

# VERMONT Safe Routes to SCHOOL



## Killington Elementary School

### Safe Routes to School Travel Plan

October 2013

*Prepared with assistance from the VT SRTS Resource Center*

*SafeRoutesVT.org*

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## INTRODUCTION

This Travel Plan represents the work of the Killington Elementary School Safe Routes to School Team. Our school is a Bronze Level Partner with the Vermont Safe Routes to School Resource Center. We believe creating and maintaining this Travel Plan is a good way to ensure an on-going Safe Routes to School (SRTS) program at our school.

Our SRTS team 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 Killington Elementary School (KES). Our school team will use this document as a resource to plan our engineering, encouragement, education, enforcement, and evaluation efforts with assistance from the VT SRTS Resource Center.

The Vermont Agency of Transportation (VTTrans), through the VT SRTS Resource Center, has provided technical assistance in producing this plan. With the help of the Resource Center, we have identified infrastructure improvements and programmatic tactics 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

### 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*

grants and/or improvements initiated by the Town of Killington.

Members of the Killington Elementary School SRTS Team	
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<b>Jamie Sudol/ Susan Clarke</b> School Nurse	<b>Mona Colwell</b> Parent & Library Staff
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<b>Whit Montgomery</b> Chief of Police	<b>Jane Aiken</b> Parent
<b>Chet Haggbarth</b> Highway and Facilities Director	

## TEAM VISION

The SRTS program at KES aligns with the community’s efforts towards promoting walking 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 KES (and the surrounding neighborhoods) is:

- To be a school and community where more students of all ages safely bicycle and walk to school and bus stops
- To increase the numbers of students carpooling and bus riding
- To incorporate walking and biking life-long safety skills into school curricula
- To be a community where more residents and visitors can walk and bike to destinations safely
- To create safe routes for our existing walking school buses to and from school

This Travel Plan outlines KES’s intentions for making walking and biking to and from school and bus stops more sustainable and safer for students and the community. Through our

SRTS program we hope to reach 50% of our students participating in walking school bus events to school during year one. We believe this goal is attainable through encouraging more walking and biking in town, and through educating students on safe walking and biking practices.

## 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 SRTS program 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 that will complement and support our proposed engineering strategies.

Meeting Date	Content and Outcomes
May 2013	<p><b>Kick-off and Engineering</b></p> <ul style="list-style-type: none"> <li>- Awarded the planning assistance grant</li> <li>- Outlined the planning process</li> <li>- Observed arrival and dismissal</li> <li>- Conducted team visioning</li> <li>- Discussed opportunities and barriers</li> <li>- Conducted walk audit</li> </ul>
July 2013	<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>
October 2013	<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

### KILLINGTON ELEMENTARY SCHOOL AND TOWN OF KILLINGTON OVERVIEW

The Town of Killington is best known for the Killington Ski Resort, which is the major employer and economic generator for the town. The town is also home to two golf courses and several hiking routes, including a section of the Appalachian Trail. The town is 30,976 acres large, and has a year-round population of approximately 1,100 residents including 500 full time households and 960 registered voters. The town has up to 20,000 daily visitors in peak ski season,

Killington Elementary School is located on Schoolhouse Road in Killington, VT. The school is a K-6 grade public school with approximately 80 students. A private preschool for 3 and 4 year olds is also housed on the premises. Schoolhouse Road is a Class Three roadway. The speed limit on Schoolhouse Road is 25 mph and the speed limit on Killington Road is 35 mph. There are no sidewalks or shoulders on Schoolhouse Road. There is a sidepath on the west side of Killington Road between Butler Road and Schoolhouse Road. Generally, Killington is a rural town with very few pedestrian or bicycle facilities. VTrans reported the average daily traffic on Killington Road, between the terminus at the Killington Mountain and the intersection with West Hill Road to be 4,500, down from 5,000 in 2007. The Town is pursuing additional development near the base of Killington which will increase this number.

Killington Elementary became a VT SRTS partner in 2012, with an initial goal to improve walking and biking to school.

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 Killington as a walkable, bikeable, and sustainable community.



Context map of the school and Town of Killington

Several relevant projects planned or underway in Killington include:

- The Town plans to repave Killington Road between Route 4 and West Hill Road in 2014, and repave Killington Road between West Hill Road and the Pickle Barrel in 2015.
- Killington received a Transportation Enhancement grant in 2011 for the Killington Road Walkway between School House Road and West Hill Road. In May 2013, the Selectboard voted on a preferred alternative to have the walkway continue on the west side of Killington Road. It does not include the reconstruction of the intersection with West Hill Road. The project is expected break ground in 2014.
- The Town of Killington is currently working on a vision for the Killington Road corridor (report to be completed in spring of 2014). This study draws from existing plans to identify strategic improvements along Killington Road.
- The Town also recently completed a streetscape study for improvements to the intersection between Route 4 and Route 100 at the northern end of Killington Road, which recommended pedestrian crossing facilities and landscaping treatments to identify the entrance to the Killington Resort Area. This study also included alternatives for road improvements, one of which would reduce the travel lanes on Killington Road from three lanes to two lanes.

## CURRENT SCHOOL DEMOGRAPHICS

KES had a total of 81 students enrolled for the 2012-2013 school year. The school serves grades K-6. Killington Elementary School provides busing to all enrolled students. The building also houses a private preschool, which has both half day and full day students.

Demographic	Count	Percentage of student body
Free/Reduced Lunch	34	43%
Students with Disabilities	11	14%
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	3	3%
Students living within 1 mile of school	12	15%
Students living within 2 miles of school	25	30%

Students in grades K-3	44	54%
Students in grades 4-6	37	46%

### CURRENT STUDENT TRAVEL MODES

Travel Mode	Walk	Bike	School Bus	Family Vehicle	Carpool	Public Transit	Other
Percentage of Student Body (A.M.)	1%	0%	25%	68%	6%	0%	0%
Percentage of Student Body (P.M.)	1%	.7%	42%	52%	4%	0%	0%

Data based on SRTS Student Tallies administered Fall 2012.

### SCHOOL ARRIVAL AND DISMISSAL PROCEDURES

Killington Elementary 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 emailed to students' parents.

The morning bell for Killington Elementary School rings at 8:07 am. There is a grace period for students until 8:10 am due to the temporary late arrival of the school bus, which was rerouted after local damage from Hurricane Irene in 2011. The normal route will resume during the 2013 and 2014 school year when the bus will arrive at 8:00 am.

Buses arrive at school at 8:05 am, dropping students off on the north side of school.

Parents drive to the parking lot and either park in the back of the parking lot and walk with their



Bus drop-off during arrival

children to the front of the school, or pull up in front of the school (anywhere in front of the school; there is no queue or official drop off). Students walk to the front of the school from their parents' cars, sometimes accompanied by the parents, sometimes alone. The principal stands at the front of the school greeting children as they approach the building.

Students riding the bus gather at the school doors at 2:55 pm and are dismissed when the school bus arrives. Students who are picked up by parents are dismissed when the principal sees the parents in the parking lot. Once dismissed to parents, students may play in one or both of the two play islands (The Sugar Shack and Kids Kingdom) in the center of the parking lot. School staff reported that students cross from the front of the school to and from the two islands amongst the traffic from parents picking up students. This activity creates opportunities for potential collisions, especially in the area between the two islands where cars drive through to park in the back of the lot or to turn around after picking up their children.

Preschool students arrive between 8:00 and 9:00 a.m. and are dismissed between 11:30 am and 4:00 pm.

Arrival		
Travel Mode	Procedure	Time
Walk	None observed School reported two students walk regularly	7:50 a.m. and 8:10 a.m.
Bike	None observed School reported one regular biker	7:50 a.m. and 8:10 a.m.
School Bus	Arrive at designated times	8:05 a.m.
Family Vehicle	Arrive staggered. Tardy by 8:10	7:50-8:10 a.m.
Dismissal		
Travel Mode	Procedure	Time
Bus	Dismissed through front door	2:55 p.m.
Family Vehicle	Dismissed when parents are visible to principal	3:00 p.m.

Walk	None observed	3:00 p.m.
Bike	None observed	3:00 p.m.

## EXISTING TRAVEL HABITS

The only means of formal access to the school is via Schoolhouse Road, a Class 3 road with no sidewalks.

Twenty-five percent of students ride the bus to school – the majority of whom are driven to a bus stop by their parents.

15% of children live within 1 mile of the school, which is considered a typical walking distance. 30% of students live within two miles of the school, which is considered a typical biking distance for elementary school children.



Schoolhouse Road approaching KES

On May 29, 2013, (the day of our safety observation) no students were observed bicycling or walking to school. Although KES only has three students who routinely walk or bike to school, the first Walk to School Events in May and June of 2013 had high student participation rates of 62% and 30% respectively. The team intends to use walking school buses as the primary means of allowing students who do not live within walking distance of the school to make walking a part of their daily or weekly commute.

The SRTS team identified the following barriers to walking to school based on the results of Parent Surveys conducted in November 2012:

- Distance
- Speed of Traffic along Route
- Amount of Traffic along Route
- Sidewalks or Pathways Not Present along Route
- Safety of Intersections and Crossings along Route
- Weather or Climate
- Availability of Adults to Bike or Walk with

- Time
- Convenience of Driving
- Absence of Crossing Guards along Route
- Child’s Participation in after School Programs
- Violence or Crime

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 enact in the upcoming school year, 2013-2014.

## KEY ISSUES

The team identified the following barriers when developing this Travel Plan:

*Issue: A high number of parents drive their children to school resulting in a chaotic atmosphere in the school parking lot at arrival and dismissal times.*

The volume of vehicular traffic in the school parking lot, combined with haphazard stopping and idling behavior by drivers creates a dangerous atmosphere for pedestrians and bicyclists.



Parents drive or park/idle cars in area between two play spaces

*Issue: The lack of separation between children’s play areas and traffic zones in the parking lot creates opportunities for pedestrian/vehicle conflicts.*

The parking lot is used widely as a play area by children, even during arrival and dismissal when there is a significant volume of vehicles driving through the parking lot. Students run through the parking lot from the school entrance, the basketball court, “gaga pit,” and two play islands in



Children’s play areas in center of parking lot

the center of the parking lot. There is little existing codification of who uses the space when, which causes potential conflicts between users.

*Issue: The Town of Killington lacks designated pedestrian facilities on almost all roads, with the exception of part of Killington Road.*

Killington is a rural town with few pedestrian and bicycle accommodations (there is an existing bicycle lane on River Road for 1 mile). While low-volume dead-end roads may be safe routes for children to walk and bike to school, the main roads that lead to the school lack safe accommodations. At the time of this report, the Killington sidepath is accessible only to pedestrians and there are no bicycle lanes on Killington Road.

*Issue: There are no bicycle parking structures at the bus stops.*

The majority of students live beyond a typical bicycling distance from the school, however, many of these students live within bicycling distance of a bus stop. Once at the bus stop, there are no places to park the bicycle before boarding the school bus.

*Issue: There is inadequate school zone signage approaching KES.*

School zone signage on Schoolhouse Road approaching KES is not visible to cars. Existing signage is of an obsolete, non-reflective style, and some signs are obscured by foliage.

*Issue: The route used by KES for Walk to School Day requires students to travel through private property to access the school.*

Miller Brook and Hemlock Ridge Roads, which have lower traffic volumes than Schoolhouse Road, were selected as the Walk to School Day route. However, the only connection from these roads to the school is an informal, non ADA compliant path through the woods. Use of this path requires students to travel on and through private property. The private residences along Hemlock Ridge Road where the path is located serve primarily as tourist vacation rentals, with few year-round residents.



Schoolhouse Road, the only access road to KES

The school champion obtained permission from the condominium property management company to access the informal path via the condominium property for the 2013 Intergenerational Walk and Bike to School Day. The school champion secured an informal

agreement with the property management company to continue to use the pathway for walking to school for large events, as long as dates of use and permission are provided beforehand. Parents and students in small groups can use the informal path on a regular basis. Students should not use this path without adult supervision. Important to note: Vermont's landowner liability statutes protect landowners from liability in cases like this. The general statute (12 V.S.A. Section 5791) says that no owner is liable for any property damage or personal injury to a person who uses the property for recreation, providing a fee is not charged. Walking to school may be considered a recreational activity as well as a transportation activity. See **Appendix L** for more details.

*Issue: There are no pedestrian facilities connecting student homes to bus stops.*

Twenty-five percent of students arrived by school bus, and forty-two percent of student departed by school bus during the 2012-2013 school year. The majority of students are driven to bus stops by their parents, due to lack of pedestrian facilities on the rural roads where most students live. The area's very low residential densities limit the feasibility of sidewalk investments on these roads. Bus stop locations can be found in **Appendix D**.

## OVERVIEW: TRAVEL PLAN RECOMMENDATIONS

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

### 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**.

### 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**. Additional information on how to begin implementing the infrastructure recommendations can be found in **Appendix H**.

### 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**.

### 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**.

### Selecting School Bus Stop Locations

The National Center for Safe Routes to School and the Pedestrian and Bicycle Information Center outline best practices and examples in their guide *Selecting School Bus Stop Locations*. The guide exists to help schools determine bus stop locations that will encourage safe walking and biking to and from bus stops, and is included in this plan as **Appendix K**.

## 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 walking and biking skills. Our education activities this year include:

- Provide educational materials in backpack mail on walking and bicycling safety and proper helmet use and fit.
- Provide education materials for parents in the school newsletter regarding proper drop-off procedures and general safe-driving behaviors.

- Publish an article in the local newspaper about Walk to School Day events including safety tips.
- Incorporate WalkSmart/BikeSmart Vermont! Curriculum into 2013/2014 school year. K-6 will participate in Introduction to Walking in the fall, with a special focus for K-2 on Halloween safety. K-4 will participate in the Walk Smart curriculum in the spring.
- Teach the BikeSmart curriculum in PE class starting in the 2013/2014 school year. The curriculum will include a full day on bike safety, including bike inspections, helmet fittings, and discounted helmet offerings. The town constable will be invited to help with the event. Both BikeSmart and WalkSmart will be incorporated in KES's Superstar Program.
- Hold a bike rodeo, possibly at the Recreation Center, in the spring, and possibly in partnership with Woodstock Elementary School or the City of Rutland. KES will request use of the SafeKids Regional Rodeo Kit through the VT SRTS Resource Center.
- Broadcast walking safety video at school events and include a link in the school newsletter (<http://www.pedbikeinfo.org/pedsaferjourney/>) and on the school website.
- Share school travel plan with Select Board, local paper, school board, planning commission, and recreation commission, if determined by the school, parent board, and SRTS Champion not to pose security risks for the school or students
- Provide crossing guard education for volunteers. Crossing guards must be at least 18 years of age and should wear a retro-reflective safety vest while on duty.
- Offer Parents Education Video on school website and newsletter.
- Provide a retro-reflective safety vest for the principal to wear during school arrival and dismissal periods to improve visibility to parents and students and to command attention as needed.
- Formalize use of the loop and play areas by time and purpose. Only permit buses in loop immediately adjacent to the school building. Assign children's play time within the Kids Kingdom and adjacent painted asphalt area (see engineering recommendations) to times when the bus loop is not active. Prohibit play in this area during pick up and drop off to reduce hazards created by children playing in the midst of pick up and drop off activities.

## 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. In 2013, KES held their first walking school bus event for Vermont Walk and Roll to School Day. 50 students participated. The school held a second walking school bus event in June where 25 students participated. Our encouragement activities this year will include:

- Host Monthly Walk to School Days (September-December, and April-June), supported by Active Seniors and KEEPERS volunteers to escort children and serve as crossing guards at the school entrance.
- Encourage students to create reminder posters with safety messages for Walk and Roll to School Day that can be posted in the school and along the driveway entrance.
- Coordinate with police to implement a “Caught Being Good” program to reward positive biking and walking behavior.
- Give small prizes for Walk to School day participants and for students who return the parent survey.
- Challenge students and staff to “walk” to Killington, England. Establish a park and walk site at Casey’s Caboose for arrival, and possibly a remote bus drop-off site.
- Move bike racks to front of school and encourage students to decorate bike racks to foster ownership and increase usage.
- Hold “Walk Across America” Challenge in 2013-2014 school year.
- Explore opportunities for remote drop off at school bus stops.

