeal to users of all different skill levels, particularly those with basic or beginner skills.</li> </ul>	<ul style="list-style-type: none"> <li>• Shared-use paths should typically be a minimum of ten feet wide and paved with asphalt.</li> <li>• Guidelines for the construction of shared-use paths can be found in the <i>Vermont Pedestrian and Bicycle Facility Planning and Design Manual</i>.</li> <li>• Further considerations are needed at intersections of the shared-use path and roadways to ensure safety for all users.</li> </ul>	<ul style="list-style-type: none"> <li>• <i>Vermont Pedestrian and Bicycle Facility Planning and Design Manual</i>  <a href="http://www.aot.state.vt.us/progdev/Sections/LTF%20Info/BikePedTOC.html">http://www.aot.state.vt.us/progdev/Sections/LTF%20Info/BikePedTOC.html</a></li> </ul>	<ul style="list-style-type: none"> <li>• Work with the municipal planning office, road commissioner, administrator, or other municipal officials to gain their support for the proposed shared-use path.</li> <li>• Work with municipal partners to engage the regional planning commission with the project in terms of funding or other support for an initial alignment study to determine the appropriate shared-use path alignment and end points. This study will help the community understand where the shared-use path may be located as well as the issues that will need to be addressed, the types of permits that will be needed, and the potential cost for developing the shared-use path as proposed. This study, done with community input, will help the community decide if they want to proceed further with the project.</li> <li>• If the community wishes to continue to pursue a shared-use path, work with the municipal partner to understand potential funding sources and the various requirements involved in obtaining them.</li> </ul>

Strategy	Advantages	Considerations	Resources	Actions
<p><b>Bicycle Routes/ Bicycle Pedestrian Warning Signs</b></p> <p>Bicycle route signs are officially designated routes for bicyclists through municipalities; they are typically used to focus bicycle travel onto roadways most suited for it.</p> <p>Bicycle and/or Pedestrian present warning signs (with an image of a bicycle and a pedestrian) provide a notice to motorists, that bicyclists or pedestrians are likely to be present.</p>	<ul style="list-style-type: none"> <li>• Bicycle route signs assist bicyclists in determining the best route for their travel.</li> <li>• Warning signs raise safety conditions for bicyclists due to greater awareness by motorists of bicyclists on the road.</li> </ul>	<ul style="list-style-type: none"> <li>• The number and location of bicycle routes and signs should be carefully studied by the community prior to implementation. Measures should be taken to reduce sign clutter.</li> <li>• Bicycle route signs and warning signs must meet the guidelines provided in the <i>Manual on Uniform Traffic Control Devices</i> (MUTCD).</li> <li>• In cases where there are on-road sections of bicycle connecting nearby trails, where a bike lane ends or a paved shoulder is reduced at a bridge, a “Share the Road Sign” may be appropriate. The “Share the Road” sign should be used to indicate a relatively brief special condition.</li> </ul>	<ul style="list-style-type: none"> <li>• <i>Vermont Pedestrian and Bicycle Facility Planning and Design Manual</i> <a href="http://www.aot.state.vt.us/progdev/Sections/LTF%20Info/BikePedTOC.html">http://www.aot.state.vt.us/progdev/Sections/LTF%20Info/BikePedTOC.html</a></li> <li>• <i>Manual on Uniform Traffic Control Devices, latest edition</i> (MUTCD), <a href="http://mutcd.fhwa.dot.gov/kno_2009r1r2.htm">http://mutcd.fhwa.dot.gov/kno_2009r1r2.htm</a></li> </ul>	<ul style="list-style-type: none"> <li>• Review guidelines provided in the latest edition of the MUTCD to make sure signs are compliant.</li> <li>• Work with the municipal planning office, road commissioner, administrator, or other municipal officials to gain their support for the creation of bicycle routes.</li> <li>• Follow the recommendations of the local official or employee as to the appropriate way to proceed, which could include: <ul style="list-style-type: none"> <li>- Presenting the idea to the municipal legislators;</li> <li>- Implementing existing recommendations in a bicycle plan for the community;</li> <li>- Undertaking the development of a bicycle plan for the community to make sure that the specific recommendations still work within the context of the entire municipality; and</li> <li>- Working with the regional planning commission.</li> </ul> </li> </ul>

Strategy	Advantages	Considerations	Resources	Actions
<p><b>Sidewalks</b></p> <p>Sidewalks are paths separated from other roadway users along the sides of the roadway reserved for pedestrians.</p>	<ul style="list-style-type: none"> <li>• Sidewalks provide a relatively safe location for pedestrians along the sides of a roadway.</li> <li>• They help to separate other roadway users and pedestrians within the same right-of-way.</li> </ul>	<ul style="list-style-type: none"> <li>• The availability of sufficient right-of-way to install sidewalks, including the travel way for vehicles and standards for sidewalk width, must be assessed.</li> <li>• Sidewalks are most effective when they include a buffer from the paved surface of the road that is at least five feet wide.</li> <li>• When sufficient right-of-way is not available for a buffer, a curb can provide some degree of separation between the roadway and the sidewalk.</li> <li>• Other considerations include drainage, grading, existing signs, structures, and utilities.</li> <li>• Sidewalks can be constructed of various materials including concrete, asphalt, or stone dust.</li> </ul>	<ul style="list-style-type: none"> <li>• <i>Vermont Pedestrian and Bicycle Facility Planning and Design Manual</i> <a href="http://www.aot.state.vt.us/progdev/Sections/LTF%20Info/BikePedTOC.html">http://www.aot.state.vt.us/progdev/Sections/LTF%20Info/BikePedTOC.html</a></li> <li>• <i>Designing Walkable Urban Thoroughfares: A Context Sensitive Approach</i> (Institute of Transportation Engineers - Publication #RP 036A) <a href="http://www.ite.org/modules/scriptcontent/orders/ProductDetail.cfm?pc=RP-036A-E">http://www.ite.org/modules/scriptcontent/orders/ProductDetail.cfm?pc=RP-036A-E</a></li> </ul>	<ul style="list-style-type: none"> <li>• Review the State's <i>Pedestrian and Bicycle Facility Planning and Design Manual</i> to determine the appropriate dimensions based on roadway classification.</li> <li>• Work with the municipal planning office, road commissioner, administrator, or other municipal officials to gain their support for the proposed sidewalk.</li> <li>• Work with municipal partners to determine the appropriate sidewalk location based on available right-of-way.</li> <li>• Review the sidewalk location to determine if any additional issues will need to be addressed, the types of permits that will be needed, and the potential cost for developing the proposed sidewalk. This review, done with community input, will help the community decide if they want to proceed further with the project.</li> <li>• If the community wishes to continue work on the proposed sidewalk, work with the municipal partners to understand potential funding sources and the various requirements involved in obtaining them.</li> </ul>

