# SAFE ROUTES TO SCHOOL

## Strategic Action Plan

ORANGE COUNTY, NORTH CAROLINA



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Updates by Orange County Planning &
Town of Hillsborough Planning 2013

Prepared for: Orange County, NC

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# Acknowledgements


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# 1 INTRODUCTION

Chapter Outline:



## 1.0 BACKGROUND

The Orange County Safe Routes to School Action Plan is a planning document prepared by committed citizens, parents, school administrators, and local government officials that recognizes goals and visions for enhancing opportunities for active travel to school, and outlines ways to turn those opportunities into realities. The Action Plan is the best first step in a successful Safe Routes to School program. This Action Plan addresses three schools in the Hillsborough area: Cameron Park Elementary, Grady Brown Elementary, and CW Stanford Middle School. The planning process served as an excellent tool for engaging schools and preparing them to make significant changes in their travel environments.

Many adults today walked or bicycled to school when they were young. Few of today's children enjoy that trip. There are a number of reasons for the decline in active travel to school, from land use policies and school consolidation, to fears about traffic safety and lack of infrastructure for non-motorized transportation. As a result, more parents are driving their children to school, morning traffic congestion is getting worse, and children are getting less exercise. Childhood obesity and diabetes rates are at all-time highs. Committed citizens in North Carolina can change this cycle, just as those in other communities across the country have done.

Safe Routes to School began as a safety initiative in Odense, Denmark about 30 years ago. The community was experiencing a high rate of crashes, including fatalities, involving children on their way to and from school. To resolve the problem, the Town brought together a diverse group of citizens, transportation professionals, and local government representatives who developed and implemented a variety of infrastructure improvements and educational and awareness programs. They achieved dramatic results, with 29% fewer crashes involving students and a 58% reduction in the overall number of crashes involving pedestrians and cyclists. Because of the community's educational program highlighting the benefits of bicycle helmets, their use increased significantly and injuries declined[1].

Clearly, Safe Routes to School helps not only schoolchildren, but also the community as a whole. Other European cities took note and began their own programs, followed in short order by cities in New Zealand, Australia, Canada, and then the United States in the 1990s. The Bronx is credited with the United States' first Safe Routes to School program[1]. Successful federal pilot programs in California and Florida have demonstrated how educational and encouragement programs can help get more children safely walking and bicycling to school, and have paved the way for a national Safe Routes to School program.

**The primary goals of the Safe Routes to School Program are to:**

1) Enable and encourage children, including those with disabilities, to walk and bicycle to school;
2) Make bicycling and walking to school a safer and more appealing transportation option, thereby encouraging a healthy and active lifestyle from an early age; and
3) Facilitate the planning, development, and implementation of projects and activities that will improve safety and reduce traffic, fuel consumption, and air pollution in the vicinity of schools[2].

### *The Federal Safe Routes to School Program*

The Federal Safe Routes to School Program was established in the 2005 Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU). It is a federally-funded reimbursement program providing communities with the opportunity to improve conditions for bicycling and walking to school. Section 1404 of SAFETEA-LU mandates that the North Carolina Department of Transportation (NCDOT) administer this program within the state, providing financial assistance to state, local, and regional agencies, and non-profit organizations that demonstrate an ability to meet the requirements of the program. The program provides funds for infrastructure improvements and non-infrastructure educational and encouragement activities for schools serving grades K-8. Infrastructure improvements must occur within a two-mile radius of the school[2]. This distance is considered reasonable for a child to bicycle to and from school each day.

### *The NC Safe Routes to School Program*

The North Carolina Department of Transportation's Division of Bicycle and Pedestrian Transportation has a long history of promoting active travel to and around schools. The Division continues to work with numerous communities across the state to develop pedestrian and bicycle plans, which is often the first step in improving non-motorized transportation infrastructure within a municipality. The Division provides a number of other services, including safety education, bicycle use training, crossing guard training, and helmet promotions throughout the state, as well as design support to other NCDOT units.

The NCDOT first identified safe travel to school as a safety priority in 2000. In 2005, it established the North Carolina Safe Routes to School (SRTS) Program to coordinate with the federal program. It works with schools, local governments and agencies, advocacy and non-profit organizations, and public health professionals at a grassroots level to identify improvements that can help make bicycling and walking to and from school a safe and healthy transportation alternative.

While infrastructure improvement is a key recommendation, education and encouragement programs are also critical to change a community's habit of driving children to school. Parents are persuaded by the actions of others. If other children in their neighborhood are walking or bicycling, they are more likely to let their children do so as well.

> "Motor vehicle crashes are the leading cause of death for children from 2 to 14 years old." (Source: National Highway Traffic Safety Administration[3])

### *Why Safe Routes to School Matters*

Nationally, fewer than 15% of children walk or bicycle to school. Nearly half of all school-aged children are driven to school[4] by their parents. This contrasts sharply with the statistical picture of 40 years ago. In 1969, 42% of all school-aged children walked or bicycled to school. In fact, almost 90% of kids living within one mile of their school walked or bicycled[5]. This decline in active travel coincides with a three-fold rise in childhood obesity and an alarming increase in adult onset diabetes - among children. A 2008 analysis by the U.S. Centers for Disease Control and Prevention shows that the South has the worst record of any U.S. region in active travel to school, with only 36% of children living within a mile of school walking or bicycling at least one day each week[6]. Only about half of North Carolina's schoolchildren are getting the recommended amount of physical activity, at least one hour most days, preferably everyday[7].

In addition to health concerns, the increase in the number of children being driven to school by their parents directly affects traffic congestion. Studies by the National Highway Traffic Safety Administration (NHTSA) show that school–related traffic accounts for 20 to 25% of all morning peak hour traffic[5]. By reducing the number of parents driving children to school, we can relieve morning peak hour delays and congestion. Reducing congestion around a school will improve the air quality. Although pollutants from congestion do not cause asthma, it can be a factor in triggering attacks. A study performed in Atlanta, Georgia during the 1996 Summer Olympics showed

a direct link between asthma and air quality. During the 17 days of the games, the City increased public transportation and limited the use of private vehicles in the downtown area, reducing morning traffic by 23% and peak ozone amounts by 28%. During this same time, there was a 42% decrease in asthma related hospitalizations, emergency room visits, and urgent care visits when compared to the 4 weeks before and after the Summer Games[8]. Asthma accounts for over 14 million missed school days each year (approximately 4 days per year per student with asthma)[9]. Therefore, improving the air quality around schools can improve student attendance rates.

Overall, there are several significant benefits to providing exercise for children: weight control, healthy bones, and fighting disease. Additionally, children who exercise regularly tend to sleep better at night and feel more rested for school. Starting good habits at an early age benefit a lifetime.

Research has shown that the most successful way to increase bicycling and walking is through a comprehensive approach that includes the "5 E's": education, encouragement, engineering, enforcement, and evaluation. Local SRTS programs can address these topics by following a comprehensive strategy that focuses on infrastructure improvements where the physical environment is not conducive to walking or bicycling, and promoting non-infrastructure programs, including education, encouragement and enforcement strategies.

## 1.1 SCHOOL DESCRIPTIONS

**Grady Brown Elementary** serves grades Pre-K-5th and is located on the western periphery of the Town of Hillsborough (just west of I-40). It adjoins mostly rural, low density residential areas. It serves 465 children of which no children walk to school.


**Table 1.1 Grady Brown Elementary Enrollment Data and School Characteristics**

| | |
|---|---|
| Grades Serviced | Pre-K-5th |
| Total Enrollment | 465 |
| Number of Students Living Within 2 Miles | Unknown |
| Percent of Students Living Within 2 Miles | Unknown |
| Number of Buses | 7 |
| Number of Students Riding Buses | 225 (48%) |
| Number of Students Walking | 0 (0%) |
| Number of Students Bicycling | 0 (0%) |
| Number of Students Driven | 240 (52%) |
| Special Needs Population | 10 |
| Land Uses Surrounding School | Rural Residential |
| "No transport" or "walk" zones | No |
| Crossing Guards | No |
| Policies that Restrict Walking or Bicycling | No |
| Existing Safety Patrol Program | Yes |
| Bicycle/Pedestrian Safety Taught to Students | Yes |

*Data provided by School District.*

**CW Stanford Middle School** serves grades 6-8 and is located in northern Hillsborough, just north of US 70. It adjoins residential neighborhoods. It serves 571 children of which only a few walk or bicycle to school.

| Table 1.2 CW Stanford Middle Enrollment Data and School Characteristics | |
|---|---|
| Grades Serviced | 6-8 |
| Total Enrollment | 571 |
| Number of Students Living Within 2 Miles | Unknown |
| Percent of Students Living Within 2 Miles | Unknown |
| Number of Buses | 10 |
| Number of Students Riding Buses | 211 (37%) |
| Number of Students Walking | 3 (0.5%) |
| Number of Students Bicycling | 0 (0%) |
| Number of Students Driven | 357 (62.5%) |
| Special Needs Population | Varies |
| Land Uses Surrounding School | Residential |
| "No transport" or "walk" zones | No |
| Crossing Guards | Yes, 1 on campus |
| Policies that Restrict Walking or Bicycling | No |
| Existing Safety Patrol Program | No |
| Bicycle/Pedestrian Safety Taught to Students | No |

*Data provided by School District.*

**Cameron Park Elementary** serves K-5 grades and is located in a residential neighborhood, in Downtown Hillsborough. It serves 632 children of which only a few children walk and bicycle to school.

| Table 1.3 Cameron Park Elementary Enrollment Data and School Characteristics | |
|---|---|
| Grades Serviced | K-5 |
| Total Enrollment | 632 |
| Number of Students Living Within 2 Miles | Unknown |
| Percent of Students Living Within 2 Miles | Unknown |
| Number of Buses | 7 |
| Number of Students Riding Buses | 300 (47%) |
| Number of Students Walking | 5 (0.8%) |
| Number of Students Bicycling | 3 (0.5%) |
| Number of Students Driven | 324 (51%) |
| Special Needs Population | 60 |
| Land Uses Surrounding School | Residential |
| "No transport" or "walk" zones | No |
| Crossing Guards | No |
| Policies that Restrict Walking or Bicycling | No |
| Existing Safety Patrol Program | Yes |
| Bicycle/Pedestrian Safety Taught to Students | Yes |

*Data provided by School District.*

*The front entrance to CW Stanford Middle School.*

## 1.2 PLANNING PROCESS

This planning process began with a 'kick-off' meeting in January 2010, which included a visioning and goals session and map working session with the project staff, steering committee, and Consultants. This meeting was followed by comprehensive fieldwork and a public workshop that sought input from residents, including parents, teachers, principals, children, Town of Hillsborough staff, and Orange County staff. This input and analysis led to the development of a draft plan that consisted of an analysis of existing conditions, and recommendations in the areas engineering, education, encouragement, enforcement, and evaluation. The plan communicates the current conditions for walking and bicycling around the three schools, recommends improvements, and outlines strategies to carry out those recommendations. The steering committee, Town staff, County staff, and NCDOT met with the Consultants for a draft plan review in which comments were provided. The final plan is an action-oriented document that will guide Orange County, the Town of Hillsborough, and the three schools in making it safer to walk and bicycle to school and to encourage more children and families to walk and bicycle to school.

## 1.3 VISION AND GOALS

The following five-year vision and goal statements were developed out of the County's original SRTS planning grant application and from committee members and the general public during the planning process. These statements guided the development of this Plan:

• Create safer walking and bicycling environments.

• Increase the number of children and parents walking to school to reap the benefits of healthier living, stronger community, and less pollution.

• Develop safer crossings of roadways for pedestrians.

• Provide greater connectivity between neighborhoods and schools.

• Educate parents and children about safety and proper rules of the road for pedestrians.

• Provide sidewalks within no walk school zones so that school buses wouldn't have to stop at every individual home.

• Reduce mileage travelled and stops made by school buses, thereby reducing costs and emissions/pollution.

• Increase physical activity for children to address obesity issues

• Determine appropriate pedestrian improvements, including traffic calming measures and safer crossings in areas with many constraints such as topography, right-of-way, and historic district regulations.

## 1.4 SRTS ACTION PLAN FRAMEWORK

The Orange County SRTS Action Plan was developed with a comprehensive, framework approach addressing all 5 E's of the SRTS program (engineering, education, encouragement, enforcement, and evaluation). Recommendations are developed for all 5 E's. They are talked about more in-depth on the following page.

# The 5 E's of Safe Routes to School


## ENGINEERING

Engineering strategies can enable more bicycling and walking and also make these activities safer. Engineering can include: improving & installing sidewalks, crosswalks, signage, traffic signals and more.

## ENCOURAGEMENT

Encouragement strategies are about having fun — they can provide ways for parents and children to discover that walking and bicycling are do-able and a lot of fun! Special events and contests can get kids excited to be a part of SRTS!

## EDUCATION

Education activities teach pedestrian, bicycle and traffic safety, as well as create awareness of the benefits and goals of SRTS. Lessons can be incorporated into classroom activities or special events to teach skills.

## ENFORCEMENT

Enforcement through the SRTS program should involve a network of community members working together to ensure safe walking, bicycling and driving. It helps deter unsafe behaviors of drivers, pedestrians and bicyclists.


## EVALUATION

Evaluation is about identifying issues, improving activities and understanding results. It is an important component of any SRTS program because it is used to determine if the goals of the strategies are being met and to assure that successful efforts are being recognized.

***Footnotes***

1. National Center for Safe Routes to School. History of Safe Routes to School. Available: http://www.saferoutesinfo.org/guide/introduction/history_of_srts.cfm Accessed: December 14, 2010.

2. FHWA – SAFETEA-LU Section: 1101(a)(17), 1404. 2005. Fact Sheets on Highway Provisions: Safe Routes to School. Available: http://www.fhwa.dot.gov/safetealu/factsheets/saferoutes.htm. Accessed: December 14, 2010.

3. National Highway Traffic Safety Administration. Traffic Safety Facts: 2006 Data. Available: http://www-nrd.nhtsa.dot.gov/pubs/810803.pdf. Accessed: December 14, 2010

4. U.S. Department of Transportation. (1995). Nationwide Personal Transportation Survey.

5. National Center for Safe Routes to School. The Decline of Walking and Bicycling. Available: http://www.saferoutesinfo.org/guide/introduction/the_decline_of_walking_and_bicycling.cfm Accessed: December 14, 2010.

6. Centers for Disease Control and Prevention. Investment in Safe Routes to School Projects: Public Health Benefits for the Larger Community. Available: http://www.cdc.gov/pcd/issues/2008/jul/07_0087.htm?s_cid=pcd53a90_e. Accessed : December 14, 2010

7. North Carolina Public Health/Public Schools of North Carolina/NC State University Cooperative Extension. Choose to Move More Every Day. Available: http://www.ces.ncsu.edu/depts/fcs/pdfs/ChooseToMove_School_Age.pdf. Accessed: December 14, 2010-12-14

8. Friedman M, Powell K, Hutwagner L, Graham L, Teague G Impact of Changes in Transportation and Commuting Behaviors During the 1996 Summer Olympic Games in Atlanta on Air Quality and Childhood Asthma. Journal of the American Medical Association. 2001 February 285(7):897-905.

9. National Center for Safe Routes to School. Health Risks. Available: http://www.saferoutesinfo.org/guide/introduction/health_risks.cfm. Accessed: December 14, 2010.

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# 2 EXISTING CONDITIONS

Chapter Outline:



## 2.0 INTRODUCTION

Defining the existing conditions of the study area is a critical element of the SRTS Action Plan. It documents the physical conditions of the study area, participant perceptions and the social norms within the individual school that ultimately delineate the issues the Action Plan must mitigate. The existing conditions are documented through a series of data collection processes that interface both the engineering and planning aspects of the SRTS Program. By combining the identification of infrastructure barriers and deficiencies in the non-vehicular transportation system with the identification of the regulations, policies and social patterns of the school's adjacent community, a complete profile can be assembled that fully defines the unique challenges of each individual school's community as well as the goals of its Action Plan.

A comprehensive, multi-faceted approach was taken to examine existing conditions including the collection of data from parent surveys and student travel tallies, site work and field interviews, and area mapping. A thorough inventory of existing conditions is assembled to provide a baseline by which to measure the results and outcomes of the SRTS Program at the community, school and street levels. The following resources were used to develop the baseline profiles of the existing conditions at Cameron Park Elementary, CW Stanford Middle, and Grady Brown Elementary:

***Tallies and Student Counts*** collected within the classrooms provided student travel norms, a profile of the school's travel environment and the number of children using each mode of transportation.

***Parent Surveys*** included the results of the parent surveys distributed by the schools and identify pre-plan parental perceptions of school zone's walkability as well as the perceived condition of the existing bicycle facilities. These surveys were a key component in the identification of relevant influences in family transportation choices at the school.

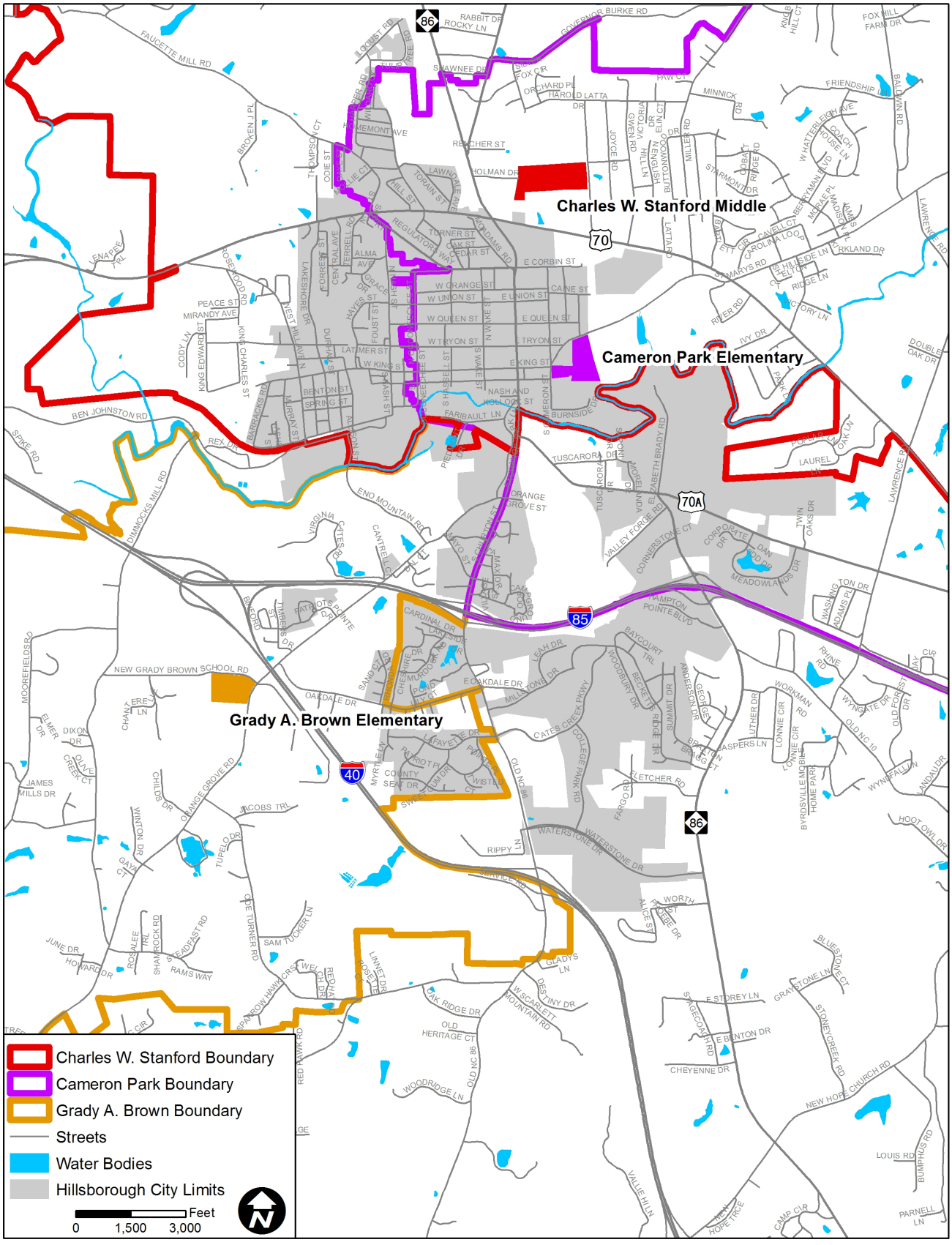
***Field Assessments*** were used to assess the supporting infrastructure and user behaviors including an on-site data collection and mapping of existing conditions. During their on-site assessments, the consultants logged the important features of both the physical and behavioral components of the pedestrian environment within the school zone and spoke with crossing guards, police officers, municipal planners, teachers, administrators, and agency officials.

***Existing Data Sources*** were tapped to expose all relevant points-of-interest to the Action Plan such as roadways and intersections with pedestrian statistics including, but not limited to, significant crash histories as well as future State and municipal capital improvement projects that may impact the school's pedestrian routing plan. Geographic Information Systems (GIS) data was critical to analyze bicycle and pedestrian facilities and gaps.

## 2.1 ORANGE COUNTY/TOWN OF HILLSBOROUGH OVERVIEW

The three schools being examined for this study are part of the Orange County school system, but all reside inside or adjacent to the Town of Hillsborough. The Town has made improving the walkability and bikability a high priority. Cooperation is necessary for improvements though as roadways cross county and town jurisdictional boundaries surrounding the schools. Map 2.1 shows an overview of the three schools.

# Map 2.1 School Service Boundary Map



## 2.2 GRADY BROWN ELEMENTARY OVERVIEW

Grady Brown Elementary is currently not a walkable or bikable school mainly because of the following: 1) The school is south of I-40 and the roadway bridge has very narrow shoulder, and 2) There are no sidewalks or pedestrian facilities of any kind leading to and away from the school. Still, a very few students (especially Cedar Ridge High School students) walk to the campus area.

Grady Brown Elementary is on New Grady Brown School Road, just off Orange Grove Road.

### *Grady Brown Tallies And Student Counts*

The National Center for Safe Routes to School provides a Student Arrival and Departure Tally to help measure the modes of transportation utilized by the students and how the SRTS Program will affect vehicular trip generation for the school. This tally may be taken annually and is a measure of the overall success of the program.

The following tables (Tables 2.1 and 2.2) show the results of tallies collected in Spring 2009 breaking down the non-motorized traffic by mode of transportation and by origin relative to school location.


*Morning shadows on the entrance sign for Grady Brown Elementary School.*

**Table 2.1: Travel Norms for Grady Brown Elementary (estimates from school leaders)**

| Grady Brown Elementary Travel Norms | |
|---|---|
| **Transportation Mode** | **Number of Students** |
| Driven by Parents | 240 |
| Transported by Bus | 225 |
| Walked | 0 |
| Bicycled | 0 |

**Table 2.2: Percentage of Students Walking and Bicycling by Distance (from SRTS parent surveys)**

| Pedestrian and Bicycle Breakout by Locality and Transportation Mode | | |
|---|---|---|
| **Distance to School** | **Walk** | **Bicycle** |
| Less than 1/4 mile | 0% | 0% |
| Between 1/4 and 1/2 mile | 0.5% | 0% |
| Greater than 1/2 mile | 0% | 0% |

*140 parent surveys were completed*

### *Grady Brown Parent Surveys*

The Parent Survey, provided by The National Center for Safe Routes to School, polls parents to determine the key factors affecting parents' decisions to allow or disallow children to walk or bicycle to area schools. These surveys also help identify the presence of safety-related conditions and provide basic background information for demographic correlation and analysis. Both the Parent Survey and Student Tally forms should be conducted at least annually to track changes and determine the success of the SRTS program.

The following information in Tables 2.3 and 2.4 was compiled from Grady Brown Elementary Parent Surveys in Spring 2010 and highlights parent perceptions of their children's existing walkable/bikable routes to school and the improvements necessary to elicit their participation in the SRTS program.

*Automobile traffic ranked high among parents' concerns for allowing their children to walk or bicycle to school. Above is Orange Grove Road (bridge over I-40). Traffic is heavy here at the start and end of the school day.*

**Table 2.3: Top Five Concerns for Parents Under Existing Conditions**

| Top Five Concerns of Parents |
|---|
| 1. Distance |
| 2. Traffic speed along route |
| 3. Traffic volume along route |
| 4. Presence of sidewalks or pathways |
| 5. Safety of intersections & crossings |

*For complete results, see Appendix A.*

**Table 2.4: Top Five Improvements Specified as Prerequisite by Parents for Participation**

| Top Five Improvements | |
|---|---|
| 1. Safety of intersections & crossings improved | 39.4% |
| 2 Sidewalks or pathways added or improved | 37.8% |
| 4. Distance to walk/bicycle reduced | 33.9% |
| 4. Traffic speed along route reduced | 33.9% |
| 5. Traffic volume along route reduced | 29.1% |

*For complete results, see Appendix A.*

*140 parent surveys were completed*

### *Grady Brown Field Assessment And Maps*

Fieldwork included a thorough on-site assessment of existing infrastructure within the school zone, and an evaluation of both traffic and behavioral patterns exhibited by roadway users during drop-off and pick-up. The field assessment broadly analyzes school traffic patterns, characteristics of the transportation network users, and the existing infrastructure strengths and weaknesses within the school zone.

The following pages highlight the data collected pertaining to the strengths and weaknesses of the existing pedestrian environment for Grady Brown Elementary School. A photographic inventory, infrastructure survey and site mapping are included.

Detailed maps depicting physical features are found in Maps 2.2-2.4.

### *Behavioral Components of Vehicular and Pedestrian Traffic Patterns*

There are little, if any elementary school students walking or bicycling to school. On-site observations noted only a small number of pedestrians that mainly walked between the high school and the elementary school once they had driven to the site. Additional information describing the travel norms for Grady Brown Elementary is listed below:

• Motorist behavior was observed as “good” adhering to pedestrian courtesies as appropriate on campus and as “fair” along Orange Grove Road with some speeding and car stacking.

• Automobile traffic was sometimes too fast due to parents and high school students running late to campus. Also, thru-traffic on New Grady Brown School Road and Orange Grove Road were often driving over the speed limit.

• Pedestrian behaviors were observed to be generally safe around the school. Parents and children walking around the campuses exhibited “good” behavior and followed the traffic patterns and safety rules.

• There were only minor backups of automobile traffic during drop-off times. Traffic does stack in the afternoons for pickup especially in the turn lane heading west and in the right lane heading east (causing some thru-traffic weaving and blind spots).

• Crime was not a significant issue of concern based on field analysis and public input.

• Crossing guards were not present. However, a police car was situated on the New Grady Brown School Road shoulder at the school entrance to maintain order.

### *Existing Infrastructure - Strengths*

There were very few strengths noted because there were no pedestrian facilities and many more issues than strengths.

• Clear school zone and pedestrian crossing signage is found along New Grady Brown School Road.

• There are on-campus sidewalks along the building front, adjacent to the car drop-off line.


*Above and below: Signage along New Grady Brown School Road is highly visible and provides some cue to the motorists that pedestrians may be in the area.*

### *Existing Infrastructure - Deficiencies*

There are multiple issues related to infrastructure deficiency and traffic issues that warrant improvement, create safety hazards, and prevent children from walking and cycling to school. Key weaknesses, barriers, and obstacles were annotated as follows:

• There are no sidewalks found on adjacent roadways (New Grady Brown School Road, Orange Grove Road, and Oakdale Drive). Table 2.5 summarizes key locations where insufficient walkways or system breaks in sidewalk continuity create barriers to pe-destrians.

• There are multiple two-lane, rural roadways that pose safety barriers for school-age cyclists and pedestrians. Traffic is significant, especially during school start up and end times, along the primary roadway system within the school zone, most notably upon New Grady Brown School Road, Orange Grove Road, and Oakdale Road.

*Sidewalk is lacking along New Grady Brown School Road.*

*Sidewalk is also lacking along Orange Grove Road.*

• Traffic speeds are an issue along all adjacent and nearby roadways. NCDOT has designed these two-lane arterials for speeds of 45 mph and 55 mph. Even along New Grady Brown School Road, in front of the schools, the school zone speed is ONLY reduced to 35 mph.

• There are no bicycle or pedestrian accommodations across I-40 on the Orange Grove Road bridge. There is approximately a two-foot shoulder that is unsafe for pedestrian and bicycle crossing.