## ENFORCEMENT STRATEGIES

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

- Work with local law enforcement officers to communicate and address unsafe motorist behaviors.
- Provide positive reinforcement to students displaying safe and healthy behaviors (Caught Being Good Program).
- Coordinate with local law enforcement on event days.
- Place speed trailers on Schoolhouse road approaching the curve prior to the school.

## 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). We first administered these in October 2012, which provided baseline information on student travel behavior. Parent

surveys will help us measure the effectiveness of SRTS efforts over time and were completed in November 2012.

We will continue to conduct annual walk audits 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	Betsey Bianchi	Annually
Student Tallies	Betsey Bianchi	Annually
Walk Audits	SRTS Team	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 and efficiency 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 between Killington Elementary School, the Town of Killington, and potentially the Vermont Agency of Transportation (VTTrans) to implement the projects. The following short, medium, and long 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 Killington Elementary 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](https://saferoutes.vermont.gov/getting_started/funding).

## APPENDICES

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APPENDIX A

NON-INFRASTRUCTURE STRATEGIES CALENDAR

Appendix A: Non-Infrastructure Strategies Calendar																	
Activity		May 2013	June 2013	July 2013	Aug 2013	Sept 2013	Oct 2013	Nov 2013	Dec 2013	Jan 2014	Feb 2014	March 2014	April 2014	May 2014	Jun 2014	July 2014	Aug 2014
<b>EDUCATION</b>																	
Provide educational materials in backpack mail and on website on walking and bicycling safety and proper helmet fit.																	
Lead	Sheila Pilsmaker																
Plan																	
Implement																	
Provide education materials for parents in the school newsletter regarding proper drop-off procedures and general safe-driving behaviors.																	
Lead	Sheila Pilsmaker																
Plan																	
Implement																	
Publish an article in the local newspaper about Walk to School Day events including safety tips and the completion of the school travel plan.																	
Lead	Betsey																
Plan																	
Implement																	
Incorporate Walk Smart/Bike Smart Vermont! Curriculum into 2013/2014 school year. K-2 6 will participate in Introduction to Walking in the fall, with a special focus for K-2 on Halloween safety. K-4 will participate in the Walk Smart curriculum in the spring.																	
Lead	Jamie Sudul																
Plan																	
Implement																	
Teach the BikeSmart curriculum in PE class or after school starting in the 2013/2014 school year. The curriculum will include a full day on bike safety, including bike inspections, helmet fittings, and discount helmet offerings. The local police department and local bicycle shop will be invited to help with the event.																	
Lead	Jamie Sudul																
Plan																	
Implement																	
Hold a bike rodeo, possibly at the Recreation Center, in the spring, and possibly in partnership with Woodstock Elementary School or the City of Rutland. KES will request use of the SafeKids Regional Rodeo Kit through the VT SRTS																	
Lead	Lindsey Gange / Betsey Bianchi																
Plan																	
Implement																	
Broadcast walking safety video at school events and include a link in the school newsletter ( <a href="http://www.pedbikeinfo.org/pedsaferjourney/">http://www.pedbikeinfo.org/pedsaferjourney/</a> ) and on the school website.																	
Lead	Betsey Bianchi																
Plan																	
Implement																	
Share school travel plan with Select Board, local paper, school board, planning commission, and recreation commission.																	
Lead	Betsey Bianchi																
Plan																	
Implement																	
Provide crossing guard education for volunteers.																	
Lead	Betsey Bianchi																
Plan																	
Implement																	
Offer Parents Education Video on school website and newsletter																	
Lead	Chris Bianchi																
Plan																	
Implement																	

Activity	May 2013	June 2013	July 2013	Aug 2013	Sept 2013	Oct 2013	Nov 2013	Dec 2013	Jan 2014	Feb 2014	March 2014	April 2014	May 2014	Jun 2014	July 2014	Aug 2014
<b>ENCOURAGEMENT</b>																
Host Monthly Walk to School Days (September-December, and April-June), supported by Active Seniors and KEEPERS volunteers to escort children and serve as crossing guards at the school entrance.																
<i>Lead</i>	Mona Colwell															
<i>Plan</i>																
<i>Implement</i>																
Encourage students to create reminder posters for Walk and Roll to School Day.																
<i>Lead</i>	Student Council															
<i>Plan</i>																
<i>Implement</i>																
Coordinate with police to implement a "Caught Being Good" program, to reward positive biking and walking behavior.																
<i>Lead</i>	Whit Montgomery															
<i>Plan</i>																
<i>Implement</i>																
Give small prizes for Walk to School day participants and for students who return the parent survey.																
<i>Lead</i>	Betsey															
<i>Plan</i>																
<i>Implement</i>																
Establish park and walk site at Casey's Caboose for arrival, and possibly a remote bus drop-off site.																
<i>Lead</i>	School Board															
<i>Plan</i>																
<i>Implement</i>																
Challenge students and staff to "walk" to Killington, England.																
<i>Lead</i>	Student Council															
<i>Plan</i>																
<i>Implement</i>																
Move bike racks to front of school and encourage students to decorate bike racks to foster ownership and increase usage.																
<i>Lead</i>	Lisa and Kaija															
<i>Plan</i>																
<i>Implement</i>																

Activity	May 2013	June 2013	July 2013	Aug 2013	Sept 2013	Oct 2013	Nov 2013	Dec 2013	Jan 2014	Feb 2014	March 2014	April 2014	May 2014	Jun 2014	July 2014	Aug 2014
<b>ENFORCEMENT</b>																
Work with local law enforcement officers to communicate and address unsafe motorist behaviors better.																
Lead	Loren Pepe															
Plan																
Implement																
Provide positive reinforcement to students displaying safe and healthy behaviors (Caught Being Good Program).																
Lead	Whit Montgomery															
Plan																
Implement																
Coordinate with local law enforcement on event days.																
Lead	Betsey Bianchi															
Plan																
Implement																
Place speed trailers along school house road.																
Lead	Betsey Bianchi and Whit Montgomery															
Plan																
Implement																
<b>EVALUATION</b>																
Administer parent surveys annually to capture opinions of new parents and changes in overall parental perceptions.																
Lead	Betsey Bianchi															
Plan																
Implement																
Collect student tally data each year to measure progress toward goals.																
Lead	Betsey Bianchi															
Plan																
Implement																
Keep the SRTS Travel plan updated and use it as a tool for increased SRTS activities.																
Lead	Betsey Bianchi															
Plan																
Implement																

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.

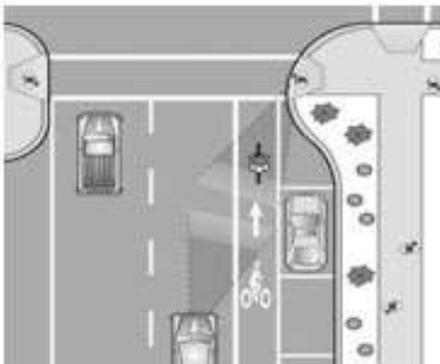


### Rectangular Rapid Flashing Beacons:

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

## Appendix C: Location-Specific Engineering Recommendations

SRTS engineering strategies create safer environments for walking and bicycling to school through improvements to the infrastructure surrounding them. 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 table provides a summary of the engineering strategies recommended for Killington Elementary School. These recommendations were developed by Toole Design Group, LLC based on input from the Killington Elementary SRTS Team. The table includes an estimate of the amount of time that is likely to be 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 Killington Elementary 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. It is our hope that our recommendations can be the basis for grants and/or improvements initiated by the Town of Killington.**

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

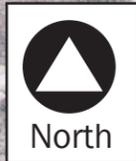
## State of Vermont Classification

**Class 1:** Form extensions of State Highways and are numbered as such.

**Class 2:** Form connections from town to town, and/or carry a more significant volume of traffic than other roads in town.

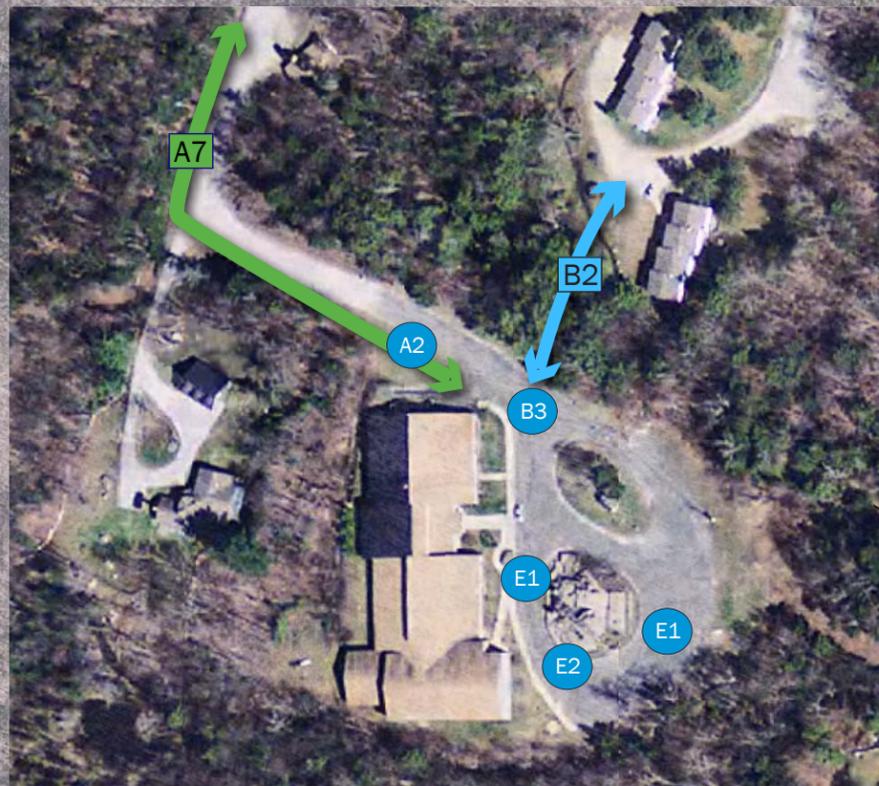
**Class 3:** All other traveled roads receiving State Aid funds.

Street name	Classification of Town Highways	Speed Limit	Curb/No curb	85 <sup>th</sup> percentile	Average speed	ADT
Killington Road	Class Two Town Road	35	Partial curb – paved	No data available	No data available	4500
Schoolhouse Road	Class Three Town Road	25	No curb – paved	No data available	No data available	No data available
Hemlock Ridge Road	Class Three Town Road	25	No curb – paved	No data available	No data available	No data available
Miller Brook Road	Class Three Town Road	25	No curb – paved	No data available	No data available	No data available
Dean Hill Road	Class Three Town Road	25	No curb – paved	No data available	No data available	No data available
West Hill Road	Class Two Town Road	25	No curb – paved	No data available	No data available	No data available



NOTE: Killington Road intersects with Route 4 in approximately 1,500 feet north

Additional improvements at northern bus stops



Killington Elementary School Detail

Killington Elementary School

See detail

# Killington Elementary School Location Key

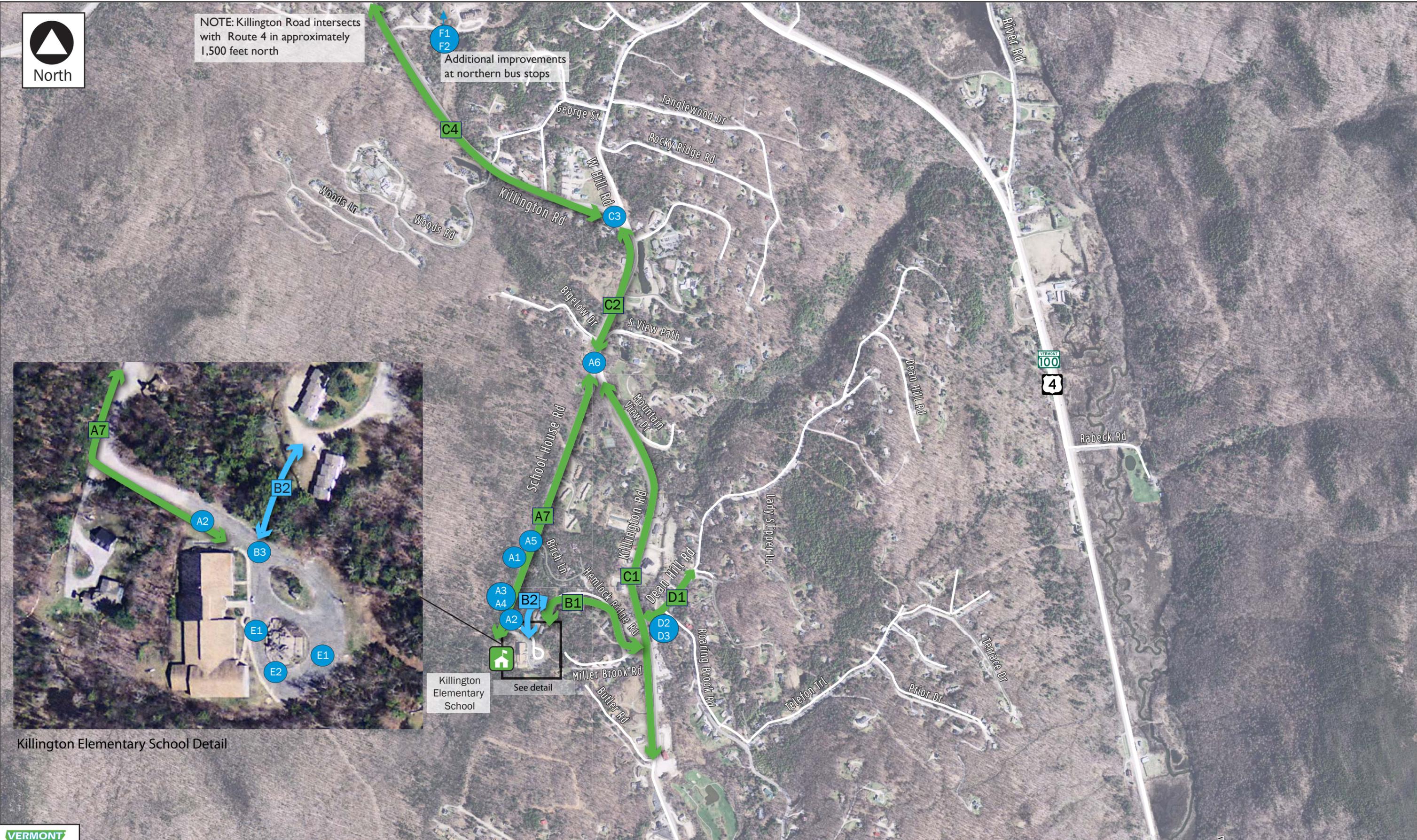
Killington, VT  
October 2013

School Location

Proposed Off-Street Path

Segment Improvement

Intersection/Spot Improvement



Site	Need	Recommendation	Time Frame	Ranking Factors	Team Priority
<p><b>A</b></p> <p><b>Schoolhouse Road</b></p> <p>Schoolhouse Road is a Class Three road with two twelve-foot travel lanes and no shoulders.</p> <p>The posted speed limit is 25 mph from Killington Road.</p> <p>Schoolhouse Road is approximately 3000 feet long and ends at the KES parking lot.</p>	<p>Schoolhouse Road is currently the only formal access point to KES. Despite being a dead-end local road, a lack of visual cues create a highway feel. Vehicles were observed traveling at excessive speeds along the road.</p> <p>The end of Schoolhouse Road turns nearly 90 degrees just before entering the school parking lot. Students may be present in the parking lot near the school and are put at risk by vehicles turning the corner unaware.</p> <p>There is a lack of visible signage or warnings to alert drivers to the presence of a school at the end of Schoolhouse Road.</p>	A1. Work with local police to install speed feedback trailer and speed limit sign on the approach to Killington Elementary School on Schoolhouse Road for a trial period.	Long term	<input checked="" type="checkbox"/> <i>Safety concerns</i> <input checked="" type="checkbox"/> <i>Priorities for the school community</i> <input checked="" type="checkbox"/> <i>Walking or biking route</i>	High
		A2. Install a gateway sign at the entrance of Killington Elementary School, near the mailboxes to alert drivers to the presence of the school.	Short term		Medium
		A3. Replace existing "SCHOOL ZONE" signs with high-intensity reflective signs 200 feet from the entrance of the school (S1-1).	Short term		High
		A4. Install "SCHOOL ZONE" pavement markings adjacent to the sign enforcement on Schoolhouse Road approaching the school.	Short term		High
		A5. Replace existing advanced warning "SCHOOL ZONE" signs 1,200 feet from the turn at end of Schoolhouse Road approaching the school with high-intensity "SCHOOL ZONE AHEAD" (S1-1 and W16-9P).	Short term		High
		A6. Install a high-visibility, durable, block-pattern crosswalk across Schoolhouse Road at the intersection with Killington Road, connecting with the existing sidewalk on the south side of the intersection. Construct ADA-compliant curb ramps at both ends of the crosswalk. See C2 and A7.	Long term		Medium
					C-3