Strategy	Advantages	Considerations	Resources	Actions
<p><b>School Zones</b></p> <p>A school zone is an identified location on the roadway abutting a school which extends several hundred feet in each direction. It is identified with signs and pavements markings and sometimes includes a reduced speed zone.</p>	<ul style="list-style-type: none"> <li>School zones increase motorists' awareness to look for students on or near the road and to drive with more caution.</li> </ul>	<ul style="list-style-type: none"> <li>The creation of a school zone typically needs the approval of the municipality, either from the Selectboard, Board of Trustees, or City Council, unless they have passed on this approval to the road commissioner.</li> <li>School zones created on state roads need VTrans approval.</li> <li>Sight distances and other roadway conditions should inform the location of signs and pavement markings noting the limits of the school zone, within MUTCD guidelines.</li> <li>With few exceptions, school zones are located on the roadway adjacent to the school's main entrance.</li> <li>Must comply with State sign laws and laws for setting speed limits.</li> </ul>	<ul style="list-style-type: none"> <li><i>Manual on Uniform Traffic Control Devices, latest edition (MUTCD)</i>, <a href="http://mutcd.fhwa.dot.gov/kno_2009r1r2.htm">http://mutcd.fhwa.dot.gov/kno_2009r1r2.htm</a></li> <li>Refer to <i>Vermont Statute 23, Section 1007</i> for guidance on assigning local speed limits <a href="http://www.leg.state.vt.us/statutes/fullsection.cfm?Title=23&amp;Chapter=013&amp;Section=01007">http://www.leg.state.vt.us/statutes/fullsection.cfm?Title=23&amp;Chapter=013&amp;Section=01007</a></li> </ul>	<ul style="list-style-type: none"> <li>Work with the municipal planning office, road commissioner, administrator, or other municipal officials to gain their support for the proposed school zone.</li> <li>Discuss the creation of a school zone with local Selectboard, Board of Trustees, or City Council to gain their support.</li> <li>For a school zone on a state road, work with municipal officials and/or the regional planning commission to contact VTrans to propose a school zone.</li> <li>Work with the municipal planning office, road commissioner, administrator, or other municipal officials to determine the specific limits of the school zone and the methods to be used to notify motorists of its presence, including signage, warning lights during arrival and dismissal times, pavement markings, or other methods.</li> <li>Work with municipal partners to determine the most appropriate way to provide funding for the notifications as appropriate and work with them to secure funding.</li> </ul>

Strategy	Advantages	Considerations	Resources	Actions
<p><b>Road Signs</b></p> <p>Road signs provide information on road conditions, direction, advisories, or mandatory actions. Road signs may be regulatory, warning, or guide signs.</p>	<ul style="list-style-type: none"> <li>• Signs notify road users about road conditions, other users, regulations, or conditions that may not be immediately apparent.</li> <li>• Many signs are not typically an expensive installation and can be approved and installed quickly.</li> </ul>	<ul style="list-style-type: none"> <li>• The number and type of existing signs can influence the effectiveness of new signs. Sign “clutter” can diminish the impact of new signs.</li> <li>• Permanent signs can become part of the background and their perception by regular road users can diminish over time.</li> <li>• Changing conditions, such as temporary flashing lights or periodic flags, can help to continually draw attention to a sign.</li> <li>• Adding new signs to a local road typically needs the approval of the municipality, either from the Selectboard, Board of Trustees, or City Council, unless they have passed on this approval to the road commissioner.</li> <li>• Signs added to state roads need VTrans approval.</li> <li>• Any proposed signage must meet the guidelines provided in the <i>Manual on Uniform Traffic Control Devices</i> (MUTCD).</li> <li>• Temporary devices such as in-street “Yield to Pedestrian” signs, require designated personnel to provide continuous maintenance. Such signs must be installed and removed EACH DAY of intended use and should not remain on the roadside when not in use.</li> </ul>	<ul style="list-style-type: none"> <li>• <i>Vermont Pedestrian and Bicycle Facility Planning and Design Manual</i> <a href="http://www.aot.state.vt.us/progdev/Sections/LTF%20Info/BikePedTOC.html">http://www.aot.state.vt.us/progdev/Sections/LTF%20Info/BikePedTOC.html</a></li> <li>• <i>Manual on Uniform Traffic Control Devices, latest edition (MUTCD)</i>, <a href="http://mutcd.fhwa.dot.gov/kno_2009r1r2.htm">http://mutcd.fhwa.dot.gov/kno_2009r1r2.htm</a></li> <li>• <i>Classification of Vermont Roads</i> <a href="http://maps.vermont.gov/imf/sites/ANR_NATR/ESViewer/jsp/">http://maps.vermont.gov/imf/sites/ANR_NATR/ESViewer/jsp/</a></li> </ul>	<ul style="list-style-type: none"> <li>• Work with the municipal planning office, road commissioner, administrator, or other municipal officials to gain their support for the placement of new signs.</li> <li>• Discuss the placement of new signs with local Selectboard, Board of Trustee or City Council to gain their support.</li> <li>• Work with the municipal planning office, road commissioner, administrator, or other municipal officials to determine the appropriate place for the signs while meeting guidelines provided in the MUTCD.</li> <li>• If proposed on a state road, work with the municipal officials and the regional planning commission to contact VTrans to gain their approval and any necessary permitting for the proposed sign s.</li> </ul>

**APPENDIX H**

**SNOW REMOVAL BEST PRACTICES**

## SNOW REMOVAL BEST PRACTICES

Prompt and effective snow, ice, and slush clearance on sidewalks along Safe Routes to School is critical for maintaining safe biking and walking conditions. Snow removal of bicycle and pedestrian accommodations that are designated school routes should be planned for. According to the VT Pedestrian and Bicycle Facility Design Manual Section 10.5.1, local policies should treat the clearance of snow from walkways as equally important as clearance of snow from roadways in order to maintain year-round accessibility.

### **Guidelines**

The responsibility of all snow and ice clearance generally falls upon the property owner of the facility. A municipality's highway department is typically responsible for snow and ice removal on roads and sidewalks on public property. Private roads and sidewalks on private property are the responsibility of the property owner.

A clear, unobstructed pathway at a minimum of 48" wide should be provided on all sidewalks, curb ramps, and through crosswalks. Snow, slush, and ice should be cleared from sidewalks, to provide a clear path of 48", ideally, within 12 hours after a storm event. Designated portions of the roadway for bicycle use should also be cleared since, even in winter, some experienced bicyclists commute by bicycle.

Pedestrian walkways, curb ramps, and crosswalks or bicycle facilities should not be used for areas of snow storage. Additional consideration should also be taken to maintain adequate sight distances at all intersections and to prevent snow storage from building up too close to walkways.

Paved shared-use paths that are designated routes to school should be kept clear of snow so that students can walk to school year-round. Snow clearance is not a consideration for natural surface paths that are used for winter activities which also allow students to cross-country ski or snow-shoe to school.

### **Recommendations**

The following six basic recommendations can assist a community in developing a strategy to improve sidewalk snow and ice clearance.

1. Create a norm of snow and ice clearance through social awareness campaigns.
2. Identify a municipal point person for snow removal.
3. Determine priority sidewalks and paths for snow clearance.
4. Improve monitoring and enforcement.
5. Design sidewalks for easier snow removal.

6. Train municipal and private snow plowing personnel on the guidelines for pedestrian and bicycle facility clearance (i.e., 48" clear path and priority routes.)

### **Monitoring and Enforcement**

There are three primary ways in which the clearance of sidewalks can be monitored and enforced;

1. Identify who monitors and enforces.
2. Define penalties and how they will be enforced.
3. Implement a social awareness campaign.