• There were no bicycle racks on campus.

• Within the rural environment surrounding the schools, there is no curb and gutter. Drainage ditches and right-of-way are an obstacle to sidewalk or sidepath development.

*High school student walking to school along Orange Grove Road, just across the bridge. The narrow shoulder is not hospitable for pedestrians.*

• There are no crossing accommodations on New Grady Brown School Road between the two schools. Students from each school were observed crossing the road. Traffic becomes quite heavy along this road making crossing dangerous.

• Unofficial bus stops lacked clear designation and safe harbor at Timbers/Orange Grove and Patriot Pointe/Orange Grove.

### *Key Crossing Issues*

*Orange Grove Road/I-40 Bridge*
As discussed before, this is a key obstacle preventing numerous families and children from walking or bicycling to school. Most residences are north of I-40 from the school. The bridge only features a 2-3 foot shoulder with significant traffic during school drop-off and pick-up times.

Significant study has been conducted regarding pedestrian/bicyclist improvements to the bridge. NCDOT Division 7 is slated to conduct a feasibility study (TIP Project EB-4980) for pedestrian bridge accommodations. NCDOT Division 7 personnel have already conducted a field visit in which two main alternatives were discussed, a separate pedestrian bridge, or a bridge widening effort.

*Orange Grove Road/New Grady Brown School Road*
This intersection features the only traffic signal in the immediate area. Heavy traffic is common here during dropoff/pickup hours. There is a wide turning radius here which allows cars to move quickly through the intersection. There are no sidewalks or pedestrian crossing treatments at this intersection.

*Orange Grove Road/Oakdale Drive*
Located just north of I-40, this intersection does not have a traffic signal. During school dropoff/pickup hours, significant traffic stacking occurs on Oakdale Drive. There are no sidewalks or pedestrian cross-ing treatments.

*The I-40 bridge is the most significant obstacle to safe pedestrian travel to school.*

**Table 2.5: Insufficient Walkways**

| Key Sidewalk Gaps | | |
|---|---|---|
| **Roadway** | **Orientation** | **Gap Description** |
| New Grady Brown School | Both sides | No sidewalk present |
| Orange Grove | Both sides | No sidewalks present |
| Oakdale | Both sides | No sidewalks present |

# Map 2.2 Grady Brown Campus Map

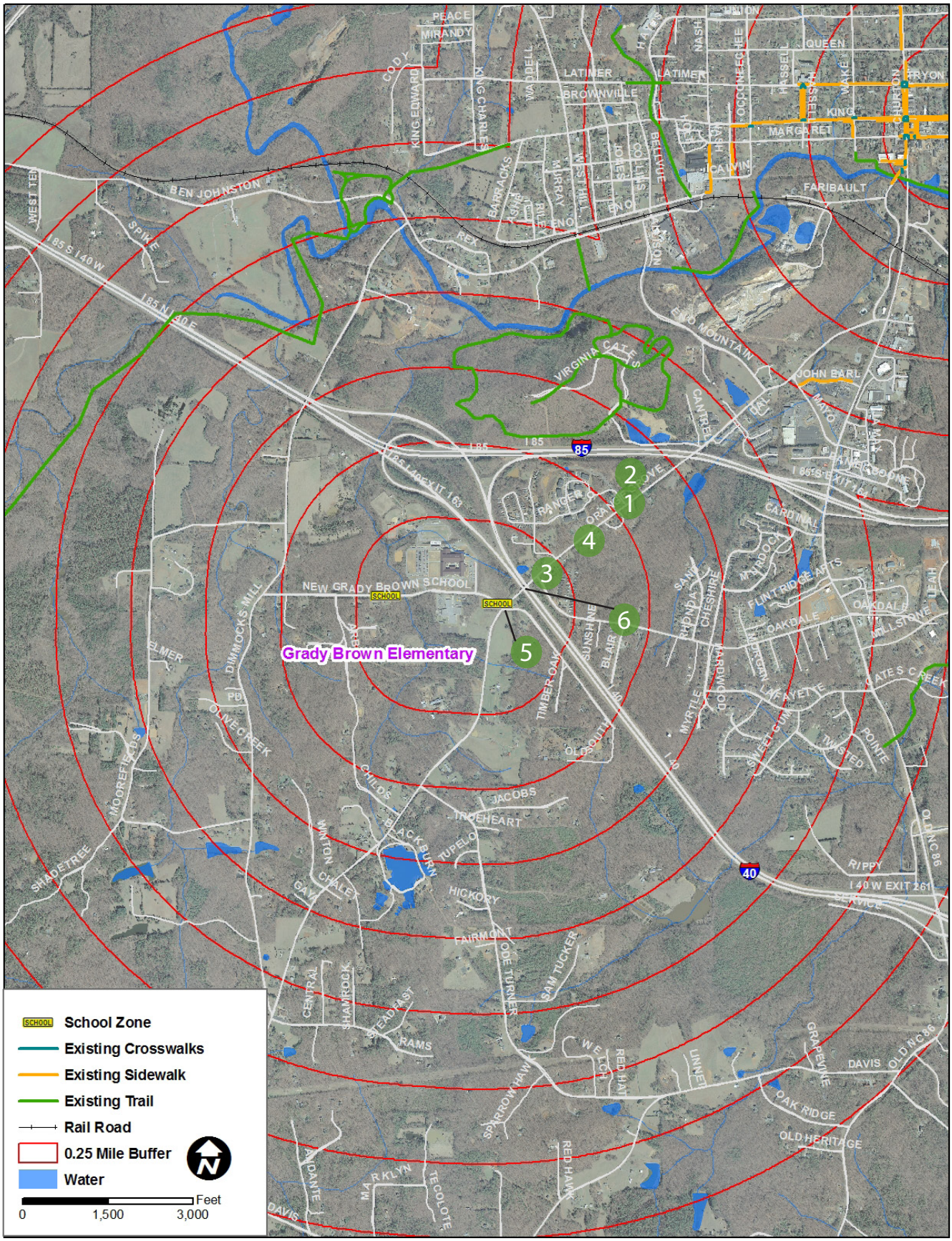

*The entranceway for motorists to drop off and pick up their children.*


*Drop off zone in front of school. Sidewalk can be found around the school front.*


*New Grady Brown School Road with Grady Brown Elementary on the left and Cedar Ridge High School on the right.*


*New Grady Brown School Road just west of Orange Grove Road intersection.*

# Map 2.3 Grady Brown School Travel Map




*Orange Grove Road near apartment complexes.*


*Schoolchildren wait along Orange Grove Road for the school bus.*

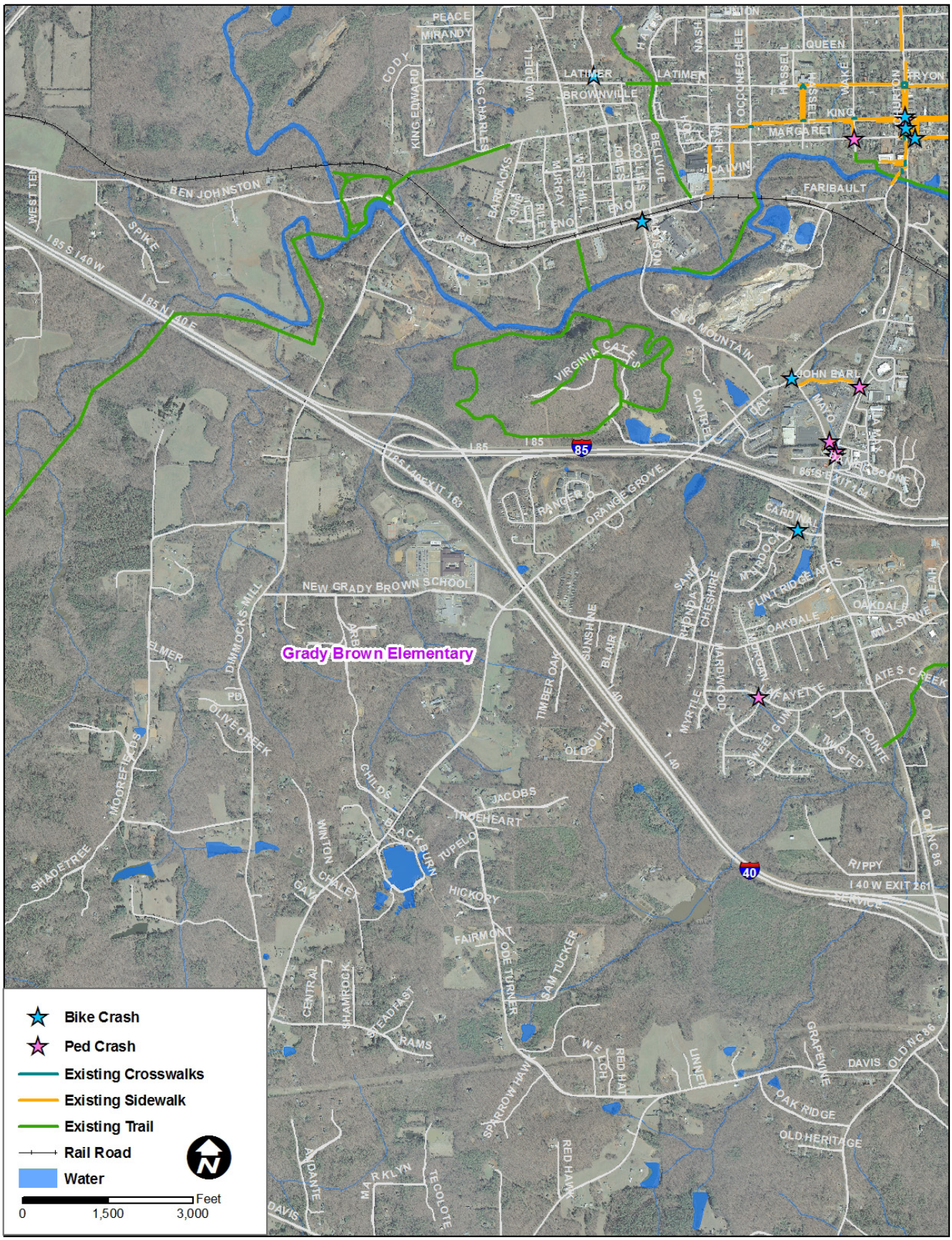

*T-intersection of Oakdale Road and Orange Grove Road.*


*Orange Grove Road, between I-40 and I-85. It is critical to provide pedestrian accommodation to connect this area to downtown Hillsborough.*


*Intersection of Orange Grove Road and New Grady Brown School Road.*


*One alternative to widening the existing I-40 bridge (Orange Grove Road) is a parallel pedestrian bridge.*

# Map 2.4 Grady Brown Bicycle/Pedestrian Crash Map



## 2.3 CW STANFORD MIDDLE SCHOOL OVERVIEW

CW Stanford Middle School is situated next to Orange High School inside a neighborhood with residential roads of which most are calm and slow but others pose serious threats to pedestrians and bicyclists. There are no sidewalks in the vicinity around the school. Thus, there are significant opportunities for improvement to make it safer for walking and bicycling. CW Stanford Middle is flanked by US 70 and Orange High School Road. US 70 sees more significant traffic as a highway with less traffic on the collector Orange High School Road. The school service boundary map (Map 2.1) indicates those areas of Hillsborough districted for attendance at CW Stanford Middle School.

### *C W Stanford Middle Tallies And Student Counts*

The National Center for Safe Routes to School provides a Student Arrival and Departure Tally to help measure the modes of transportation utilized by the students and how the SRTS Program will affect vehicular trip generation for the school. This tally may be taken annually and is a measure of the overall success of the program.

The following tables (Tables 2.6 and 2.7) show the results of tallies collected in Spring 2009 breaking down the non-motorized traffic by mode of transportation and by origin relative to school location.

*Students begin to file into CW Stanford Middle School in the early morning.*

**Table 2.6: Travel Norms for CW Stanford (estimates from school leaders)**

| CW Stanford Travel Norms | |
|---|---|
| **Transportation Mode** | **Number of Students** |
| Driven by Parents | 357 |
| Transported by Bus | 211 |
| Walked | 3 |
| Bicycled | 0 |

**Table 2.7: Percentage of Students Walking and Bicycling by Distance (from SRTS parent surveys)**

| Pedestrian and Bicycle Breakout by Locality and Transportation Mode | | |
|---|---|---|
| **Distance to School** | **Walk** | **Bicycle** |
| Less than 1/4 mile | 0% | 0% |
| Between 1/4 and 1/2 mile | 0% | 0% |
| Greater than 1 mile | 0% | 0% |

*40 parent surveys were completed*

### *CW Stanford Middle Parent Surveys*

The Parent Survey, provided by The National Center for Safe Routes to School, polls parents to determine the key factors affecting parents' decisions to allow or disallow children to walk or bicycle to area schools. These surveys also help identify the presence of safety-related conditions and provide basic background information for demographic correlation and analysis. Both the Parent Survey and Student Tally forms should be conducted at least annually to track changes and determine the success of the SRTS program.

The following information in Tables 2.8 and 2.9 was compiled from CW Stanford Middle Parent Surveys in Spring 2010 and highlights parent perceptions of their children's existing walkable/rideable routes to school and the improvements necessary to elicit their participation in the SRTS program.


*Speeding cars on Highway 70 pose a concern for parents.*

**Table 2.8: Top Five Concerns for Parents Under Existing Conditions**

| Top Five Concerns of Parents |
|---|
| 1. Distance |
| 2. Traffic volume along route |
| 3. Traffic speed along route |
| 4. Safety of intersections & crossings |
| 5. Presence of sidewalks or pathways |

*For complete results, see Appendix A.*

**Table 2.9: Top Five Improvements Specified as Prerequisite by Parents for Participation**

| Top Five Improvements | |
|---|---|
| 1. Safety of intersections & crossings improved | 81.3% |
| 2 Sidewalks or pathways added or improved | 78.1% |
| 4. Distance to walk/bicycle reduced | 59.4% |
| 4. Traffic speed along route reduced | 53.1% |
| 5. Traffic volume along route reduced | 53.1% |

*For complete results, see Appendix A.*

*43 parent surveys were completed*

### *CW Stanford Middle Field Assessment And Maps*

Fieldwork included a thorough on-site assessment of existing infrastructure within the school zone, and an evaluation of both traffic and behavioral patterns exhibited by roadway users during drop-off and pick-up. The field assessment broadly analyzes school traffic patterns, characteristics of the transportation network users, and the existing infrastructure strengths and weaknesses within the school zone. The following pages highlight the data collected pertaining to the strengths and weaknesses of the existing pedestrian environment for Stanford Middle. A photographic inventory, infrastructure survey and site mapping are included. Detailed maps depicting physical features are found in Maps 2.5-2.7.

### *Behavioral Components of Vehicular and Pedestrian Traffic Patterns*

Currently, there are very few students walking or bicycling to school. The majority of students bicycling or walking to school do so with parental or sibling supervision. There are no crossing guards in the area. Additional information describing the travel norms for Stanford Middle is listed below:

• Motorist behavior was observed as “good,” adhering to pedestrian courtesies as appropriate on campus. Orange High School Road could be labeled as “fair” due to lacking pedestrian facilities and roadway characteristics. US 70 could be labeled as “bad” due to traffic speeds, lacking pedestrian infrastructure, lack of crossings, and traffic volumes. Drivers on US 70 frequently exceed the speed limit and volumes can be relatively high.

• Only a few students and parents were observed walking to and from school at the time of this study.

• Motorists drop their children off and pick them up at the CW Stanford Middle main entrance. Automobile stacking does occur at times backing up along Orange High School Road but this does not hinder pedestrian safety or flow.

• Crime should not be a significant issue of concern based on field analysis and public input.

### *Existing Infrastructure - Strengths*

There were very few strengths noted because there are few pedestrian facilities and traffic calming facilities in and around Stanford Middle. The following observations were noted as existing system strengths.

• On-campus sidewalks and crosswalks are adequate.

• There are possibilities of connecting neighborhoods to the school using trails and greenways along current easements and “cut throughs”.

*Crosswalk on school grounds.*

### *Existing Infrastructure - Deficiencies*

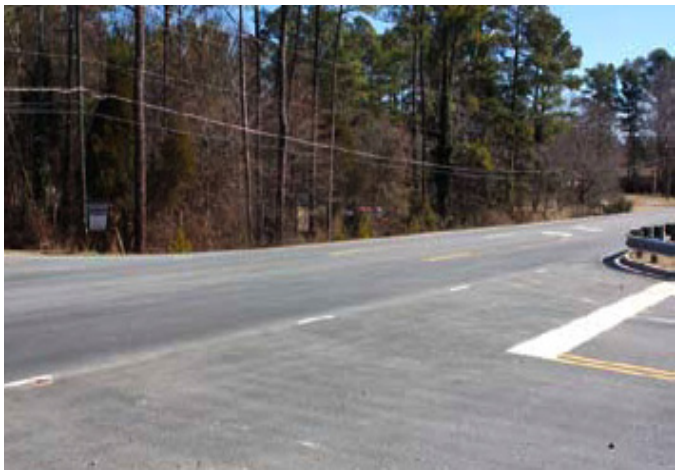
Because of the lacking existing infrastructure surrounding CW Stanford Middle School, there are several issues that warrant improvements, create safety hazards, and prevent children from walking and cycling to school. Key weaknesses, barriers, and obstacles were annotated as follows:

• There is no sidewalk connectivity to neighborhoods and streets. Table 2.10 summarizes key locations where insufficient walkways or system breaks in sidewalk continuity create barriers to pedestrians including US 70, NC 86, Orange High School Road, and Harold Latta Road.

• US 70 presents a serious safety threat for pedestrians and bicyclists because of its lacking infrastructure, high speeds, and high traffic volume. Either side of US 70 presents engineering challenges for sidewalk or trails.

• The residential land use and street pattern on the eastern side of the school prevents a direct connec-

*US 70's size and high speeds creates a barrier between communities.*



*The intersection of Gwen Road and US 70 has no pedestrian facilities.*

tion for students to walk to school. Currently, to walk to school, they must use US 70.

• There are no marked crosswalks in the vicinity around the school. Curb ramps are also lacking due to the absence of sidewalk

• There are no bicycle racks located on campus.

### *Key Crossing Issues*

*Orange High School Road/US 70*

Orange High School Road ends at US 70 as a signalized intersection. However, due to high speeds coupled with high traffic volumes along US 70, this intersection is very difficult for pedestrians to cross. There are no sidewalks or pedestrian treatments at this lo-cation. Orange High School Road provides the pri-mary access to the school, so any student walking from US 70 must utilize this intersection. Students living south of US 70 will have to cross this very busy 3-lane roadway.

*Gwen Road/US 70*

Gwen Road ends at US 70 as an unsignalized intersection. Due to high speeds coupled with high traffic volumes along US 70, this intersection is very difficult for pedestrians to cross. There are no sidewalks or pedestrian treatments at this location. Gwen Road is located directly across from where a proposed retirement community will be constructed (the roads are already complete). As a part of the development, a trail will be constructed. Therefore, it is likely that pedestrians will want to cross US 70 at this location due to the trail.

*Scotswood Boulevard/US 70*

Scotswood Boulevard provides access to the Churton Grove Community, a 330 acre residential area. There are plans for this community to continue to expand in the future. Scotswood Boulevard currently ends at US 70 and is not controlled by a traffic signal. There are no sidewalks or pedestrian treatments at this location. As mentioned earlier, the traffic speeds and volumes along US 70 make this intersection difficult for pedestrians to cross. Due to the lack of east-

*The intersection of NC 86 and US 70.*

west connectivity in the Churton Grove area, many of the students living in this community might choose US 70 as their preferred route if walking or bicycling to school.

*NC 86/US 70*
This signalized intersection carries significant traffic volumes on all approaches. Additionally, each approach has a free flow right turn lane, making it very difficult to control vehicular traffic for pedestrians. There are currently no sidewalks or pedestrian treatments at this location.

*NC 86/NC 57*
This signalized intersection would be utilized to provide access to the school from the west by providing access to the west side of campus via Holman Drive. Traffic volumes can be high during the peak hours. There are currently no sidewalks or pedestrian treatments at this location.

*Orange High School Road/School Entrance*
This unsignalized intersection provides primary access to the school. Although speeds are not high during arrival and dismissal times due to the school traffic, there is a significant amount of traffic at this location. Currently, there are no sidewalks or pedestrian treatments at this location.

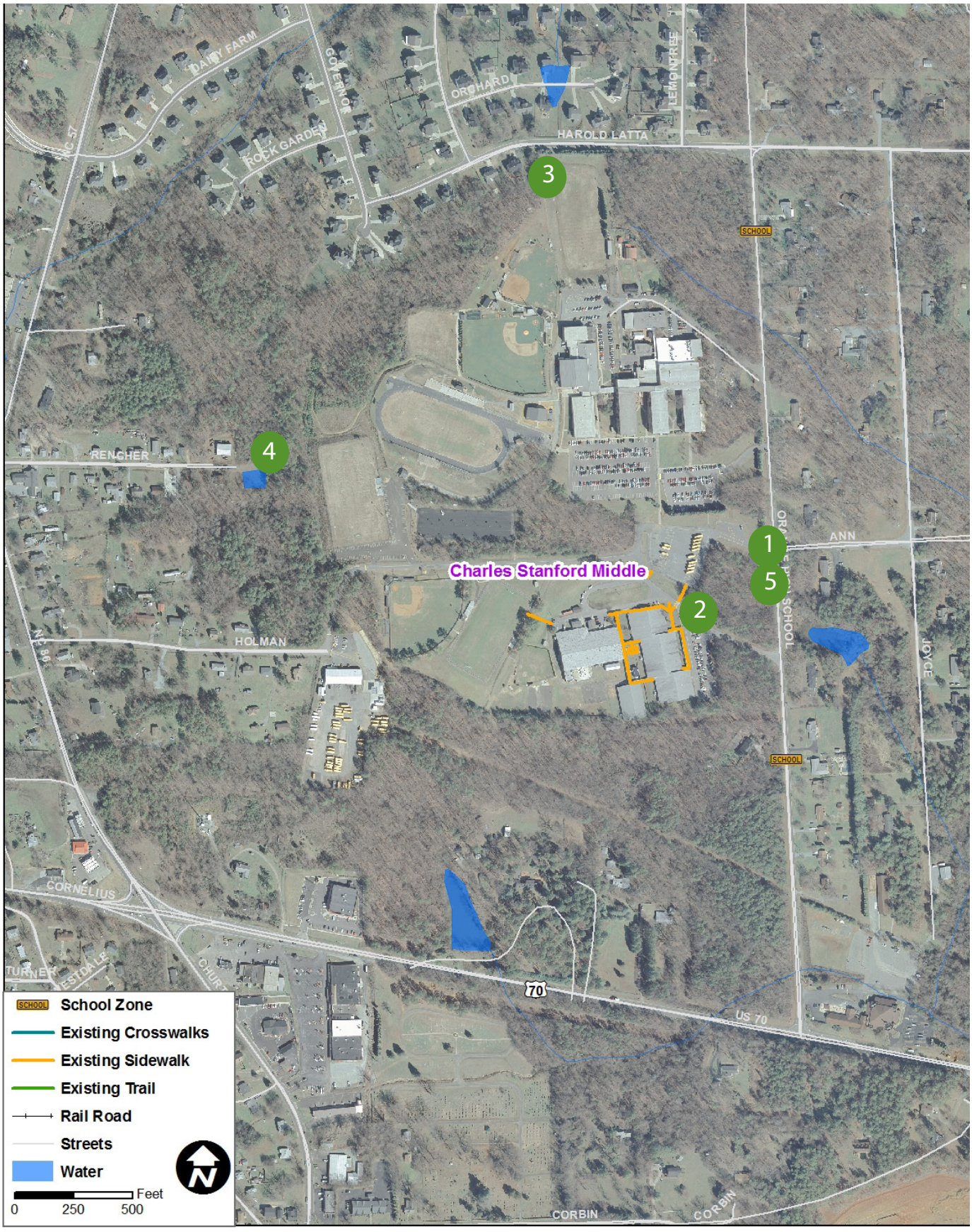
*Orange High School Road/Harold Latta Road*
Approximately 0.4 miles north of the entrance to Stanford Middle School, Orange High School Road takes a 90 degree turn to the east. Harold Latta Road connects at the middle of the curve from the west. Harold Latta Road is controlled by a stop sign. There are currently no sidewalks or pedestrian treatments at this intersection. Due to the unusual geometry, pedestrian paths should be clearly defined at this intersection.