Site	Need	Recommendation	Time Frame	Ranking Factors	Team Priority
<b>A</b>  <b>Schoolhouse Road</b> (cont.)		A7. Investigate opportunities to improve bike and pedestrian infrastructure on School House Road. Implementing improvements will require necessary easements, permits, and parcel ownership verification.	Long term	<input checked="" type="checkbox"/> <i>Safety concerns</i>  <input checked="" type="checkbox"/> <i>Priorities for the school community</i>  <input checked="" type="checkbox"/> <i>Walking or biking route</i>	Medium
					C-4

Site	Need	Recommendation	Time Frame	Ranking Factors	Team Priority
<p><b>B</b></p> <p><b>Hemlock Ridge Road / Miller Brook Road</b></p> <p>Hemlock Ridge and Miller Brook Roads are paved Class Three roads. They are each 24-foot wide two-way roads without striping. The speed limit on each is 25 mph.</p> <p>Hemlock Ridge Road terminates at a condominium complex rented primarily during the winter ski season. An informal path through the wooded area adjacent to the complex connects the roadway directly to the school parking lot.</p>	<p>Hemlock Ridge and Miller Brook Roads serve as a walking school bus route originating at Casey's Caboose. Students walk from the parking lot of Casey's Caboose, under supervision, up Miller Brook Road to Hemlock Ridge Road and through the wooded pathway into the school parking lot.</p> <p>The roadways lack appropriate pedestrian facilities. The pathway connecting Hemlock Ridge Road to the school grounds is informal and not ADA-compliant.</p>	<p>B1. Stripe a two-foot shoulder on either side of Hemlock Ridge Road; and shoulders on either side of Miller Brook Road from Killington Road to Hemlock Ridge Road. Work with the Town to ensure that the shoulders will be completely plowed and clear of snow through the winter.</p>	<p>Medium term</p>	<p><input checked="" type="checkbox"/> <i>Safety concerns</i></p> <p><input checked="" type="checkbox"/> <i>Priorities for the school community</i></p> <p><input checked="" type="checkbox"/> <i>Walking or biking route</i></p>	<p>High</p>
		<p>B2. Construct an ADA-compliant off-road path connecting the end of Hemlock Ridge Road to the school grounds. New path connections will require necessary easements, permits, and parcel ownership verification. Pathways utilizing VT public right-of-way must also be ADA-compliant year round, including snow removal. Lighting should be provided for security along the path after consulting with the condominium association.</p>	<p>Medium term</p>		<p>High</p>
		<p>B3. In conjunction with the completion of the off-road path, install a high-visibility, durable, block pattern crosswalk from the end of the off-road pathway to the existing sidewalk running along the east side of the school building. Construct ADA-compliant curb ramps at both ends of the crosswalk. Install a corresponding pedestrian warning sign (warranted at all crosswalks not controlled by a stop sign or traffic signal). Include a movable in-street pedestrian sign (R1 6c) at the crosswalk, to be removed during non-daylight hours and inclement weather.</p>	<p>Medium term</p>		<p>High</p> <p>C-5</p>

Site	Need	Recommendation	Time Frame	Ranking Factors	Team Priority
<p><b>C</b></p> <p><b>Killington Road</b></p> <p>Killington Road is the main road through Killington, connecting Route 4 to the Killington Mountain Ski Area. It is a Class Two road with a speed limit of 35 mph.</p> <p>An asphalt-paved pathway exists along the west side of the road from Schoolhouse Road to the Killington Mountain Ski Resort.</p> <p>There are signals at Dean Hill Road and West Hill Road.</p>	<p>Much of Killington Road lacks pedestrian facilities for walking along or crossing the road.</p>	<p>C1. Work with the Town to allow bicycle access on the existing segment of sidepath. If necessary, install signage explaining pathway rules or etiquette and post bicycle speed limits as needed.</p>	<p>Short term</p>	<p><input checked="" type="checkbox"/> <i>Safety concerns</i></p> <p><input checked="" type="checkbox"/> <i>Priorities for the school community</i></p> <p><input checked="" type="checkbox"/> <i>Walking or biking route</i></p>	<p>High</p>
	<p>Vehicles were observed to travel on the road at a high-rate of speed. The slope and frequent curves in the road limit sightlines and create the potential for conflict between vehicles and crossing pedestrians or those bicycling on the road.</p>	<p>C2. Extend the sidewalk on Killington Road to West Hill Road per the Select Board approved alternative.</p>	<p>Medium term</p>		<p>High</p>
	<p>On the existing sidepath, signage explicitly prohibits bicycles from using the path and there are no existing on-road bike lanes.</p>	<p>C3. With construction of the sidewalk extension, install high-visibility, durable, block-pattern crosswalk across Killington Road at West Hill Road. Add pedestrian indications to existing signal and ADA-compliant curb ramps as necessary.</p>	<p>Medium term</p>		<p>High</p>
	<p>The Town recently voted to select a preferred alternative for the Killington Walkway Transportation Enhancement Grant. The walkway will be continued on the west side of Killington Road from School House Road to West Hill Road. The project does not include the reconstruction of the intersection at West Hill Road. (Killington Walkway Alternatives, DuBois and King, 2013).</p>	<p>C4. Extend the existing sidepath from the future terminus at West Hill Road to the intersection of Killington Road and US Route 4 on the east side of Killington Road.</p>	<p>Long term</p>		<p>Low</p> <p>C-6</p>

Site	Need	Recommendation	Time Frame	Ranking Factors	Team Priority
<p><b>D</b></p> <p><b>Dean Hill Road</b></p> <p>Dean Hill Road is a Class Three residential road which intersects with Killington Road near the school.</p> <p>The road is approximately 34 feet wide at the intersection with Killington Road, narrowing to 24 feet at the intersection with Roaring Brook Road to the east.</p> <p>There is a signal on Killington Road at Dean Road which is operational during the ski season.</p>	<p>Dean Hill Road serves as a connection for all of the residential roads near the school between Killington Road on the west and US Route 4 on the east.</p> <p>Students and a substantial number of seasonal visitors who stay in the residential area to the east of Killington Road would benefit from a safe, signalized crossing to reach the path on the west side of Killington Road in order to walk to the restaurants and shops along the road. There are very few crossing opportunities on Killington Road.</p> <p>Additionally, there is not a logical pedestrian network connecting the residences and connected streets on Dean Hill Road to the Killington Road path. There is a need for appropriate pedestrian facilities on Dean Hill Road to complete this connection.</p>	<p>D1. Between Killington Road &amp; Roaring Brook Road, either install a sidewalk on one side (the north side is preferred at the conceptual level, though investigation is required), or stripe at least 3' wide shoulders on both sides.</p> <p>Widen shoulders between Roaring Brook Road and McClallen Road on both sides to 3' and investigate the need for sidewalks to extend to McClallen Road.</p>	Medium term	<input checked="" type="checkbox"/> <i>Safety concerns</i> <input checked="" type="checkbox"/> <i>Priorities for the school community</i> <input checked="" type="checkbox"/> <i>Walking or biking route</i>	Low
		<p>D2. Maintain signal operation at Killington Road during all school months. Install a high-visibility, durable, block pattern crosswalk across Killington Road at the intersections with Dean Hill Road. Construct an ADA-compliant curb ramp on the west side of the crosswalk to connect the crosswalk to the existing side path on Killington Road.</p>	Medium term		Low
		<p>D3. If recommendation D1 results in sidewalk on the south side of Dean Hill Road, install a high visibility, durable, block pattern crosswalk across Dean Hill Road at Killington Road, connecting the shoulders on either side of the Dean Hill Road (D2).</p>	Medium term		Low
					C-7

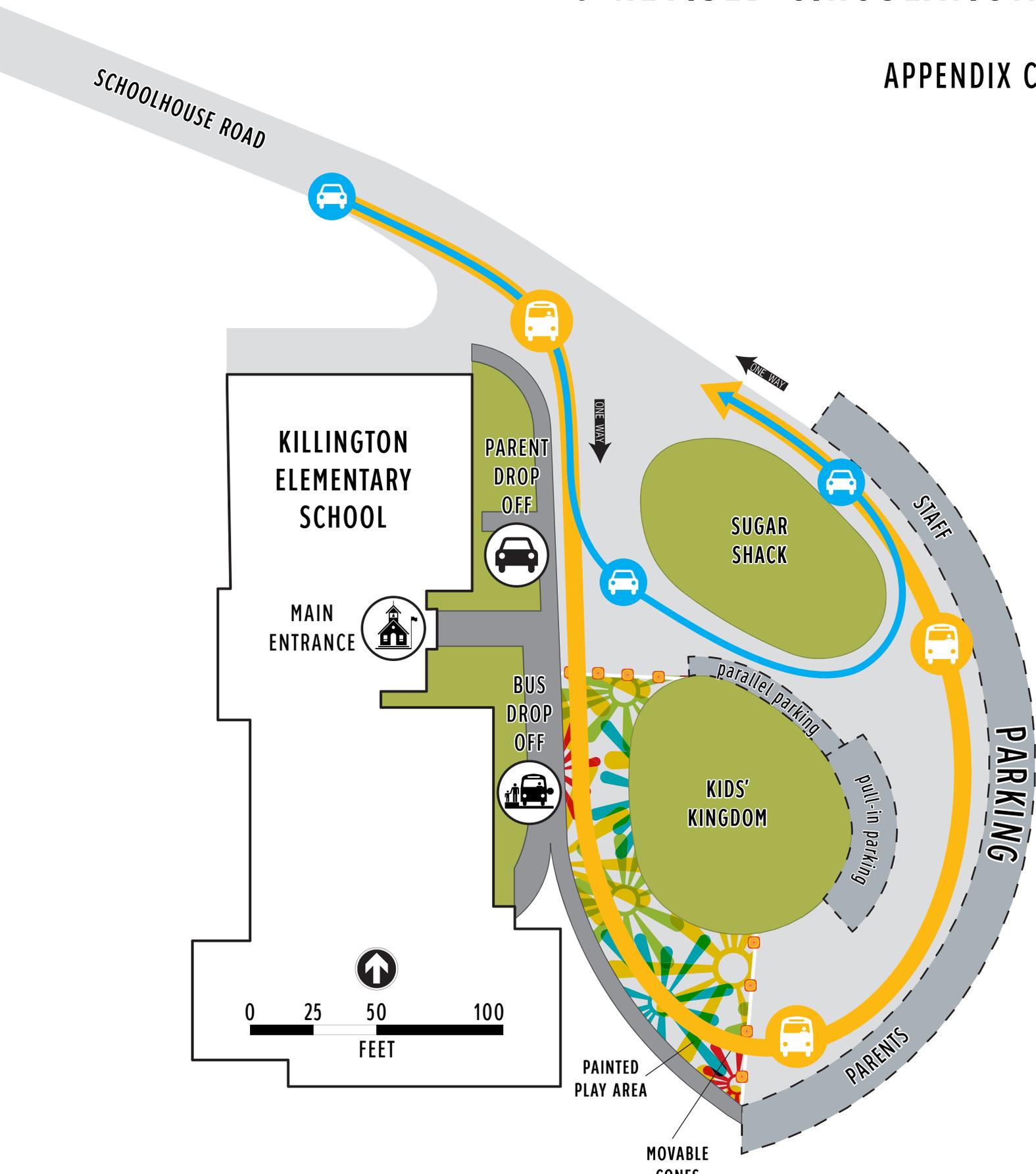
Site	Need	Recommendation	Time Frame	Ranking Factors	Team Priority
<p><b>E</b></p> <p><b>KES Parking Lot</b></p> <p>The KES parking lot has two play areas in the center of the lot. Cars and buses enter the lot and circle around both play areas during arrival and dismissal periods.</p>	<p>While traffic was observed to be slow, children run through the parking lot to play, which could lead to conflicts.</p> <p>There is a need to separate children’s play areas from traffic to improve safety in the school parking lot during arrival and dismissal periods.</p>	<p>E1. Place rolling planters, cones, or movable bollards on the eastern edge of the basketball court and the northwestern side of the Kids Kingdom to create a barrier between the parking area and play area.</p> <p>Temporary barriers serve the purpose of defining who owns the space when, reducing the potential for conflicts. Barriers can be moved during bus pick-up and drop-off to allow the bus to drive around the Kids Kingdom, while creating a space for play throughout the day. The temporary barriers can also be removed for evening or weekend events.</p>	Short term	<p><input checked="" type="checkbox"/> <i>Safety concerns</i></p> <p><input checked="" type="checkbox"/> <i>Priorities for the school community</i></p> <p><input checked="" type="checkbox"/> <i>Walking or biking route</i></p>	High
		<p>E2. Paint the asphalt area between the temporary barriers and the entrance of the school, adjacent to the Kids Kingdom to indicate a play area for children only. Students can paint the asphalt as a way to create ownership of the area.</p>	Long term		High

C-8

Site	Need	Recommendation	Time Frame	Ranking Factors	Team Priority
<p><b>F</b></p> <p><b>Bus stops</b></p> <p>There are thirteen bus stops for KES students located on Killington Road, Route 100, Route 4, and River Road.</p>	<p>Many students live within a typical bicycling distance to a bus stop. There are no bicycle parking accommodations for students who may want to ride a bicycle to their bus stop.</p>	<p>F1. Install two hitch-style bicycle racks at each bus stop. Installation will require environmental review and permitting.</p>	<p>Short term</p>	<p><input checked="" type="checkbox"/> <i>Priorities for the school community</i></p> <p><input checked="" type="checkbox"/> <i>Walking or biking route</i></p>	<p>Medium</p>
		<p>F2. Evaluate the bus stop locations using guidance from <i>SRTS Selecting Bus Stop Locations Guide</i> to plan bus stop locations for upcoming school year.</p> <p>Some suggestions include:</p> <ul style="list-style-type: none"> <li>• Home-side loading (routing the bus so students do not have to cross the street).</li> <li>• Locating bus stops in areas with 750 feet of visibility in both directions on roads with a speed limit over 35 mph.</li> <li>• Locating the bus stop in a well lit area.</li> </ul>	<p>Short term</p>		<p>Medium</p> <p>C-9</p>