APPENDIX I

WEST WINDSOR PEDESTRIAN MASTER PLAN, 1999

# WEST WINDSOR PEDESTRIAN MASTER PLAN

## FEASIBILITY STUDY FOR THE TOWN OF WEST WINDSOR

BY

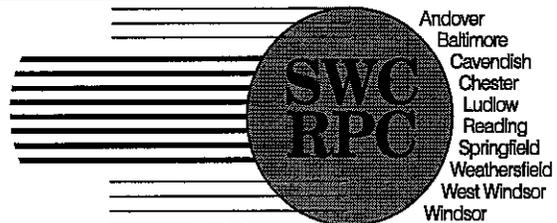
SOUTHERN WINDSOR COUNTY  
REGIONAL PLANNING COMMISSION

APRIL 1999

**Southern Windsor County Regional Planning Commission**

P.O. Box 320  
Ascutney Professional Building, Route 5  
Ascutney, VT 05030-0320

Phone: (802) 674-9201  
Fax: (802) 674-5711



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## APPENDICES

- A - NATURAL AND CULTURAL RESOURCE MAPPING
- B - DETAILED COST ESTIMATES

## **I. INTRODUCTION**

The purpose of this master plan is to document existing conditions for pedestrians in and around the village of Brownsville, identify and prioritize projects to address deficiencies, and evaluate possible constraints to construction of individual projects. The Southern Windsor County Regional Planning Commission completed a regional Bicycling and Walking Plan in 1997. The Plan recommends that villages in the region undergo a local inventory of conditions to develop a list of prioritized needs for use in future funding applications and capital planning at the local level. The Town of West Windsor has previously identified some broad issues related to pedestrian access and wishes to explore solutions to address them.

## **II. PROJECT DESCRIPTION**

Brownsville is the one established village within the town of West Windsor. The village is located primarily along VT Route 44 near the intersection with Brownsville-Hartland Road (Town Highway 1) at the base of Mount Ascutney. Ascutney Mountain Resort faces the village and has its main access off of VT Route 44, approximately 0.5 miles to the east of the village center. The study area for the village (see Figure 1) includes VT Route 44 from Brook Road on the eastern end to Harrington Road on the western side. Seams Road intersects Route 44 west of the Brownsville-Hartland Road and serves a residential neighborhood. The Albert Bridge (Elementary) School is located on the Brownsville-Hartland Road just north of Route 44. The resort village, which includes lodging and commercial uses, is located just south of the village across Mill Brook.

## **III. PROJECT GOALS AND OBJECTIVES**

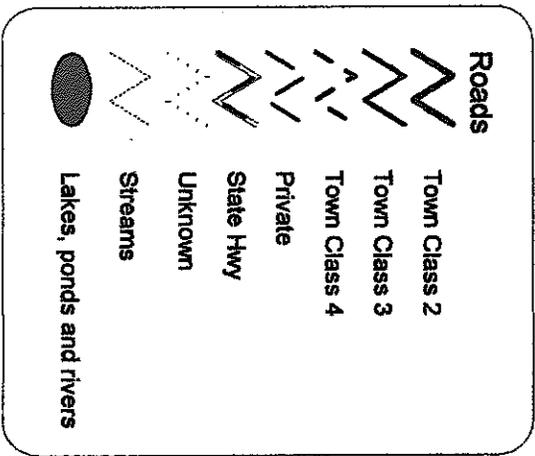
Planning for the needs of pedestrians serves several objectives. Within a densely developed village center, there are often origins and destinations in close enough proximity to each other that walking is a feasible form of transportation. By replacing vehicle trips with walking, several benefits are realized:

- ◆ Reduced traffic congestion
- ◆ Provision for those who do not have access to a car
- ◆ Reduced air pollution from tailpipe emissions
- ◆ Better definition of a village/community center
- ◆ Increased sense of community

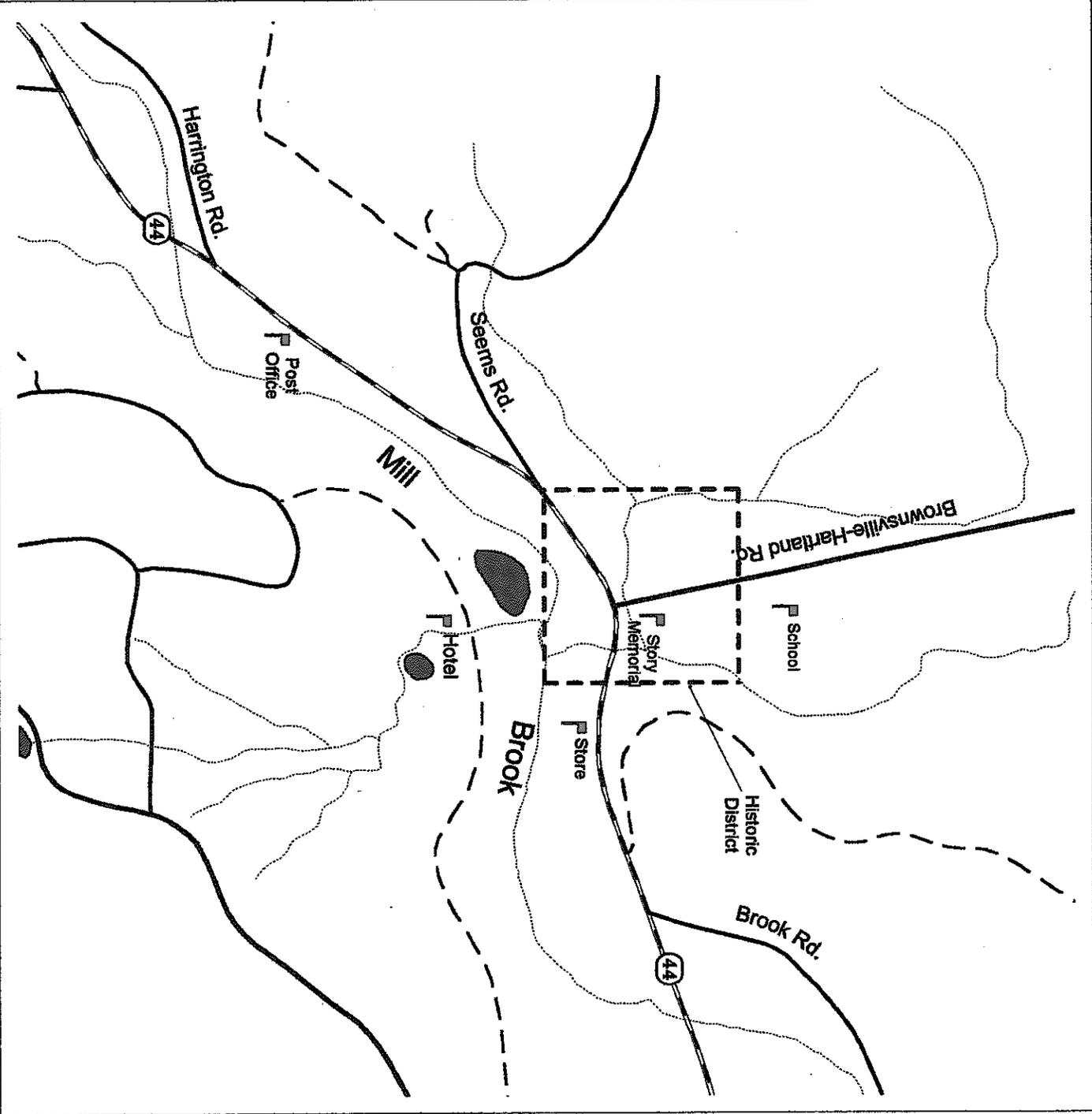
Providing facilities for pedestrians may also have economic benefits from an increased quality of life that can be a factor in locating businesses or new residents in a community.