*The entrance to the Middle School lacks sidewalks.*

**Table 2.10: Insufficient Walkways**

| Key Sidewalk Gaps | | |
|---|---|---|
| **Roadway** | **Orientation** | **Gap Description** |
| New Grady Brown School | Both sides | No sidewalk present |
| Orange Grove | Both sides | No sidewalks present |
| Oakdale | Both sides | No sidewalks present |

# Map 2.5 CW Stanford Middle Campus Map




*The entranceway for motorists to drop off and pick up their children.*

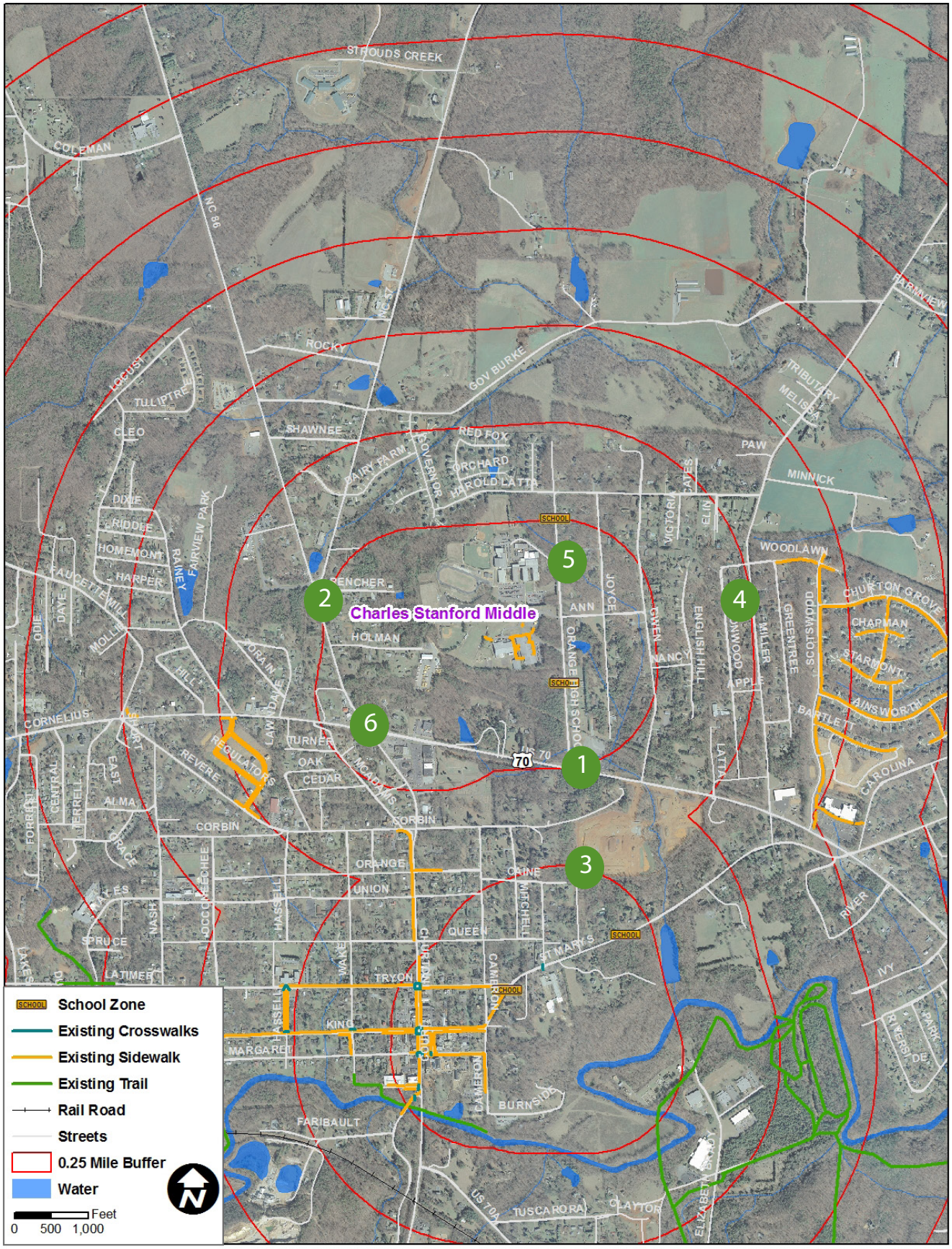

*Drop-off zone in front of school. Sidewalk can be found around the school front.*


*Well used foot path off of Harold Latta Road, which is behind the adjacent high school. Serves both schools.*


*Footpath at the dead end of Rencher, which leads into the back of the middle school.*


*In the morning and afternoon there are no left turns allowed out of the school.*

# Map 2.6 CW Stanford Middle Travel Map




*The intersection of US 70 and Orange High School Road has no pedestrian facilities.*

*The intersection of NC 86 and NC 57 is also a large intersection without pedestrian facilities of any kind.*

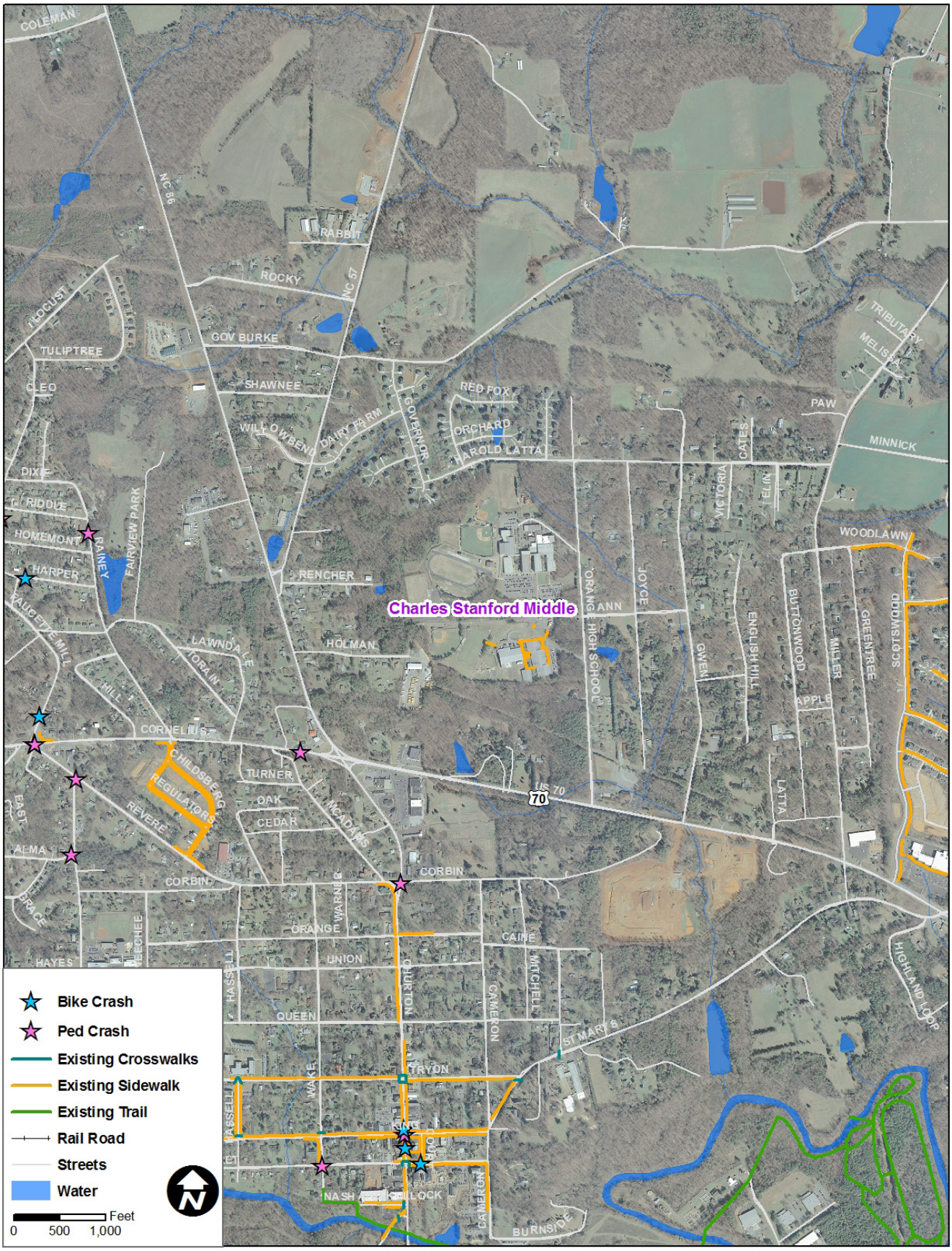
*At the end of Caine Street, there is a path that leads through a future retirement development that will connect to US 70 close to the school.*


*There is low traffic volume on neighborhood roads like Buttonwood.*

*A view southward down Orange High School Road.*

*A pedestrian walking at the dangerous intersection of US 70 and NC 86. Here two major roadways converge, both with high traffic volume and speeds.*

# Map 2.7 CW Stanford Bicycle/Pedestrian Crash Map



## 2.4 CAMERON PARK ELEMENTARY OVERVIEW

Cameron Park Elementary is situated next to St. Matthews Episcopal Church (circa 1826) on St. Mary's Road near downtown Hillsborough. Across the street, there are a few small businesses and low density residential. The traffic volumes are very high on St. Mary's Road, especially during commuter hours. There are no sidewalks or bicycle lanes in the vicinity around the school. Thus, there are significant opportunities for improvement to make it safer for walking and bicycling. The school service boundary map (Map 2.1) indicates those areas of Hillsborough districted for attendance at Cameron Park Elementary School.


*Cameron Park Elementary School entrance sign.*

### *Cameron Park Elementary Tallies and Student Counts*

The National Center for Safe Routes to School provides a Student Arrival and Departure Tally to help measure the modes of transportation utilized by the students and how the SRTS Program will affect vehicular trip generation for the school. This tally may be taken annually and is a measure of the overall success of the program.

The following tables show the results of tallies collected in the Spring of 2010 breaking down the pedestrian traffic by mode of transportation and by origin relative to school locality.

**Table 2.11: Travel Norms for Cameron Park Elementary (estimates from school leaders)**

| Cameron Park Elementary Travel Norms | |
|---|---|
| **Transportation Mode** | **Number of Students** |
| Driven by Parents | 237 (53%) |
| Transported by Bus | 187 (42%) |
| Carpooled | 19 (4%) |
| Walked | 3 (1%) |
| Bicycled | 0 |

**Table 2.12: Percentage of Students Walking and Bicycling by Distance (from SRTS parent surveys)**

| Pedestrian and Bicycle Breakout by Locality and Transportation Mode | | |
|---|---|---|
| **Distance to School** | **Walk** | **Bicycle** |
| Less than 1/4 mile | 29% | 0% |
| Between 1/4 and 1/2 mile | 11% | 0% |
| Greater than 1 mile | 0% | 0% |

*246 parent surveys were completed*

### *Cameron Park Elementary Parent Surveys*

The Parent Survey, provided by The National Center for Safe Routes to School, polls parents to determine the key factors affecting parents' decisions to allow or disallow children to walk or bicycle to area schools. These surveys also help identify the presence of safety-related conditions and provide basic background information for demographic correlation and analysis. Both the Parent Survey and Student Tally forms should be conducted at least annually to track changes and determine the success of the SRTS program.

The following information in Tables 2.13 and 2.14 was compiled from the Cameron Park Elementary Parent Surveys in the Spring of 2010 and highlights parent perceptions of their children's existing walkable/rideable routes to school and the improvements necessary to elicit their participation in the SRTS program.

*Students and parents entering the front of Cameron Park Elementary*

**Table 2.13: Top Five Concerns for Parents Under Existing Conditions**

| Top Five Concerns of Parents |
|---|
| 1. Traffic speed along route to school |
| 2. Traffic volume along route to school |
| 3. Distance |
| 4. Safety of Intersections and Crossings |
| 5. Presence of sidewalks or pathways |

*For complete results, see Appendix A.*

**Table 2.14: Top Five Improvements Specified as Prerequisite by Parents for Participation**

| Top Five Improvements | |
|---|---|
| 1. Sidewalks or pathways added/improved | 49.1% |
| 2. Safety of Intersections Improved | 46.5% |
| 3. Traffic volume along route to school | 43.0% |
| 4. Traffic speeds along route to school | 39.9% |
| 5. Distance | 32.9% |

*For complete results, see Appendix A.*

*246 parent surveys were completed*

### *Cameron Park Elementary Field Assessment*

Fieldwork included a thorough on-site assessment of existing infrastructure within the school zone and an evaluation of both traffic and behavioral patterns exhibited by roadway users during drop-off and pick-up times. The field assessment broadly analyzes school traffic patterns, characteristics of the transportation network users, and the existing infrastructure strengths and weaknesses within the school zone.

The following pages highlight the data collected pertaining to the strengths and weaknesses of the existing pedestrian environment for Cameron Park Elementary School. A photographic inventory, infrastructure survey and site mapping are included.

Detailed maps depicting physical features are found on Maps 2.8-2.10.

### *Internal Traffic Flow*

There are three driveway accesses on St. Marys Street: 1) a vehicular ingress 2) a vehicular egress and 3) a single bus driveway that handles both the ingress and egress of the school buses routing children to the rear entrance of the school building. Traffic circulates counter clockwise from Driveway 1 splitting into two lanes in front of the main entrance of the school. The left lane is for exiting traffic and the right for drop offs. A crosswalk traverses the dual carpool lanes at the entrance way. This location is supervised by an attending teacher. Vehicles are routed from the drop off, past the building, turned 90 degrees to the right to wrap around the short side of the building for approximately 100' and then turned 90 degrees to the left to exit onto St. Mary's. This single lane exit currently supports left, through, and right turning traffic.

### *Behavioral Components of Vehicular and Pedestrian Traffic Patterns*

Pedestrian traffic was observed coming from Thomas Ruffin Road and the east side of the school. Most pedestrian traffic was parents that parked nearby and walked to meet their children. Just a few walkers were observed that were traveling between school and home. Additional information describing the travel norms for Cameron Park Elementary is listed:

• The overall behavior of motorists was perceived as "fair." Drivers on campus appeared knowledgeable of the intended traffic patterns. Parents did not appear to be paying attention when exiting the parking lot which caused a hazardous condition for pedestrians trying to utilize the existing marked crosswalk.

*Cars lining up in front of the school's entrance.*

• There was a lot of traffic congestion in front of the school on St. Mary's Road. In the morning, St. Mary's Road is heavily travelled by commuter traffic heading from Hillsborough to Interstates 85 & 40. Traffic appeared to be exceeding the speed limit prior to drop off and pick up queues. Near the school, there was gridlock in front of the school and very long queues from both directions.

*Congestion on St. Mary's Road in the morning.*

• During drop-off and pick-up times, traffic routinely queued into St. Mary's Road. During the morning the queues were caused by a combination of commuter traffic and school traffic. During the afternoon, the queues were caused primarily by carpool traffic. On the observation day, the pick up routine did not appear to be very efficient since it took approximately 45 minutes to dismiss a majority of the students. During both peak periods, it was difficult for vehicles to make a left turn due to the queues trying to enter the school at the driveway to the west.

• Due to the long queues and delays on St. Mary's Road, several dangerous maneuvers were witnessed during the observation period. Non-school traffic would become frustrated and drive around carpool traffic that had queued into St. Mary's Road. Therefore, they would temporarily drive in the wrong direction in the adjacent lane to get around the traffic. This was observed more often during the afternoon dismissal time than the morning drop off time.

*A car driving on the wrong side of the road in order to get around traffic on St. Mary's Road.*

• Some carpool traffic would try to access the school site before there was adequate room for the entire vehicle to turn into school property. Therefore, they would be left with the back side of their car blocking St. Mary's Road.

*A car pulls into the school before there is room, blocking traffic on St. Mary's Road.*

• The designated route for pedestrians entering from Thomas Ruffin Road requires pedestrians to cross the exiting carpool traffic. After that, they are required to walk along a narrow path between the carpool line and the brick school. The path then ends in the handicapped parking.


*The narrow on-campus pedestrian pathway is sandwiched between a brick wall and traffic.*

• Pedestrians were also observed entering from the gravel road that is adjacent to St. Matthews Episcopal Church. These pedestrians have to cross traffic entering the carpool line, and then they get on a designated path leading them to a supervised crossing into the school.

• There is a location with pull-in parking perpendicular to St. Mary's Road, between the driveways that carpoolers utilize to enter and exit the school. These vehicles can cause site distance issues for cars pulling out of the exit driveway. Additionally, when entering or leaving the campus (depending on if the car pulls in forward or backs in) the parked cars have to back into on-coming traffic on St. Mary's Road, which is just coming out of a curve.

*Cars parked perpendicular to St. Mary's Road (on right) cause sight distance issues for those leaving campus..*

• There was one officer on site assigned to control traffic, but his purpose did not include assisting pedestrians. Instead, he is located at the bus driveway to stop traffic so that school buses can exit onto St. Mary's Road. Vehicular traffic did not appear to pay adequate attention to him. He reported that one crossing guard was actually hit at this location.

### *Existing Infrastructure - Strengths*

Cameron Park is located near the downtown area, so there is a lot of possibility for students to walk or bicycle to school. There is a good network of sidewalks downtown that can allow students to safely travel from the downtown area to the vicinity of the school. The following observations were noted as existing system strengths:

• There is a clearly defined school zone on St. Mary's Road.

• There is an established trail connecting to the adjacent property to the school grounds. Utilizing this trail can give children access to the school without having to walk along St. Mary's Road.

*The historic Cameron Park Trail.*

*An under-utilized bicycle rack on campus.*

### *Existing Infrastructure - Deficiencies*

Despite the strengths of the existing system, there are existing deficiencies in the infrastructure that impede user participation in the SRTS program. Onsite survey of the existing infrastructure annotated the following weaknesses, barriers, safety hazards and concerns as follows:

• There are significant gaps in sidewalk connectivity through target neighborhoods and along the key pedestrian and bicycling routes to the school campus. Table 2.15 summarizes key locations where insufficient walkways or system breaks in the sidewalk continuity creates barriers to pedestrians.

• There are multiple roadways that pose safety barriers for elementary school-age pedestrians and bicyclists. Both traffic volume and travel speed on the roadway system within the school zone are significant most notably upon St. Mary's Road and US 70.

• Present roadway geometrics present safety challenges for pedestrians and bicyclists. St. Mary's Road is narrow with grade issues along most of the roadway. There is a curve and a bad grade near the school, making the section of St. Mary's Road just west of the school very dangerous for pedestrians or cyclists. Subdivisions on the north side of US 70 do not have a safe crossing to access the roads that lead to the school. Specific concerns are presented in the next section, *Key Crossings.*

*There is a steep grade along most of St. Mary's Road making it a dangerous route for pedestrians.*

• The existing bicycle rack on the school's campus is situated where only one side can be used and is not covered.

• At select locations, curb ramps did not comply with ADA regulations. The most common non-compliance violations included, but were not limited to, incomplete curb ramps at intersection radii, incorrect positioning of the ramp within the radii and the lack of truncated domes in the ramp itself.

• Besides the crossing on St. Mary's Road at Thomas Ruffin Street, there are no marked crosswalks in the vicinity of the school.

**Table 2.15: Insufficient Walkways**

| Key Sidewalk Gaps | | |
|---|---|---|
| **Roadway** | **Orientation** | **Gap Description** |
| St. Mary's Road | Both sides | No sidewalks present |
| Thomas Ruffin Street | Both sides | No sidewalks present |
| East Queen Street | Both sides | No sidewalks present |
| North Cameron Street | Both sides | No sidewalks present |
| South Cameron Street | Both sides | No sidewalks present |

### *Key Crossings*

*St. Mary's Road & Thomas Ruffin Street*
This unsigalized intersection is located at the primary exit for carpool traffic. There is a marked crosswalk across St. Mary's Road on the west side of the intersection. Other than this, there are no other pedestrian treatments at this intersection. Traffic volumes are high on St. Mary's Road, especially during the morning drop off period. The posted speed limit is 25 miles per hour, but traffic did not appear to be obeying the posted limits. There is no crossing guard at this location to assist pedestrians across St. Mary's Road.

*St. Mary's Road & Cameron Street & King Street*
This intersection basically has three streets coming together in close proximity to each other. All approaches are stop sign controlled. There is sidewalk on King Street and on a small section on the west side of St. Mary's Road. The sidewalk on St. Mary's Road is not compliant with ADA requirements. There are no marked crosswalks in this intersection.

*A non-compliant curb ramp.*

*Traffic at the intersection of St. Mary's Road and Thomas Ruffin Road.*


*3 streets converge within close proximity to each other- St. Mary's Road, Cameron Street & King Street.*

# Map 2.8 Cameron Park Elementary Campus Map


*A crosswalk across St. Mary's Road to the school.*


*A poorly designed walkway through campus.*


*A nature trail on the school's campus.*


*Pedestrians on campus in the morning drop-off hours.*

# Map 2.9 Cameron Park Elementary Travel Map


*The intersection of Cameron Street, St. Mary's Road and King Street.*


*East Queen Street is a low traffic density residential street close to the school.*


*A pedestrian attempts to cross Churton Street at its intersection with King Street.*


*The Orange County Farmers Market is very close to the elementary school.*

# Map 2.10 Cameron Park Bicycle/Pedestrian Crash Map

# 3 RECOMMENDATIONS


Chapter Outline:



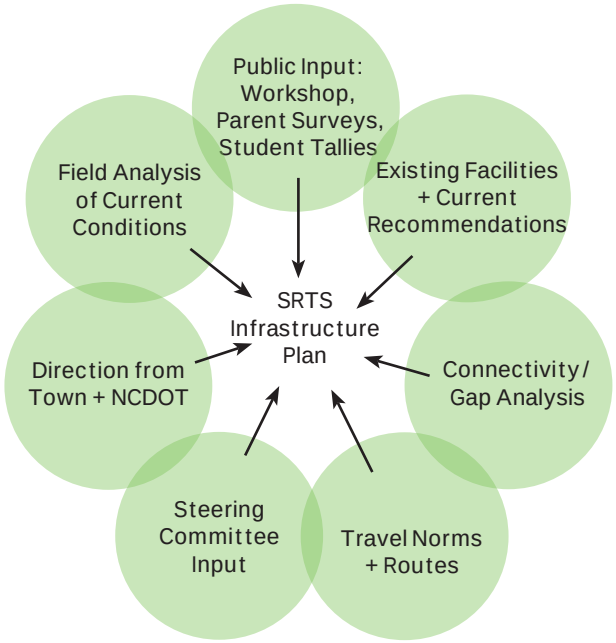
## 3.0 OVERVIEW

There are two main strategies for creating a safe environment where more students are walking and bicycling to school: physical improvements (engineering) and programs (education, encouragement, and enforcement activities). Engineering topics are covered in this chapter, while programming recommendations are covered in Chapter 5.

The proposed physical recommendations for Grady Brown Elementary, Cameron Park Elementary, and CW Stanford Middle School are a series of bicycle and pedestrian improvements that create a safe, connected, and comprehensive system. This chapter presents those recommendations along with key SRTS recommendations and a proposed infrastructure map of both schools.

## 3.1 METHODOLOGY

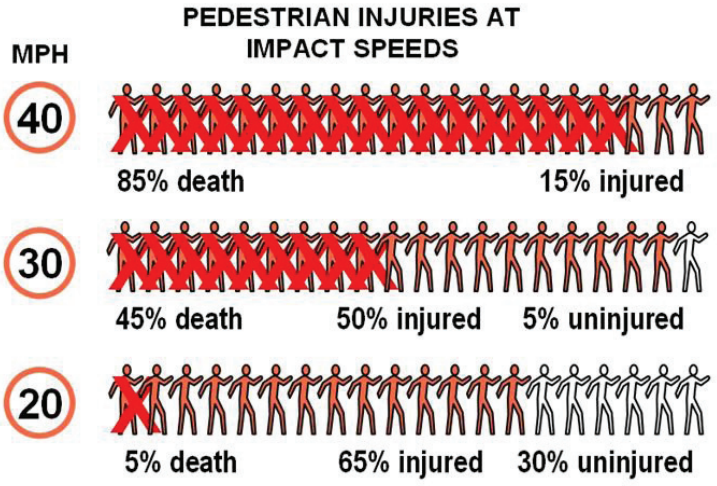
A variety of sources were consulted during the development of the infrastructure recommendations: previous plans and studies, existing conditions, the Consultant's fieldwork inventory, public input, and noted patterns of travel. Fieldwork included an examination of conditions at major crossings, conditions along primary corridors, and a consideration of gap connectivity. Map discussion and analysis was conducted at steering committee meetings and public meetings to pinpoint specific areas in need of infrastructure improvements.




*A diagram of the methodology described in section 3.1 to develop the SRTS Infrastructure Plan.*

## 3.2 SAFETY IMPROVEMENTS

One of the main goals of the SRTS program and this Action Plan is the provision of bicycle and pedestrian facilities. Provision of bicycle and pedestrian facilities not only makes walking and bicycling to school feasible options, but makes those options safer, as well. The infrastructure recommendations are geared towards areas in need - where children and parents live and where they are walking today.




*From: Killing Speed and Saving Lives, U.K. Department of Transportation, London, 1987.*

It is important to consider current statistical information and national design standards when making these recommendations. Some key statistics include:

• The age group with the highest rate of pedestrian crashes are boys ages 5-9 because of darting across roadways.

• Pedestrians struck at 40 mph have 15% survival rate; 95% of those hit by a vehicle moving at 20 mph survive.

Some of the treatments recommended in this chapter have been proven to reduce crashes, as shown in the 2007 FHWA Crash Reduction Factors Study (http://safety.fhwa.dot.gov). Table 3.1 shows some typical countermeasures and associated crash reduction factors from that study. Together, all proposed facilities should be developed and existing facilities improved to create a safe and connected pedestrian and bicycle network to and from Grady Brown Elementary, Cameron Park Elementary, and CW Stanford Middle School. On-road and off-road components should be integrated to provide a connected transportation and recreation network. All infrastructure projects undertaken by Orange County should aim to meet the highest standards possible (using NCDOT, AASHTO and ADA standards for accessibility for all users).

**Table 3.1: Crash Reduction Factors**

| Countermeasure | Crash Reduction Factor |
|---|---|
| Install sidewalk | 74% |
| Install pedestrian countdown signal heads | 25% |
| Install pedestrian refuge islands | 56% |
| Improve/install marked crosswalks | 25% |

*2007 FHWA Crash Reduction Factors Study (http://safety.fhwa.dot.gov)*

## 3.3 INFRASTRUCTURE FACILITY TYPES

There are six project types typically recommended for bicycle and/or pedestrian infrastructure:

• ***Corridor Improvements*** - The recommended corridor projects are linear in nature and aim to expand upon the existing network of sidewalks, bicycle lanes, paved shoulders and trails to provide a more connected system which adequately separates pedestrians from roadway travel lanes.

• ***Crossing Improvements*** - Pedestrians have a much greater risk of being struck by a vehicle when crossing a roadway as opposed to walking on the shoulder or sidewalk beside it. Nationally, nearly 75% of all police-reported pedestrian crashes involve pedestrians crossing roadway travel lanes. Typical crossing improvement recommendations may include: marking intersection crossings, installing or retrofitting curb ramps, or adding signalization.

*There are currently no sidewalks along New Grady Brown School Road.*

• ***Traffic Calming Measures*** - This comprehensive approach seeks to reduce traffic speeds and create a balance between cars, pedestrians, and bicyclists. Traffic calming helps pedestrians and bicyclists feel less threatened by motor vehicle traffic, and helps drivers be more aware of pedestrians. Many installations reduce the width of the roadway at the intersection, also reducing the pedestrian's exposure to traffic. Slowing speeds makes a big difference in safety. Traffic calming may include speed humps, median islands, curb extensions, lane width reduction, etc.

**Table 3.2: Grady Brown Elementary Corridor Improvements**

| Improvement Type | Description | Length |
|---|---|---|
| New Sidewalk | Along north side of New Grady Brown School Road from Orange Grove Road to westernmost high school entrance. | 1500 LF |
| New Sidewalk | Along south side of New Grady Brown School Road from Orange Grove Road to Dimmocks Mill Road (and future MST Trail). | 4400 LF |
| New Sidewalk & New Bicycle Lanes/Paved Shoulder | Along both sides of Orange Grove Road from New Grady Brown School Road to Hillsborough core (north of I-85), including I-40 bridge. | 6520 LF |
| New Sidewalk | Along one side of Oakdale Drive from Orange Grove Road to Cheshire Drive. | 3500 LF |

• ***On-Campus Improvements*** – Once students have reached campus, they need continuous infrastructure to support the completion of their trip. This may include sidewalks, marked crosswalks, covered walkways, and bicycle parking options.

• ***Other Safety Improvements*** – Additional, site-specific issues and needs may exist such as signage, lighting, flashing beacons, crossing guards, and maintenance.

• ***Long Term Improvements*** – These projects are also critical for SRTS safety but may require a longer-term process or be dependent on or incidental to a future reconstruction or resurfacing project.

## 3.4 GRADY BROWN ELEMENTARY

The following section outlines specific recommendations for each projects type. Short-term or high priority projects are identified and further discussed in Section 3.5.

### *Corridor Improvements*

*A full list of corridor improvements is outlined in Table 3.2 above.*

### *Crossing Improvements*

***1. New Grady Brown School Road Midblock (between Cedar Ridge High School and Grady Brown Elementary)***

• Provide midblock crossing for children crossing between two schools.

• As part of midblock crossing, place median island refuge in existing turn lane.

• Add high visibility (continental style) marked crosswalks.

• Incorporate curb ramps at marked crosswalks and refuges.

• Add in-roadway crossing signage at crosswalk.

• Consider raising crosswalk to slow traffic.

• Ensure sidewalk leads conveniently and adequately away from crosswalk to each school.

• Consider a crossing guard for this location.

***2. Orange Grove Road/New Grady Brown School Road***

• Sidewalk is needed leading to this intersection along both roads.

• Consider reducing curb radii to slow traffic.

• As sidewalk is added and development continues, provide appropriately located, marked crosswalks and countdown signals.

• Consider crossing guard here in future if necessary.


*A pedestrian walks down the side of Oakdale Drive due to the lack of sidewalks.*

**3. Orange Grove Road/Oakdale Drive**

• Sidewalk is needed leading to this intersection along both roads.

• Traffic queues can be long at this intersection, potentially warranting signalization. Further study by NCDOT is recommended.

• If a traffic signal is installed in the future, provide high visibility marked crosswalks, curb ramps, and countdown signals for pedestrians.

• Consider reducing curb radii to slow traffic.

## *Traffic Calming Measures*

• Reduce the school zone speed limit along New Grady Brown School Road from 35 mph to 25 mph.

• Consider adding a school zone on Orange Grove Road from New Grady Brown School Road to Patriots Pointe Drive.

• A raised crosswalk between the schools with median refuge island, as discussed above, would have traffic calming impact along New Grady Brown School Road.

## *On-campus Improvements*

• Provide bicycle racks on campus at convenient location near main entrance.

• Provide a sidewalk connection on the school campus to the sidewalk along the frontage, preferably that links where the street crossing will be located.

## *Other Improvements*

• Consider the proposed Patriots Pointe Trail connection. (page 3-14).

## *Long-term Improvements*

• I-40 Bridge and Orange Grove Road

- With existing residential areas including apartments and single-family homes north of I-40 and likely future development, the I-40 bridge is a key constraint keeping children and families from walking to school.

- A feasibility study should be developed weighing costs and benefits and determining alternatives such as retrofitting pedestrian accommodations on the existing bridge or building a new bridge.

- Ultimately, with growing development pressure, Orange Grove Road (including the bridge) should be widened to incorporate curb and gutter, 4-5' paved shoulders or bicycle lanes, plus sidewalks on both sides. This should be considered for the entire length of Orange Grove Road from New Grady Brown School Road to S. Churton Street. This would likely be constructed through a combination of development requirements, grant funding, and local/state funds.