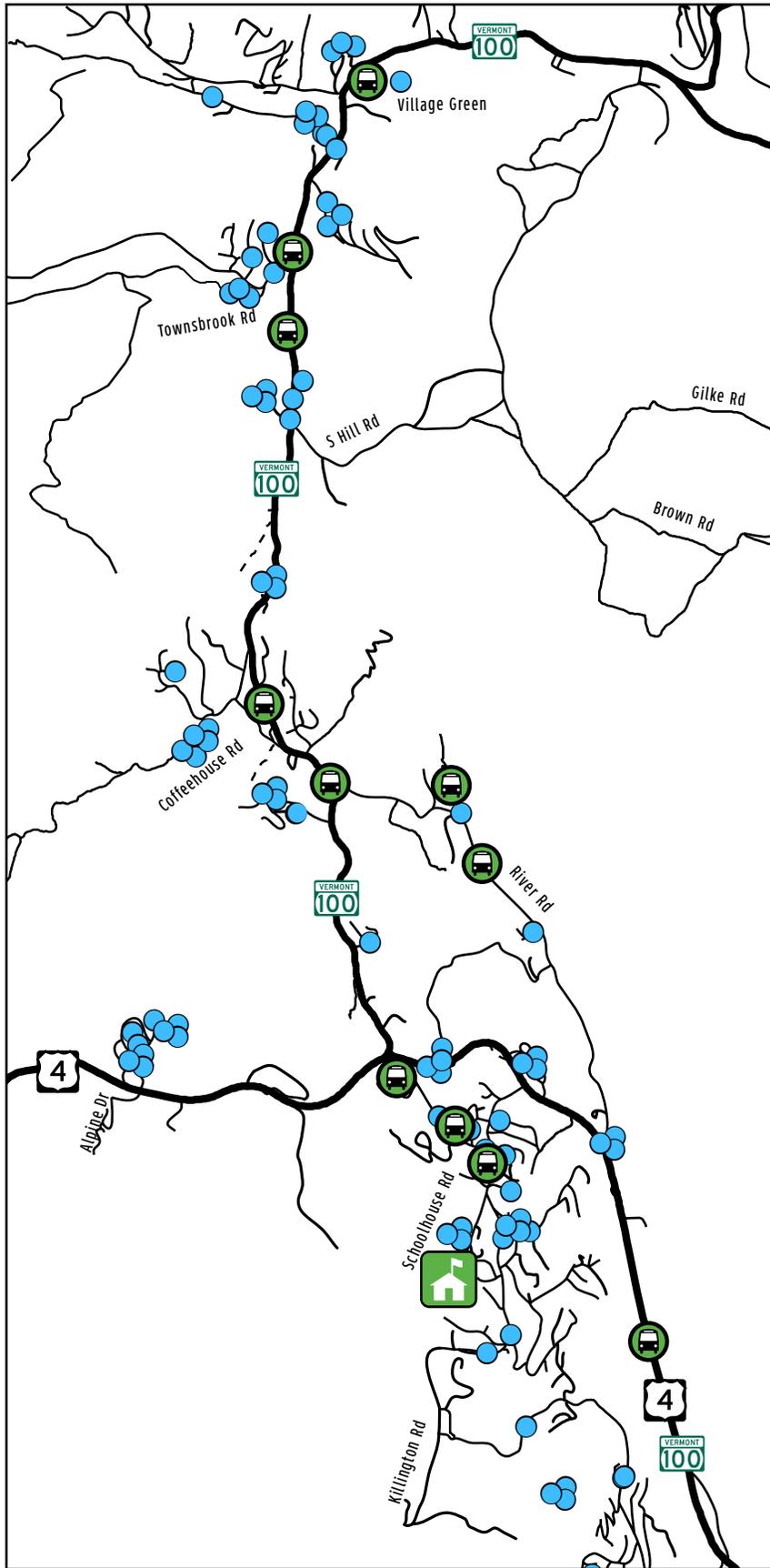
# CONCEPTUAL PARKING LOT PLAN & REVISED CIRCULATION

## APPENDIX C



APPENDIX D

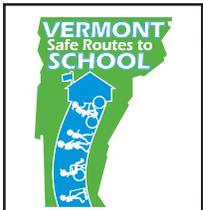
BUS STOP AND STUDENT LOCATOR



# Student Locations and Bus Stops

Killington, VT  
June 2013

-  Student Home
-  School Location
-  Bus Stop



APPENDIX E

KILLINGTON ELEMENTARY SRTS ENROLLMENT FORM

[View Summary](#)

[Browse Responses](#)

[Filter Responses](#)

[Crosstab Responses](#)

[Download Responses](#)

[Share Responses](#)

Default Report ▾

Displaying 30 of 31 respondents

**Response Type:**  
Normal Response

**Collector:**  
VT SRTS Enrollment Form  
(Web Link)

**Custom Value:**  
*empty*

**IP Address:**  
75.147.37.193

**Response Started:**  
Saturday, September 15, 2012 9:57:23 AM

**Response Modified:**  
Saturday, September 15, 2012 10:05:45 AM

**1. Please provide your contact information below:**

---

Name: - Loren Pepe

---

Title: - Principal

---

School: - Killington Elementary School

---

Address: - 686 Schoolhouse Road

---

City/Town: - Killington

---

ZIP: - 05751

---

Email Address: - lpepe@wcsu.net

---

Phone Number: - 802-422-3366

---

**2. Does your school have an existing Safe Routes to School Program?**

---

No

---

**3. If yes, please check the SRTS Elements of your school's current program:**

---

No Response

---

**4. A School Travel Plan is a written document that outlines a school community's intentions of making walking and biking to and from school more sustainable and safe. The plan is completed through a team-based process and will be the school community's guiding document for putting a successful Safe Routes to School program in action. Would you like your school to be considered for hands-on Travel Plan assistance offered by the Resource Center?**

---

Yes

---

**5. How many students attend this school? Please list total student population by grade.**

---

K - 10

---

1 - 13

---

2 - 07

---

3 - 14

---

4 - 10

---

5 - 15

---

6 - 12

---

7 - 0

---

8 - 0

---

Total - 81

---

**6. Approximately what percentage of students live within:**

---

1 mile of school - 10%

---

**7. Approximately how many students currently:**

Walk to school - 4%

Bike to school - 0

**8. How many crossing guards are assigned to this school? If none, please provide details if school staff, volunteers, student safety patrols, etc help to cross students.**

None

**9. Please mark the stakeholders that will participate in the SRTS program:**

Principal

Parents

School Staff

Community Organization

Local Planning or Engineering Department

**10. I have received the support from my school's principal to pursue a Safe Routes to School program**

Yes

Loren Pepe, Principal

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[Use Cases](#) • [Customer Feedback](#) • [Product Feedback](#) • [Market Research](#) • [Employee Satisfaction](#) • [Performance Reviews](#) • [Healthcare Surveys](#) • [Event Planning](#)  
[Education Surveys](#) • [Non Profit Surveys](#) • [Phone Polling](#) • [Forms By Wufoo](#) • [SurveyMonkey Audience](#)

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APPENDIX F

KILLINGTON PARENT SURVEY REPORT, NOV 2012

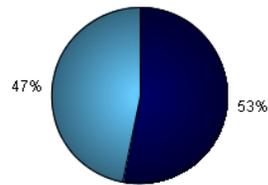
## Parent Survey Summary

<b>Program Name:</b>	Killington Elementary School	<b>Month and Year Collected:</b>	November 2012
<b>School Name:</b>	Killington Elementary School	<b>Set ID:</b>	9216
<b>School Enrollment:</b>	81	<b>Date Report Generated:</b>	01/22/2013
<b>Enrollment within Grades Targeted by SRTS Program:</b>	81	<b>Number of Questionnaires Analyzed for Report:</b>	47
<b>Number of Questionnaires Distributed:</b>	81		

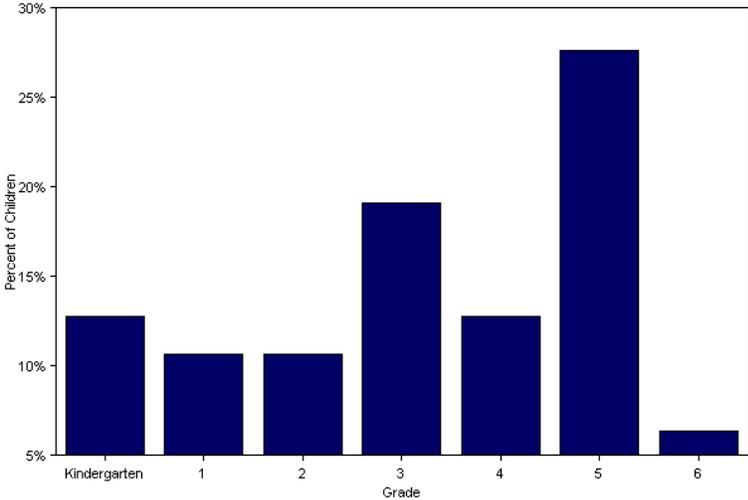
This report contains information from parents about their children's trip to and from school. The report also reflects parents' perceptions regarding whether walking and bicycling to school is appropriate for their child. The data used in this report were collected using the Survey about Walking and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

### Sex of children for parents that provided information

■ Male ■ Female



**Grade levels of children represented in survey**

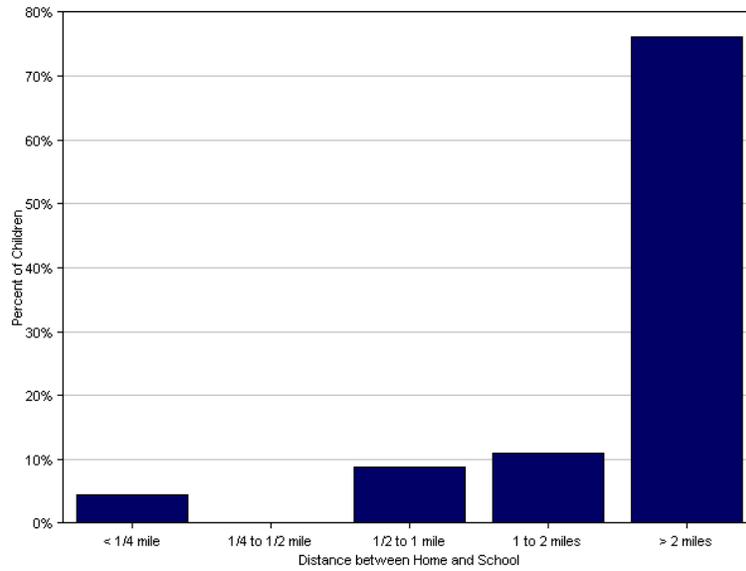


**Grade levels of children represented in survey**

Grade in School	Responses per grade	
	Number	Percent
Kindergarten	6	13%
1	5	11%
2	5	11%
3	9	19%
4	6	13%
5	13	28%
6	3	6%

No response: 0  
 Percentages may not total 100% due to rounding.

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

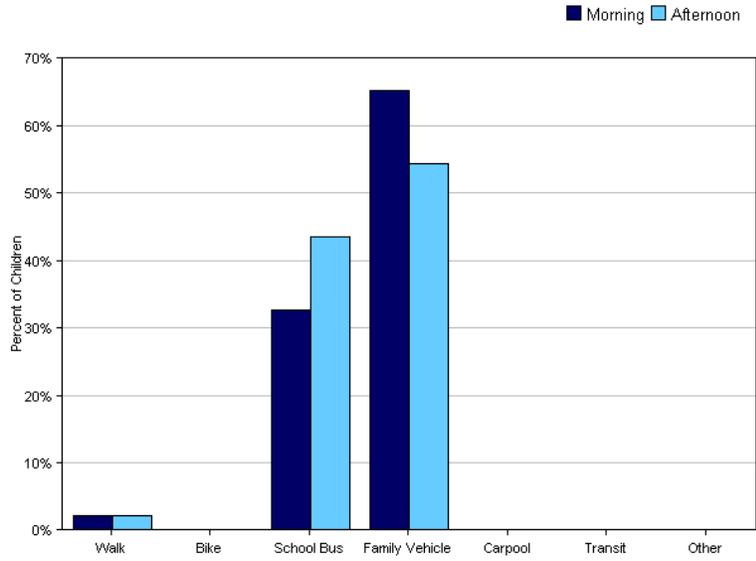


**Parent estimate of distance from child's home to school**

Distance between home and school	Number of children	Percent
Less than 1/4 mile	2	4%
1/4 mile up to 1/2 mile	0	0%
1/2 mile up to 1 mile	4	9%
1 mile up to 2 miles	5	11%
More than 2 miles	35	76%

Don't know or No response: 1  
 Percentages may not total 100% due to rounding.

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

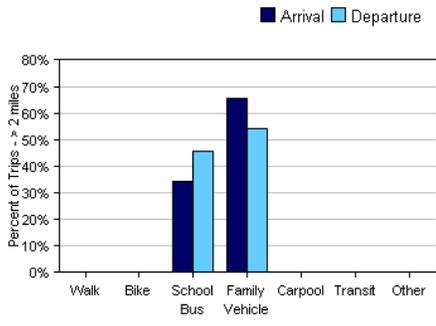
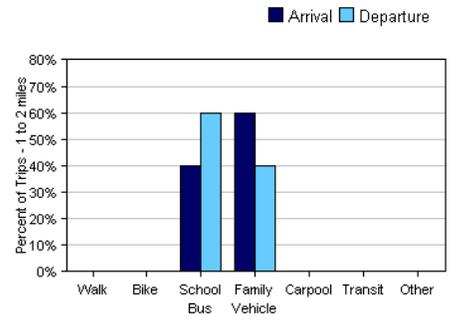
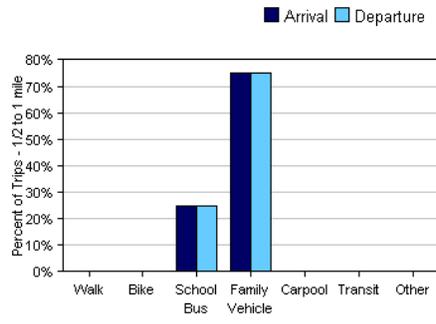
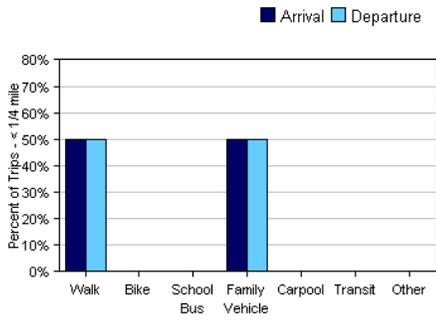


**Typical mode of arrival at and departure from school**

Time of Trip	Number of Trips	Walk	Bike	School Bus	Family Vehicle	Carpool	Transit	Other
Morning	46	2%	0%	33%	65%	0%	0%	0%
Afternoon	46	2%	0%	43%	54%	0%	0%	0%

No Response Morning: 1  
 No Response Afternoon: 1  
 Percentages may not total 100% due to rounding.

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	2	50%	0%	0%	50%	0%	0%	0%
1/4 mile up to 1/2 mile	0	0%	0%	0%	0%	0%	0%	0%
1/2 mile up to 1 mile	4	0%	0%	25%	75%	0%	0%	0%
1 mile up to 2 miles	5	0%	0%	40%	60%	0%	0%	0%
More than 2 miles	35	0%	0%	34%	66%	0%	0%	0%

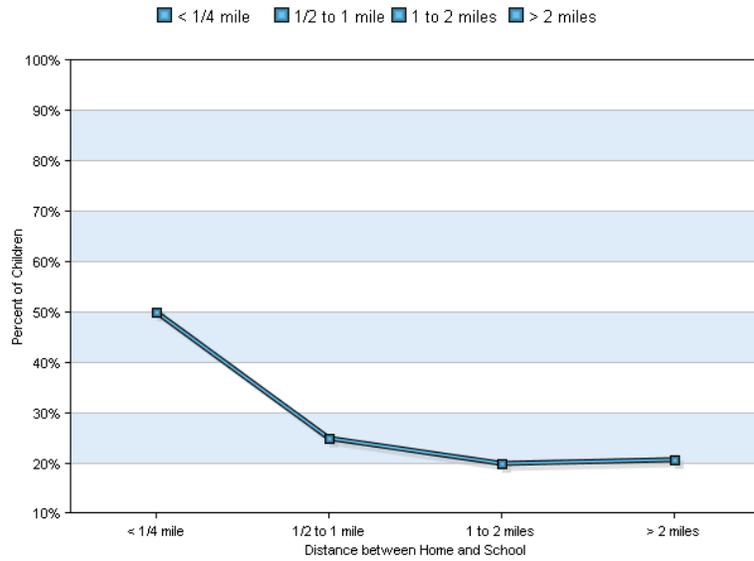
Don't know or No response: 1  
 Percentages may not total 100% due to rounding.

**School Departure**

Distance	Number within Distance	Walk	Bike	School Bus	Family Vehicle	Carpool	Transit	Other
Less than 1/4 mile	2	50%	0%	0%	50%	0%	0%	0%
1/4 mile up to 1/2 mile	0	0%	0%	0%	0%	0%	0%	0%
1/2 mile up to 1 mile	4	0%	0%	25%	75%	0%	0%	0%
1 mile up to 2 miles	5	0%	0%	60%	40%	0%	0%	0%
More than 2 miles	35	0%	0%	46%	54%	0%	0%	0%

Don't know or No response: 1  
 Percentages may not total 100% due to rounding.