The Vermont Agency of Transportation (VAOT) currently has two programs that can potentially fund the design and construction of pedestrian facilities. The Enhancement program funds a list of 12 eligible activities, one of which is the provision of bicycle and pedestrian facilities. The Local Transportation Facilities (LTF) Bicycle and Pedestrian Program funds improvements for

# Figure 1



## Brownsville Village Study Area



bicyclists and pedestrians. At this time, both programs accept applications from communities on an annual basis (Enhancement in the Fall, LTF in the Spring). The programs are competitive and require a local share of total project funding (Enhancement - 20% local, LTF - 10% local). Both programs require that some preliminary analysis of submitted projects has taken place prior to application. This analysis should identify any constraints to constructing a project, gauge public support, and develop reasonable cost estimates to use for project planning. The results of this Master Plan can be used to apply for project funding under either of these programs.

#### **IV. EXISTING CONDITIONS**

The study area within the village of Brownsville is served by two primary roadways. VT Route 44 travels east-west through the center of the village and serves as Main Street. Brownsville-Hartland Road travels north-south and intersects at a T intersection with Main Street in the center of the village near the Town Offices. Both roads are paved and marked with double yellow center lines and white edge striping. The posted speed on Main Street is 30 MPH from Brook Road to the bridge over Mill Brook just west of Harrington Road.

Both Main Street and Brownsville-Hartland Road vary in width depending on location. From Harrington Road to Seems Road, Main Street is 24 - 26 feet wide with little or no gravel shoulders beyond the edges of pavement. The travel lanes are marked at approximately 10 feet wide, which leaves 2 to 3 foot-wide paved shoulders beyond the white edge line. From Seems Road to Brook Road, Main Street widens to approximately 34 feet and on-street parking is permitted from Seems Road to just east of the bridge over Mill Brook in the center of the village.

The section of Brownsville-Hartland Road in the study area varies in width from 29.5 feet to 32 feet from the intersection with Main Street up to the entrance driveway to the Brownsville Elementary School and then back down to 24 feet past the school driveway.

The village has 5-foot-wide concrete sidewalks with granite curbing located primarily on the north side of Main Street. One section of sidewalk begins at Brook Road and continues along Main Street, wrapping around the corner radius to connect with walkways that serve the Town Offices. A second section of sidewalk begins on Brownsville-Hartland Road and continues along Main Street to Seems Road. Granite curbing with no sidewalk is present on the south side of Main Street from opposite Seems Road to a point across from Story Memorial Hall. There is one additional pedestrian facility within the study area. A 4-foot-wide pedestrian bridge crosses Mill Brook behind the West Windsor volunteer fire station. The bridge provides access to Ascutney Mountain resort via an unimproved path that leads up to Hotel Road.

The condition of the existing sidewalks is fair to good and curb exposure has not been deteriorated by pavement overlays. There is a sub-surface drainage system in all the areas that have curbing. The pedestrian bridge has a wooden deck and wooden hand rails. A gravel path leads to the bridge from the parking lot of the fire station. There are no marked crosswalks within the village. There are no signalized intersections within the village.

## **V. ORIGINS AND DESTINATIONS**

Given the location of key origins and destinations in the village of Brownsville, the existing sidewalk network does not provide complete access for pedestrians. The village has a mix of commercial, residential and public land uses located in close proximity to each other. This development pattern lends itself well to the use of walking for some of the daily trips that are taken.

At the east end of the village, the main potential generator of pedestrian traffic is the Brownsville General Store. The store is located on the south side of Main Street. Another key generator is the Ascutney Mountain Resort located on the south side of Main Street, across Mill Brook . The resort is busiest during the winter months, but hosts events during the summer and fall as well. Destinations at the resort that are open to the public include the ski area itself, restaurants, the Health and Fitness Center, a ski shop and a day care center that is used by some of the children who attend the Elementary School. During the summer and fall months, the resort hosts a variety of public events such as concerts, craft shows and seasonal festivals.

In the center of the village, and up Brownsville-Hartland Road, several other key destinations are located. These include Story Memorial Hall, which houses the Town offices and also serves as the gymnasium for the Elementary School. North of Story Hall is the Brownsville Community church and then the Elementary School north of that. On the opposite side of the street from the church is the Mary L. Blood Memorial Library. A real estate office is located on the north side of Main Street just west of the intersection with Brownsville-Hartland Road.

The remainder of the village is primarily residential homes located along both sides of Main Street from Brownsville-Hartland Road to Seems Road. Seems Road serves a number of residences in close proximity to Main Street. Residences are also found along Main Street between Seems Road and Harrington Road. The Mill Brook Bed and Breakfast is located at the corner of Harrington Road and Route 44. On the south side of Main Street, approximately midway between Seems Road and Harrington Road, the Brownsville Post Office and the Brownsville Hairstyling business share a building.

The distance from Harrington Road to Brook Road is approximately 0.3 miles and the Elementary School is located less than 0.1 miles up Brownsville-Hartland Road. The average distance that people are willing to walk (according to the National Bicycling and Walking Study) is 0.6 miles. There are many residences and destinations in Brownsville close enough to each other to facilitate walking.

## **VI. LOCALLY IDENTIFIED PROBLEMS**

Three primary concerns regarding pedestrian accommodation have been identified at the local level: the interaction of pedestrians and overall traffic circulation patterns around the town offices/church/Elementary School, pedestrian access to the Post Office, and strengthening the pedestrian connection between the village and Ascutney Mountain Resort.

On-street parking is provided between Story Hall and the Church. In this area, parking consists solely of widened pavement immediately adjacent to the roadway pavement. There are no pavement markings or other ways that the parking is distinguished from the rest of the road. In addition, the Elementary School parking is used during special events at Story Hall. There is existing street lighting in this area. A “cobra” style fixture is located on a utility pole just north of the Story Hall driveway and another is located near the entrance driveway for the Elementary School. When events end, there is a confusing and potentially dangerous mix of pedestrian and vehicle traffic between Story Hall and the School.

The portion of Main Street between Seems Road and the Post Office is fairly narrow and shoulder width is very narrow. There is a steep bank on the south side of Main Street directly off the edge of the roadway. The Post Office and hair stylist are destinations that should have pedestrian access for the residents that live close enough to walk there.

Providing better access for pedestrians between the village and Ascutney Mountain Resort would have several benefits. Presently, there are students from the Elementary School who attend the Day Care at the resort at the end of their regular school day. While the bridge provides basic access, a more definitive facility would make this daily trip easier and safer. Village destinations such as the General Store would likely see an increase in business if better access were provided from the resort. Conversely, local residents would benefit from having a direct connection to Resort amenities like the restaurant and fitness center. Providing this pedestrian access would help reduce the number of short automobile trips between the Resort and the village.

## **VII. CONCEPTUAL ALIGNMENT ALTERNATIVES**

Based on the existing sidewalk network, existing land use patterns, previously identified problems and the limits of the study area, three main travel corridors for pedestrians were identified and examined for possible improvements. The three locations are: 1) between the Elementary School and the existing sidewalk in front of Story Memorial Hall; 2) between the end of the existing sidewalk along Main Street that ends at Seems Road and the Post Office; and 3) between the village and Ascutney Mountain Resort.

For each of these corridors, alternatives were examined using accepted design standards and input from the West Windsor Select Board and Planning Commission. A standard 5-foot clear width was assumed for either sidewalks or widened shoulders. This is a commonly accepted walkway width that allows two pedestrians to walk side by side, meets the requirements of the Americans with Disabilities Act for wheelchair access and allows for most modern sidewalk maintenance equipment.