• Oakdale/Cheshire/Hardwood Drive Intersection

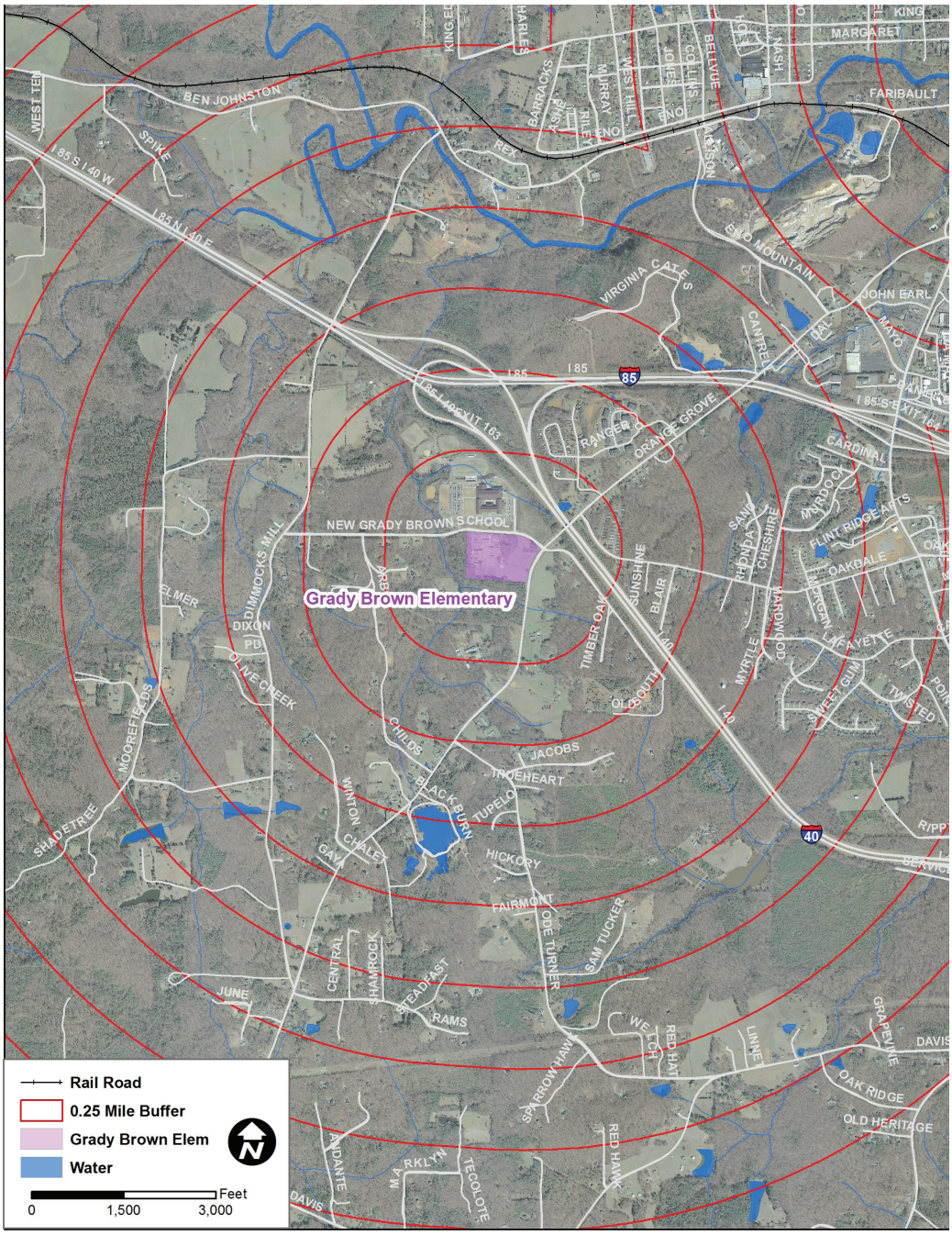
- Sidewalk and marked crosswalks are needed.

## 3.5 GRADY BROWN ELEMENTARY PRIORITY PROJECTS

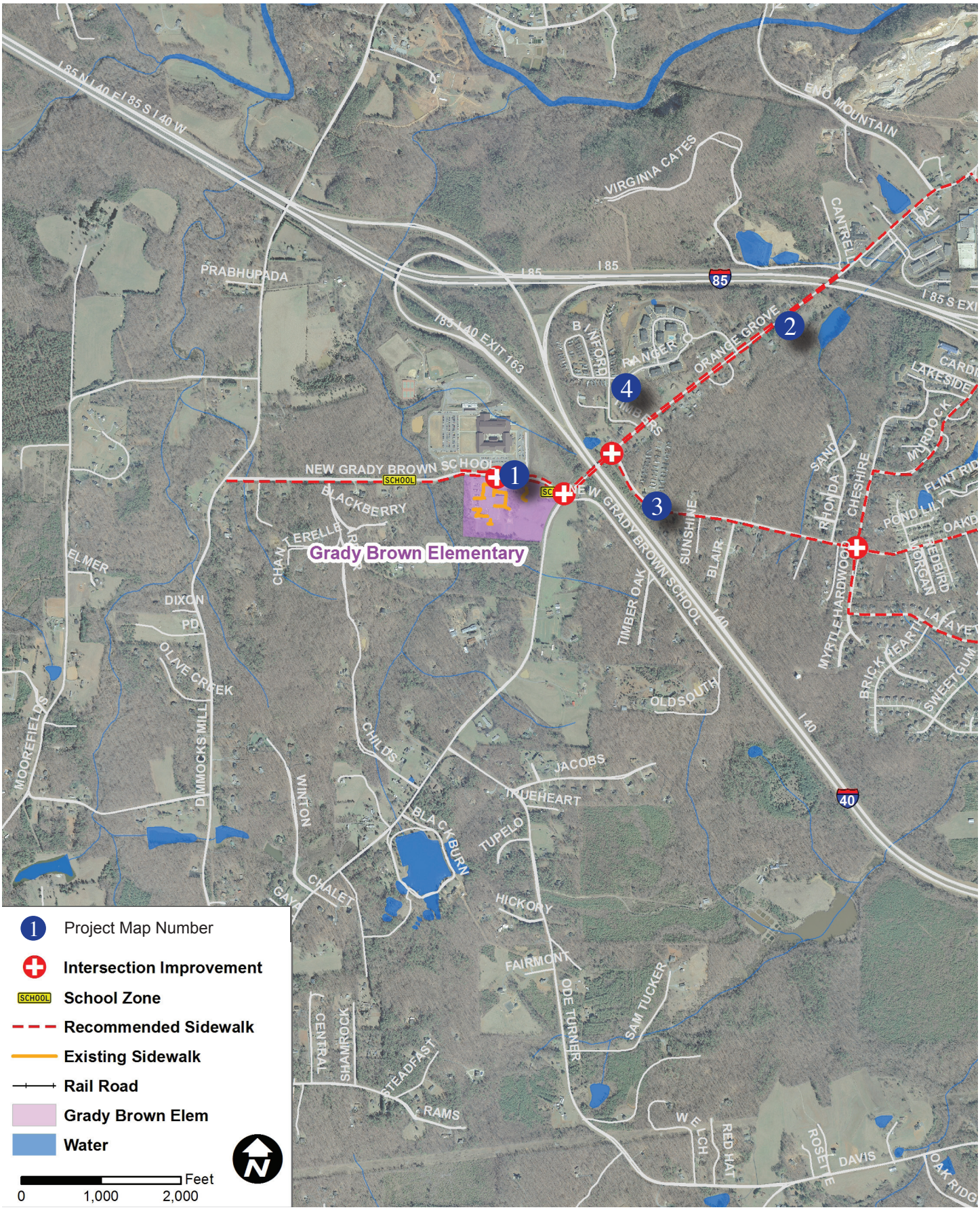
*Overview*

A comprehensive network of engineering improvements are recommended for the Grady Brown Elementary School area. Map 3.1 shows approximate travel distances in concentric rings. Specific network projects have been identified as integral to improving bicycle and pedestrian safety around Grady Brown Elementary School. The top priority projects of the comprehensive recommended network are shown in Map 3.2. The project cutsheet number on the map identifies the location of each priority project. The following pages provide detailed cut-sheet map recommendations, photos, and cost estimates.

**Map 3.1: Grady Brown Elementary Travel Map**



## Map 3.2: Grady Brown Elementary Priority Projects



# Project #1: New Grady Brown School Road Sidewalk & Midblock Crossing

**Location:**
New Grady Brown School Road, from Grady Brown Elementary school entrance to Orange Grove Road

**Recommendations:**
- Sidewalk (both sides)
- Midblock crosswalk
- Reduce school zone speed limit from 35 mph to 25 mph

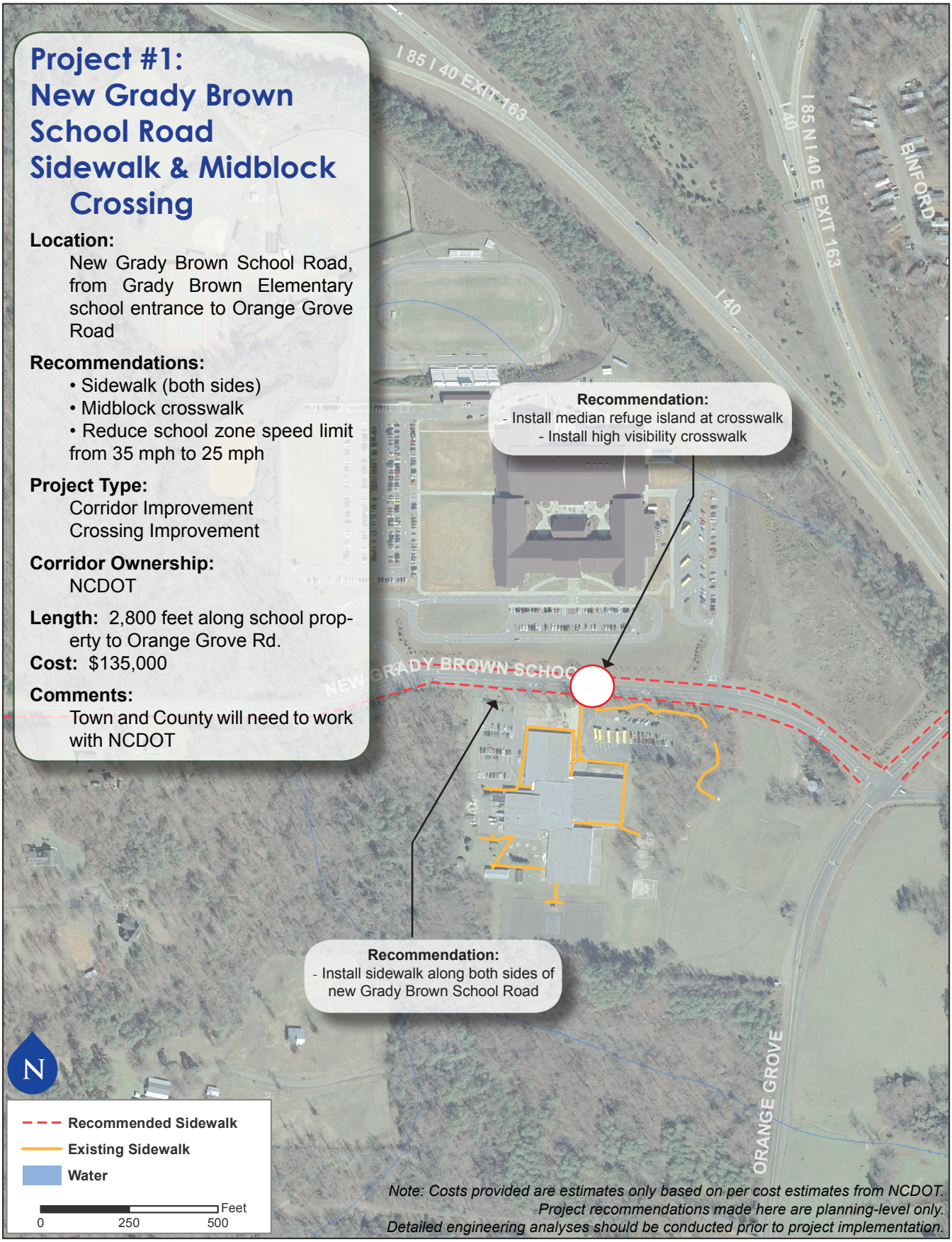
**Project Type:**
Corridor Improvement
Crossing Improvement

**Corridor Ownership:**
NCDOT

**Length:** 2,800 feet along school property to Orange Grove Rd.

**Cost:** $135,000

**Comments:**
Town and County will need to work with NCDOT




*Note: Costs provided are estimates only based on per cost estimates from NCDOT. Project recommendations made here are planning-level only. Detailed engineering analyses should be conducted prior to project implementation.*

# Project #1: New Grady Brown School Road Sidewalk & Midblock

*Importance*

As the only roadway that connects to Cedar Ridge High School and Grady Brown Elementary, pedestrian improvements will make a big difference in safety and walkability. Also, a significant amount of pedestrians cross this roadway between both schools. Keys to safety along this corridor are the addition of sidewalk, traffic calming, and the provision of a safe midblock crossing.

*Recommended Solutions*

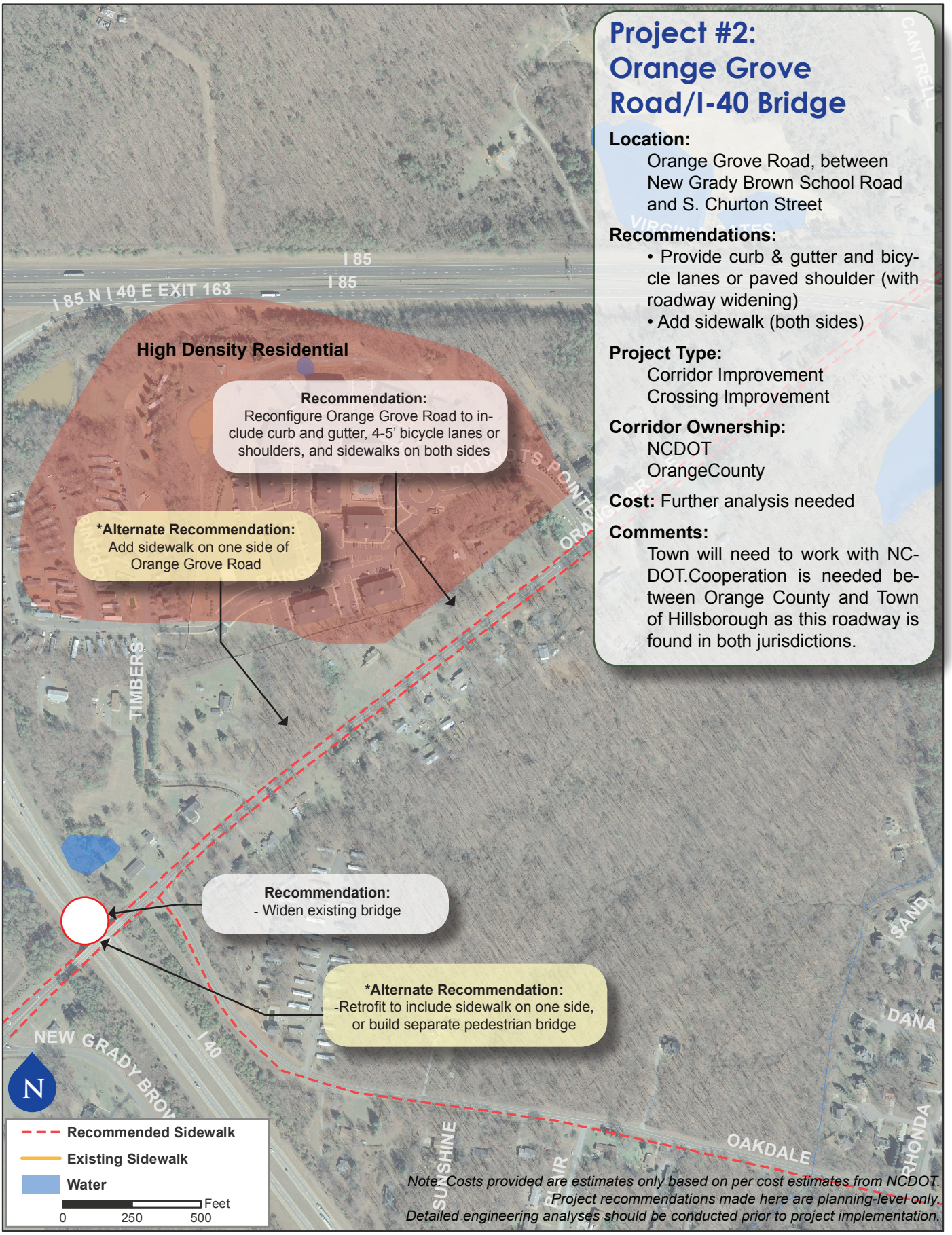
*Sidewalk*

• Provide sidewalk on both sides along school properties to Orange Grove Road from school entrances to Orange Grove Road.
• With addition of sidewalk, provide high visibility marked crosswalks across each school driveway.

*Midblock Crossing*

• Provide midblock crossing to connect Cedar Ridge High School and Grady Brown Elementary.
• The midblock crossing should include a median refuge island (in current turn lane), a high visibility (continental style) marked crosswalk, curb ramps, and in-roadway pedestrian crossing signage (to increase compliance).
• Ideally, this crosswalk would be raised as a traffic calming mechanism.
• School zone speed limits should be reduced from 35 mph to 25 mph. Speed limit should be enforced.
• Sidewalk should lead conveniently and adequately away from crosswalk to each school.
• A crossing guard should be considered at this location.

*Shown here in a before-and-after set of photos is a rendering of what a median refuge island, a high visibility crosswalk across Grady Brown School Road, and sidewalks would look like.*




# Project #2: Orange Grove Road/I-40 Bridge

**Location:**
Orange Grove Road, between New Grady Brown School Road and S. Churton Street

**Recommendations:**
- Provide curb & gutter and bicycle lanes or paved shoulder (with roadway widening)
- Add sidewalk (both sides)

**Project Type:**
Corridor Improvement
Crossing Improvement

**Corridor Ownership:**
NCDOT
OrangeCounty

**Cost:** Further analysis needed

**Comments:**
Town will need to work with NCDOT.Cooperation is needed between Orange County and Town of Hillsborough as this roadway is found in both jurisdictions.

*Note: Costs provided are estimates only based on per cost estimates from NCDOT. Project recommendations made here are planning-level only. Detailed engineering analyses should be conducted prior to project implementation.*

# Project #2: Orange Grove Road/I-40 Bridge

*Importance*

Orange Grove Road connects the town of Hillsborough and numerous residential communities, including high-density areas, to Grady Brown Elementary School. Currently the roadway features very narrow shoulders and no sidewalks. The I-40 bridge is critical for connectivity between land uses on either side of the interstate. Unfortunately, I-40 is still a major barrier for non-motorized modes trying to access the school due to real and perceived constraints and dangers for walkers and bicyclists trying to cross the bridge. Improving this roadway will make it possible for people to walk and bicycle safely to school.

*Recommended Solutions*

• Provide curb and gutter, 4-5' bicycle lanes or shoulders, and sidewalks on both sides for this section of Orange Grove Road from Churton Street to New Grady Brown School Road. This includes a bridge widening to support these additional facilities (paved shoulders and sidewalks both sides).

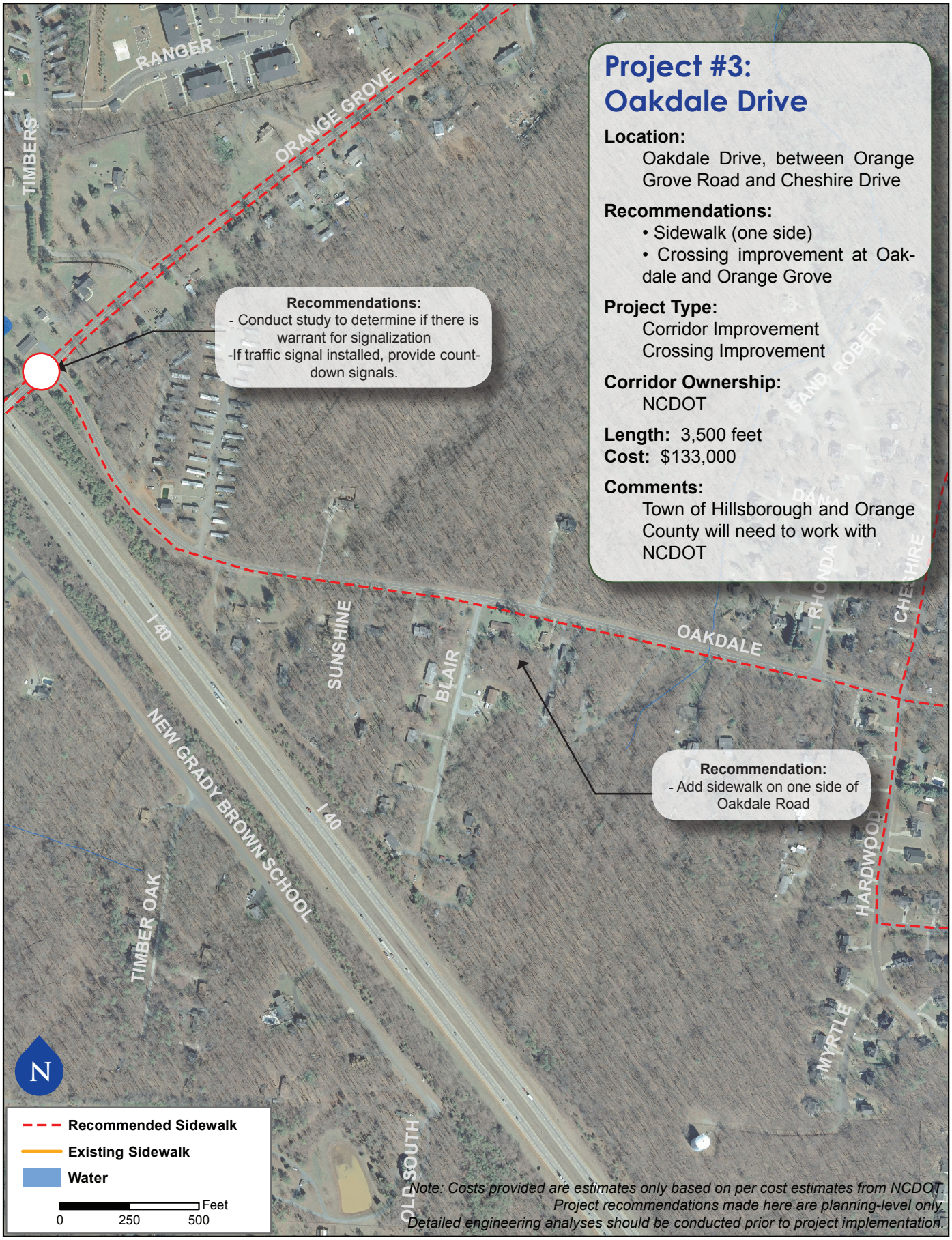
*In order to achieve this above solution, an overall roadway widening and reconfiguration is necessary. Based on a 2008 preliminary analysis and meeting notes on the TIP Project EB-4980 (bridge feasibility over I-40) held between NCDOT, Orange County, and the Town of Hillsborough, it was clear that a solution is needed. Preliminary alternatives included the construction of a new pedestrian bridge or the widening of the existing bridge. It was noted that with growing development pressure and traffic growth, the bridge will need to be widened eventually. Also, it was noted, that with development anticipated, consideration should be given to ultimately providing a change in cross section for Orange Grove Road to include curb and gutter, wider shoulders/bicycle lanes, and sidewalks.

**Alternative Solutions*

- Provide sidewalk on the southeast side of Orange Grove Road and retrofit pedestrian facility on northwest side of I-40 bridge, or build separate pedestrian bridge to accommodate foot traffic across I-40.

*The current bridge across I-40 is narrow and dangerous to cross as a pedestrian.*

*A view down Orange Grove Road shows that it lacks sidewalks and other pedestrian facilities.*




# Project #3: Oakdale Drive

**Location:**
Oakdale Drive, between Orange Grove Road and Cheshire Drive

**Recommendations:**
- Sidewalk (one side)
- Crossing improvement at Oakdale and Orange Grove

**Project Type:**
Corridor Improvement
Crossing Improvement

**Corridor Ownership:**
NCDOT

**Length:** 3,500 feet
**Cost:** $133,000

**Comments:**
Town of Hillsborough and Orange County will need to work with NCDOT

*Note: Costs provided are estimates only based on per cost estimates from NCDOT. Project recommendations made here are planning-level only. Detailed engineering analyses should be conducted prior to project implementation.*

# Project #3: Oakdale Road

*Importance*

Oakdale Drive connects residential areas north and east of I-40 to Orange Grove Road, close to Grady Brown Elementary School. Currently, this road sees moderate to heavy traffic, especially during school arrival and dismissal times. Without a traffic signal at Orange Grove Road, traffic queues are quite long (indicative of a need for traffic signal). Providing sidewalk connections will enable a number of parents and children to walk to school (assuming improvements are also made to Orange Grove Road and the I-40 bridge).

*Recommended Solutions*

- Provide sidewalk on one side of Oakdale Drive from Cheshire Drive to Orange Grove Road.
- Conduct a study to determine if there is warrant for signalization at Oakdale Drive and Orange Grove Road (NCDOT).
- Add high visibility marked crosswalks. If a traffic signal is added at Oakdale Drive and Orange Grove Road, add countdown signals. However, it should be noted that NC DOT requires a receiving sidewalk where crosswalks are installed.
- Consider reducing curb radii at Oakdale Road and Orange Grove Road to slow turning traffic at this intersection.

*A view of the current intersection of Oakdale Road and Orange Grove Road.*

# Project #4: Patriots Pointe Trail Connection

**Location:**
Patriots Pointe Apartments and Timbers Drive

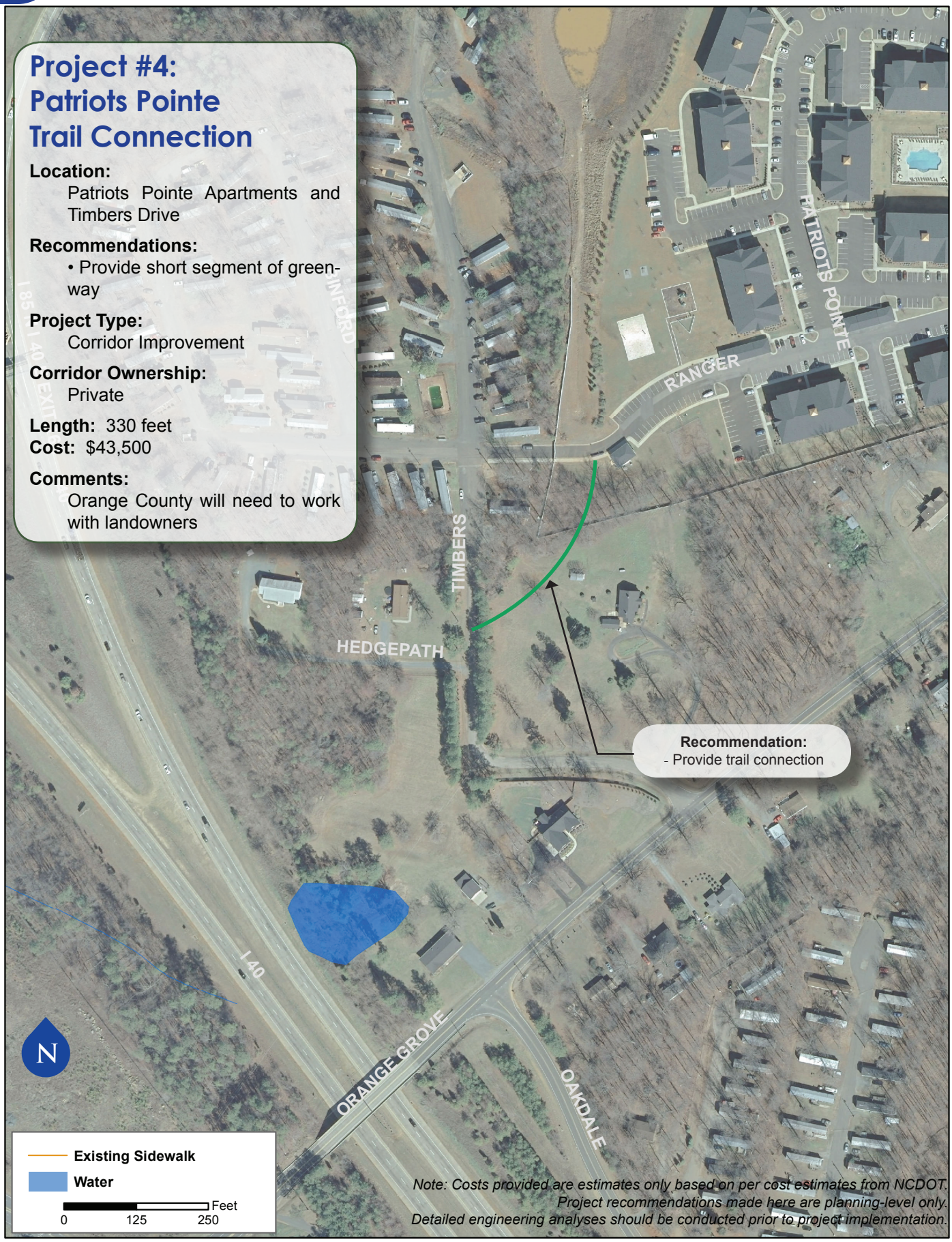
**Recommendations:**
• Provide short segment of greenway

**Project Type:**
Corridor Improvement

**Corridor Ownership:**
Private

**Length:** 330 feet
**Cost:** $43,500

**Comments:**
Orange County will need to work with landowners




*Note: Costs provided are estimates only based on per cost estimates from NCDOT. Project recommendations made here are planning-level only. Detailed engineering analyses should be conducted prior to project implementation.*

## Project #4: Patriots Pointe Trail Connection

*Importance*

Providing a trail here shortens the walking distance to school for Patriots Pointe apartments residents. A trail would also reduce the distance pedestrians have to walk along Orange Grove Road.