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

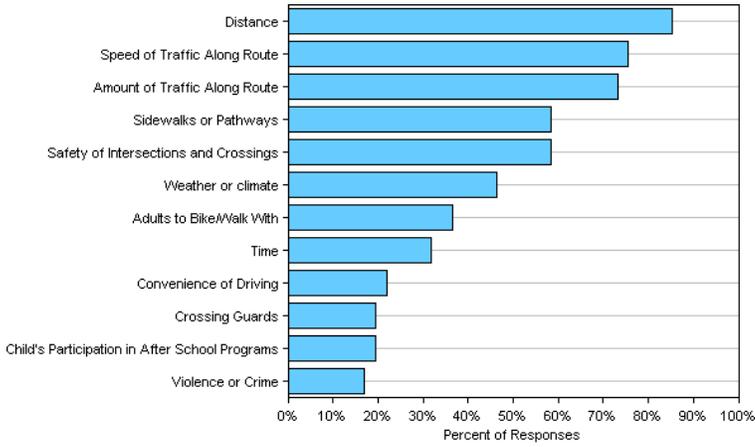


**Percent of children who have asked for permission to walk or bike to/from school by distance they live from school**

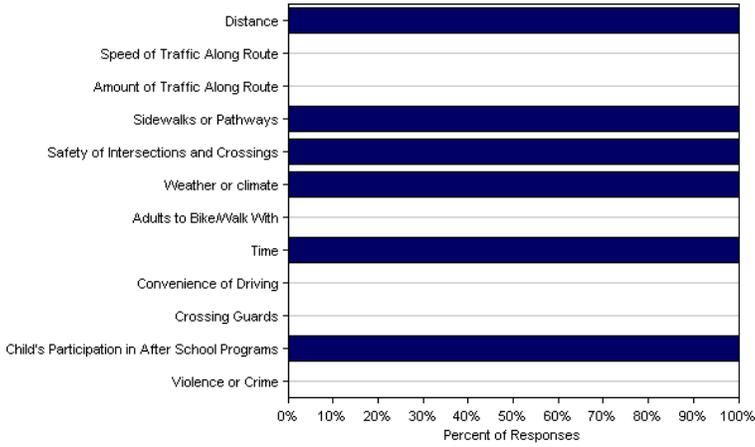
Asked Permission?	Number of Children	Less than 1/4 mile	1/4 mile up to 1/2 mile	1/2 mile up to 1 mile	1 mile up to 2 miles	More than 2 miles
Yes	10	50%	0%	25%	20%	21%
No	35	50%	0%	75%	80%	79%

Don't know or No response: 2  
 Percentages may not total 100% due to rounding.

**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**



**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
Distance	85%	100%
Speed of Traffic Along Route	76%	0%
Amount of Traffic Along Route	73%	0%
Sidewalks or Pathways	59%	100%
Safety of Intersections and Crossings	59%	100%
Weather or climate	46%	100%
Adults to Bike/Walk With	37%	0%
Time	32%	100%
Convenience of Driving	22%	0%
Crossing Guards	20%	0%
Child's Participation in After School Programs	20%	100%
Violence or Crime	17%	0%
<b>Number of Respondents per Category</b>	<b>41</b>	<b>1</b>

No response: 5

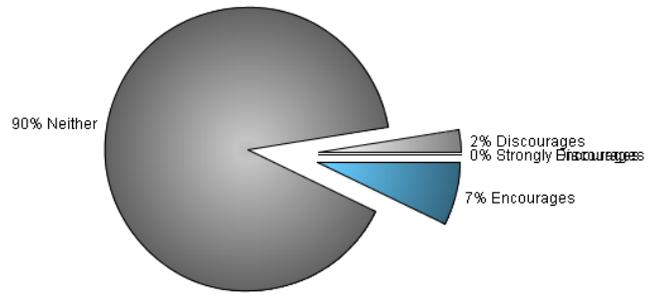
Note:

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

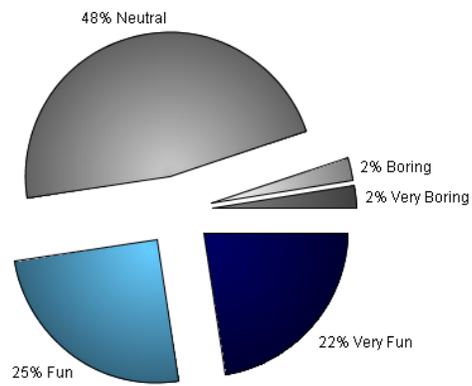
--Each column may sum to > 100% because respondent could select more than issue

--The calculation used to determine the percentage for each issue is based on the 'Number of Respondents per Category' within the respective columns (Child does not walk/bike to school and Child walks/bikes to school.) If comparing percentages between the two columns, please pay particular attention to each column's number of respondents because the two numbers can differ dramatically.

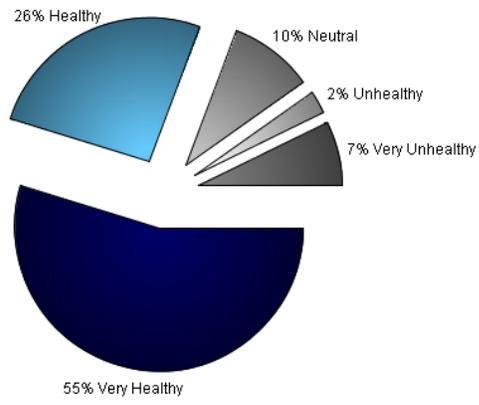
Parents' opinions about how much their child's school encourages or discourages walking and biking to/from school



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



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



**Comments Section**

SurveyID	Comment
963692	If we lived closer to school, we would walk/bike to school. It would be fun!
963759	I would let my child walk to school, only if others accompanied her.
963766	We have to drive about 3 miles to get to a bus. If the bus came closer (Pico?) we would be able to walk bike to the bus.
963709	If Killington Road had sidewalks all the way to school, we would walk with our child on some days. Because there is none, traffic drives too fast and it's not safe. I, myself, have almost gotten hit walking on this road, so I would never allow my child to.
963715	Because we live along a major route there is no safe place to ride a bike or walk
963731	We would have to cross Route 4 then walk/bike up West Hill Road to even get to the access road. West Hill is a huge factor in our reasoning.
963743	My child and I bike/run to school in the spring. We often park at Surefoot and travel to school from there. My child really enjoys this and I often wish we could do it more.
963751	Right now we just live too far away and off of a very busy highway. If we lived in Killington (on an access road) we would walk/bike!!
963764	My child would be much more interested in walking if he were walking with friends.
963768	KES is the most active school :). The bus situation is tough because most kids live outside of the area and need to be bused in. If there was sidewalks along the highway and throughout Killington area it may be a different story. Maybe the state should look into its inability to access 264 so kids can be safe on sidewalks.
963736	Being a tourist town and so many different people, I believe this age group could not go alone to school without adult supervision.
963754	If we lived closer to school, walking/biking would be fine.
963721	I believe walking or biking to school would be great if you live close by and had an adult with you. We live much too far to even consider the idea.
963683	We live to far from school to bike or walk.
963767	None of these questions really apply. We are too far away to consider letting our children walk or bike to school.
963694	It is completely unsafe and out of the questions to let me children walk/ride to school. I feel like this questionnaire does not even apply to us.
963745	Having a daughter in today's climate I would not feel comfortable letting them out along.
963760	If we didn't live in the country I could see the children walking and biking to school, but it is over 10 miles to school.
963725	Our home is 7 miles from the school, up a mountain. Even biking to/from school is unlikely were sidewalks/traffic improved. It's just too far for young children. However, sidewalks closer to the school would encourage recreational walking and running.
963695	We would be interested in safe routes to the bus stop in Pittsfield.
963711	Because we are so far from the school, the kids are not encourage to ride their bikes or walk to school
963770	We live too far away.

APPENDIX G

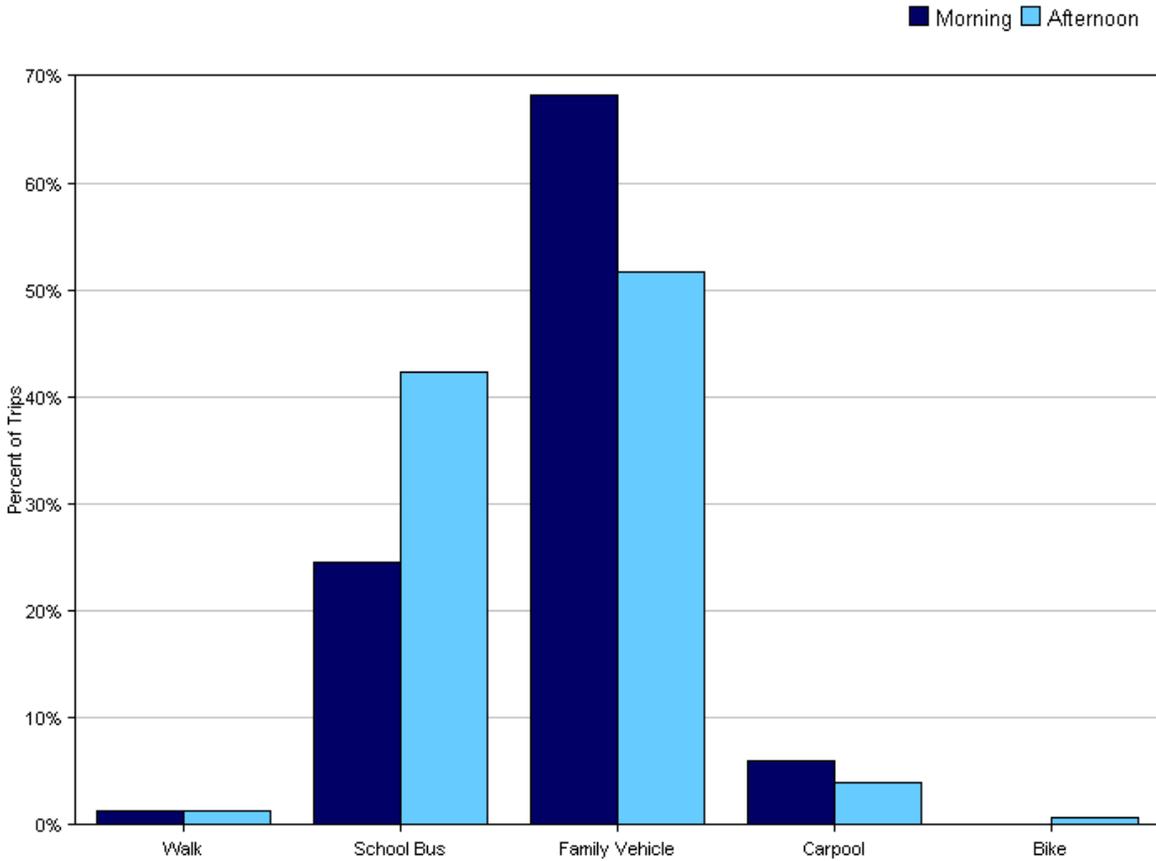
STUDENT TRAVEL TALLY, OCT 2012

## Tally Report Summary

<b>Program Name:</b>	Killington Elementary School	<b>Month and Year Collected:</b>	October 2012
<b>School Name:</b>	Killington Elementary School	<b>Set ID:</b>	10721
<b>School Enrollment:</b>	81	<b>Date Report Generated:</b>	11/06/2012
<b>Enrollment within Grades Targeted by SRTS Program:</b>	81	<b>Number of Classrooms Included in Report:</b>	6
<b>Number of Classrooms in School:</b>	6		

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

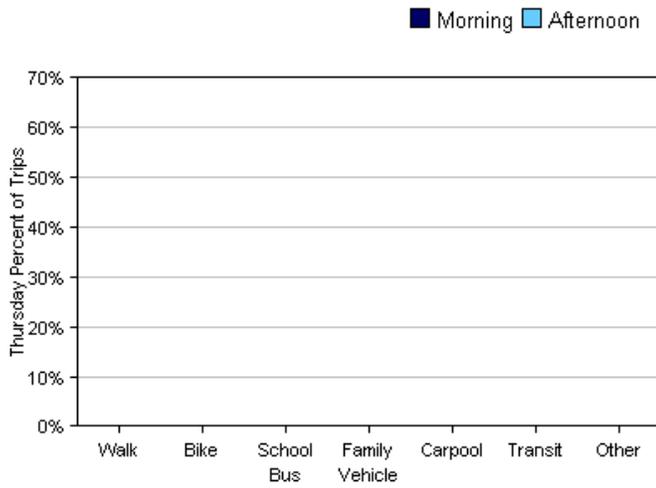
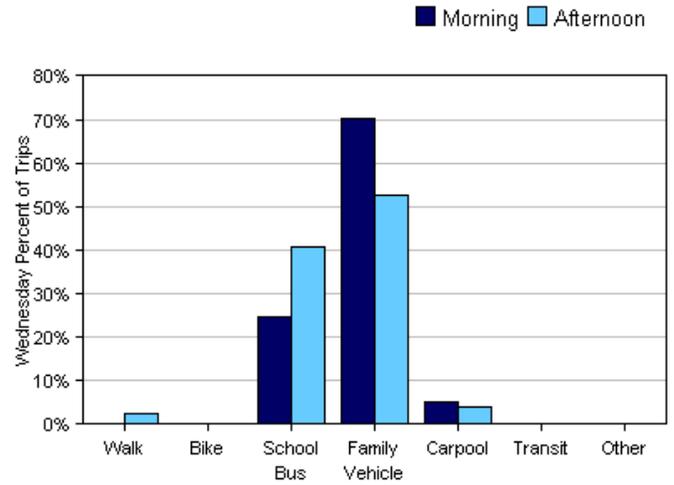
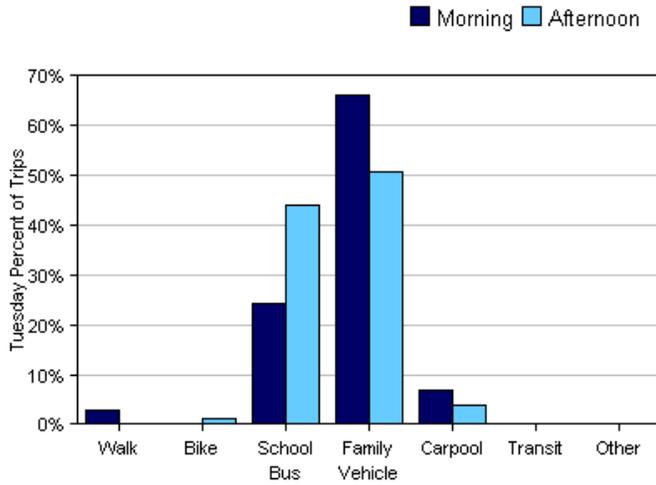


### Morning and Afternoon Travel Mode Comparison

	Number of Trips	Walk	Bike	School Bus	Family Vehicle	Carpool	Transit	Other
Morning	151	1%	0%	25%	68%	6%	0%	0%
Afternoon	151	1%	0.7%	42%	52%	4%	0%	0%

Percentages may not total 100% due to rounding.