### **A. Elementary School to Story Memorial Hall**

Alternative 1 - Construct curbs, sidewalks and subsurface drainage along Brownsville-Hartland Road within existing road right-of-way.

This alternative makes use of the extra paved width that exists on the east side of Brownsville-Hartland Road between the municipal office building and the entrance driveway to the Elementary School. This space is currently used for parking during events at either Story Hall, the church, or the school. This alternative would retain the parking, but would define it through the use of curb extensions, or bulbouts, at either end and curbing and sidewalks along the east side of the parking at the edge of the right of way of the town highway (see Figures 2 and 3). The sidewalk will pass closely by a door located on the west side of the church. It will be necessary to ramp the sidewalk down in this area to meet the existing door threshold.

The Church has plans for building an addition on the north side of the building. A representative of the church trustees was contacted to fully understand the plans for the addition and any implications of this proposed sidewalk alternative. The addition will extend approximately 20-foot north of the current north wall of the church and will result in closure of the north church driveway. The main goal of the addition is to provide better handicapped access to the church. The door for the new addition will be on the north side of the building. This sidewalk alternative could coordinate well with the proposed addition by providing a designated handicapped parking space as close as possible to the new entrance. A walkway on church property could then be constructed from the Town sidewalk to the north side entrance. Continued coordination will be required between the Town and the Church during design of the sidewalk.

There is an existing sub-surface drainage system along Route 44. It is proposed that any drainage required as a result of the new curbing would be piped to the existing system. West Windsor is within the VAOT District 4 maintenance area. District 4 is responsible for drainage facilities along Route 44. The District office was contacted about the potential tie in to the existing drainage system along the highway and they were receptive to the idea.

#### Comments:

- ◆ Uses public right of way
- ◆ Provides positive separation between pedestrians and motor vehicles
- ◆ Helps define on-street parking
- ◆ Most direct route between school and existing sidewalks
- ◆ Requires sub-surface drainage
- ◆ Incorporates traffic calming measures in school/public building location

#### Alternative 2 - Construct sidewalk on separated alignment behind the Brownsville Community Church

This alternative would construct a sidewalk at grade with the surrounding ground from the school to the north side of the driveway for Story Hall. The sidewalk would travel from near the school playground, behind the Community Church and then parallel the Story Hall parking area up to the opening of the driveway. An easement would be required from the church to construct this alternative. Grass lined swales on either side of the sidewalk would provide for natural treatment of any storm water runoff associated with the sidewalk and surrounding area.

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1-2

 = NEW CURB AND SIDEWALK  
 ○ = NEW STREET LIGHT

NOT TO SCALE

BROWNSVILLE - HARTLAND RD.

SCHOOL ENTRANCE

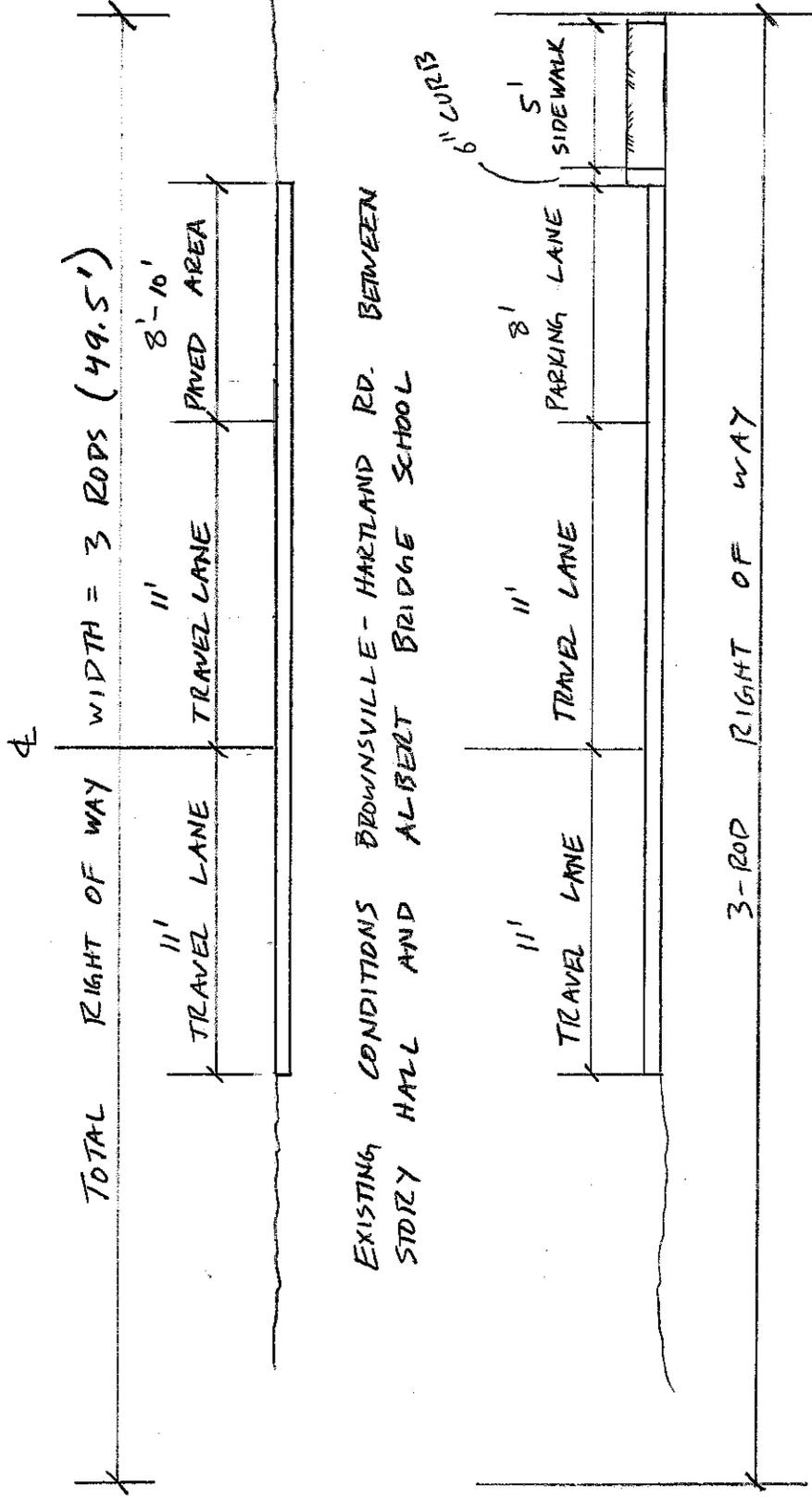
CHURCH

STORY MEMORIAL HALL

ROUTE 44

PROPOSED PEDESTRIAN IMPROVEMENTS ON  
 BROWNSVILLE - HARTLAND RD.

FIGURE 2



EXISTING CONDITIONS BROWNSVILLE - HARTLAND RD. BETWEEN  
 STOLZY HALL AND ALBERT BRIDGE SCHOOL

PROPOSED BROWNSVILLE - HARTLAND RD  
 PEDESTRIAN IMPROVEMENT

FIGURE 3

Comments:

- ◆ Requires easement from Brownsville Community Church
- ◆ Provides positive separation between pedestrians and motor vehicles
- ◆ Does not address on-street parking circulation between Story Hall and the school
- ◆ Circuitous route
- ◆ Less visible than sidewalk adjacent to street

**B. Seems Road to Post Office/Harrington Road**

For all of the alternatives in this corridor, it is recommended that modifications be made to the intersection of Seems Road and Route 44. The existing configuration of this intersection encourages westbound traffic on Route 44 that is destined for Seems Road to travel through the intersection at high speed. Especially for the alternatives that involve accommodation of pedestrians on the south side of Route 44, slowing traffic through this intersection by changing its design is strongly recommended. Given the location of the existing sidewalk on the north side of Route 44, pedestrians would be required to cross the road to access facilities on the south side of Route 44.