*Recommended Solutions*

• Provide a multi-use path connecting the southwest corner of Patriots Pointe to Timbers Drive. Alternatively, the fencing/gate between the apartment complex and the trailer park could be removed or a small pedestrian gate passageway could be created if agreed upon (at no cost).

## 3.6 CW STANFORD MIDDLE SCHOOL

The following section outlines specific recommendations for each project type. Short-term or high priority projects are identified and further discussed in Section 3.7.

### *Corridor Improvements*

*A full list of corridor improvements is outlined in Table 3.3.*

**Table 3.3: CW Stanford Middle School Corridor Improvements**

| Improvement Type | Description | Length |
|---|---|---|
| New Sidewalk/Bike Lane | Add sidewalk along west side of Orange High School Rd from US 70 to Harold Latta Road. Consider bicycle lanes or paved shoulders (will require widening) | 3790 Ft |
| New Sidewalk | Add sidewalk along both sides of US 70 from Churton Street to Scotswood Boulevard (entire US 70 in Hillsborough is recommended but this section is important for this school) | 6200 Ft |
| New Sidewalk/Bike Lane | Add sidewalk along both sides of Harold Latta Road from Cloverfield Drive and continuing along Orange High School Road to Miller Road. Consider bicycle lanes or paved shoulders. * | 3940 Ft |
| New Sidewalk | Add sidewalk along one side of Miller Road from Harold Latta Road to Woodlawn Drive | 950 Ft |
| New Sidewalk | Add sidewalk along one side of NC 86 from Governor Burke Road to US 70 | 2280 Ft |
| New Sidewalk | Add sidewalk along one side of NC 57 from Governor Burke Road to US 70 | 2280 Ft |
| New Multi-use Path | Connect Buttonwood Drive to English Hill Lane through easement | 460 Ft |
| New Multi-use Path | Follow utility easement from Miller Drive to school and to US 70 | 5800 Ft |

* will require widening

*Orange High School Road would benefit greatly from the addition of a sidewalk and bicycle lanes.*

*The addition of sidewalks and crosswalks will make Orange High School Road more walkable as shown in this photo rendering.*

## Crossing Improvements

### *1. US 70/Orange High School Road*

• Add high visibility marked crosswalk.

• Add pedestrian countdown signalization.

• Add advanced pedestrian crossing signage and school zone signage.

• Maintain a crossing guard at this location.

• If trail is installed along utility easement crossing Orange High School Road from Corbin Creek Woods Subdivision, install high visibility crosswalk and advanced pedestrian warning signage at intersection.

### *2. US 70/Gwen Road*

• Add signalization at intersection as Corbinton Commons development is constructed.

• Add high visibility marked crosswalk.

• Add pedestrian countdown signalization.

•Add advanced pedestrian crossing signage and school zone signage.

### *3. Orange High School Road/Harold Latta Road*

• Stripe new high visibility crosswalk markings across Orange High School Road.

• Consider adding a crossing guard at this location.

• Consider pedestrian warning signs or in-roadway pedestrian signs.

### *4. Orange High School Road/Ann Road*

• Stripe new high visibility crosswalk markings across Orange High School Road. [Note that NCDOT standards

require a receiving sidewalk for crosswalks.]

• Consider adding a crossing guard to this location.

• Consider pedestrian warning signs or in-roadway pedestrian signs.

***5. Orange High School Road/School Entrance***

• Stripe new high visibility crosswalk markings across school entrance road with advanced stop lines for leaving traffic.

• Maintain a police officer or crossing guard at this location.

***6. US 70/Scotswood Boulevard***

• Add high visibility marked crosswalk.

• Add pedestrian countdown signalization.

• Add advanced pedestrian crossing signage.

***7. US 70/Churton Street***

• Add high visibility marked crosswalk.

• Add pedestrian countdown signalization.

• Add advanced pedestrian crossing signage.

• Consider geometric reconfiguration to reduce turning radii.

• Consider adding pedestrian refuge islands in pork chop (free-flow right turns) and medians.

***8. NC 86/NC 57***

• Add high visibility marked crosswalk.

• Add pedestrian countdown signalization.

• Add advanced pedestrian crossing signage.

• Consider geometric adjustment to intersection to slow right turning vehicles. Consider extending large island that separates Rencher Street from NC 86.

***9. Gwen Road/Nancy Drive & Gwen Road/Ann Road & Miller Road/Woodlawn Drive***

• Add high visibility marked crosswalk.

• Add advanced pedestrian crossing signage.

## *Traffic Calming Measures*

• Extend school zone on Orange High School Road from Harold Latta Road to US 70. If pedestrian traffic increases, consider adding school zone on US 70 on both sides of Orange High School Road.

• Provide traffic calming (speed humps) and/or pedestrian signage on Rencher from NC 57 to back of school and on Woodlawn Drive from Greentree Drive to Buttonwood Drive.

• Slow traffic on US 70 near Orange High School Road with a speed limit reduction and enforcement.

## *On-campus Improvements*

• Add sidewalk leading to school and construct curb ramps.

• Add bicycle rack area near main entrance of school.

• Restripe on-campus crosswalks as they are faded.

## *Other Improvements*

• Enhance the “cut throughs” leading to both the high school and middle school from neighborhoods to the north and west.

• Improve all curb ramps to follow modern guidelines with truncated domes.

## *Long-term Improvements*

• Follow recommendations set forth by the Town of Hillsborough sidewalk/greenway planning.

*An AT&T utility easement near the school could be formalized into a multi-use trail.*

*Currently there are no bicycle racks at the front of campus. Here a bicycle leans against a fence behind the school.*

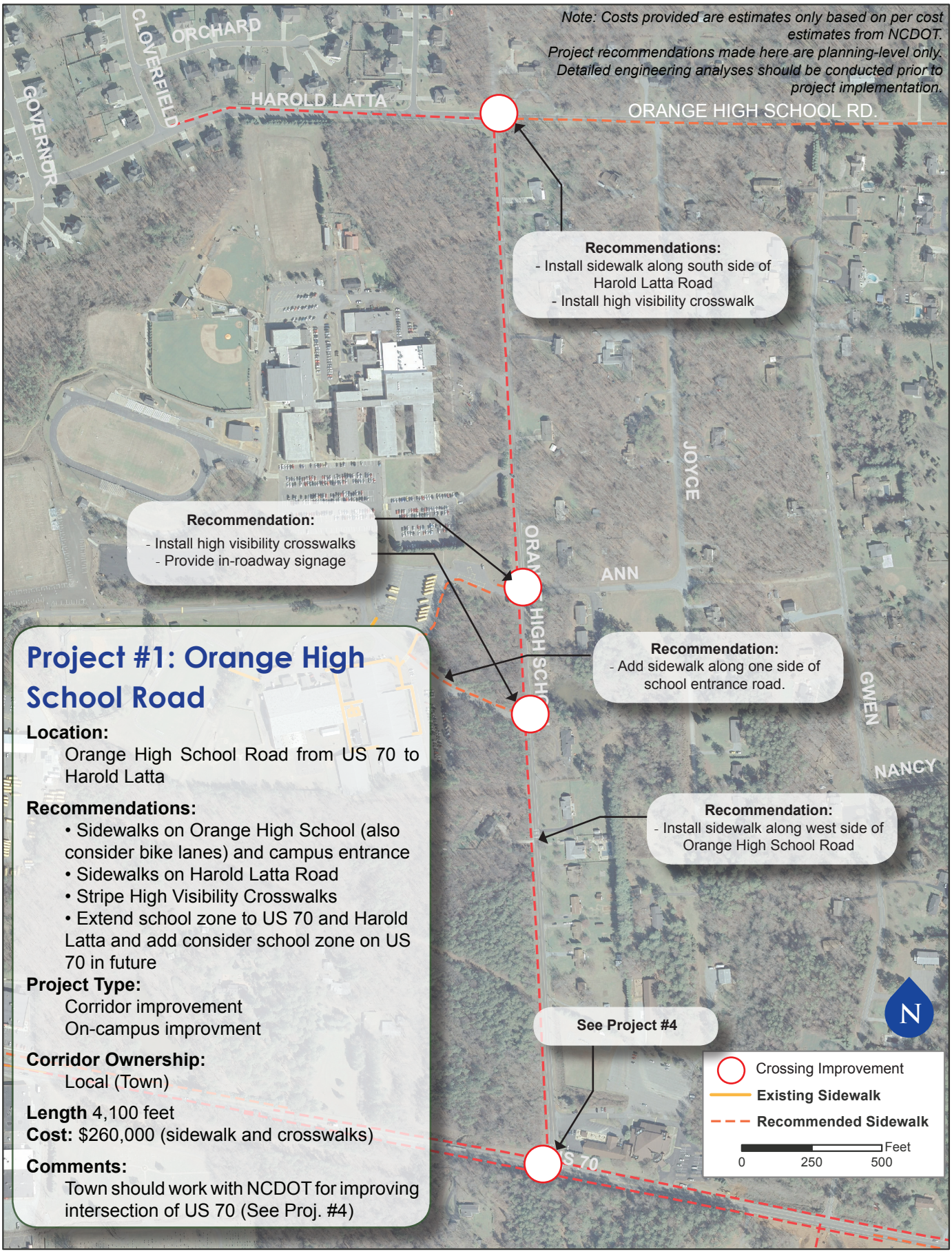
## 3.7 CW STANFORD MIDDLE SCHOOL PRIORITY PROJECTS

### Overview

A comprehensive network of engineering improvements is recommended for the Stanford Middle School area. Specific network projects have been identified as integral to improving bicycle and pedestrian safety around Stanford Middle School. In Map 3.3 approximate travel distances are shown in concentric rings. These are the top priority projects of the comprehensive recommended network seen in Map 3.4. The project cutsheet number on the map identifies the location of each priority project. The following pages provide detailed cutsheet map recommendations, photos, and cost estimates.

**Map 3.3: CW Stanford Middle School Priority Projects**

## Map 3.4: CW Stanford Middle School Priority Projects




## Project #1: Orange High School Road

**Location:**
Orange High School Road from US 70 to Harold Latta

**Recommendations:**
- Sidewalks on Orange High School (also consider bike lanes) and campus entrance
- Sidewalks on Harold Latta Road
- Stripe High Visibility Crosswalks
- Extend school zone to US 70 and Harold Latta and add consider school zone on US 70 in future

**Project Type:**
Corridor improvement
On-campus improvment

**Corridor Ownership:**
Local (Town)

**Length** 4,100 feet
**Cost:** $260,000 (sidewalk and crosswalks)

**Comments:**
Town should work with NCDOT for improving intersection of US 70 (See Proj. #4)

# Project #1: Orange High School Road

*Importance*

This road directly connects both the Middle School and High School to US 70 and neighborhoods to the south and west. It currently has no pedestrian facilities and is highly unsafe to walk on. Therefore it is critical that this road be improved for pedestrians.

*Recommended Solutions*

*Orange High School Road*

- Add sidewalk on west side of Orange High School Road (north of US 70 and south of Harold Latta Road).
- Add high visibility marked crosswalks.
- Consider bicycle lanes or paved shoulders
- Reduce speed limit by extending school zone.
- Add sidewalk at campus entrance.

*Orange High School Road/School Entrance*

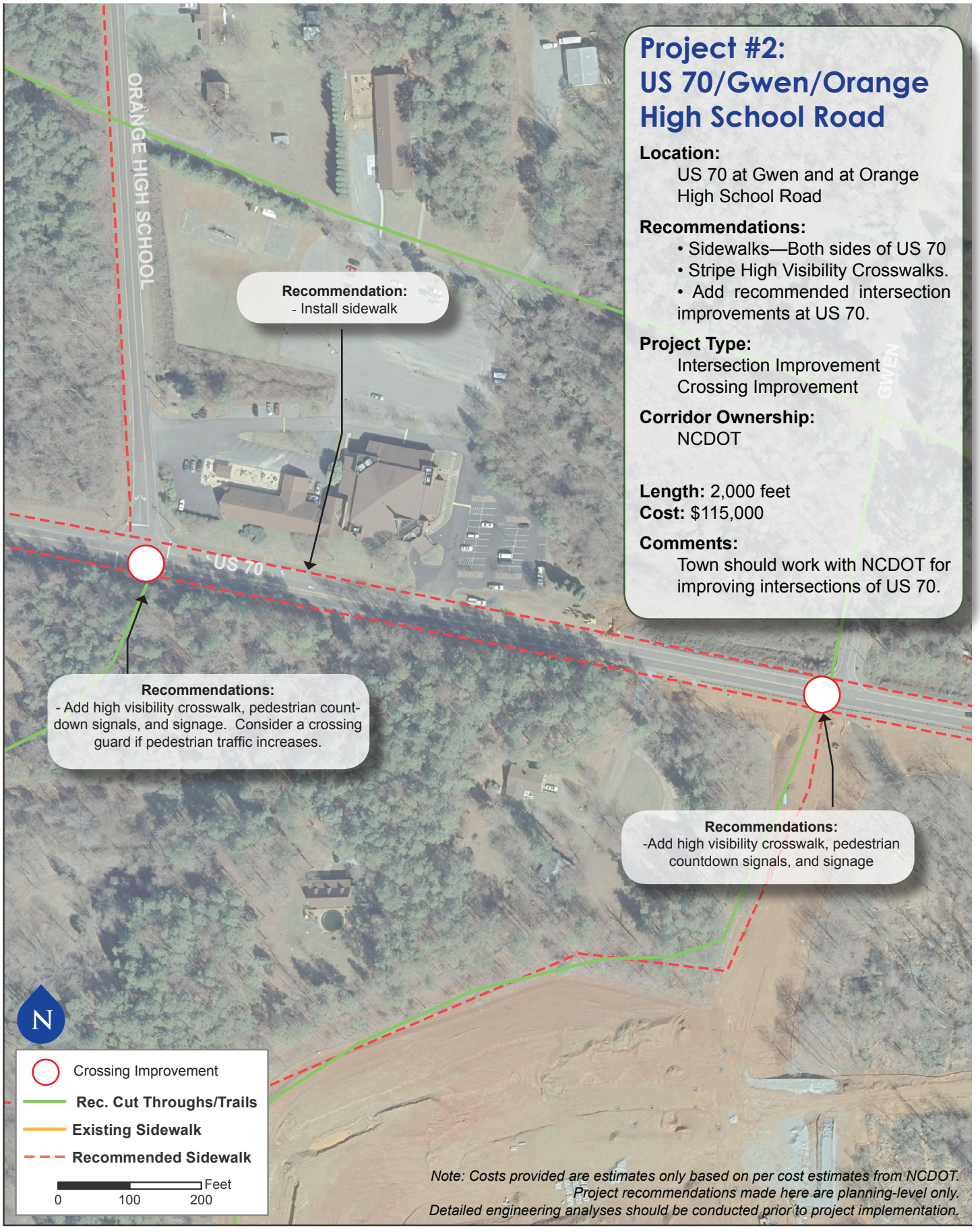
- Install high visibility marked crosswalk markings and portable in-roadway pedestrian crossing signage at both school entrances/exits.
- Maintain a crossing guard at the main campus entrance location (Crossing guard can put portable in-roadway sign out and remove each shift).

*Orange High School Road/Harold Latta Road*

- Add sidewalk on west side of Orange High School Road and south side of Harold Latta Road.
- Stripe new high visibility crosswalk markings across Orange High School Road. Also utilize portable in-roadway pedestrian crossing signage.
- Consider adding a crossing guard to this location.
- Consider pedestrian warning signs or in-roadway pedestrian signs.
- Provide speed limit enforcement.

*There are currently no sidewalks along the road that leads to the middle school.*

*As seen in this photo rendering, the sidewalk would be a simple addition that would improve pedestrian access to the school.*




## Project #2: US 70/Gwen/Orange High School Road

**Location:**
US 70 at Gwen and at Orange High School Road

**Recommendations:**
- Sidewalks—Both sides of US 70
- Stripe High Visibility Crosswalks.
- Add recommended intersection improvements at US 70.

**Project Type:**
Intersection Improvement
Crossing Improvement

**Corridor Ownership:**
NCDOT

**Length:** 2,000 feet
**Cost:** $115,000

**Comments:**
Town should work with NCDOT for improving intersections of US 70.

*Note: Costs provided are estimates only based on per cost estimates from NCDOT. Project recommendations made here are planning-level only. Detailed engineering analyses should be conducted prior to project implementation.*

# Project #2: US 70/Gwen and US 70/Orange High School Road

*Importance*

Currently US 70 is a major barrier to pedestrians. It separates most of Hillsborough from both the Middle and High schools and is highly dangerous to cross with traffic and lacking pedestrian facilities. Therefore it is critical that this road be improved for pedestrians. Speed limits should be reduced on US 70 if possible with school zone signage considered in the future if warranted.

*Recommended US 70 and Intersection Solutions*

*US 70/Orange High School Road (also see Project #4)*

- Add sidewalk on US 70.
- Add high visibility marked crosswalk.
- Add pedestrian countdown signalization.
- Add pedestrian signage and school zone signage.
- Maintain a crossing guard at this location if pedestrian traffic increases.

*US 70/Gwen Road*

- Add sidewalk on US 70.
- Connect to proposed greenway along AT&T utility easement and the proposed greenway on the Corbinton Commons site.
- Signalize intersection as Corbinton Commons development is constructed.
- Add high visibility marked crosswalk.
- Add pedestrian countdown signalization.
- Add pedestrian signage and school zone signage.
- Consider turning radii reduction.

*The intersection of US 70 and Orange High School Road is currently a very dangerous place to cross the street.*

*The recommended pedestrian treatments such as crosswalks and sidewalks would make it much easier and safer to cross here.*

# Project #3: Buttonwood Drive/ English Hill Lane Proposed Easement

**Location:**
Between Buttonwood Drive and English Hill Lane

**Recommendations:**
- Multi-use Path
- Stripe High Visibility Crosswalks
- Add Pedestrian Signage

**Project Type:**
Corridor Improvement
Crossing Improvement

**Corridor Ownership:**
Private

**Length:** 500 feet
**Cost:** $66,500

**Comments:** Will need to work with homeowners


*Note: Costs provided are estimates only based on per cost estimates from NCDOT. Project recommendations made here are planning-level only. Detailed engineering analyses should be conducted prior to project implementation.*

# Project #3: Buttonwood Drive/English Hill Lane Cut Through

*Importance*

Currently children and parents living in the neighborhoods off of Scotswood Blvd must walk to school via US 70 where there are no sidewalks or pedestrian facilities. This cut through would enable pedestrians to utilize residential streets to access both the Middle and High schools.

*Recommended Solutions*

- Add high visibility marked crosswalks (Gwen/Ann, Gwen/Nancy, and Miller).
- Add pedestrian signage at Gwen/Ann crossing.
- Construct a multi-use trail connecting both streets and establish an easement for the trail.
- Consider traffic calming (speed humps) on Buttonwood from Miller to recommended trail.


*The roads in the Buttonwood Drive and English Hill Lane area have very low traffic volume and would provide safe routes to the school if a trail was created to connect the two to shorten the trip.*

# Project #4: US 70/ Orange High School Road and Connector Trail

**Location:**
US 70 and Orange High School Road, future Corbin Creek development

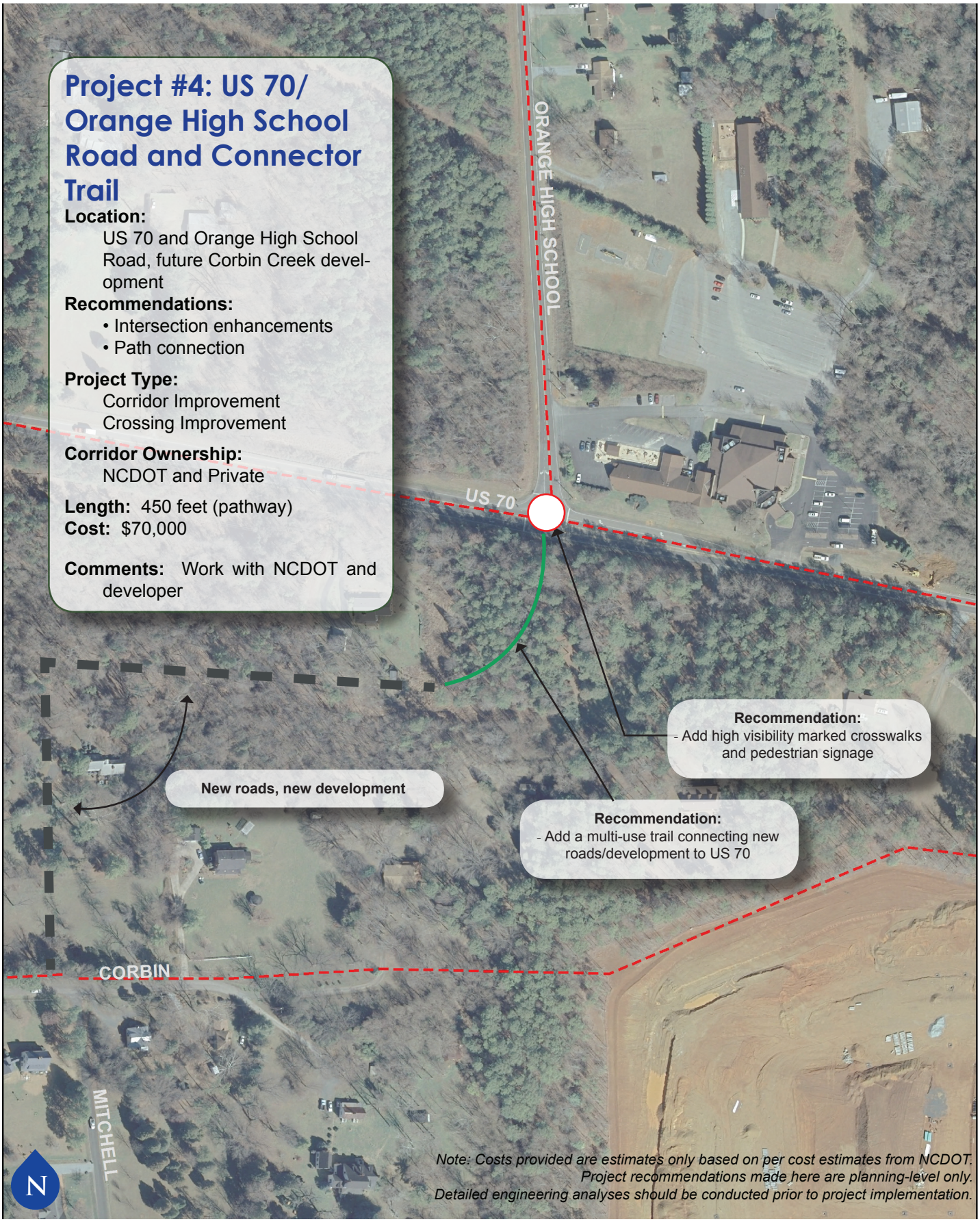
**Recommendations:**
- Intersection enhancements
- Path connection

**Project Type:**
Corridor Improvement
Crossing Improvement

**Corridor Ownership:**
NCDOT and Private

**Length:** 450 feet (pathway)
**Cost:** $70,000

**Comments:** Work with NCDOT and developer




*Note: Costs provided are estimates only based on per cost estimates from NCDOT. Project recommendations made here are planning-level only. Detailed engineering analyses should be conducted prior to project implementation.*

# Project #4: US 70/Orange High School Road and Connector Trail

*Importance*

There are no pedestrian facilities along US 70 or Orange High School Road (these are needed). With the up-coming Corbin Creek subdivision, a trail connection would more directly link Stanford Middle School, Cameron Park Elementary, and neighborhoods on both sides of US 70.

*Recommended Solutions*

- US 70/Orange High School Road crossing:
  - Add high-visibility marked crosswalks
  - Add countdown signals
  - Add curb ramps
  - Add signage
  - Provide crossing guard in future if pedestrian activity increases.
- Provide connector trail from new development to US 70 crossing.

*The intersection of Orange High School Road and US 70 could be greatly improved with sidewalks, marked crosswalks, countdown signals, and pedestrian signage.*

## 3.8 CAMERON PARK ELEMENTARY SCHOOL

The following section outlines specific recommendations for each projects type. Short-term or high priority projects are identified and further discussed in Section 3.9.

### *Corridor Improvements*

*A full list of corridor improvements is outlined in Table 3.4.*

*Lack of sidewalk and shoulders / bicycle lanes make walking and bicycling difficult on St. Mary's Road.*

**Table 3.4: Cameron Park Elementary School Corridor Improvements**

| Improvement Type | Description | Length |
|---|---|---|
| New Sidewalk | Provide sidewalk on the west side of Cameron Street from Margaret Lane to King Street | 330 LF |
| New Bicycle Lanes/ Paved Shoulder | Provide bicycle lanes or wide paved shoulders along both both sides of St. Mary's Road from Cameron Street to US 70 | 5800 LF |
| Greenway / Trail | Provide a greenway connecting US 70 at the proposed retirement center to Thomas Ruffin Street | 2400 LF |
| Greenway / Trail | Provide a greenway from Cameron Street east through the Board of Education Property that will connect with Cameron Park | 485 LF |
| Greenway / Trail | Provide a greenway from the Historic Cameron Park trail to Cameron Park Elementary School. | 550 LF |
| New Sidewalk | Provide sidewalk on the east side of North Cameron Street from St. Mary's Road to Queen Street | 1175 LF |
| New Sidewalk | Provide sidewalk on south side of Queen Street from Cameron Street to Thomas Ruffin Street | 800 LF |
| New Sidewalk | Provide sidewalk on the west side of Thomas Ruffin Street from Queen Street to St. Mary's Road. | 340 LF |
| New Sidewalk | Provide a sidewalk from the Orange County Farmer's Market to the existing sidewalk leading to the Orange County Offices. | 125 LF |
| New Sidewalk | Provide a sidewalk on the north side of the Orange County offices driveway to Cameron Street. | 140 LF |
| New Sidewalk | Provide a sidewalk from Thomas Ruffin Street, in front of the school property, and through the parking area that will connect with the existing sidewalk to the front entrance to the school. | 325 LF |

Note: Improvements in Table 3.4 were developed prior to the adoption of the *Town of Hillsborough Community Connectivity Plan* and in some instances may not be consistent with this plan. The SRTS Advisory Committee will review these recommended improvements prior to implementation. Future amendments may be considered .

## Crossing Improvements

### 1.Thomas Ruffin Street / St. Mary's Road

• Provide a crossing guard during drop off and dismissal times.

• Provide portable in-roadway crossing signage

### 2. Cameron Street / Orange County Board of Education Proposed Trail

• Sidewalk is needed long west side of Cameon Street between King Street and Margaret Street (see note p. 3-30).