### Morning and Afternoon Travel Mode Comparison by Day

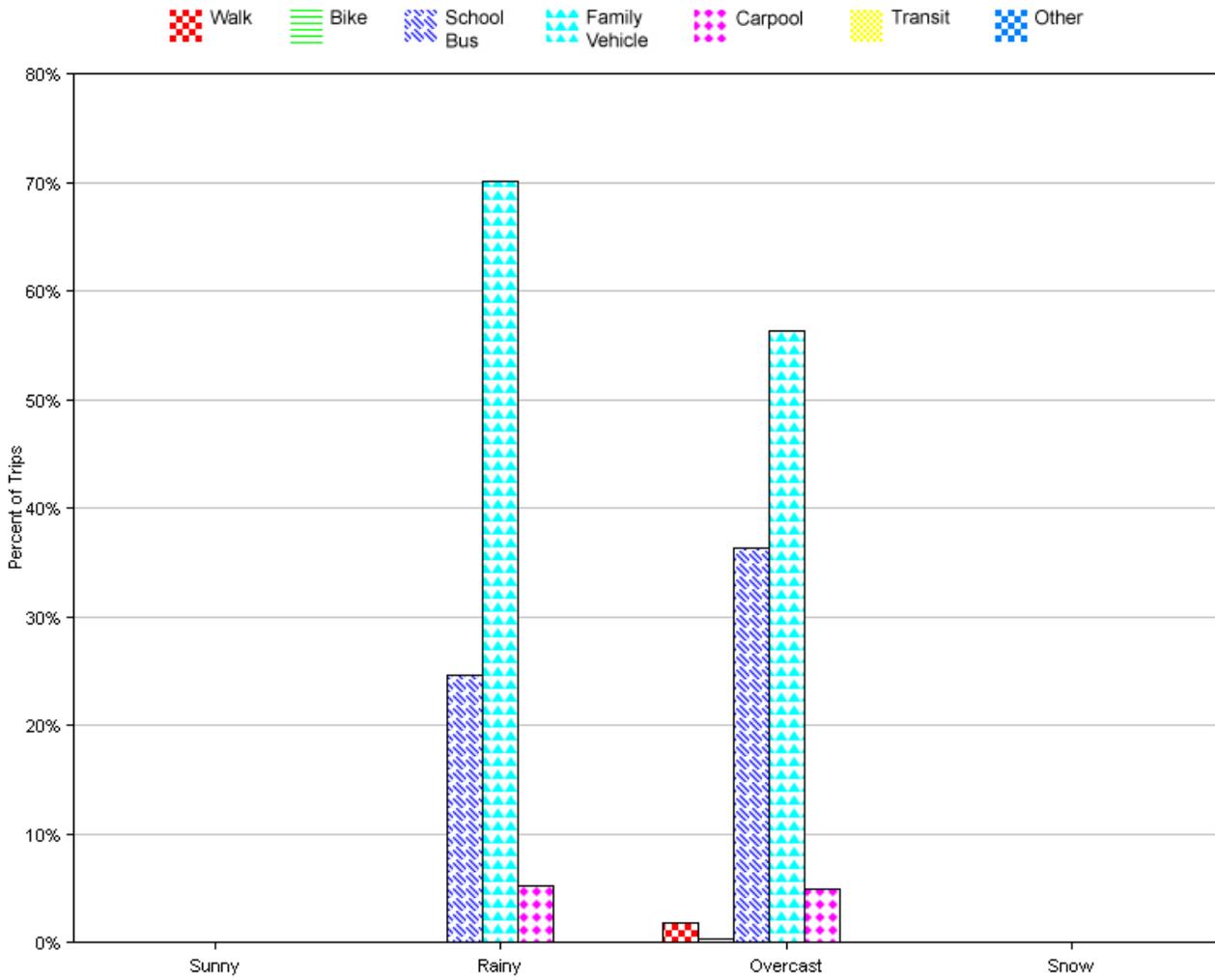


### Morning and Afternoon Travel Mode Comparison by Day

	Number of Trips	Walk	Bike	School Bus	Family Vehicle	Carpool	Transit	Other
Tuesday AM	74	3%	0%	24%	66%	7%	0%	0%
Tuesday PM	75	0%	1%	44%	51%	4%	0%	0%
Wednesday AM	77	0%	0%	25%	70%	5%	0%	0%
Wednesday PM	76	3%	0%	41%	53%	4%	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	0	0%	0%	0%	0%	0%	0%	0%
Rainy	77	0%	0%	25%	70%	5%	0%	0%
Overcast	225	2%	0.4%	36%	56%	5%	0%	0%
Snow	0	0%	0%	0%	0%	0%	0%	0%

Percentages may not total 100% due to rounding.

APPENDIX H

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>• Pedestrian Safer Journey: The National Highway Traffic Safety Association has created a video to help teach children pedestrian safety skills. <a href="http://www.pedbikeinfo.org/pedsaferjourney/">http://www.pedbikeinfo.org/pedsaferjourney/</a></li> <li>• See Partner Resource CD for more materials</li> </ul>

Strategy	E's	Advantages	Considerations	Resources
<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>	<b>Education, Encouragement</b>	<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>• Walking when it is too far or unsafe guide <a href="http://saferoutes.vermont.gov/sites/saferoutes/files/Including%20Students%20When%20It%27s%20Too%20Far%20or%20Unsafe%20VT.pdf">http://saferoutes.vermont.gov/sites/saferoutes/files/Including%20Students%20When%20It%27s%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>	<b>Encouragement</b>	<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>

Strategy	E's	Advantages	Considerations	Resources
<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 school determined incentives 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>

Strategy	E's	Advantages	Considerations	Resources
<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> </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>

Strategy	E's	Advantages	Considerations	Resources
<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.aaamidatlantic.com/FetchFile.ashx?id=e55bfa26-a70d-4e17-afde-073b86cc9975">http://www.aaamidatlantic.com/FetchFile.ashx?id=e55bfa26-a70d-4e17-afde-073b86cc9975</a> </li> </ul>

Strategy	E's	Advantages	Considerations	Resources
<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 I

SNOW REMOVAL TOOLKIT

## SNOW REMOVAL TOOLKIT

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 J

INFRASTRUCTURE STRATEGIC 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>

Strategy	Advantages	Considerations	Resources	Actions
<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>

Strategy	Advantages	Considerations	Resources	Actions
<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_NATR/ESViewer/jsp/">http://maps.vermont.gov/imf/sites/ANR_NATR/ESViewer/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 (MUTCD)</i>, <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/olders/ProductDetail.cfm?pc=RP-036A-E">http://www.ite.org/modules/scriptcontent/olders/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 K

LIABILITY OF LANDOWNERS

## Liability of Landowners

Vermont's landowner liability statutes protect landowners from liability in cases that may apply to Safe Routes to Schools Activities. The general statute (12 V.S.A. Section 5791) says that no owner is liable for any property damage or personal injury to a person who uses the property for recreation, providing a fee is not charged. See the full statute below for details.

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### ***Chapter 203: LIMITATIONS ON LANDOWNER LIABILITY***

#### **12 V.S.A. § 5794. Landowner protection**

##### **§ 5791. Purpose**

The purpose of this chapter is to encourage owners to make their land and water available to the public for no consideration for recreational uses by clearly establishing a rule that an owner shall have no greater duty of care to a person who, without consideration, enters or goes upon the owner's land for a recreational use than the owner would have to a trespasser. (Added 1997, No. 110 (Adj. Sess.), § 1.)

##### **§ 5792. Definitions**

As used in this chapter:

(1) "Consideration" means a price, fee or other charge paid to or received by the owner in return for the permission to enter upon or to travel across the owner's land for recreational use. Consideration shall not include:

(A) compensation paid to or a tax benefit received by the owner for granting a permanent recreational use easement;

(B) payment or provision for compensation to be paid to the owner for damage caused by recreational use; or

(C) contributions in services or other consideration paid to the owner to offset or insure against damages sustained by an owner from the recreational use or to compensate the owner for damages from recreational use.

(2)(A) "Land" means:

(i) open and undeveloped land, including paths and trails;

(ii) water, including springs, streams, rivers, ponds, lakes and other water courses;

(iii) fences; or

(iv) structures and fixtures used to enter or go upon land, including bridges and walkways.

(B) "Land" does not include:

- (i) areas developed for commercial recreational uses,
- (ii) equipment, machinery or personal property, and
- (iii) structures and fixtures not described in subdivision (2)(A)(iii) or (iv) of this section.

(3) "Owner" means a person who owns, leases, licenses or otherwise controls ownership or use of land, and any employee or agent of that person.

(4) "Recreational use" means an activity undertaken for recreational, educational or conservation purposes, and includes hunting, fishing, trapping, guiding, camping, biking, in-line skating, jogging, skiing, snowboarding, swimming, diving, water sports, rock climbing, hang gliding, caving, boating, hiking, riding an animal or a vehicle, picking wild or cultivated plants, picnicking, gleaning, rock collecting, nature study, outdoor sports, noncommercial aviation, visiting or enjoying archeological, scenic, natural, or scientific sites, or other similar activities. "Recreational use" also means any noncommercial activity undertaken without consideration to create, protect, preserve, rehabilitate, or maintain the land for recreational uses. (Added 1997, No. 110 (Adj. Sess.), § 1; amended 2011, No. 99 (Adj. Sess.), § 1.)

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- (iii) structures and fixtures not described in subdivision (2)(A)(iii) or (iv) of this section.

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**§ 5794. Landowner protection**

(a) The fact that an owner has made land available without consideration for recreational uses shall not be construed to:

- (1) limit the property rights of owners;
- (2) limit the ability of an owner and a recreational user of the land to enter into agreements for the recreational use of the land to vary or supplement the duties and limitations created in this chapter;
- (3) support or create any claim or right of eminent domain, adverse possession or other prescriptive right or easement or any other land use restriction;
- (4) alter, modify or supersede the rights and responsibilities under chapters 191, animal control, and 193, domestic pet or wolf-hybrid control, of Title 20; under chapters 29, snowmobiles, and 31, all-terrain vehicles, of Title 23; under chapter 23, bicycle routes, of Title 19; and under chapter 20, Vermont trail system, of Title 10;
- (5) extend any assurance that the land is safe for recreational uses or create any duty on an owner to inspect the land to discover dangerous conditions;
- (6) relieve a person making recreational use of land from the obligation the person may have in the absence of this chapter to exercise due care for the person's own safety in the recreational use of the land.

(b) Nothing in this chapter shall create any presumption or inference of permission or consent to enter upon an owner's land for any purpose.

(c) For the purposes of protecting landowners who make land available for recreational use to members of the public for no consideration pursuant to this chapter, the presence of one or more of the following on land does not by itself preclude the land from being "open and undeveloped": posting of the

land, fences, or agricultural or forestry related structures. (Added 1997, No. 110 (Adj. Sess.), § 1; No. 147 (Adj. Sess.), § 190a.)

**§ 5795. Exceptions**

This chapter shall not apply to lands owned by a municipality or the state. (Added 1997, No. 110 (Adj. Sess.), § 1.)

APPENDIX L

SCHOOL BUS STOP LOCATION GUIDE

# Selecting School Bus Stop Locations:

A Guide for School Transportation Professionals



July 2010



Pedestrian and Bicycle  
Information Center

**SafeRoutes**  
National Center for Safe Routes to School



[www.nhtsa.gov](http://www.nhtsa.gov)

Prepared by the National Center for Safe Routes to School and the Pedestrian and Bicycle Information Center, both part of the University of North Carolina Highway Safety Research Center, with funding from the National Highway Traffic Safety Administration

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# Introduction

Transporting students to and from school safely is a foremost priority for school transportation directors, school bus drivers, crossing guards and others involved in getting students to school. School children travel to and from their schools by a variety of modes including school buses, private vehicles, carpools, public and private transportation providers, bicycles and on foot.

School buses are the safest mode of transportation to and from school in the United States.<sup>1</sup> According to the National Highway Traffic Safety Administration, approximately 450,000 public school buses travel approximately 4.3 billion miles to transport 23.5 million children to and from school and school-related activities.<sup>2</sup> On average, 20 school-age children die each year in school bus-related crashes or incidents. Of these 20, five of the children are injured inside the bus, five are struck by other vehicles, and 10 are struck by the school bus itself.<sup>1</sup> These statistics indicate that there's an opportunity for even this very safe form of travel to improve the safety of both the locations where students wait for the school bus and the routes students travel between home and the school bus stop.



School transportation planners are tasked with planning bus routes. However, only fragmented information regarding safety considerations for determining the location of school bus stops has been available to them. Generally, the placement of school bus stops dictates not only the routes that students will have to travel between home and the stop, but also the conditions in which the student will be waiting, and both impact student safety.

School transportation professionals, school administrators, and others who care about student transport to school could benefit from straightforward guidelines that present safety-related considerations for school bus stop siting. These guidelines offer steps for the designation of school bus stops and strategies to support safe pedestrian behavior by students between their homes and their bus stops. This guide is timely as school budgets and other pressures may lead to the consolidation of bus routes and/or expansions of areas designated as “no transport zones.” Both of these changes can lead to increased walking distances for students or shifts to travel modes other than buses. In addition, new schools are under construction, existing schools have changing attendance boundaries and other circumstances may also result in potential changes to bus routes. Such changes also present the opportunity to identify new school bus stops. Other documents that provide guidance on school bus route planning and the identification of potential safety concerns along the route are described in the Resources section.

## Acknowledgments

The National Association for Pupil Transportation (NAPT) and National Association of State Directors of Pupil Transportation Services (NASDPTS) members provided insight into their school bus stop selection process. The leadership of NAPT and NASDPTS provided assistance in the development of this guide by soliciting member feedback on various topics and providing review and comment on drafts of this guide. This guide would not have been possible without the assistance of these organizations and the experience and insight of their members.

# Determining School Bus Stop Locations

**M**aking decisions about where school bus stops will be placed requires balancing conditions that would be ideal with the realities of a community's road system, weather and topography. In this discussion, ideal characteristics are described, but these characteristics will rarely all be met for every school bus stop. Transportation directors must seek to do everything possible for student safety with less than perfect conditions.

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*There is no perfect school bus stop, because it is impossible to eliminate all potential hazards, but guidelines and training are still necessary to ensure that responsible parties are making the safest, most informed decisions when placing stops.*

*—State Director of Pupil Transportation*

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## A Note About Policy

Transportation directors usually have state and/or local policies that must be followed before considering a potential school bus stop site's specific characteristics. State and local policies can influence or dictate the process and ultimate placement of school bus stops. State-level policies, often mandated by the State Boards of Education or legislatures, tend to only address basic requirements, such as the minimum distance between school bus stops. Such basic policies may be presented as guidelines rather than requirements. The vast majority of decisions on routing and placement of stops are made at the local school district level.

Although some districts have no local level regulation and rely solely on existing state-level regulation for guidance, other districts utilize a wide range of policies. Some school districts have very formal, written policies while others have nothing "set in stone," and the decisions are made entirely at the discretion of the school transportation director.

District-level regulations related to school bus stops may address issues such as:

- Use of private roads and/or property
- Special guidelines for kindergarten students such as door-step pick-up
- Placement of stops at corners or mid-block locations
- Placement of stops on main arterials
- Provisions for providing transportation in hazard zones within a "no transport zone"
- Placement of stops in cul-de-sacs and
- Proximity of stops to railroad crossings

Districts face several delicate policy issues and must decide which responsibilities the school bears and which responsibilities fall to parents and other caregivers. In addition, those responsibilities must be further clarified to reflect policies when students are traveling between home and their school bus stops and while waiting for the bus. Most school transportation professionals agree that it is the parents' responsibility to supervise students at these times. However, many also recognize that this may be an unrealistic expectation due to work schedules, disabilities, or other circumstances. In some cases, accommodations may have to be made for these situations. Regardless of how these situations will be handled, clearly stating and communicating expectations about parents' responsibilities is vital.

## Street-Side Characteristics

After following existing policy, the next step to consider is school bus stop location options. It is impractical to discuss school bus stops without discussing bus routes. Clearly they are closely related and the characteristics of one have implications for the other. For example, if a route involves travel along a busy road, and a stop is designated along that segment of the route, students who wait at that stop will have to contend with traffic on that road. Information here will be presented with the school bus stop as the central point of focus but with the recognition that there is a need to balance the desired characteristics of a bus stop with the realities of what the school bus route will allow.

Street-side characteristics include the conditions on the road where the school bus stops to load and unload students. To provide the safest environment for students to walk between home and the school bus stop and wait at the stop:

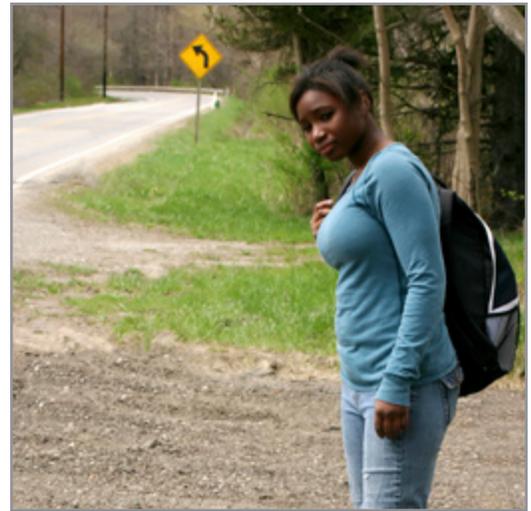
- Pick routes on streets with lower traffic volumes and lower speeds.
- Minimize or avoid multi-lane roads where pedestrians are most at risk of injury.<sup>3</sup>
- Pick roads with sidewalks or designated pedestrian paths separate from the roadway and traffic. If these are not available, pick roads with sufficient space to walk along the roadway to reach the stop.
- Avoid or limit stops that require the school bus to make a left turn anywhere along the route.
- Avoid stops that require backing up. If backing up is unavoidable, pick up students before backing. During the afternoon return trip, drop off the students only after backing up and being in position to drive forward.
- Avoid railroad crossings along the bus route. If it is impossible to avoid crossings, signage and railroad crossing arm protection should be present.
- Select stops that provide sufficient visibility for both pedestrians and drivers. There needs to be enough sight distance so drivers, bus drivers and students waiting at the stop all can see each other. There are no standardized distance measures that provide sufficient visibility nor are there formulas for computing an appropriate sight distance, but the following can impact sight distances:
  - o Sunrise/sunset times (Try to avoid placing stops where vehicles will be facing into the sun at pick-up or drop-off times.)
  - o Curves and hills
  - o Trees and other vegetation
  - o On-street parked cars and approaching vehicles
  - o Snow drifts from snowplows

For areas where insufficient sight distance may be an unavoidable, contact the local transportation authority to post warning signs when needed. The Manual of Uniform Traffic Code Devices<sup>4</sup> (MUTCD), used by traffic engineers, describes use of “Bus Stop Ahead” signs based on sight distance. According to the 2009 edition of the MUTCD, the sign should be installed in advance of locations where a stopped school bus—picking up or discharging passengers—is not visible to road users for an adequate distance. The transportation authority can help determine what is considered to be “an adequate distance.”