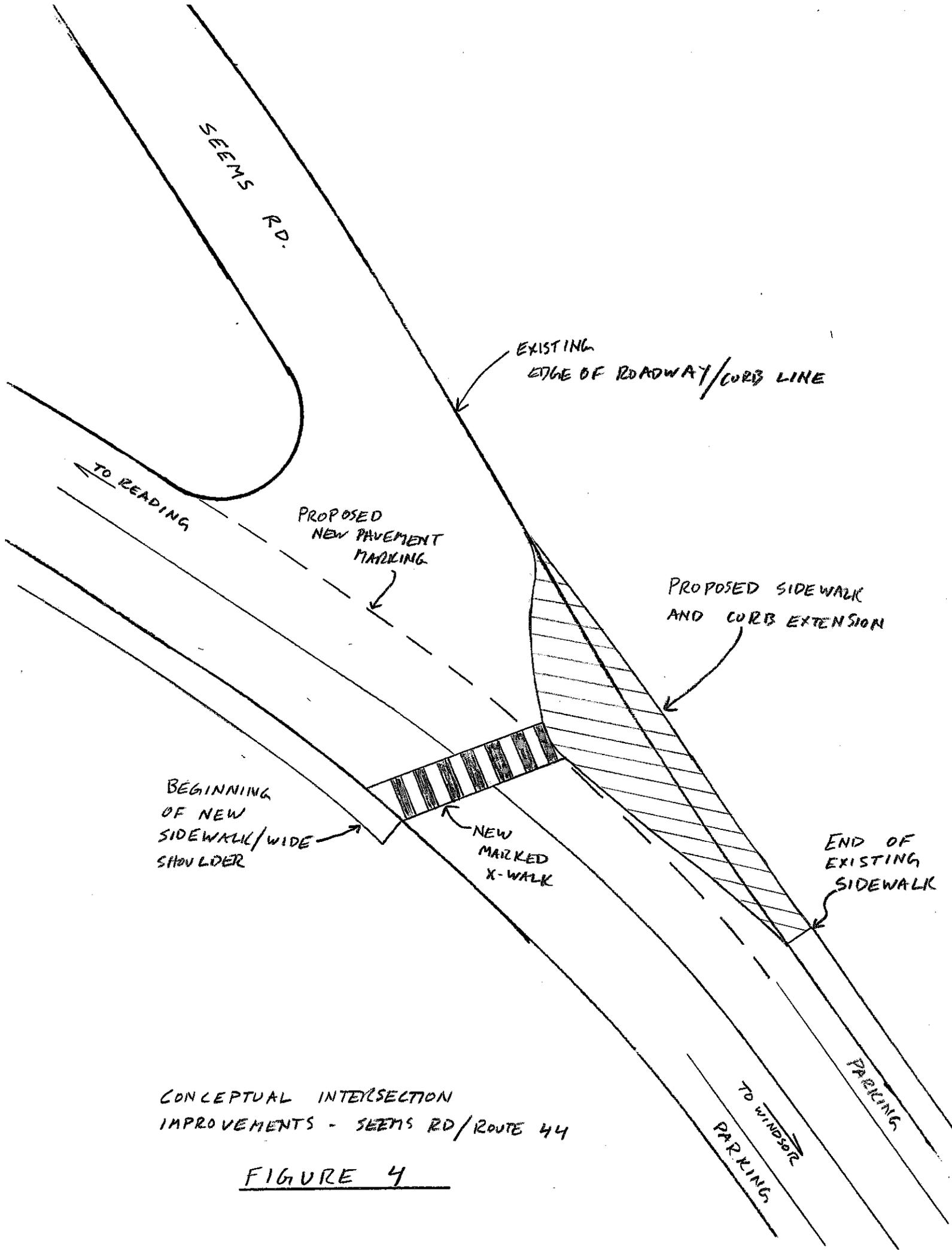
It appears that there is room in this intersection to bring the curbing out on the north side of the road to result in a shorter crossing distance for pedestrians (see Figure 4). The extended curbing would also provide traffic calming that would encourage slower vehicle speeds entering the village from the west and for traffic traveling from Main Street to Seems Road. Signs and a marked crosswalk would be included as a minimum treatment to facilitate crossing at this location. The approximate cost of the intersection improvements alone is \$18,800 and has been included in the cost estimates for the alternatives for this corridor.

Alternative 1 - Construct separated sidewalk on south side of Route 44 from the Seems Rd./Main St. intersection to the Post Office.

This alternative makes use of a relatively open, flat and undeveloped piece of land that lies between Seems Road and the Post Office. The majority of this land is owned by Richard and Margaret Brown and construction of the sidewalk in this location would require an easement from them as well as two other private property owners. The sidewalk would parallel Route 44 up to the west end of the driveway that serves the Post Office.

Comments:

- ◆ Requires easements from at least three private property owners, including the owners of the Post Office lot
- ◆ Provides positive separation between vehicles and pedestrians
- ◆ May be impacted by flooding of Mill Brook
- ◆ Provides scenic views of the Brook
- ◆ Provides direct connection from existing walks to Post Office



CONCEPTUAL INTERSECTION  
IMPROVEMENTS - SEEMS RD/ROUTE 44

FIGURE 4

- ◆ Requires crossing of Rte. 44 at Seems Rd.

**Alternative 2 - Construct a widened shoulder on the south side of Route 44 from opposite Seems Road to the Post Office**

The existing roadway shoulder is essentially non-existent on this section of the highway. This alternative would widen the sub-base through the addition of fill material, additional sub-base and pavement. The shoulder does not have to be paved, but if accommodation of wheelchairs is a consideration, then paving is preferable. While gravel can be compacted to a suitable degree to be used by wheelchairs, it requires more routine maintenance than pavement and may not be cheaper in the long run. Because of the steep bank down to the plateau of land adjacent to the highway in this location, a fair amount of fill will be required. In addition, utility poles in this section would need to be relocated. The amount of fill required and the relocation of the utility poles would require easements from private property owners to construct this option.

**Comments:**

- ◆ May require slope easement from at least 3 private property owners
- ◆ Widened roadway may encourage higher vehicle speeds entering village from the west
- ◆ No separation of pedestrian travel from vehicles
- ◆ May not appear to be a pedestrian facility
- ◆ Would require relocation of existing utility poles
- ◆ Requires crossing of Rte. 44 at Seems Rd.

**Alternative 3 - Construct a widened shoulder on the north side of Route 44 from opposite Seems Road to Harrington Road**

This option is very similar to Alternative 2, except that the other side of the highway is used and the shoulder is extended to Harrington Rd. to serve the Mill Brook Bed and Breakfast at the intersection. The grade difference between the edge of the roadway and adjacent property is not as pronounced on the north side of Route 44, but re-ditching would be required. There are no utility poles on this side of the road that would need to be relocated. A marked crosswalk and associated signs would be provided to cross from the shoulder to the Post Office.