• Construct a bulb out where the current on-street parking is located.

• Provide a high visibility crosswalk.

• Provide pedestrian signage.

• Install ADA compliant curb ramps.

### 3. Cameron Street / Board of Education Driveway

• Sidewalk is needed along the south side of the County Offices Driveway to Cameron Street (see note p. 3-30).

• Provide a high visibility crosswalk on the west side of Cameron Street across driveway.

• Install ADA compliant curb ramps leading to this intersection along both roads.

### 4. Cameron Street / Margaret Lane

• Provide a high visibility crosswalk on the west side of Cameron Street across Margaret Lane.

• Install ADA compliant curb ramps.

## Traffic Calming Measures

• Traffic calming measures, such as speed humps and mini traffic circles, are recommended along Queen Street, Thomas Ruffin Street, and Cameron Street.

• Speed limit enforcement is needed along St. Mary's Road.

## On-campus Improvements

• Provide bicycle racks on campus at convenient location near main entrance. Ideally, the bicycle racks should be covered on a concrete pad.

• Provide crossing guards during drop of and dismissal at the following locations:
- St. Mary's Road / Thomas Ruffin Street
- Cameron Street / King Street (this location will be moved south if the trail connection is made through the Orange County Board of Education property.)

• Do not allow vehicles to turn left out of the school during drop off and pick up.

• Encourage parents who wish to walk their children into the school to use the carpool line instead of campus parking.

• Provide marked parking spaces for teachers on the western side of the parking lot. This will reduce conflict points for parents parking and dropping off children.

## Other Improvements

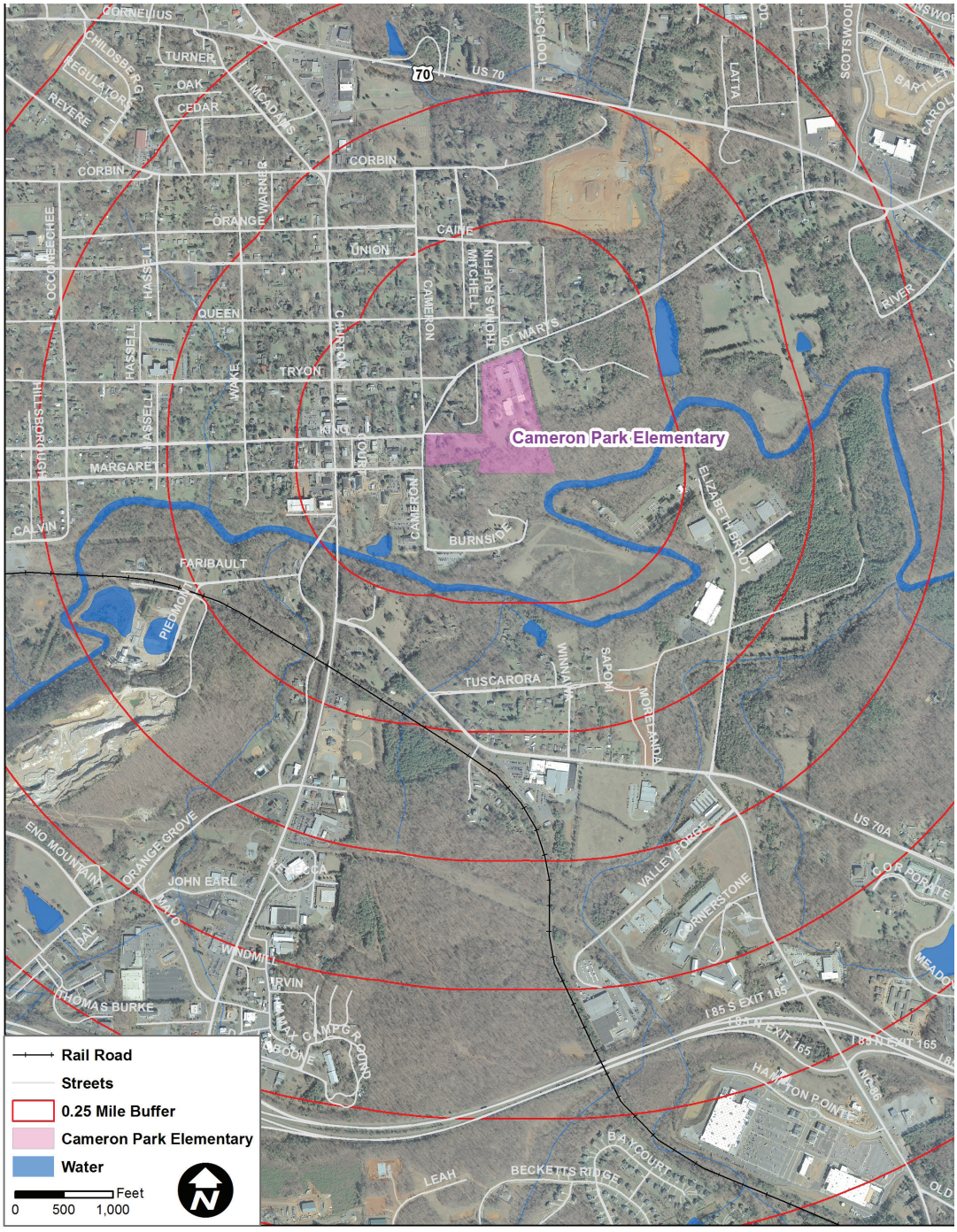
• Consider changing the school start time to a later time to avoid commuter traffic on St. Mary's Road at the exact same time.
• Consistently stripe marked crosswalks throughout the Downtown including on Churton Street.
• Install pedestrian countdown signals at signalized intersections along Churton Street.

## 3.9 CAMERON PARK ELEMENTARY SCHOOL PRIORITY PROJECTS

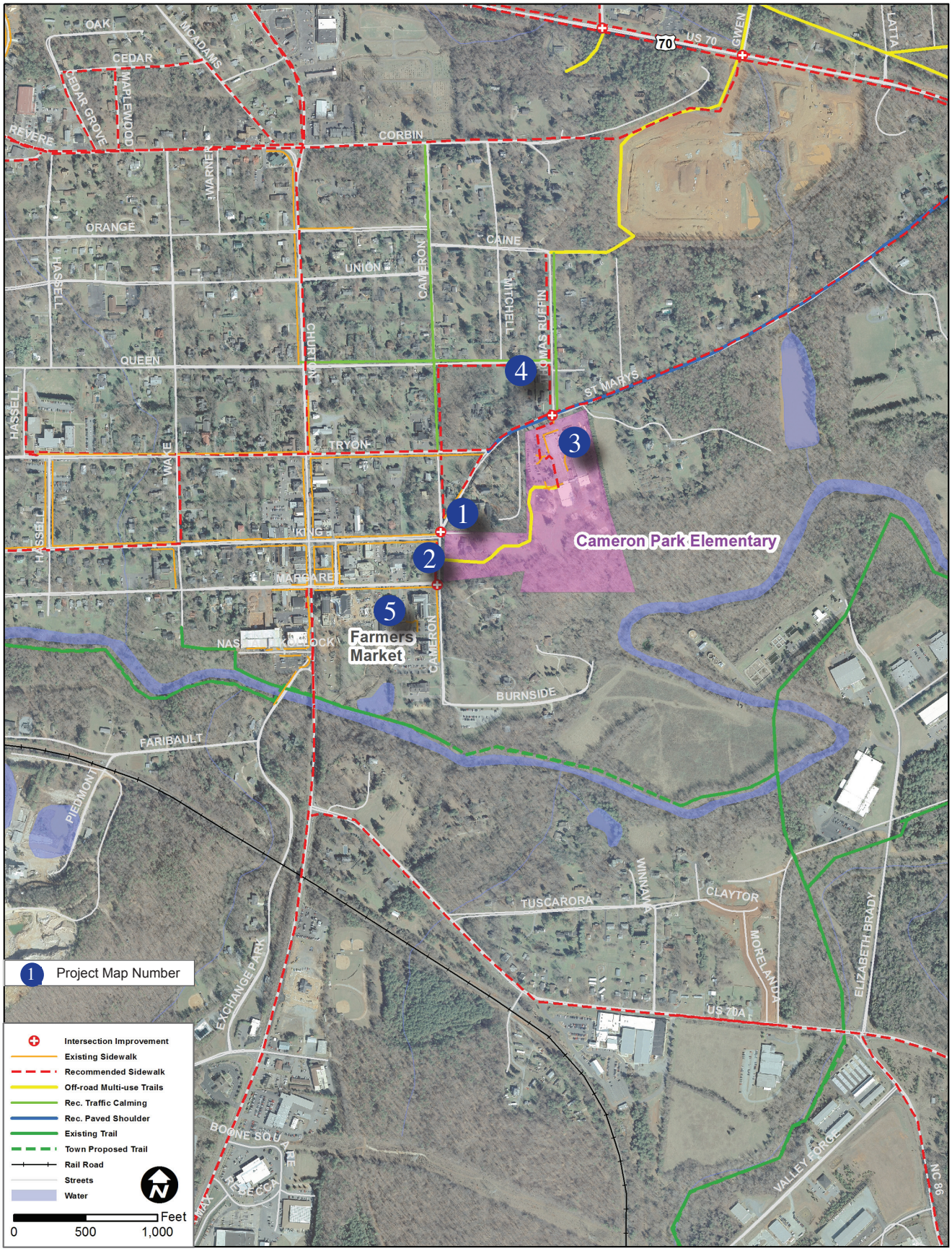
### Overview

A comprehensive network of engineering improvements are recommended for the Cameron Park Elementary School area. Specific network projects have been identified as integral to improving bicycle and pedestrian safety around Cameron Park Elementary School. These are the top priority projects of the comprehensive recommended network seen in Map 3.6. The project cutsheet number on the map identifies the location of each priority project. The following pages provide detailed cutsheet map recommendations, photos, and cost estimates.

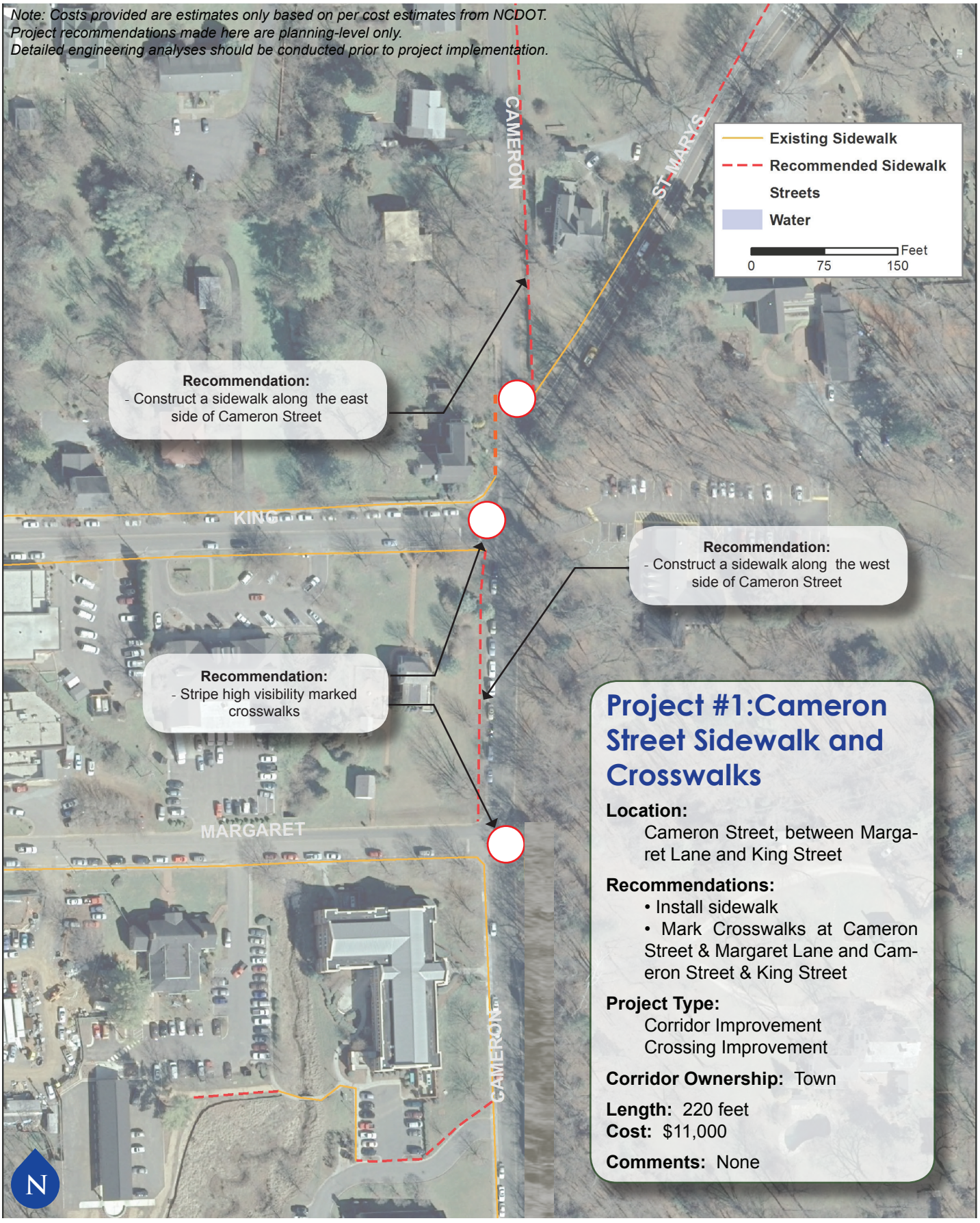
**Map 3.5: Cameron Park Elementary Travel Map**



## Map 3.6: Cameron Park Elementary Priority Projects



*Note: Costs provided are estimates only based on per cost estimates from NCDOT.*
*Project recommendations made here are planning-level only.*
*Detailed engineering analyses should be conducted prior to project implementation.*




**Recommendation:**
- Construct a sidewalk along the east side of Cameron Street

**Recommendation:**
- Construct a sidewalk along the west side of Cameron Street

**Recommendation:**
- Stripe high visibility marked crosswalks

## Project #1:Cameron Street Sidewalk and Crosswalks

**Location:**
Cameron Street, between Margaret Lane and King Street

**Recommendations:**
- Install sidewalk
- Mark Crosswalks at Cameron Street & Margaret Lane and Cameron Street & King Street

**Project Type:**
Corridor Improvement
Crossing Improvement

**Corridor Ownership:** Town

**Length:** 220 feet
**Cost:** $11,000

**Comments:** None

# Project #1: Cameron Street Sidewalk and Crosswalks

*Importance*

There is currently a small gap in the current sidewalk network along Cameron Street, between Margaret Lane and King Street. This section of sidewalk is a priority because it is located across from the Board of Education which provides access to Cameron Park Elementary School.

*Recommended Solutions*

• Provide sidewalk on the west side of Cameron Street between Margaret Lane and King Street.
• With addition of sidewalk, provide high visibility marked crosswalks at each adjacent intersection to cross Margaret Lane and King Street.

*A crosswalk is needed across Margaret Lane at Cameron Street.*

# Project #2: Board of Education Trail to Cameron Park Elementary School

**Location:**
Cameron Street to the existing Historic Cameron Park and to Cameron Park Elementary School

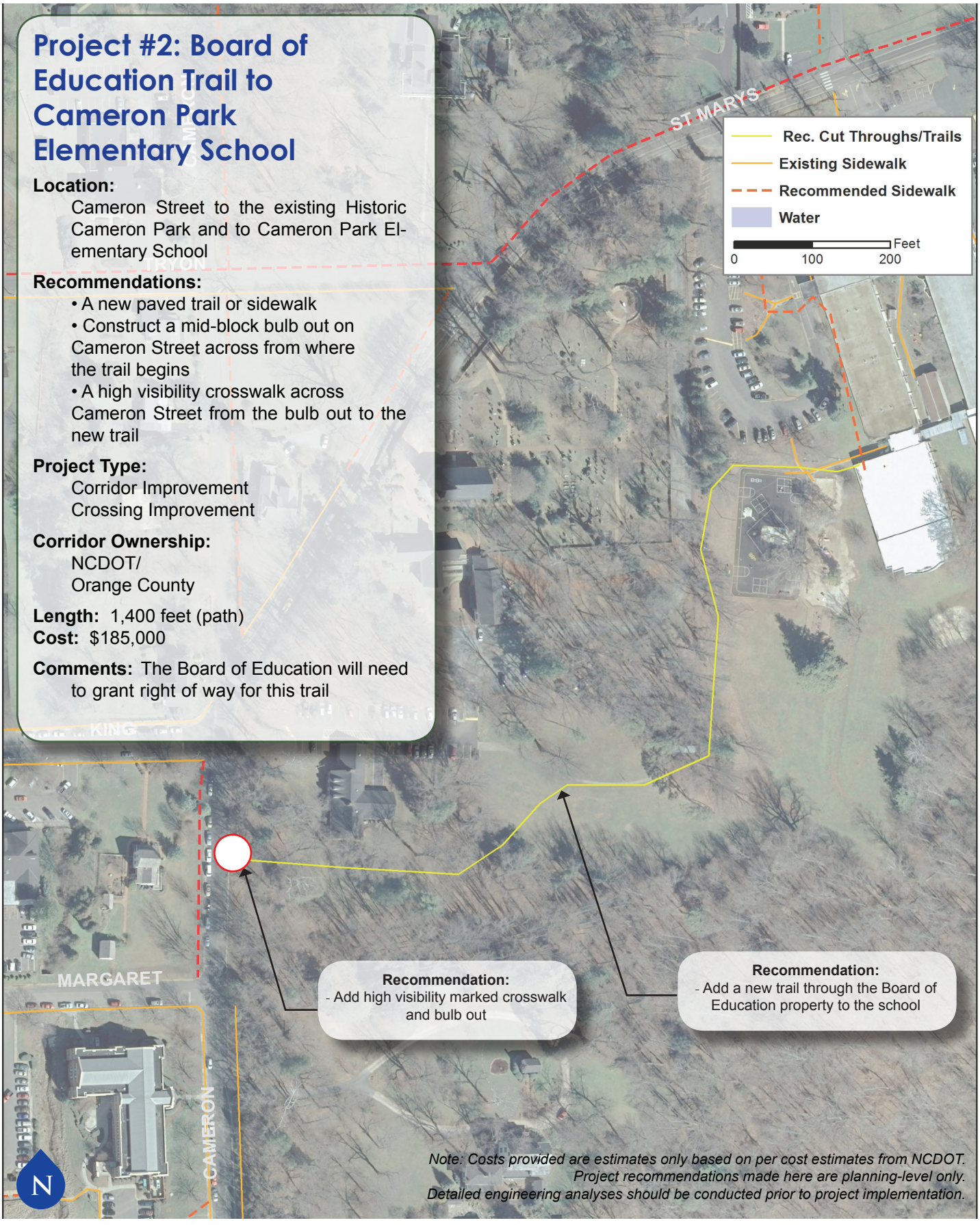
**Recommendations:**
- A new paved trail or sidewalk
- Construct a mid-block bulb out on Cameron Street across from where the trail begins
- A high visibility crosswalk across Cameron Street from the bulb out to the new trail

**Project Type:**
Corridor Improvement
Crossing Improvement

**Corridor Ownership:**
NCDOT/
Orange County

**Length:** 1,400 feet (path)
**Cost:** $185,000

**Comments:** The Board of Education will need to grant right of way for this trail




*Note: Costs provided are estimates only based on per cost estimates from NCDOT. Project recommendations made here are planning-level only. Detailed engineering analyses should be conducted prior to project implementation.*

# Project #2: Board of Education Trail to Cameron Park Elementary School

*Importance*

The road that passes directly by Cameron Park Elementary School, St. Mary's Road, is not an acceptable location for children to walk or ride their bicycle. Therefore, providing a path from the Board of Education property at Cameron Street that will connect with the Historic Cameron Park walkways and continue on to the Elementary School will allow children to safely access the school without the traffic issues on St. Mary's Road.

*Recommended Solutions*

• Provide a trail or sidewalk across the Board of Education Property that will connect with the Historic Cameron Park Trail.
• Provide a trail or sidewalk from the Historic Cameron Park Trail to the Cameron Park Elementary School.
• Construct a bulb out on Cameron Street to provide a shorter crossing distance and better visibility for children since they would otherwise be obscured between parked cars on Cameron Street.
• Provide a high visibility crossing across Cameron Street from the bulb out to the new trail.
• Staff this location with a crossing guard during drop off and dismissal times.

*A current view across Cameron Street of the potential site for a new trail through the Board of Education property.*

*As seen in this photo rendering, a bulbout and crosswalk lead to a paved trail that would be a safe route to access the school.*

# Project #3: New Sidewalk Connection to School from St. Mary's Road

**Location:**
New sidewalk from St. Mary's Road to Cameron Park Elementary Entrance

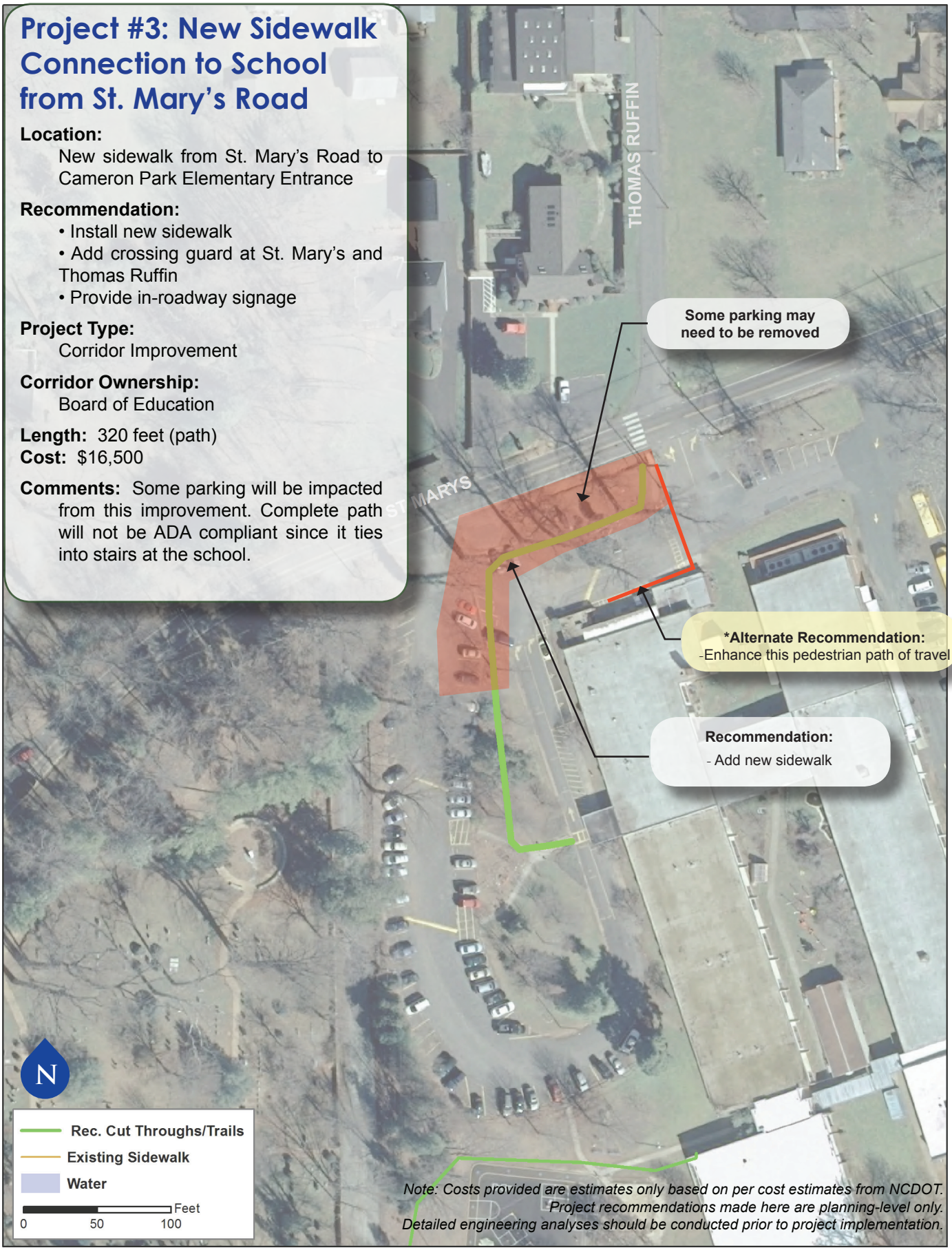
**Recommendation:**
- Install new sidewalk
- Add crossing guard at St. Mary's and Thomas Ruffin
- Provide in-roadway signage

**Project Type:**
Corridor Improvement

**Corridor Ownership:**
Board of Education

**Length:** 320 feet (path)
**Cost:** $16,500

**Comments:** Some parking will be impacted from this improvement. Complete path will not be ADA compliant since it ties into stairs at the school.




*Note: Costs provided are estimates only based on per cost estimates from NCDOT. Project recommendations made here are planning-level only. Detailed engineering analyses should be conducted prior to project implementation.*

# Project #3: New Sidewalk Connection to School from St. Mary's Road

*Importance*

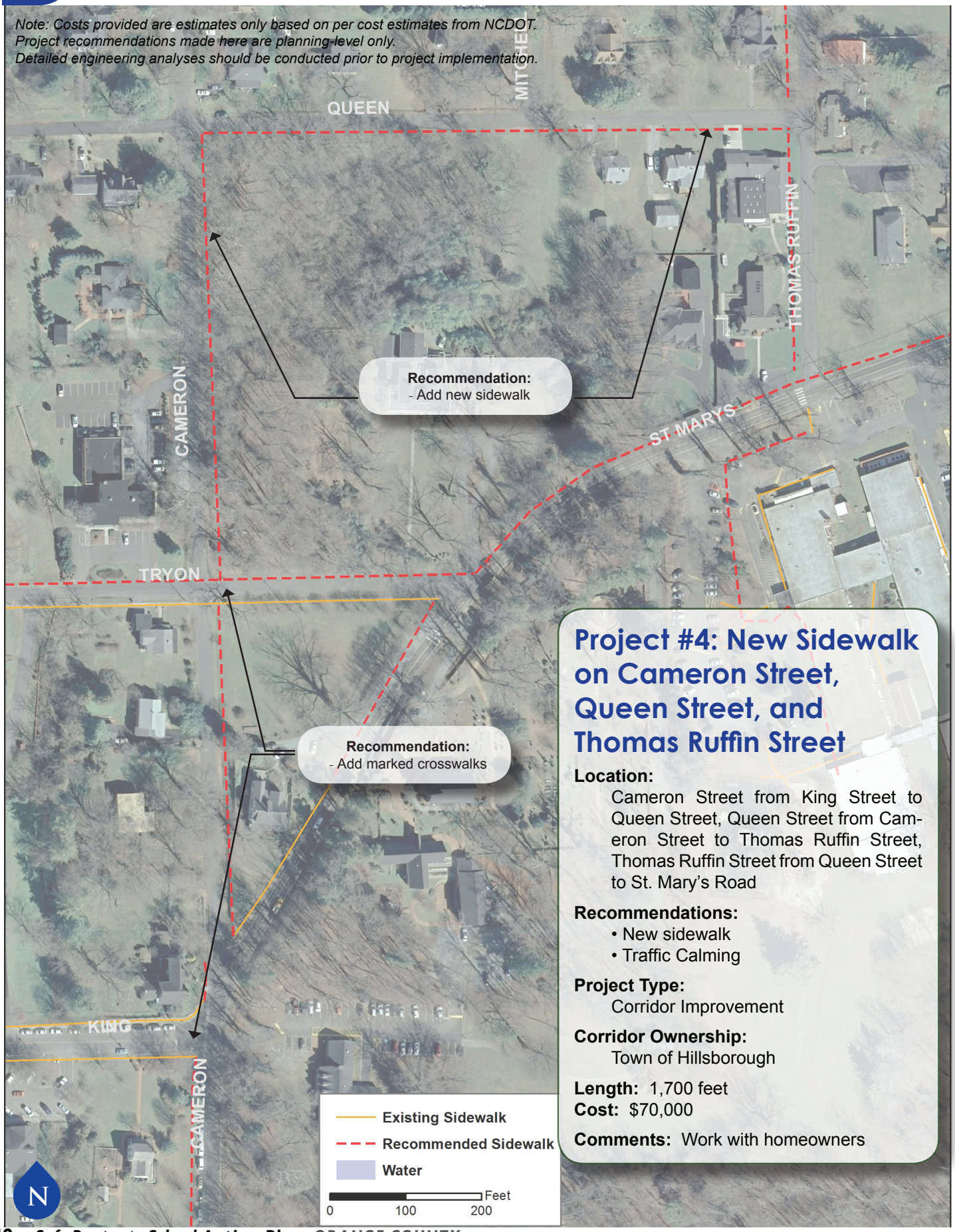
Students accessing Cameron Park Elementary School from St. Mary's Road walk on a defined path that has them crossing through the carpool line, walking next to a brick wall on a very narrow painted path, then walking through the handicapped spaces to enter the school. Drivers did not appear to be alert to pedestrian activity, making this a potentially hazardous path.