## School Bus Stop Characteristics

In addition to the on-street characteristics, characteristics about the off-street location of the school bus stop are also critical to ensuring student safety during transport to school. This section addresses the school bus stop itself. For the safest areas for students to wait for, and load onto or off of the bus:

- Choose “near-side” stops whenever possible.
  - Minimize the need for students to cross a road from the stop to the bus regardless of the type of roadway.
  - Students **must not** cross multi-lane roads where all traffic is not controlled by the presence of a school bus stop arm and flashing lights.
- Pick locations that offer adequate lighting. If students will be waiting during low light hours, the stop should be positioned near a street light or other light source whenever possible.
- Choose locations with sufficient space for students and parents to wait at least 12 feet from the roadway. This distance is recommended based on the “12-foot rule” for students approaching and leaving the bus included in the National School Transportation Specifications and Procedures 2005 Revised Edition.<sup>5</sup> However, some transportation professionals have suggested that the distance needs to reflect the bus class and the differing sight distance afforded by each. For example, Type C buses have a sight distance of 17 feet, so consider the appropriate distance for the type of school buses being used by your district.
- Consider the surrounding environment. Commercial businesses and parks offer benefits and drawbacks. While they can confer safety because drivers may be more likely to expect pedestrians in these areas, they also can distract children from being ready to load when the bus arrives.
- Choose locations that provide protection from weather. Depending on the geographical region:
  - Establish stops that offer shade without sacrificing visibility.
  - Avoid areas where snow drifts will reduce visibility or access to the bus.
- Determine policies for mid-block stops compared to corner stops. Whether a stop is located mid-block or on a corner does not have the same impact on safety as other factors described here, but this is a policy decision that must be taken into consideration. The Transit Cooperative Research Program’s “Guidelines for the Location and Design of Bus Stops”<sup>6</sup> describes advantages and disadvantages of mid-block, near side and far side stops, but this report, focused on public transit, assumes pedestrians cross behind the bus whereas students are taught to cross in front of the bus. Both far-side corner (the corner past the intersection) and near-side corner (the corner located prior to the intersection) stops can impact sight distance.



State and local policies vary regarding corner or intersection stops. This variation is due to differing interpretations of safety issues and their priority, especially as they relate to visibility, traffic conditions, and control of oncoming traffic. Corner stops are considered preferable because they conform with drivers’ expectations to stop at intersections. They also provide a wide area to scan for traffic and students, minimize buses backing up and create more efficient routes. However, corner stops can be considered less preferable due to the inability to easily control all approaching drivers. Some states have noted that if a school bus stop

is at an intersection or corner, students should be loaded and unloaded on the far side of the intersection so that the school bus blocks the cross traffic and the stop arm controls the other directions. Although there are advantages and disadvantages for each, perhaps the most important consideration is to avoid locating school bus stops at busy intersections.

- Consider the number of students who will use a stop. While the presence of multiple students confers safety, too many students increases the likelihood of behavioral problems.

This guide focuses on the prevention of traffic-related injuries, however, students—like all community members—face other risks such as assault or other crimes. Many transportation policies address non-traffic issues—such as proximity to liquor stores, bars, adult entertainment, sex offenders, and other-crime related factors. See the Resources section for more information on these factors.

## The Student's Route Between Home And School Bus Stop

The majority of members of NAPT and NASDPTS who provided feedback which helped inform this guide indicated that their district level policies, guidelines, or recommendations for establishing school bus stops in some manner considered the safety of the route that students travel between their doorstep and the bus stop. The most commonly mentioned elements were:

- The presence of a “safe” path
- Quality and type of road crossings (more specifically, the number of lanes and the traffic controls present at these crossings)
- Proximity of railroad crossings
- Traffic speed limits
- Walking distance

There was a strong emphasis on the parents' role in ensuring the safety of the student while in route to or from the stop and waiting at the stop.

The following factors influence student safety around traffic between home and the school bus stop and should be considered during the bus stop placement process:

- Many school districts or states have policies that specify the maximum distance permitted between a student's home and the school bus stop. The distance between home and the stop:
  - o Typically ranges from one to one and one-half miles
  - o Sometimes varies with the age of the rider
  - o Are increasing in some districts due to economic constraints that are impacting bus service
  - o Assumes that parents will ensure the child's safety between the home and school bus stop
  - o May be determined from the center of the roadway outside of the residence to the bus stop, not from the front door of the residence to the stop
  - o Is usually approved by the school board and follows state guidelines
  - o May be determined by examining safety issues on a case-by-case basis instead of using a certain distance standard

- School bus stops should be located so that students and parents have adequate pathways to walk from home. Although it may not always be possible to provide all these features, desirable pedestrian routes:
  - o Minimize or avoid street crossings
  - o Have traffic controls (stop signs or traffic signals) to provide assistance to pedestrians if crossing streets cannot be avoided
  - o Have sufficient space to walk that is separated from traffic (ideally, a sidewalk or path separated from the roadway is available)
  - o Do not require walking on high-volume, high-speed roads
  - o Are passable in snowy weather

Several resources are available for transportation professionals and parents to use to assess how “walkable” a particular route is from one location to another. The “Walkability Checklist” available from the Pedestrian and Bicycle Information Center (see Resources section) gives insight into the walkability of a neighborhood by raising questions such as:

- Did you have room to walk? Potential problems include:
  - o Sidewalks or paths started and stopped
  - o Sidewalks were broken or cracked
  - o Sidewalks were blocked with poles, signs, shrubbery, dumpsters, etc.
  - o No sidewalks, paths, or shoulders
- Was it easy to cross streets? Potential problems include:
  - o Road was too wide
  - o Traffic signals made us wait too long or did not give us enough time to cross
  - o Street needed striped crosswalks or traffic signals
  - o Parked cars blocked our view of traffic
  - o Trees or plants blocked our view of traffic
  - o Sidewalks needed curb ramps or ramps needed repair
- Can a child:
  - o Cross at crosswalks or at a location where the child can see and be seen by drivers
  - o Stop and look left, right and then left again before crossing street
  - o Walk on sidewalks or shoulders facing traffic where there are no sidewalks
  - o Cross with the traffic signal

An additional benefit of using a walkability checklist is that it can serve to document and demonstrate the need for pedestrian facilities or improvements to existing facilities when approaching traffic engineers or planners about these issues.

# Putting The Guidelines Into Practice

While school transportation directors and others involved in route planning need some flexibility in making decisions to evaluate local conditions and individual cases, standardizing the criteria used in decision-making helps create a transparent, explainable process. A systematic process may be easier to explain to school administration, the public and parents and does not rely on subjective “common sense” determinations, which can vary widely depending on the transportation director. However, processes and policies are only useful in improving student safety if they are implemented.

As previously discussed, most states do not have a state-level policy or recommendation related to school bus stop selection, but most districts do—at least to some degree. States vary in the degree of specificity in bus safety policies, including identifying the responsible party (i.e., school districts, individual schools, parents, or drivers) for establishing policies on various safety issues. Some of these variations may inadvertently cause safety gaps or gaps in policies on coverage and eligibility for school bus use. It is critical that local schools and school districts establish policies for school bus routing and the placement of school bus stops.

Some school districts contract pupil transportation services to a private school bus company. Ultimately the decisions of where to place a school bus stop should be made by the local school transportation director or school administration.

## Engage Available Resources

School transportation planners should engage local law enforcement officers and transportation authorities that have jurisdiction over roads along, or adjacent to, school bus routes. Law enforcement officers can share data related to crashes and speeding prevalence that may indicate areas to avoid when possible. They will also know the traffic patterns on local roadways, such as the most common types of vehicles, traffic flow irregularities, or other particularly dangerous situations that should be avoided.

Transportation authorities, who may be the Department of Transportation or the local traffic engineer, can provide information about the relative traffic volume and condition of different roads. These agencies not only are responsible for signage that could indicate an upcoming school bus stop and speed limit designation, but they also can provide information on limits to possible engineering treatments and hazard mitigations based on the MUTCD.

If not already utilized, school transportation planners should consider technology-assisted route development. Many school districts use route-planning software or GIS mapping. While these systems often offer benefits like improved efficiency, they can be limited in their role in selection of school bus stops. Care must be taken not to place a higher priority on efficiency than safety. For example, locating a school bus stop on a secondary street may remove the bus from an arterial that offers a more direct route, but the location also allows students to stand on a lower speed street with less traffic. Refer to the Resources section, including “National School Transportation Specifications and Procedures 2005 Revised Edition” for more information.

## Plan to Address Parent and Community Concerns

School administration and transportation planners need to plan ahead to address parent and community member concerns. A clearly described appeal process will allow for efficient handling of concerns. At the same time, adopting and documenting the use of a consistent set of criteria for school bus stop selection will make it easier to justify district decisions about stop locations.

While most states and school districts appear to have an appeal process in place for school bus stop relocation, addition, or elimination, the process varies tremendously. Some districts handle appeals with a phone call from parents; others require completion of a form. Some districts give the final authority for a decision to a school principal, while others give that role to the school district transportation director or the school board. Response time also varies and ranges from immediate removal of a stop if a property owner complains to a multi-step process if a parent complains.

Safety is the primary consideration when evaluating a parent's complaint, not personal circumstances or convenience. Nevertheless, people involved in evaluating such situations usually recognize that all of these considerations may go hand-in-hand. Most districts recognize some issues and include specific language in their policies related to selecting school bus stops for children with special needs, homeless children and children who live along routes deemed hazardous, both within and outside of eligible transportation zones.

Several factors can reduce the number of appeals that school transportation planners may face. Some appeals can be avoided when districts have a clearly stated policy and policy rationale, a monitoring process in place, and an open atmosphere where school bus drivers feel comfortable reporting safety issues to supervisors at any time during the school year. A monitoring process could include a hazardous route checklist that drivers use at the beginning of the school year after routes are set but before school starts. Alternately, the transportation director could perform "ride-alongs" at different points during the school year to assess school bus route and stop conditions.

Some districts annually evaluate the student pedestrian population and their safety to and from school; some do not evaluate this population at all. While most school districts consider the safety of the route between home and the school bus stop, the specificity of what is meant by "safe route" between home and the school bus stop varies between school districts and even within topics (e.g., distance, identified hazards, traffic conditions). Again, developing consistent criteria and an assessment process (such as use of a walkability checklist) can help improve safety for students.

## Work With the School to Educate Parents

Parents can benefit from a reminder to consider the safety of their child's route between the school bus stop and home and their role. Parents often overestimate their child's readiness to walk alone. Parents need to assess the route from home to the school bus stop so that they can determine if their child needs to be accompanied on the route.



School transportation planners should encourage parents to walk with young students or rotate duties with other parents. Walking to the school bus stop with their child is a chance for parents to assess and teach pedestrian safety skills. See Resources section for pedestrian safety education information to share with parents and students.

Schools that have expanded the zone where students are not eligible to ride the school bus might consider starting a Safe Routes to School program that focuses on making it safer for children to walk and bicycle to school. The Resources section contains more information.

Parents with disabilities are sometimes given special considerations, and their children's school bus stops may be placed at, or very near, their houses since they may not be able to accompany their child to a stop away from the house. Children with special needs who do not receive special transportation may need to be picked up at the curb closest to home. Though these may be desirable practices, and perhaps required under a student's Individualized Education Program (IEP), schools must be prepared to educate other parents about the reasons why some students are picked up at their doors and others are not. Explanations should be general in nature to avoid violation of confidentiality.

## **Provide Comprehensive Training**

Schools and school districts should consider integrating school bus safety training and pedestrian safety training for students since virtually all bus riders are also pedestrians. The route between home and the school bus stop as well as safety at the stop are often considered the parents' responsibility, not the schools', and thus bus-stop-to-home safety may or may not be included in any state-mandated safety trainings. Although school bus drivers' and students' safety before and after a ride is just as important as during a ride, this association is not always reflected in policies, training material, and instructions.

The NHTSA "School Bus Driver In-Service Safety Series"<sup>7</sup> includes a module on "Loading/Unloading" that addresses pedestrian safety and the Resources section details additional pedestrian safety education information to share with parents and students.

# Examples

The examples below illustrate how specific states or school districts have addressed different points mentioned in this guide. These examples are not necessarily considered to be “model” policies, as there seems to be little criteria to support what would be considered “model.” Instead, the examples are intended to provide ways for readers to see how guidelines are put into practice. Please note that text within boxes in these examples are direct quotes from their guidelines and policies.

## State Guidelines

### Colorado

Colorado has produced guidelines for establishing a safe student school bus stop that provide points for transportation providers to consider when establishing locations for loading and unloading students. The Colorado guidelines address the following issues related to placement of school bus stops:

- Visibility
  - o Can the bus be seen by other motorists at a distance of 200 feet or four seconds at optimal speeds while the amber lights are activated in the corporate limits of a city or town? The distance is lengthened to 500 feet in rural areas.
  - o At what distance are the students and other motorists visible to the driver when approaching the stop?
  - o How do light conditions affect the visibility approaching the student stop? (sun rising and setting, background lighting — Christmas season, etc.)
  - o Is the school bus windshield free from cracks, pits and dirt?
- Terrain / Landscape:
  - o Hills and curves affect the location of a student stop. Locating a stop on a hill or curve is a dangerous option. Make every effort to locate stops in areas that afford the bus driver the greatest visibility when approaching the stop. Check that other motorists also have a clear view of the school bus at the stop.
  - o How do surrounding buildings affect what the driver can see when approaching the stop?
  - o Are there potential hazards from driveways (private or business)?
  - o Take into consideration any parked vehicles, especially recreational vehicles that may inhibit the drivers’ view.
  - o Are construction zones affecting the stop in any way?

### Alabama

The Alabama Department of Education Pupil Transportation Section provides school districts with a combination of autonomy and guidance in determining distances between school bus stops. The guidelines include the following recommendations:

There are no regulations regarding the location of school bus stops, the maximum or minimum distance between stops, or the distance a student might have to walk to get to a designated stop. Such requirements are the responsibility of local school systems. Even so, the following statements are offered as guidelines by the Alabama Department of Education, Pupil Transportation Section.

#### **Advantages of Frequent Stops**

- Parents like to be able to see their children at the stop.
- Getting to a bus stop can sometimes be difficult, given lack of sidewalks, no shoulders on roadway, and density of traffic, etc.
- Fewer students at stops can mean less behavior problems and less possible property damage.

#### **Disadvantages of Frequent Stops**

- Most school bus fatalities occur while school buses are stopped to load/unload children. More stops mean greater potential for school bus fatalities.
- Stopping and starting creates more traffic hazards and delays, and more vehicle maintenance.
- More side roads would have to be included on routes.
- Routes take longer because of additional bus stops and loading time. This can require additional buses and personnel to transport all students.