**Comments:**

- ◆ May require slope easement from at least seven private property owners
- ◆ Widened roadway may encourage higher vehicle speeds entering village from the west
- ◆ No separation of pedestrian travel from vehicles
- ◆ May not appear to be a pedestrian facility
- ◆ Would require regrading of existing ditch adjacent to road
- ◆ Requires crossing of Rte. 44 at Post Office
- ◆ May impact some private property amenities like fencing, landscaping and mailboxes

**Alternative 4 - Construct curb and sidewalk on the south side of Route 44 adjacent to the roadway from opposite Seems Road to the Post Office**

This alternative is similar to Alternative 2 for this corridor except that a curb and sidewalk is constructed instead of a widened shoulder. Fill would still need to be added to provide enough space for the sidewalk and curbing. A drainage system to collect stormwater runoff would need to be constructed along the curbed section and connected to the existing system that ends near Seems Road.

**Comments:**

- ◆ May require slope easement from at least three private property owners
- ◆ Curb and sidewalks helps define the village area better than a widened shoulder
- ◆ Curbing provides positive separation of pedestrian travel from vehicles
- ◆ Sidewalks are easily identified as a pedestrian facility
- ◆ Would require relocation of existing utility poles
- ◆ Requires crossing of Rte. 44 at Seems Rd.
- ◆ Requires construction of subsurface drainage system

**C. Brownsville Village to Ascutney Mountain Resort**

**Alternative 1 - Construct a separated walkway from Route 44, behind the Fire Station, across Mill Brook to Ascutney Resort**

This alternative would improve on the existing pedestrian path that provides access from the village to the resort. Presently, there is a gravel path behind the Fire Station and a narrow wooden decked bridge across the brook. Once across the brook, there is no formal path and there is a flight of stairs up to Hotel Road. A more definitive path could be created through the use of pavement markings and signs from Route 44 to the path behind the Fire Station. The path could be paved from that point to the bridge. Included in the cost estimate for this alternative is a new pre-fabricated bridge. The new bridge would ensure that the width and surface are handicapped accessible. The paved walkway would continue on the other side of the brook. To achieve the Americans with Disabilities Act recommended maximum 5% grade, the walkway would need to switchback several times to make up the approximately 30 feet in elevation difference between the end of the bridge and the resort road. The stairs could remain in place as an optional access. Signs on Hotel Road should indicate that pedestrians should be expected to cross at this location.

**Comments:**

- ◆ Requires easements from at least two private property owners
- ◆ Good separation of pedestrian travel from vehicles
- ◆ Provides direct access from village to resort
- ◆ Provides handicapped accessibility
- ◆ Opportunity to cost-share with Ascutney Mtn. Resort

- ◆ May reduce vehicle trips through the village
- ◆ Without a crosswalk, only connects to roadway shoulder on Rte. 44

## **VIII. UTILITIES**

There are several underground utilities within the study area in the village of Brownsville. The Elementary School, Brownsville Community Church and Town offices share a common water system from a well located in the basement of the school. The line runs from the school, behind the church and enters the Town office building at the southeast corner of the building. This water line is buried approximately six feet deep over its length. The sidewalk alignment identified as Alternative 2 for connecting the school to Story Hall is the only project that could potentially impact this water line. However, based on the depth of excavation required for the sidewalk and the depth of the water line, no conflicts are anticipated.

A sewer line runs from the Ascutney Mountain resort to the Town of Windsor. The line originates at condominium units within the resort and runs down to Route 44 east of where Brook Road intersects the highway and then runs along Route 44. None of the alternatives examined in this report would impact this line.

Buried fiber optic cable maintained by VTEL is present in the village of Brownsville. One section of cable is located under the parking lot for Story Hall. The section most likely to have a possible impact on sidewalks being investigated runs along the east side of Brownsville-Hartland Road beginning near the Elementary School ball fields and continuing to the north. According to VTEL staff, this cable is buried approximately 1 - 3 feet below the roadway surface near the edge of pavement. It is unlikely that sidewalk construction would adversely impact the cable, but coordination with VTEL would need to take place during design of any sidewalk improvements along Brownsville-Hartland Road.

Utility poles carrying wires for telephone, cable and electricity are present throughout the village of Brownsville. Poles that are located along Route 44 are clearly within the Right-of-Way of the highway. According to the VAOT Utilities division, these poles are in the Right-of-Way by permission of the VAOT. If a project requires that poles be relocated, this is done at the utility's expense. If it is necessary to move the poles outside of the existing Right-of-Way to construct the project, and no other Right-of-Way is required, the utility must acquire rights for pole relocation. However, if Right-of-Way is required for the project, then the state or municipality must acquire rights for relocation of the poles and this will be included in the cost of the project.

## **IX. NATURAL AND CULTURAL RESOURCES/ENVIRONMENTAL DOCUMENTATION**

Proposed alignments were reviewed in order to assess possible impacts to natural and cultural resources. The following data sources were used for the assessment:

- Digital orthophotography from the Vermont Division of Property Valuation and Review;

- Regional GIS map of generalized land cover types, created by the RPC in 1992;
- State GIS map of National Wetland Inventory (regulatory) wetlands;
- GIS map of flood zones from the Federal Emergency Management Agency;
- GIS map of Natural Heritage Inventory sites, as identified by the Nongame and Natural Heritage Program;
- GIS map of critical deer wintering habitat, as identified by the Vermont Department of Fish and Wildlife;
- GIS maps of sites, structures, and districts on the state and national registers of historic places, created by the RPC as part of the Connecticut River Scenic Byway feasibility study in 1996-97;
- Conceptual drawing of proposed sidewalk alignments created by the RPC after consultation with the Town of West Windsor.

**Groundwater** — The proposed alignments are within the Wellhead Protection Area for the Summit Water Co. public community water system. No part of the sidewalk would cross the well's isolation zone, and this type of development should not be a threat to groundwater quality. The Water Supply Division of the Department of Environmental Conservation administers the state's groundwater protection rules.

**Wetlands** — There are a few areas that need to be evaluated for possible wetland impacts. The area of greatest concern initially would be a wetland between Mill Brook and the Mt. Ascutney base area, which is within 50 feet or so of one proposed path location. This wetland appears to be an artificial pond associated with the resort, and would likely not pose a serious obstacle to locating the sidewalks in or very near its location.

Under the Vermont Wetland Rules wetlands are divided into three classes. Class I and II wetlands are presumed to have functions and values worthy of protection, and disturbance of a wetland or buffer area may not take place without a Conditional Use Determination from the state Wetlands Office. Class III wetlands are not automatically presumed to have significant functions and values, and are not regulated under the rules, although they may be protected through the Act 250 process if specific water quality, wildlife habitat, or other natural resource functions are identified. There are no Class I wetlands in the area. There are three mapped Class II wetlands relatively near the path locations. One is across the Brownsville-Hartland Road from the school, and another is above Hotel Road in the resort area; these wetlands should not be of concern. The other is the pond between the Mill Brook and Hotel Rd. that was mentioned above. Areas east of the Brownsville-Hartland Rd. and south of Route 44 should be looked at to see if there are any unmapped wetlands associated with the brooks. The state Wetlands Office should be asked to more precisely delineate the Class II wetland and to confirm that no other regulated wetlands would be impacted.

Under federal wetland regulations, the Army Corps of Engineers has jurisdiction over wetland impacts, and the extent of oversight is dependent on the nature of the activity and the acreage of the disturbed area, not on the nature of the wetland itself. There are special rules and expedited permitting procedures for small-scale disturbances and road crossings. The state Wetlands

Office should be asked for assistance in coordinating its review with the Army Corps of Engineers.