*Recommended Solutions*

• Provide sidewalk from the existing crossing at Thomas Ruffin Street that would traverse school property fronting St. Mary's Road, turn through the existing natural area, then connect with the sidewalk that currently provides access to the front of the school. An adult is currently stationed at this crossing to assist children safely into the school.
• Provide crossing guard at St. Mary's Road.
• Provide in-roadway pedestrian crossing signs (portable) at St. Mary's Road.
• *Alternative solution*: Enhance existing painted walkway (shown in pictures below) to create a more positive barrier such as bollards or railing. Consider creating a raised crosswalk as well. The facility, as all recom mended facilities, should be ADA-compliant.



*The current walkway through campus is hazardous. It crosses through traffic and has no positive barrier separating the path from traffic. A formal sidewalk out of the way of traffic would be a much safer solution.*




## Project #4: New Sidewalk on Cameron Street, Queen Street, and Thomas Ruffin Street

**Location:**
Cameron Street from King Street to Queen Street, Queen Street from Cameron Street to Thomas Ruffin Street, Thomas Ruffin Street from Queen Street to St. Mary's Road

**Recommendations:**
- New sidewalk
- Traffic Calming

**Project Type:**
Corridor Improvement

**Corridor Ownership:**
Town of Hillsborough

**Length:** 1,700 feet
**Cost:** $70,000

**Comments:** Work with homeowners

# Project #4: New Sidewalk on Cameron Street, Queen Street, and Thomas Ruffin Street

*Importance*

The section of St. Mary's Road between King Street and Thomas Ruffin Street is not a safe place for children to walk. The traffic volumes are high, there is a curve that limits sight distance, and there is not sidewalk or paved shoulder. No elementary age student should be allowed to walk along this section of roadway. Posted traffic speeds are low in this area, but traffic calming is recommended to continue to encourage traffic to move slowly. If the school enacts the policy to not allow vehicles to turn left out of their driveway during drop off and pick up, there will be a lot more vehicular traffic in this area, making traffic calming more of a necessity.

*Recommended Solutions*

• Provide sidewalk along Cameron Street, Queen Street, and Thomas Ruffin Street to provide access to the school for students coming from the west.
• Provide a high visibility crosswalk where the sidewalk starts at the Cameron Street / St. Mary's Road intersection. A small section of sidewalk will need to be constructed on the west side of Cameron Street to just past St. Mary's Road. At that location, the sidewalk will change from the west side to the east side.
• Provide a high visibility crosswalk on Cameron Street where the sidewalk will cross Tryon Street.
• Provide traffic calming such as speed humps or mini traffic circles.



*As seen in this before and after photo rendering, the simple addition of a sidewalk to Thomas Ruffin Street across from the school would be a way to make it safer for children to take this route to school.*

# Project #5:Walking School Bus from Farmers Market

**Location:**
From Farmer's Market to Cameron Street

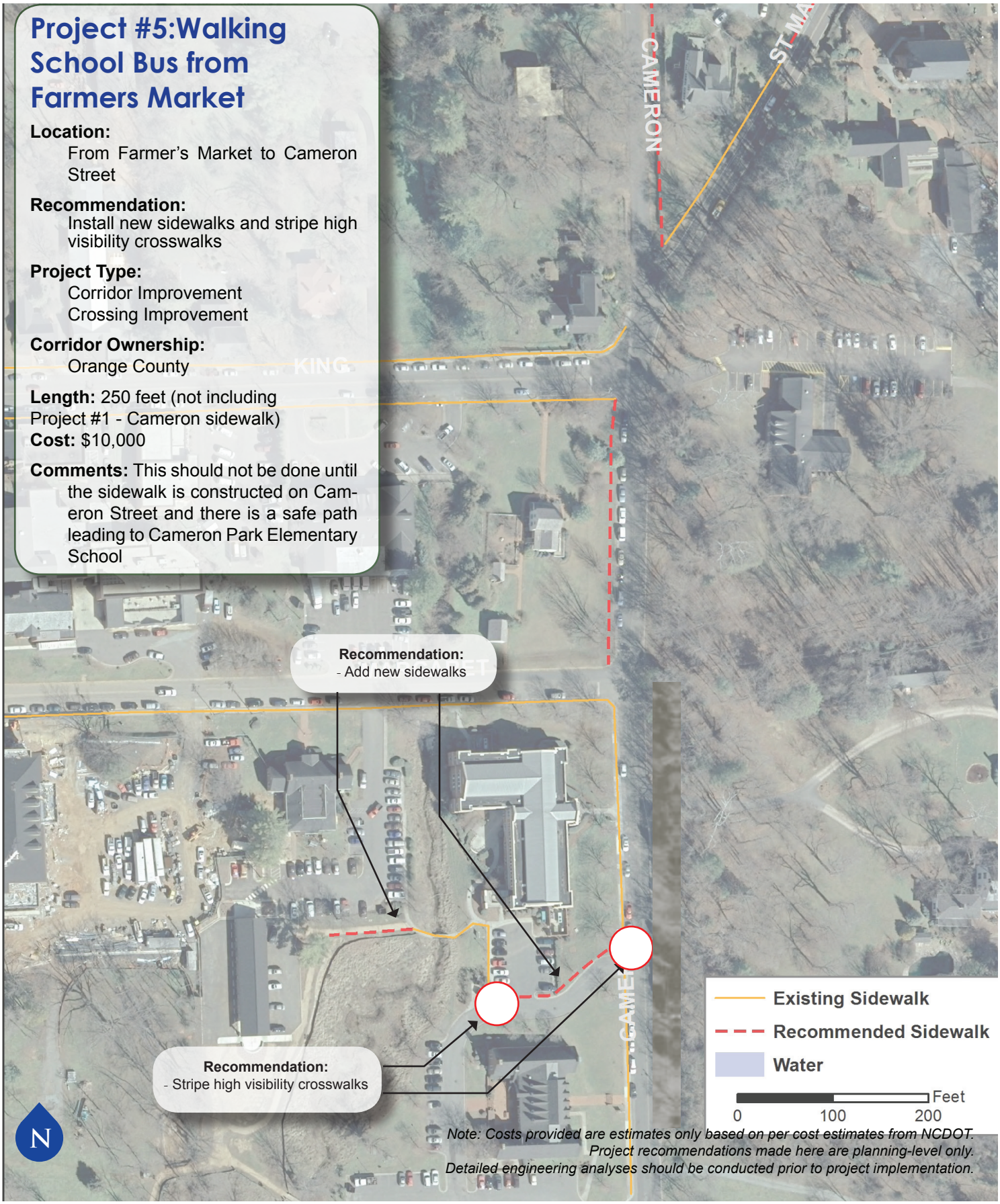
**Recommendation:**
Install new sidewalks and stripe high visibility crosswalks

**Project Type:**
Corridor Improvement
Crossing Improvement

**Corridor Ownership:**
Orange County

**Length:** 250 feet (not including Project #1 - Cameron sidewalk)
**Cost:** $10,000

**Comments:** This should not be done until the sidewalk is constructed on Cameron Street and there is a safe path leading to Cameron Park Elementary School




*Note: Costs provided are estimates only based on per cost estimates from NCDOT. Project recommendations made here are planning-level only. Detailed engineering analyses should be conducted prior to project implementation.*

# Project #5: Walking School Bus from Farmers Market

*Importance*

The Orange County Public Market House (Farmer's Market) is located less than half a mile from Cameron Park Elementary School. This would be a good location for children who do not live close enough to walk to have a park and walk opportunity. To do this, a safe route would need to be provided from the Farmer's Market the school. When completed, a parent or teacher should accompany children using this path.

*This route will not be ADA compliant due to the existing stairs at the Government Services Center access.

*Recommended Solutions*

• Provide sidewalk from the Farmer's Market to the existing sidewalk leading to the John M. Link, Jr. Government Services Center.
• Provide a high visibility crosswalk across the driveway where the Government Services Center sidewalk currently ends.
• Provide sidewalk on the north side of the Government Services Center driveway from the crosswalk to Cameron Street.

*A view of the Farmer's Market.*

*A new sidewalk would be needed through this area to connect to the one in this photo.*


*The path would then lead past the Government Services Center.*

*A sidewalk would be needed along Cameron Street, as well as a crosswalk across it.*

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# 4 CURRENT PLANNING EFFORTS & POLICIES AND POLICY RECOMMENDATIONS


Chapter Outline:



## 4.0 INTRODUCTION

While the engineering and programming recommendations described in this Plan are critical for creating safe routes to school, strong pedestrian or bicycle oriented plans, policies, and regulations are also key elements of a complete SRTS program. These plans and policies help ensure that pedestrian and bicycle-friendly facilities are implemented with new development. Also, school system policies such as busing, school siting, and wellness policies are essential for making it safer and for encouraging more walking and bicycling to school.

This chapter contains existing plan and policy reviews with recommended policy revisions and amendments. The recommended policy statements will help the community and its schools achieve its vision of becoming more walkable and bikable. Town planning staff and school leaders should become familiar with these policies and regulations to ensure the full suite of policy tools are used and enforced.

Walkability should be an item considered with all future development, growth, and school siting decisions. More people will walk when their proximity to key destinations is reasonable. For example, a mixed use development near a school will engage more walking while the development of a school at the outskirts of Town will promote less walking and more driving.

This section is divided into the following components:

- Town of Hillsborough Policies / Existing Plans Review
- Orange County Policies / Existing Plans Review
- Town and County SRTS Policy Recommendations
- School/District Policies
- School/District SRTS Policy Recommendations

## 4.1 TOWN OF HILLSBOROUGH POLICIES / EXISTING PLANS REVIEW

### *Vision 2010*

The Town of Hillsborough's Vision 2010 provides strong support for pedestrian and bicycle travel. While Safe Routes to School is not specifically mentioned, many of the Town's goals and visions correlate with chil-dren and parents walking to school. Below are a few rel-evant excerpts from the plan:

*Create and maintain a transportation system that offers convenience, safety, interconnectedness, and choices.*

*Fully implement the Master Parks and Recreation Plan.*

a) Continue acquiring land along the Eno River to preserve water quality and implement the River Walk plan.

b) Extend the neighborhood park system throughout the community.

c) Promote the construction of sidewalks and bikeways.

*Promote alternatives to the automobile such as bicycles, walking, and rapid transit.*

a) Construct sidewalks and bikeways.

b) Work with Orange Public Transportation (OPT) and Triangle Transit Authority (TTA) to bring expanded transit opportunities to Hillsborough.

c) Change the development rules to provide adequate incentives for developers to build sidewalks.

d) Develop requirements for interconnectivity between developments to strongly discourage/prohibit neighborhoods with gates and numerous cul-de-sacs.

e) Expand the pedestrian network through the use of easements connecting dead-end streets and allowing public access on utility easements.

### *Hillsborough US 70 / Cornelius Street Corridor Strategic Plan 2007*

While this plan does not directly affect the areas surrounding the SRTS action plan, it does provide strong support for pedestrian and bicycle facilities on the US 70 corridor, which is a major barrier within Town to accessing Stanford Middle School. Below is an excerpt from the plan.

*The Bicycle/ Pedestrian Pathways*

The combination of the bicycle lanes and sidewalk into bicycle/ pedestrian pathways provides multiple benefits for the community. Most obviously, the pathways provide safe routes of travel for nonmotorized travelers. Children and adults will be able to access the path from surrounding neighborhoods. The path will also be a low-impact recreation resource providing public health benefits. Many community members prefer walking to high impact exercise. Also, there are environmental benefits to creating the bicycle/pedestrian pathways including increased non-motorized travel, resulting in fewer vehicles mile traveled, which leads to improved air quality. These pathways will allow community members to incorporate physical activity into daily routines. Also, there are economic benefits. The pathways will promote economic development by encouraging commercial investment in the corridor. Businesses want to locate in places that people frequent by foot and by car. The pathways will aid in connecting businesses along the corridor and will help to establish a retail-friendly environment. Finally, the incorporation of planting strips and the landscaped median will improve the overall aesthetic quality of the 70 Corridor further encouraging redevelopment and also improving the quality of life for area residents.

### *Hillsborough Unified Development Ordinance*

The Town of Hillsborough Unified Development Ordinance (UDO) consolidates the town's zoning and subdivision regulations. The UDO supports safe pedestrian and bicycle transportation and development. While these policies could be strengthened, such as requiring bicycle facilities with all new development, they provide a good foundation and support for Safe Routes to School. The ordinance also contains direct ties and references to the Community Connectivity Plan.

*6.17.3 GENERAL PROVISIONS*

*6.17.3.1 Development Sites*

If a parcel fronts on a street segment designed as a high priority or Orange County priority sidewalk segment in the sidewalk recommendation map of the Community Connectivity Plan, any new development on that parcel shall construct a public sidewalk along the designated frontage. The permit issuing authority may modify this requirement upon presentation by the applicant for development approval of competent evidence demonstrating that strict compliance with this standard is not economically feasible or reasonably practicable due to topography, stream buffer requirements, or other similar reasons. The permit issuing authority may, as a condition of any waiver or modification of this sidewalk requirement require a partial payment equal to no more than the cost of the sidewalk segment for which the waiver or modification are granted. All payments received shall be deposited into the Town's sidewalk construction capital fund.

If a parcel fronts on a street segment designated as a low priority sidewalk segment in the sidewalk recommendation map of the Community Connectivity Plan, any new development on that parcel shall either (1) construct the sidewalk along the designated frontage or (2) at the applicant's option, make a payment to the Town in lieu of constructing a sidewalk, or (3) a combination of (1) and (2). The permit issuing authority shall establish the amount of the payment, which shall not exceed the estimated cost of the construction of the sidewalk or section thereof. All payments received shall be deposited into the Town's sidewalk construction capital fund.

*6.17.3.2 New Public Streets*

Sidewalks will be provided along both sides of all proposed and existing public street within a development. Sidewalks will be provided along any existing public road directly accessed by the proposed development as follows:

(a) The sidewalk will extend the length of the property adjacent to the roadway on the same side as the proposed development.

(b) The developer will provide any necessary additional right-of-way needed for the sidewalk to either the Town or NCDOT, as appropriate.

*6.17.3.3 Design Requirements*

*6.17.3.3.a.* Sidewalks built adjacent to a NCDOT road facility shall be built to meet NCDOT sidewalk standards.

*6.17.3.3.b.* Sidewalks shall be at least five (5) feet wide and constructed of concrete at least five (5) inches thick, or such other materail as may be approved by the permit issuang authority.

*6.17.3.3.c.* Sidewalks shall connect via a direct link to the primary building entry.

*6.17.3.3.d.* For non-residential lots with existing sidewalks or for sidewalks constructed as part of a new deelopment, shade trees shall be located in the parcel front yard so as to shade the walkway without damaging it. The shade trees shall be installed 10 feet behind the sidewalk and be spaced no greated than 40 foot on center. This requirement shall not be applied to non-residential building built within 10 feet of the right-of-way or with a front courtyard or other side features that provide similar shading.

*6.17.3.3.e.* For non-residential buildings built within 10 feet of the right-of-way shade trees shall be installed between the curb and sidewalk in accordance with town planting and right-of-way standards.

*6.17.3.3.f.* Sidewalks and walkways shall be constructed to meet ADA requirements.

*6.17.3.3.g.* When a retaining wall of 30 inches or more in height or steep grade exceeding a 1:1 ratio is located within five feet of a sidewalk or other constructed system designed and placed as to direct public pedestrian traffic, a barrier shall be constructed and maintained between the sidewalk and the grade change.

*6.17.3.3.h.* When the horizontal slope of a sidewalk exceeds the minimum grade allowed by ADA, it shall be treated as a ramp with railing requirements.

### *Town of Hillsborough Community Connectivity Plan 2009*

The Community Connectivity Plan provides ample support for pedestrian and bicycle transportation as well as children and parents walking to school. While SRTS is not directly mentioned, this plan provides town-wide recommendations for improving both pedestrian and bicycle connectivity, educatin, and enouragement. Below are a few relevant excerpts from the plan:

Hillsborough is a vibrant community committed to connectivity in which th e growing populatin's needs for recreation, health, and wellness are supported by a network of safe and convenient options for alternative modes of travel beetween home, work, and area destinations via sidewalks, greensways, trails, and bicycle lanes.

- *Ehance Local and Regional Connectivity:* Develop an integrated, interconnected, comprehensive walkway, bikeway, and shared-use path between neighborhoods and area destinations.

- *Increase Safety and Functionality:* Provide safe and functinal pedestrian and bicycle routes throughout the connectivity network.

- *Promote Education and Outreach:* Educate public officials, business and community leaders, and the general public on the benefits of walking and bicycling by developing and distributing educational materials.

### *Parks and Recreation Master Plan 2009*

The Town of Hillsborough Parks and Recreation Master Plan provides recommendations for the many parks and greenways within Town as well as connections to these facilities. This plan supports pedestrian and bicycle transportation as shown in the relevant recommendations below:

*Recommendations*

1. Provide safe, convenient and efficient routes of travel for non-motorized traffic in Hillsborough.

2. Create a connectivity master plan for the Town of Hillsborough.

3. Implement the plans for Riverwalk (*which would create a longer distance community connection to the Farmers Market/Cameron Park elementary School area).*

4. Implement plans for Riverwalk serving as a portion of the NC Mountains-to-Sea Trail.

5. Promote additional greenway projects, including Cates Creet and the NC Mountains-to-Sea connector trails.

6. Promote connectivity on a greater level by designing greenways and trails to link with regional trail systems.

7. Promote the implementation of the Sidewalk Master Plan.

8. Provide pedestrian amenities, such as benches and water fountains, at public parks and recreational spaces.

9. Investigate expansion of pedestrian and bicycle paths along historic routes, utility rights-of-way and stream corridors.

10. Integrate Town facilities, such as sewer eastements, scheduled buffers, water protection areas, flood plains, transportation corridors and rights-of-way, with pedestrian and bicycle routes.

11. Coordinate project planning between Public Works and Planning departments to construct a pedestrian and bicycle friendly community.

12. Promote bicycle paths along major transportation corridors.

13. Provide bicycle racks at all public parks and recreational spaces.

14. Promotes the inclusion of pedestrian and bicycle routes and amenities in development and redevelopment projects.

15. Provide safe and convenient pedestrian access to schools.

16. Support ordinance amendments that enhance the pedestrian and bicycle envirоinment in Hillsborough.

## 4.2 ORANGE COUNTY POLICIES / EXISTING PLANS REVIEW

### *Orange County Bicycle Transportation Plan 1999*

This extensive bicycle plan addresses facilities on a more expansive scale, including the towns of Carrboro, Chapel Hill, and the City of Durham. The plan's introductory goals include providing rural areas with routes that access urban areas within and adjacent to Orange County as well as addressing current facilities by providing increased connectivity between these urban areas. The plan has out-lined goals and objectives for achieving successful bicycle facilities:

1. Construct bicycle facilities in Orange County that will make cycling for transportation purposes safer, more convenient, and more efficient.

- Widen travel lanes to 12 feet and provide paved shoulders.
- Change state and regional bicycle transportation policies and programs.
- Dedicate funding for better surfacing, maintenance, and signage.
- Establish a Bicycle Advisory Committee at the local and regional levels.
- Provide intersection improvements and treatments including bicycle pavement markings and "bicycle sensitive: traffic signal actuators.
- Increase safety on Orange County bicycle transportation routes.
- Provide education for adult and children bicyclists and adult drivers.
- Improve cycling routes by providing route mapping.
- Target illegal cyclist and motorist behavior and enforce rights regarding NC law.
- Provide accurate accident reporting.
- Assess implementation with performance measures being annual number of miles of road lanes widened to 12 feet and number of miles of 4 foot shoulders constructed; aso the number of persons attending the cyclist skills and traffic education courses.

### *Orange County 2030 Comprehensive Plan 2008*

The Orange County Comprehensive Plan is an official public document that provides the framework for long-range decision-making through the year 2030. The Plan contains goals and objectives that serve as the foundation for County policy decisions that effectively provide a coordinated approach to future growth and development. Increasing pedestrian and bicycle facilities through the SRTS program is consistent with the following goals and objectives of the Plan:

Transportation Goal 1:

An efficient and intergrated multi-modal transportation system that protects the natural environment and commmunity character.
Objective T-1.4: Develop new transportation facilities in a manner that has a positibve impact or avoids nagative impacts on the community, including historical or cultural assets, existing neighborhoods, schools and recreational facilities, and the overall rural character in Orange County.
Transportation Goal 2:

A multi-modal transportation system that is affordable, available, accessible to all users, and that promotes public health and safety.
Objective T-2.1: Increase the provisin of bikeways and walkways, and also increase supportive facilities such as bicycle parking zones.
Objective T-2.2: Evaluate and serve special transportation needs of the senior population, youth, the economically disadvantaged and the disabled, including both everyday needs and disaster transit provision.
Objective T-2.6: Increase safety awareness between car drivers and bicyce riders, and increase sfety for pedestrins.
Objective T-2.7: Construct bicycle facilites in Orange County that will make cycling safer, more convenient, and more efficient.

Transportation Goal 3:

Integrated land use planning and transportation planning that serves existing development, supports future development, and is consistent with the County's land use plans which include provisions for preserving the natural environment and community character.
Objective T-3.2: Create and implement an Orange County Comprehensive Transportation Plan that provides the framework for a comprehensive and connected transportation system supporting a mix of all transportation modes, including sidewalks and bicycle facilities, bus and rail transit facilities, and highways. The plan should be coordinated with the goals and objectives of the Comprehensive Plan and seek to maintain and enhance community character and the natural environment.
Objective T-3.3: Determine the policies to guide connectivity within and between residential developments based on their impact on neighborhood character.

### *ORANGE COUNTY UNIFIED DEVELOPMENT ORDINANCE*

Section 5.15.6 MAJOR SUBDIVISION STANDARDS, sub-section (f)(i) provides that if the subdivision is located in a Transition Area designated as such by the Comprenhensive Plan, a plan for sidewalks or pedestrian/bike lanes is required. Subsection (f)(ii) also requires a pedestrian plan for subdivision proposals not located in a transition area.

Section 7.8.1 STREETS - GENERAL STANDARDS, Subsection (B)(1) provides that where the subdivision of land abuts a roadway that is part of an approved plan, required bicycle and sidewalk improvements may be required by the subdivider.

## 4.3 TOWN AND COUNTY SRTS POLICY RECOMMENDATIONS

- Develop stronger bicycle policies and ordinances to foster development of facilities within the Town. Policies such as bicycle parking, bicycle lane development with roadway construction/repair, and bicycle helmet laws should be added.

- Sidewalk/trail connectivity within developments and parking areas should be stressed as highly important for transportation purposes.

- A pedestrian countdown signal crosswalk policy should be written to require these important pedestrain facilities at all major roadway intersections.

- The Town should consider adopting a complete streets policy which requires that the policy which requires that the planning, design, construction and maintenance of roadway and transit facilities will include the needs of all transportation users - pedestrians, bicyclists, the disabled, transit users, and motorists. Complete streets improve safety by providing dedicated facilities for pedestrians and bicyclists.

- Under state law, 100% of revenues from traffic fines goes to the school district. Consideration should be given to utilizing a portion of this revenue for SRTS. When drivers speed and commit other moving violations, especially in areas where there are vulnerable populations such as school zones, they endanger children. Therefore, it is rational that the fine revenue generated should be used for programs that incerease safety. Safe Routes to school programs calm traffic and reduce the number of vehicles driven by parents in school zones and other places where childrren may be walking or bicycling to school. Utilizing fine-based revenues creates a permanent and appropriate way to fund SRTS programs within the Town or County.

- Orange County should reconsider its lane width recommendation in the Bicycle transportation Plan. Studies have shown that narrower travel lanes slow traffic.

## 4.4 ORANGE COUNTY SCHOOL/DISTRICT POLICIES

A number of existing policies support walking and bicycling to school. However, as shown in Section 4.4, these policies can still be strengthened to support the goals of SRTS.

### *Student Transportation Walkers and Riders Policy 6322*

Transportation is provided to students who live more than 1½ miles from the schools to which they are assigned. However, if a student lives within this radius and a walking route is difficult or dangerous, transportation will be provided. Students who do not ride school buses will comply with rules developed by their schools regarding arrival and dismissal times. Unless otherwise indicated, students who ride school buses, private cars, or walk to school are to arrive at school not earlier than 7:20 a.m. at elementary schools, 7:40 a.m. at middle schools, and 8:00 a.m. at high schools and must depart at the end of the school day before 2:40 p.m. at elementary schools, 3:40 p.m. at middle schools, and 4:05 p.m. at high schools, respectively, unless involved in school sponsored activities.

### *Facilities Plan and Development Specifications Policy 9030*

School sites should be located as near as is practical to the center of the attendance area the schools are expected to serve. It is also desirable for school sites to be located in such a way as to facilitate joint use of the sites and adjacent parks and playgrounds by both the schools and the Park Board. The minimum desirable size for an elementary school site is 5 acres plus 1 additional acre for each 100 pupils to be enrolled and for a junior or senior high school site, 10 acres plus 1 acre for each 100 pupils to be enrolled. The developers are to take into consideration playgrounds, drainage, and regulations as prescribed by the State Planning Office.

*Elementary Schools*

1. An elementary school should be large enough to accommodate all of the pupils who live within a reasonable walking distance for primary children. Under ordinary circumstances this distance will not exceed one mile. An elementary school should also be large enough to accommodate a complete program of auxiliary as well as basic services provided to all pupils. In addition to the regular classroom teachers, full-time principals, librarians, and specialized services including, but limited to, those generally provided in reading, art, music, guidance, health, food service, and physical education should be affordable.

2. Elementary school sites should not be located adjacent to major arterial streets or highways. Insofar as possible, sites should be located in neighborhoods or potential neighborhoods, which are not divided, by major arterial streets or highways.

*Secondary Schools*

1. No optimum sizes have been determined for secondary schools. Adequacy of site as well as accessibility to students and patrons are determinants, which will be given consideration. However, schools should be large enough to permit the effective and economical provisions of a complete program of required and elective subjects, co-curricular activities, and specialized services.

2. Junior and senior high sites should not be located adjacent to major arterial streets or highways. However, such sites should be located to permit ready access by automobile from major arterials.

## 4.5 SCHOOL/DISTRICT SRTS POLICY RECOMMENDATIONS:

• The school district should consider revising the Physical Activity and Healthy Eating Policy (Policy Number 3541) to include language about SRTS and how walking and bicycling to school aids in children obtaining their needed daily physical exercise. It should include elements of the SRTS program such as educational and encouragement programs and events to increase the amount of children walking and bicycling as well as improving route safety and accessibility.

• The school siting and school facilities policies should be revised to provide more opportunity for schools to be located near dense or residential areas free of barriers for pedestrians and bicyclists. The school district should also consider revising the minimum acreage requirements for new school facilities. These requirements are often too large for what is ideally needed for each school, particularly joint use facilities are desired, and the “one size fits

all" guidelines often eliminate potential school property within towns. The policy should also include language on encouraging the re-use and adaptation of existing schools rather than the construction of new schools.

•The school district should maintain the busing policy providing transportation for students who live 1.5 miles or further from school. This policy aides in encouraging children who live close to their schools to walk or bicycle to school. The school district, however, should review Policy 6322 and more clearly identify what "difficult or dangerous" means for those living within 1.5 miles. This will help determine he difference between courtesy busing and hazard busing sites when determining busing provisions.