## **District Guidelines**

### **Anoka-Hennepin School District #11, Minnesota**

The Anoka-Hennepin School District #11 in Minnesota developed a student transportation policy that includes policies and procedures for school bus stop locations and procedures for determining hazardous roadways. Excerpts from its Student Transportation Policy manual are included below:

#### **General Information**

- A. **Transportation Area / Non-Transported Area.** Traffic safety factors and distance are the two primary criteria used to establish Non-Transported areas. The Non-Transported areas, less than 2 miles, are determined by measuring the distance, in the most direct route, from the home of the student to the nearest property line of the school of attendance. Distances are electronically calculated with the assistance of Edulog bus routing software that incorporates detailed mapping capabilities. The Edulog routing software is linked to AH Connect, with safeguards to protect this sensitive information. Parents/guardians can register on AH Connect, and receive a password that will enable them to access bus route information for their students. Bus routes are arranged according to geographic areas.
- B. **Bus Stops.** Whenever possible, bus stops will be located at the nearest corner or intersection to the student's home. Stopping at corners or intersections is generally safer due to the expectations of traffic. When a bus stops mid-block it can confuse motorists, whereas traffic anticipates the bus will stop or yield at the intersection. Students, especially in primary grades, tend to forget about pedestrian safety when in the proximity of their homes. In recent years metro student fatalities have occurred when young students disembarked the bus at house stops and were struck by cars. Also house identification is much more difficult for substitute drivers, causing the bus to arrive late to school. The number of bus stops on the bus route impacts the length of time students are on the bus and the number of buses required to provide this service. Bus stops will be located to maximize bus route safety and efficiency.

## **Bus Stop Locations And Procedures**

- A. The bus routes may change each year based on the student population. Students may walk two to three blocks to the bus stop depending on the route structure and time schedule. Transportation Department guidelines for walking to a bus stop are .1 mile for kindergarten, .2 mile elementary, and .3 mile for secondary students. However, if it is more economical when developing bus routes to increase the distance from the home to the bus stop, these guidelines will not apply and students may walk longer distances to bus stops.
- State guidelines for walking distances from homes to bus stops do not exist. The State requires that the school district provide transportation for all students who reside more than 2 miles from school. Every other decision relating to bus stop location and routing is left to the local school board.
- B. Generally, buses will not travel down cul-de-sacs unless the vehicle is picking up students with disabilities, because backing a school bus to turn around can be a safety threat to small children and property. A full sized bus needs 115 feet to safely turn around and the average cul-de-sac is only 90 feet. Also, individual stops at all homes would add considerable time to a bus route.
- C. Visibility from the home to the bus stop is not part of District criteria for establishing bus stops. Bus stops are collector points in the neighborhood. If a parent/guardian is concerned about watching their child at the stop they need to walk with them to the stop. Topics such as the “Danger Zone” in the district bus safety curriculum explain the correct method for students to enter and exit the bus at the corner.
- Sections D. and E. were omitted here because they relate to optional uses of different light systems and are thus unrelated to the placement of bus stops.
- F. Bus stops should be located with clear visibility for 500 feet in both directions. Stops in residential areas where the speed limit is 35 mph or less may not be located within 100’ of each other (State Law).
- G. Stops in or out of residential areas with speed limits exceeding 35 mph may not be located within 300 feet of each other (State Law).
- H. Most bus stop complaints received by the Transportation Department are requests to move the bus stop closer to the home or daycare, especially if the current stop is not within view of the residence. Some bus stops will not be located where the stop can be seen from the home. If this is a concern, the parent/guardian will need to make arrangements to supervise their child at the stop.
- I. The school district views the bus stop as an extension of the school grounds and will enforce all school district policies (i.e. bus discipline, bullying, harassment, weapons, tobacco, etc) at the bus stop.
- J. If a regular education bus stop is not active for a two-week period, the stop will be discontinued until the Transportation Department or the bus company is notified. If a student riding on special transportation does not ride for three days in a row (and does not call the bus company to cancel their ride for those three days), the stop will be cancelled until a parent/guardian has contacted the Transportation Department to reactivate the stop. Once notified of the need to reactivate a bus stop, it may take up to 3 school days to re-start the service at the stop, since the pickup times for other students might need to be changed.

## **Determining Hazardous Roadways**

The Transportation Department and bus company staff meet monthly to discuss issues related to busing and the Edulog routing system. This group also does an annual review of roadways in the District that are deemed to be hazardous, where students are not assigned to a bus stop across the hazardous roadway.

The determining factor for designating a roadway as hazardous is a posted speed limit over 30 miles per hour. There may be exceptions allowed (where students are permitted to cross the road) if the traffic volume allows for safe crossing, regardless of the speed. These exceptions are presented to the Safety Committee for discussion and approved annually by the school board. A list of the designated hazardous roadways can be found in Appendix A, page 31, at the end of this [the Student Transportation Policy manual] document.

## Brevard District Schools, Florida

The policies of the Brevard District Schools in Florida include a requirement that:

Bus stops shall be designated at the most reasonably safe location for the area being served. There shall be a minimum distance of 200 feet between bus stops unless an unusual circumstance dictates otherwise. Whenever possible, school bus stops shall not be designated where the visibility is obscured for a distance of 200 feet either way from the bus.

In order to help determine *the most reasonably safe location for the area being served*, the Brevard District Schools' Transportation Department developed a *Brevard School Bus Route Survey* form that includes a series of questions for their school bus drivers to answer about the school bus stops and road hazards. Questions on the survey form include the following:

### Stops

- Are bus stops visible at least 200 feet in each direction?
- Are any of your bus stops too close/too far apart?
- Are areas available for students to wait at least 10 feet from the main roadway?
- If students must cross a roadway to board your bus, do they wait for your signal to cross?
- As you approach the bus stop are you able to see the waiting students?
- Do you have stops where motorists routinely run your stop signals?
- Do you have bus stops you believe are confusing to motorists regarding the Florida school bus stop laws?
- Do you have any bus stops you believe should be evaluated for safety deficiencies?
- Do you find students sitting right next to the road when you approach the stop?

### Road Hazards

- Do you cross railroad tracks on your school bus route?
- Are railroad crossing signaling devices (lights, gates, bells) available?
- Are you able to see at least 1000 feet in both directions at the railroad crossing?
- Are there any serious road hazards along your bus route?
- Are all appropriate sign and hazard notifications erected along your route?
- If you must cross a dual highway, is there sufficient space for your bus to be stopped in the median without blocking a travel lane?
- Are you required to back your school bus anywhere along your route?

The form also includes room for "General Bus Driver Comments." The completed survey forms can be used to help identify hazardous school bus stops as well as hazardous routes and rely on the bus drivers themselves to be able to identify problems with their routes and stops along the routes.

## Fairfax County, Virginia

The Fairfax County Virginia School District developed a School Bus Stop Safety Evaluation Criteria rating system that is to be used to rate the desirability of an existing or potential school bus stop. With this detailed rating system, each stop is rated on each of 8 criteria, using a four-point scale that ranges in value from 3 to 0 and then a cumulative value is calculated for each stop based on those ratings.

An example of the manner in which this rating system is structured and used to rate the students' waiting area at a school bus stop follows:

### Value = 3:

- The stop is in a residential neighborhood with a curbed street or a 10-foot buffer exists between the traveled portion of the road and waiting area when the speed limit is 30 mph or less. OR
- A deceleration lane and a curbed street or a deceleration lane and a 20-foot buffer exists between the traveled portion of the road and the waiting area when the speed limit is 35 mph AND the waiting area is on a sidewalk or asphalt path.

### Value = 2:

- The street is curbed or a 5-foot buffer exists from the traveled portion of the road and waiting area when the speed limit is 30 mph or less. OR
- A deceleration lane and 10-foot buffer or deceleration lane and curbed street exist between the traveled portion of the road and waiting area when the speed limit is 35 mph. OR
- A deceleration lane and curbed street or a deceleration lane and a 20-foot buffer exist between the traveled portion of the road and waiting area. When the speed limit is greater than 35 mph. OR
- A physical barrier separates and protects students from traffic when the speed limit is greater than 35 mph AND the waiting area may not be on a sidewalk or asphalt path.

### Value = 1:

- A 5-foot buffer exists between the traveled portion of the road and waiting area when the speed limit is 35 mph; the waiting area may or may not be a sidewalk or asphalt path. OR
- Students wait next to the road on a curbed street without a sidewalk or asphalt path when the speed limit is 35 mph or greater. OR
  - o A 5-foot buffer exists between the traveled portion of the road and the waiting area or the street has curbing.
  - o The waiting area is on a sidewalk or asphalt path.
  - o Posted speed is 40 mph

### Value = 0:

- A buffer less than 5 feet exists between the traveled portion of the road and waiting area when the speed limit is 35 mph. OR
- A buffer less than 10 feet exists from the traveled portion of the road when the speed of motorists is 40 mph or more AND the waiting area may not be on a sidewalk or asphalt path

# Conclusion

Although a few states have policies on routing and placement of school bus stops, the vast majority of these decisions are made at the local school district level. Though local school transportation professionals have been given the responsibility for planning school bus routes and designating school bus stops, little information regarding safety considerations for designating stops has been available to them.

The guidelines for selecting school bus stops presented here reflect a priority of safety for students getting to and from bus stops and while waiting for their buses. The guidelines have been developed with the recognition that, most of the time, school bus routes and stops must exist in less than ideal environments. School transportation professionals will always have to balance the designation of “ideal” school bus stops with the realities of what the bus route will allow as they are impacted by local roadway conditions, school budgets and other limitations.



The primary goal for providing these guidelines has been to provide school bus transportation professionals with information they will find useful in developing new policies or reviewing and revising existing policies and procedures for selecting school bus stops. Another goal has been to encourage districts to establish policies that provide the safest school bus stops possible, within existing constraints. For additional information on school bus safety and school bus driver education, child pedestrian injury data and pedestrian safety education, see the Resources section.

# References

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5. National School Transportation Specifications and Procedures 2005 Revised Edition. Adopted by: The Fourteenth National Congress On School Transportation. Central Missouri State University. Warrensburg, Missouri, May, 2005.
6. Guidelines for the Location and Design of Bus Stops. Transit Cooperative Research Program Report 19. Federal Transit Administration. Transportation Research Board. Washington, DC. 1996.
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# Resources

## School Bus Safety and School Bus Driver Education

### ***Identification and Evaluation of School Bus Route and Hazard Marking Systems***

National Association of State Directors of Pupil Transportation.

In this report, the National Association of State Directors of Pupil Transportation describes findings from NHTSA-funded research regarding school bus route hazards. NASDPT defines school bus route hazards, recommends a model for identifying them, and describes how to train and inform school bus drivers and school transportation officials these hazards.

<http://www.nasdpts.org/hazard.pdf>

### ***Illinois School Bus Safety Program for Pre-K and Grades K–8***

Illinois State Board of Education.

This teacher's guide includes a ten-lesson program intended to teach children the basics of bus safety. These materials include age-appropriate lesson plans and activities that focus on safe skills and behavior as students in pre K through grade 8 walk to, wait for, ride on, board and exit the bus.

[http://www.isbe.state.il.us/Funding/pdf/bus\\_safety\\_teach\\_guide.pdf](http://www.isbe.state.il.us/Funding/pdf/bus_safety_teach_guide.pdf)

### ***Kids, the School Bus and You***

National Highway Traffic Safety Administration.

This handout presents tips and rules for children, parents, and drivers to help promote safety in and around school buses.

Search the NHTSA Web site (<http://www.nhtsa.dot.gov>)

### ***National School Transportation Specification and Procedures***

The Fourteenth National Congress on School Transportation.

The National School Transportation Specification and Procedures are intended to guide states as they establish their own rules and regulations for school bus equipment and school transportation operations. Based on recommendations from the delegates of the Fourteenth National Congress on School Transportation, these specifications focus on the safety, security, and general welfare of student bus riders.

<http://www.ncstonline.org/Documents/2005%20NSTSP-v4-4-7-08.pdf>

### ***School Bus Driver In-Service Safety Series***

National Highway Traffic Safety Administration.

This training program is designed for practicing bus drivers. Modules address: Driver Attitude, Student Management, Highway-Rail Grade Crossing Safety, Vehicle Training, Emergency Evacuation, Knowing Your Route, Loading and Unloading, Adverse Weather Conditions, and Transporting Students with Special Needs. Most modules require between one and one and one-half hours to complete.

Search the NHTSA Web site (<http://www.nhtsa.dot.gov>)

### ***School Bus Stops: A Safety Guide For Transporters***

Pupil Transportation Safety Institute.

This guide describes elements of bus stop safety, how to handle special situations, responsibilities of individuals involved and example forms.

[http://www.pts.org/downloads/School\\_Bus\\_Stop\\_book.pdf](http://www.pts.org/downloads/School_Bus_Stop_book.pdf)

### **Web Site of the National Association for Pupil Transportation**

This Web site provides information about the association, its committees, its annual conference, and National School Bus Safety Week, as well as relevant links for pupil transportation professionals. It includes professional development and certificate programs for transportation professionals seeking continuing education.

<http://www.napt.org>

### **Web Site of the National Association of State Directors of Pupil Transportation Services**

This Web site features membership and contact information, as well as publications, reports, and position papers on topics regarding safety and best practices in student transportation. This site also contains information about councils within the organization, including the School Bus Manufacturers Technical Council, the Supplier Council, and the Council of State Associations.

<http://www.nasdpts.org>

## **Child Pedestrian Injury Data**

### ***Traffic Safety Facts: Children***

National Highway Traffic Safety Administration.

This annual publication reports on traffic injuries and fatalities of children ages 14 and under. This report indicates trends in the types of traffic situations in which injuries occur and the age of children involved. It also details seatbelt use and effectiveness.

Search the NHTSA Web site (<http://www.nhtsa.dot.gov>) for the current edition.

### ***Traffic Safety Facts: School Transportation-Related Crashes***

National Highway Traffic Safety Administration.

This annual publication highlights characteristics of crashes that occur during transport to school. It includes the time and type of crashes and fatality statistics. Crashes that involve school buses or vehicles functioning as school buses are captured in this data.

Search the NHTSA Web site (<http://www.nhtsa.dot.gov>) for the current edition.

## **Pedestrian Safety Education**

### ***A Kid's Guide to Safe Walking***

National Highway Traffic Safety Administration.

Geared towards middle school-age youth, this brochure introduces basic pedestrian safety skills, including several safety tips for crossing the street.

Search the NHTSA Web site (<http://www.nhtsa.dot.gov>)

### ***Prevent Pedestrian Crashes***

National Highway Traffic Safety Administration.

This three-page guide for parents and caregivers of pre-school and elementary school children offers basic information on child pedestrian crashes and safety behaviors for parents to teach to children.

Search the NHTSA Web site (<http://www.nhtsa.dot.gov>)

### ***Teaching Children to Walk Safely as They Grow and Develop***

National Center for Safe Routes to School.

This guide provides an overview of child development during the elementary and middle school years and how it relates to their pedestrian safety skills. Behaviors to assess and tips for how to strengthen a child's pedestrian abilities are included for three age groups.

[http://www.saferoutesinfo.org/resources/education\\_teachingchildren.cfm](http://www.saferoutesinfo.org/resources/education_teachingchildren.cfm)

### ***Tips for Parents and Other Adults for Teaching Pedestrian Safety to Children***

National Center for Safe Routes to School.

This brief tip sheet describes how parents can be role models of safe pedestrian behavior. Other tips focus on choosing safe walking routes and the importance of considering child development patterns while teaching pedestrian safety skills.

[http://www.saferoutesinfo.org/resources/collateral/tips\\_for\\_parents.pdf](http://www.saferoutesinfo.org/resources/collateral/tips_for_parents.pdf)

### ***Tips for Walking Safely to School***

National Center for Safe Routes to School.

This handout offers tips for school-age children. These tips describe how to increase safety when walking to and from school.

[http://www.saferoutesinfo.org/resources/collateral/tips\\_for\\_kids.pdf](http://www.saferoutesinfo.org/resources/collateral/tips_for_kids.pdf)

### ***Walkability Checklist***

Pedestrian and Bicycle Information Center.

The Walkability Checklist helps give insight into the walkability of a neighborhood. It contains insightful questions, allowing the user to evaluate a neighborhood's walkability. In addition to the questions, the Checklist provides both immediate answers and long-term solutions to a neighborhood's potential problems.

<http://www.walkinginfo.org/checklist>

### ***Web Site of the National Center for Safe Routes to School***

The National Center for Safe Routes to School Web site features a variety of resources that focus on increasing child pedestrian and bicyclist safety, particularly during travel to school. Useful materials range from webinars to downloadable talking points to program development tips and toolkits. There are resources for parents, school staff, students, planners, Safe Routes to School coordinators, and marketing professionals.

<http://www.saferoutesinfo.org>

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