**Significant wildlife habitat** — There are no known sites containing threatened or endangered species in the area, according to maps created by the Vermont Nongame and Natural Heritage program. There are two areas nearby that have been identified as critical deer wintering habitat, but the paths are at least 600 feet away from the nearest point in those areas, and should not have any impact on their habitat functions.

**Historic resources** — Historic resources are protected under Section 4(f) of the US Department of Transportation Act and under section 106 of the National Historic Preservation Act. If Federal funding is used for construction of the project, it will be necessary to document that the proposed walkway will have either no effect or no adverse effect on historic properties. The paths to the school and to the resort would be within a state historic district, and would pass close by several buildings on the State Register of Historic places; however, if the paths were properly designed, any impacts on the Brownsville historic district would probably be positive.

**Flood zones** — All of the proposed routes south of Route 44 are likely to cross through the 100-year flood zone. The flood zone on the official Flood Insurance Rate Maps does not appear to follow the streambed of Mill Brook through this area, so elevations would have to be taken to get a better idea of its exact location. A sidewalk in this area would need to be designed so as not to significantly impair the flood storage capability of the area if possible. The town should investigate the effect of the sidewalks on flood hazard regulations and on availability of coverage through federal insurance programs.

**Archaeological resources** — Areas of close proximity to water courses such as the Mill Brook have been known to contain both prehistoric and historic artifacts. For this reason an archaeological investigation will be required during the design phase of the proposed walkway if Federal funds are used on the project.

Archaeological investigations typically consist of three levels of research: Phase I, Phase II, and Phase III. Phases II and III are only required if adverse impacts to archaeological resources are identified in the first phase.

Phase I investigations are normally divided into Phase IA and Phase IB components. Phase IA usually consists of doing archival research of the Vermont Archaeological Inventory and other files at the Vermont Division for Historic Preservation, and reviewing town histories and records, historical society records, archival maps and photographs. A field inspection is also completed during Phase IA to determine the general archaeological integrity of the area where a proposed project is located.

If the area is determined to be archaeologically sensitive based on the Phase IA research, Phase IB is initiated. This would consist of hand excavated test pits or inspection of recently plowed fields. If archaeological sites have been identified during Phase I, a Phase II investigation would

then be initiated.

Phase II study would more specifically define any sites identified during Phase I. If the sites identified in Phase I will not be affected by proposed construction, the Phase I investigation is all that is required. Phase III consists of intensive excavation that is intended to recover samples of an archaeological site that would be destroyed by proposed construction activities.

**Hazardous materials** — There are no active hazardous materials sites along the proposed alignments. There are two underground storage tanks at Ascutney Mountain Resort holding gasoline and diesel, and one underground gasoline tank at the Brownsville store. Each of these properties has been the site of a hazardous materials spill in the past, but in both cases cleanup is complete. Before doing any excavation for a sidewalk, the Town would need to confirm the locations of the fuel tanks at the resort and ensure that the work would not impact the tanks.

Maps illustrating these resources and their relationship to potential sidewalk locations are included in Appendix A.

## **X. CONFORMANCE WITH LOCAL AND REGIONAL PLANS**

The most recent town plan for the Town of West Windsor was adopted May 9, 1994. Planning and providing for pedestrian travel is supported by the Town Plan. In discussing the Town Center Area which comprises Brownsville and the immediately surrounding area, the plan states that, "Wherever possible in the Town Center Area, more compact development patterns should be encouraged." Providing for pedestrians supports this type of development pattern and, in turn, this type of development is necessary for encouraging walking as a viable transportation choice. In addition, the Transportation section discusses the need to, "accommodate pedestrians" and discusses the possibility of a bicycle (multi-use) path along Route 44 and extension of sidewalks.

The Regional Transportation Plan was supplemented in 1997 by a Regional Bicycling and Walking Plan. The Bicycling and Walking Plan identifies Brownsville specifically as an area that has a high potential for pedestrian use and a need to provide pedestrian access to employment, residential and governmental areas. Additionally, the Regional Transportation Plan references bicycling and walking in several chapters and survey results for the region indicate support for development of better facilities for bicycling and walking. In the 1993 Transportation Survey, almost 35% of respondents rated the condition of existing sidewalks as poor.

## **XI. COST ESTIMATE SUMMARY**

For each of the alternatives that was investigated, a preliminary engineering and construction cost estimate was developed. The costs were based on typical sections for each of the alternatives, selected field measurements, measurements taken from digital orthophotographs and average unit bid prices provided by the Vermont Agency of Transportation. The total cost for each project includes engineering, construction, contract administration assuming the use of Federal funds,

and a contingency based on the preliminary nature of this study. A detailed spreadsheet and itemization of the costs can be found in Appendix B. Depending on the funding source, the town share of the cost would vary. The allowance for in-kind services like local donations of material or labor would reduce the cash match required. The costs for the alternatives are as follows:

Elementary School to Story Memorial Hall

Alternative 1 - Sidewalk and curb extensions adjacent to Brownsville-Hartland Road - \$75,300

Alternative 2 - Separated sidewalk behind Brownsville Community Church - \$55,600

Seems Road to Post Office/Harrington Rd.

Alternative 1 - Separated sidewalk on south side of Route 44 - \$93,200

Alternative 2 - Widened shoulder on south side of Route 44 - \$74,800

Alternative 3 - Widened shoulder on north side of Route 44 - \$72,400

Alternative 4 - Curb, sidewalk and drainage on south side of Route 44 - \$203,600

Note: All four alternatives for this corridor include construction costs for improvements to the Seems Road/Route 44 intersection which total \$18,800 (construction only)

Brownsville Village to Ascutney Mountain Resort

Alternative 1 - Separated sidewalk and bridge across Mill Brook - \$115,900

## **XII. RECOMMENDATIONS/ADDITIONAL OBSERVATIONS**

The West Windsor Selectboard and Planning Commission were presented with all of the alternatives investigated for the three pedestrian corridors that were examined. Based on input from these two boards, the alternative that received the highest priority was Alternative #1 for the Albert Bridge School to Story Memorial Hall corridor. The decision was based on the existing amount of pedestrian activity in this area and the potential for conflict with motor vehicle traffic traveling on Brownsville-Hartland Road and turning into or out of the school or town office driveways. The traffic calming aspect of this project is an added benefit that will address potential conflicts between pedestrians and motor vehicles.

The travel corridor from the end of Seems Road to the Post Office received the next highest amount of interest, although neither board decided on a preferred alternative. If the school sidewalk project is successful in receiving funding, the Town will pursue other pedestrian facilities as local resources allow.

Brownsville village has ideal land use patterns for encouraging pedestrian travel. The school sidewalk project is a short, but critical link in the pedestrian network within the village. The conceptual design of the sidewalk does not involve any significant environmental, construction or right-of-way constraints. The proposed construction would likely be entirely within town right of way. This project is viable and will result in increased public safety of the transportation system.

As a final note, local officials should be aware of the potential negative impact of paving projects on village sidewalks. Whenever pavement maintenance is planned for areas within the village that have curbed sidewalks, provision should be made for milling the existing pavement first prior to overlaying new pavement. If this technique is not used, curb exposure and resulting separation of pedestrian travel from the adjacent roadway will be lost over time. The result is that sidewalks will become dysfunctional and the public investment in them will be lost. This recommendation would apply to VAOT paving projects that include the village as well as locally managed pavement management efforts.