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# 5 PROGRAM RECOMMENDATIONS


Chapter Outline:



## 5.0 INTRODUCTION

The SRTS Program is an opportunity to address the needs of the community on a comprehensive level. Encouraging families within close proximity of the schools to walk or bicycle reduces the demand on our infrastructure by directly reducing the number of motor vehicles on the roadway. This results in improved safety for both vehicular and pedestrian users alike. The results from a successful SRTS Program quickly domino from health and safety improvements that directly affect our students to more indirect benefits, such as the reductions to school zone congestion, the consumption of fuel, and transportation costs to the school district, as well as marked improvements in the air quality along strategic corridors.

Each community committed to the SRTS movement is unique. In fact, visions and goals may vary greatly between communities depending on the individual challenges, barriers, and demographics of the school district. Therefore, the activities associated with Education, Encouragement and Enforcement may also vary greatly. It should also be noted that some strategies for each of these three E's may address all three E's together.


The following sections outline the basic strategies of these programming elements. A comprehensive listing of topics and action steps for education, encouragement, and enforcement programs is provided along with a list of specific programs that can be implemented to have the greatest impact. Note, education, encouragement, enforcement, engineering and evaluation are all interdependent tools that are often most effective when presented in combination.

It is recommended that all the priority programs identified below be incorporated early on when initiatiing a SRTS Program. Education and Encouragement activities are relatively low cost and can easily be part of the kick-off of the program. Several other programs are identified that offer a variety of techniques to encourage the parents and children to walk and ride their bicycles to school. Many of these are also low cost, giving schools a wide variety of activities to utilize in and sustain their SRTS Program.

### *Involving Students with Special Needs*

Improved infrastructure such as sidewalk connectivity and pedestrian treatments at crossings benefit the welfare of the entire community as well as those participating in the SRTS Program. However, there are select sectors of the school populace that can feel disconnected from the program due to limitations beyond their control. Two such groups include those students living too far to walk or bicycle to school and students with disabilities. It is important to design SRTS Programs, events and activities that include everyone.

*Living Outside the Walk Zone*

With encouragement strategies in place, much excitement can be generated within the student body about participating in the SRTS Program. There are

events, activities and rewards that are highly visible to the entire community. However, what if you are a child that lives outside of the walk zone? The SRTS Program is for everyone! Each of the activities can be modified to accommodate children from neighborhoods outside the walk zone. For instance, Park and Walk or Bus and Walk programs allow for parents and school buses to drop off students at a designated location (maybe a park, church, or community center) that is within walking distance to the school. Adult chaperones then assemble walking school buses from that location to the school. Other participation opportunities may be built in by allowing special time and access to the school or athletic fields before, during, or after school, so that children who cannot walk to school can still accrue miles, minutes, or steps by walking laps around designated locations on campus. There are many classroom activities and curriculum enhancements that can be modified in the same manner.

Link of interest:
• http://www.saferoutesinfo.org/guide/encouragement/index.cfm

*Involving Children with Disabilities*
Federal legislation identifies the inclusion of children with disabilities as a necessary component of the SRTS Program. Disabilities are defined under many different classifications and by varying degrees, but the common factor between them all is that the benefits of physical exertion and social interaction as well as the promotion of physical independence are crucial in developing these children's well being. Many resources for ideas on how to include this very special and important sector of the student body in physical activities for the SRTS Program can be found at the National Center of Physical Activity and Disabilities. Listed below are a few examples.

a) Parental Roles in Facilitating and Supporting an Active Lifestyle for a Child with a Disability.
b) Maintaining or Improving Fitness in Childhood Disorders.
c) The Rationale and Benefits of Sport Participation for Youth of All Abilities.
d) Program Considerations for Integrating Children with Disabilities into Community Sports and Recreation Programs.
e) Cycling (includes equipment).
f) Exercise Guidelines for People with Disabilities.

The National Center for Safe Routes to School has created a list of strategies for involving disabled students:

1. *Involve special education professionals and parents of children with disabilities on the SRTS team*. Achieving the benefits of SRTS for children with disabilities begins with awareness of their needs and how the school system is structured to address them. The people in the best position to know these things are special education professionals and the parents of children with disabilities. Invite them to participate as members of the school's SRTS team. Without this perspective, SRTS organizers may miss important opportunities to benefit children with disabilities.

2. *Consult special education professionals and parents of children with disabilities when planning SRTS education activities during the school day.* Communicate with special education professionals to ensure that inclusive SRTS activities are scheduled to maximize participation by special needs students. This involves knowledge of both class schedules and times when the special needs professionals are available to assist. For example, if a pedestrian/bicycle safety education class is held during physical education, additional staff or volunteers may be needed to ensure students with disabilities are able to fully participate.

3. *Seek input and involvement when planning SRTS encouragement events*. Safe Routes to School activities, such as Walk to School Day and Walking and Wheeling Wednesdays, can also benefit from the input of those who know children with disabilities best. Parents and special education professionals can work with SRTS organizers to determine appropriate strategies to include their children, as well as provide a source of volunteers to assist with the event.

4. *Involve children with disabilities in walking and bicycling audits.* Safe Routes to School programs can help to make schools more accessible for children

with disabilities by identifying physical barriers along the route to school, such as missing curb ramps, steep driveways, sidewalk gaps and pedestrian signals that are not accessible. Students with physical disabilities, and their parents, know these barriers all too well. They should be invited to participate in walking and bicycling audits and other "field activities" throughout the SRTS process.

5*. Ensure that the Principal understands that including students with disabilities is a priority.* Principals have a unique authority in every school. If you are having trouble reaching out to special education resources, they can often help bridge relationships with the right people, including special education teachers and parents.

*6. Ensure SRTS messages and images are inclusive.* One common mistake that SRTS programs make is using photographs and images that do not include students with disabilities, therefore implying that the program is not intended for them. Images chosen to represent the program should always include a balance of students of all ages, genders, ethnicities and abilities.

7. *Establish special programs when necessary.* In most cases, children with disabilities can be included alongside their peers. All that is required is proper consultation with parents and special educators, a little creativity, and perhaps a change of approach. However, SRTS organizers should recognize that there are circumstances under which this arrangement, on its own, does not achieve optimal results for a student with disabilities. In these cases, it is best to work with a special education professional to develop a custom-tailored program.

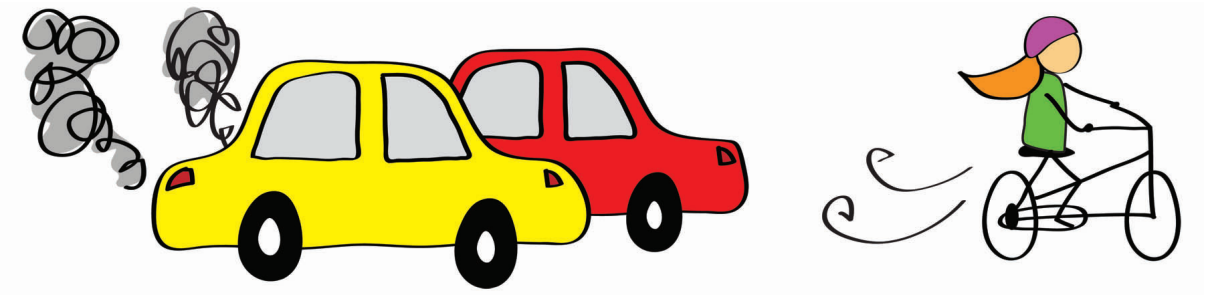
Links of interest:
• http://www.ncpad.org/fun/fact_sheet.php?sheet=96&view=all
• http://www.saferoutesinfo.org/search/?searchbox=children+with+disabilities
• http://www.saferoutespartnership.org/local/4317/4359
• http://katana.hsrc.unc.edu/cms/downloads/Involving_students_with_disabilities.pdf

## 5.1 EDUCATION

Education activities target the entire school community including residents living within the school zone, roadway users, student body, parents and even the school staff. Activities focus on teaching pedestrian and bicycle safety, health and wellness benefits and the positive environmental impacts of walking and bicycling.

### *Suggested Topics:*

1) For Children: Bicycle and pedestrian safety is always the principal focus of SRTS educational strategies and events. For young pedestrians, education is a valuable tool in encouraging safe practices and habits even though they may be traveling under parental supervision. However, education involves more than just safety procedures for pedestrians at crossings and the use of clear hand signals for cyclists. It includes teaching children about their personal safety as well -- why they need to exercise; wear their helmets; use a buddy system; know where "safe places" are along the route; and use only designated, well-traveled routes. Just as importantly, children need to understand that their choices do matter,



*Teaching kids about the environmental benefits of riding a bicycle or walking to school is a great way to get them excited about the SRTS Program.*

and that environmental responsibility is assigned to all ages. Helping children assimilate good habits into their routines is a simple strategy, but its benefits are perhaps the most important improvement goal within the SRTS Program -- improving our children's safety and well-being. The primary topics pertinent to children are listed below and can be easily incorporated into events, activities and/or contests.

a) Pedestrian and bicycle safety skills
b) Personal safety
c) Health and environmental benefits

Links of interest:
• http://www.saferoutesinfo.org/guide/education/children.cfm

•http://www.saferoutesinfo.org/guide/education/strategies_for_educating_children.cfm

2) For Parents: Parents play multiple roles in the SRTS Program, and their advocacy is pivotal in promoting student participation. Parents lead by example: initiating efforts to participate in the SRTS Program, exhibiting compliance with drop off and pick up procedures, imparting instructional guidance, and driving responsibly through the school zones. It is important for parents to know proper pedestrian and bicycle safety skills so that they can model and reinforce the proper behavior with their children, even when not walking or bicycling to school. The following topics represent key information to be conveyed to parents to encourage their participation in the SRTS Program.

*Bicycle Rodeos are a fun way to teach kids about important bicycle safety skills.*

a) Drop off and Pick up policies and traffic patterns
b) Review of pedestrian and bicycle facilities within the school district
c) Teaching age-appropriate safety procedures

Link of interest:
• http://www.saferoutesinfo.org/guide/education/key_messages_for_parents.cfm

3) For Drivers near the School: There is universal concern amongst school and community stakeholders over the speed of traffic and driver compliance with State traffic laws within the school zones. Statistics support their concerns as the severity of pedestrian injuries is directly related to the travel speed of the vehicle. Therefore, it is imperative that driver education and encouragement stress the importance of these topics.

a) Awareness and driver expectation for pedestrian traffic within the school zones and designated program routes
b) Compliance with speed limits, yielding to pedestrians, and awareness of school zone speed limits
c) Compliance with coming to a complete stop at stop signs
d) Compliance with stop bars and remaining clear of the crosswalk

Link of interest:
http://www.saferoutesinfo.org/guide/education/key_messages_for_drivers_near_the_school.cfm

4) For Neighbors: The residents and businesses within the school zones benefit from the SRTS Program through the addition of walkable and bikable facilities, improvements in safety features, and the reduction in area congestion. Likewise, the schools' neighbors also influence the effectiveness of these improvements based on their level of participation in the program. Designated routes through neighborhoods that have the community's support provide a safer and more positive experience for the children--

sidewalks are clear, neighborhood traffic is prepared to share the roadway with young pedestrians and bicyclists, and family pets are appropriately controlled. Certain businesses along a route may even identify themselves as "safe places" for children to go if they need assistance. The information listed below includes the issues residents and businesses within SRTS communities should address.

a) Keep sidewalks clear of obstructions, including snow.

b) Prune plants that impede visibility at intersections and street crossings.

c) Be responsible with pets and keep them appropriately leashed or restrained along the designated routes.

d) Be prepared to share the road with young pedestrians and bicyclists.

Link of interest:

• http://www.saferoutesinfo.org/guide/education/key_messages_for_neighbors.cfm

### *Priority Education Programs*

1. Integrate bicycle/pedestrian education into the school day. This can come in the form of making it part of the curriculum, part of Physical Education class, or even one-day events/assemblies. It should be a priority of the schools to teach safety and educate children. Include hands-on skills training such as simulated street crossings and bicycle handling drills. The following is a list of how bicycle/pedestrian education can be incorporated into several different classes:

Art, Computer Class - Create posters promoting Walk to School Day, safety messages, contests and reward recipients.

Geography - Design survey and maps of walking routes to school or use on line Walk Across America games and activities.

Health - Use pedometers to measure steps, or simply measure walking time accumulated by students; study health benefits of physical activity. Other issues such as air pollution and air quality could be taught. Children could figure out the amount of greenhouse gases that are not produced each time students walk or bicycle to school. Additionally, the impact of exercise and healthy lifestyle as it relates to obesity, diabetes, asthma and other diseases could be addressed in the classroom.

Mathematics - Keep logs of walking time or steps; calculate speeds and distances, individual and group averages, trends and statistical analyses.

Physics - Study the biomechanics of walking. For example: Do stride lengths vary with height, weight, age, leg length? How does walking speed depend on your step speed and stride length?

Biology - Look for specific plant or animal species, or inventory indigenous species along walking routes or catalogue seasonal changes in the flora and fauna.

English - Write press releases and public service announcements to promote Walk to School Day. Write essays or keep a diary about your experiences walking.

History - Study historical locations in your community by walking to them.

Social Sciences - Photograph important things about your community observed while walking to school. Is there anything you'd like to change? What can you do about it?

2. Start a comprehensive motorist/pedestrian/bicyclist safety campaign. This would be an early implementation effort after adoption of this plan to continue

## Priority Education Programs

1. Integrate bicycle/pedestrian education into the school day.

2. Start a comprehensive motorist/pedestrian/ bicyclist safety campaign.

momentum of this program. A significant campaign should be conducted annually. This should include the following efforts:

• Create flyers and brochures with safety information and tips (crossing at marked crosswalks, using sidewalks, obeying traffic signals, stopping for pedestrians, being attentive around schools, etc.).

• Create posters and billboards with simple, powerful graphics and language about the importance of safety.

• Develop handouts and materials passed out to schoolchildren to deliver to their parents.

• Involve the local television and newspaper media.

• Utilize additional law enforcement staff and techniques during the campaign.

• Hold walking and bicycling events during this campaign.

• Involve elected officials through organized events and speeches.

### *Other Suggested Strategies:*

• Utilize the League of American Bicyclists Kids Bicycle Education and the NCDOT Basics of Bicycling curricula to fit a bicycle safety program into the Physical Education schedule.

• Conduct bicycle rodeos locally with cooperation from local government and/or businesses.

• Include hands-on skill training.

• Hold one-time instruction assemblies about walking/bicycling to school.

• Educate parents during PTA/PTO meetings and open houses by sending home materials through the schoolchildren.

• Develop media stories, brochures, emails, and websites to distribute key messages and safety education materials.

• Develop a driver safety campaign.

• Hold neighborhood group meetings or attend existing neighborhood group meetings to introduce SRTS.

• Provide environmental educational signage along trails leading to school or on school property.

• Participate in the Walk and Bicycle Across America Program. This program is a web-based, interactive game that promotes exercise and participation in the SRTS Program and integrates these components with more traditional educational lessons. Classes participating in the game receive a map identifying historical or otherwise significant sites with links to educational web pages. This is a wonderful compliment to geography, math, social studies, and other subject area lessons as each destination on the map is designed to broaden the student's knowledge of the United States while teaching skills in mapping, computer science, and more. The cumulative miles clocked by the students in the class walking and bicycling to school are summed and used as available miles to travel the map and progress the children along to interesting places, fun exercises and plenty of learning experiences.

Links of interest:
• http://www.saferoutesinfo.org/guide/education/index.cfm
•http://www.saferoutestoschools.org/lessonplans.shtml
•http://www.saferoutestoschools.org/pdfs/CurriculumGuide0910.pdf
•http://www.saferoutestoschools.org/lessonplans.shtml
•http://www.saferoutestoschools.org/Forms/WalkBicycleGuide2006.pdf

## 5.2 ENCOURAGEMENT

Encouragement activities present the best opportunities to generate excitement and build momentum for a community's SRTS Program. The strategies focus on fun ways to create interest in walking and bicycling to school, bring families and community stakeholders together, and inspire a sense of pride in self, school, and community for all participants. As mentioned previously, all encouragement activities should incorporate both children who live outside the walking and bicycling zone and children with disabilities.

### *Suggested Topics:*

1) Target Audience: It is important to tailor activities to address the concerns outlined in the Action Plan for each individual school. The success of promotional events depends on how well the encouragement experience matches the interest of the group participating. For example, the children's ages are key components in the selection of the activities, as well as the presentation of the educational information. Additional considerations in planning the activities are listed below:

a) Include interests for community stakeholders, parents and children.
b) Plan for participation by individuals with disabilities.
c) Plan for participation by individuals outside walk-zone parameters.
d) Combine multiple elements (5 E's) in each activity.
e) Plan efforts that fit the personality of the community.

Links of interest:
• http://www.saferoutesinfo.org/guide/encouragement/index.cfm

2) Create Partnerships: Public and private service providers prove to be helpful partners in the planning and implementation of both activities and project goals. Often these groups have educational materials or reward incentives to contribute to the activities. Make sure you canvas your local agencies for support as well as participation. Note, common agencies identifiable in most communities are listed below:

a) Organizations that support public health.
b) Town Planning Department for joint promotion.
c) Local law enforcement.
d) Town officials and/or celebrities.
e) Local businesses especially those near designated routes and/or with similar priorities -- bicycle repair shops, retail sportswear and equipment stores, etc.

Links of interest:
•http://www.saferoutesinfo.org/guide/encouragement/index.cfm
• http://ctb.ku.edu/en/LearnMore.htm (Community Toolkit)

3) Promoting Events: Creating excitement around the SRTS Program, maintaining its momentum, and sustaining the community's participation can be a challenging endeavor and one that primarily hinges on successful promotion initiatives. Each year the SRTS Program should be reintroduced for new families joining the school's community as well as for veteran participants. Maintaining the visibility of the program's activities, participants, and rewards not only contributes to the vitality of the program, but it also influences the community's adoption of new cultural attitudes about transportation and environmental responsibility. The following list provides suggestions for consideration.

a) Use media to spread word and generate excitement.
b) Utilize Town officials and celebrities as advocates and spokespersons.
c) Create a website with SRTS information and maps of routes to school.
d) Be visible in the community with presence in local businesses and event locations prior to festivities.
e) Engage sponsors.

# Priority Encouragement Programs

1. Begin a walking school bus program at Cameron Park Elementary School and Stanford Middle School.

2. Begin mileage clubs/contests.

Links of interest:
• http://www.saferoutesinfo.org/guide/encouragement/index.cfm
• http://ctb.ku.edu/en/LearnMore.htm
• http://www.nhtsa.gov/people/injury/pedbimot/bicycle/Safe-Routes-2002/toc.html

### *Priority Encouragement Programs*

1. Immediately begin a walking school bus program at Cameron Park Elementary and Stanford Middle Schools. As improvements are implemented, a walking school bus program can be implemented at Grady Brown Elementary School. The walking school bus was the most articulated request and interest of the public and committees during this planning process. A walking school bus is a group of children walking to school with one or more adults. This community should build on the momentum of this planning process and reach out to parents and students to make this a reality. The walking school bus could begin as a once-a-month or once-a-week activity and, as it gains more interest, becomes a regular occurrence. A walking school bus serves a number of purposes:

• Makes walking to school safer and more fun.

• Increases number of children walking to school.

• Eases parents' concerns and fears of their children walking to school unsupervised.

• Provides a means of reinforcing safe walking/bicycling behaviors by practicing techniques learned.

• Creates an opportunity for more socialization and community-building.

• Saves gas and eases traffic congestion.

2. Begin mileage clubs/contests. Mileage clubs and/or contests encourage children to begin or increase their amount of walking or bicycling to school. Typically, children track their mileage, and may win a prize. These clubs or contests are a good way to establish individual or team goals and can be structured for friendly competition or self motivation. They also allow a way to recognize accomplishments which keeps children interested in participating and makes the program fun. More information on mileage clubs and contests is included in the Activities and Contests sections below.

### *Other Suggested Strategies:*

• Participate in International Walk to School Day which is held annually in the month of October. The participating schools can celebrate with organized activities and an organized parent / student walk to school. Some communities plan participation events for a day, some for a week and some for the entire month. There are readily available guidelines for planning, promoting and implementing Walk to School Day events.

• Establish a regular Walk and Bicycle to School Day. Much like the International Walk to School Day, local officials or the school administration select a special day, or number of periodic days during the school year, to encourage parents and students to use non-motorized transportation on designated day(s). Rewards, competitions and incentives are used to combine education, healthy life choices and entertaining activities that help bond the community together and champion a common cause.

• Involve schoolchildren in "Adopt-a-Trail" program. Schools could participate by adopting a nearby trail and performing basic maintenance like trail clean-up.

• Promote Park and Walk strategies where families drive to meet and walk the remaining distance to

school. This could be a parking lot within walking distance. One suggested Park and Walk location for Cameron Elementary is the nearby Farmer's Market.

• Hold special events, activities, and contests that relate to SRTS throughout the year. The following sections provide several examples that can be considered.

***Special Events:***

Special events can create a lot of excitement in the community. The following are some ideas for events that can stand alone or incorporate into other planned programs.

• Bicycle Swap: Bicycle swaps are exciting events that can be used as fund raising opportunities. Individuals bring gently used bicycles to the swap. For a small admission fee, they are allowed to display and/or barter for fantastic deals on a "new" set of wheels. In some states, these events draw hundreds of bicycles and are very organized complete with websites and media coverage.

• Walk to School Parade: One way to involve the entire community is a Walk to School Parade. Elected officials, SRTS stakeholders and sponsors all meet at a central location along a designated route and walk to school together. If neighborhoods are spread out, several specific routes can be utilized and team spirit tapped for friendly competition. Flags or incentives along the route could make the hike seem short and exhilarating. Competition between the teams can even be rewarded through sponsors willing to donate prizes or discounts within their establishment for the victors. A Walk to School Parade is a great way to increase involvement in walking to school.

Bicycle Rodeos: Bicycle rodeos are bicycle skills events that provide an opportunity for bicyclists to practice and develop safe skills. Goals are to learn, practice, and demonstrate their bicycle handling skills in a fun, noncompetitive atmosphere. Bicycle rodeos can be large or small and require volunteers or a group of instructors. Local service organizations, PTA/PTOs, bicycle shop owners, cycling clubs, and law enforcement could provide assistance. A bicycle rodeo is related to Priority Recommendation #1 in Section 5.1 except that the recommendation in 5.1 is more intense, is built into school classtime, and utilizes a series of lessons. A bicycle rodeo is used more as an "introductory", fun, one-day event that is better suited for community events or field days.

***Activities:***

Activities can be a fun way to get parents and children involved in SRTS Programs. They are typically very low cost, but provide a lot of motivation and excitement. The following is a list of potential activities that can be incorporated into a SRTS Program:

• Bicycle Trains: Bicycle trains may be more convenient than walking school buses for students and parents located more than one to two miles from the school or more attractive to older students. However, its operation resembles the Walking School Bus in terms of group pick ups and drop offs under adult supervision.

• Mileage Clubs: Logging miles, minutes and even steps with pedometers can give children a sense of accomplishment and earn prizes for achieving established goals. Mileage clubs can also be joined by children who live outside the walk zone as well. Some SRTS Programs have offered opportunities to Walk-at-Recess giving tokens, charms and rewards for miles reached.

• Walk N' Roll Punch Cards: This activity is used as an incentive to encourage students to walk or ride to school by tracking the number of days they participate through the number of punches they receive on their card. When the card's punch spaces are completely filled, the child earns a reward.

• School-based Welcome: The School-based Welcome is designed to greet walkers arriving at school with refreshments, rewards, and incentives. This is an excellent encouragement activity that can be used independently or in combination with other events and SRTS elements. The Welcome station may be manned with special guests from time to time to keep children excited about reaching their final destination. Some examples of innovative ideas used in existing SRTS Programs include Welcome stations that include a tour of a fire truck or ambulance, a visit from school mascots, or local celebrities.

• Walkability and Bikeability Checklists: By enlisting the children and parents in the maintenance and sustainability of the SRTS Program, they take on the ownership and responsibility for its success. Checklists for neighborhood walkablity and bikeability are available through the National Safe Routes to School website listed below. These lists can be used to engage children and parents in the assessment of their neighborhood and school districts. Prizes can be awarded to children or parents who participate in completing the checklists. Small prizes could be given to everyone who participates or you could have participants enter their name in a drawing for a nicer prize.

### *Contests:*

A little friendly competition can cause a lot of excitement! Contests can be incorporated into several of the programs previously mentioned. The prizes do not have to be expensive...special recognition, a party for a class, a scooter or bicycle donated by an area business... these are all ideas of incentives for children. You can incorporate beads or bracelets that the children earn... small things can easily motivate children. The following are just a few examples of contests that can be held as a part of your SRTS Program.

• Golden Sneaker Award: One example of a very inexpensive prize is the “Golden Sneaker Award”. For this award, homeroom classes tally the number of children each week that use an alternative mode of transportation. Points are accumulated based on the total number of commutes per mode per class. The class with the highest participation for the month wins the coveted Golden Sneaker Trophy. The trophy is a sneaker that is spray painted gold and mounted on a base. The winning class gets to keep the trophy for the following month. This also allows students who cannot walk or bicycle to school an opportunity to participate as well with the group.

• Program Logo/Art Contest: Many Encouragement activities are simple and require nothing more than a child’s imagination and a few basic art supplies. One creative way to make the SRTS Program visible at your school is to hold Logo, Sign, or Banner contests for the School’s SRTS Program or event days. This is also an activity that works well in combination with other Encouragement and Education activities such as International Walk to School Day. Students can create signs and banners used to promote the walk, display throughout the school and/or carry during the event.

Contests are a great way to build excitement about your SRTS Program. They don’t have to be expensive, just fun!

### *Resources*

a) Encouragement
www.saferoutesinfo.org/guide/encouragement
b) Event Ideas:
http://www.walktoschool.org/eventideas/index.cfm
c) Official website of International Walk to School
http://www.iwalktoschool.org/resources.htm
d) Planning Walk to School Events:
www.walktoschool.org/eventideas/plan_event.cfm
e) Bicycle Swap Advertised by the Bicycle Coalition of Maine:
http://www.bicyclemaine.org/
f) Frequently Asked Questions about organizing and registering an event on line:
http://www.walktoschool.org/faq/index.cfm
g) Combining Safety, Fun and the Walk to School:
http://www.saferoutesinfo.org/guide/walking_school_bus/index.cfm
h) Log Miles Walked:
www.walktoschool.org/eventideas/log-miles.cfm

i) Walk and Roll Punch Card:
http://www.saferoutesinfo.org/program-tools/walk-n-roll-punch-card
j) Golden Sneaker Award:
http://www.tam.ca.gov/Modules/ShowDocument.aspx?documentid=494
k) Walkability Checklist
http://drusilla.hsrc.unc.edu/cms/downloads/walkability_checklist.pdf

## 5.3 ENFORCEMENT

Enforcement becomes necessary when unsafe behaviors are identified and/or persist within the school zone after the education and encouragement features of the plan have been implemented. These behaviors can likely be attributed to frustrated commuters struggling to navigate school related congestion during peak hours, on-site drivers engaged in drop off and pick up, and/or the failure of pedestrians and bicyclers to follow safety rules. The primary focus of the SRTS Program is the safety and well being of our children. Enforcement strategies ranging from school posted warnings to involvement with law enforcement agencies are often necessary to insure these goals are met.

### *Suggested Topics:*

1. For Drivers: The integration of vehicular traffic, pedestrians, and bicyclists on shared roadway facilities fosters the most critical safety concerns both on the school campus and along designated routes. The most common safety violations for drivers are included in the list below.

a) Speeding.
b) Not yielding to pedestrians at a marked or unmarked crosswalk.
c) Stopping or unloading students in a bus zone.
d) Parking illegally.
e) Dropping students off in the street instead of designated areas.
f) Allowing students to walk between parked vehicles and buses.
g) Driving while distracted (by cell phones, radios, eating, etc...).
h) Violating school drop off and pick up procedures.

2. For Pedestrians: Enforcement strategies do not just apply to drivers of motor vehicles. It is also imperative that pedestrians follow the safety rules when sharing roadway facilities with vehicular traffic, and this is especially true for children whose behaviors are less predictable. The most common safety violations of pedestrians are:

a) Disregarding directions of the Crossing Guard.
b) Failing to follow safety rules like looking both ways before crossing.
c) Not walking facing traffic.
d) Crossing at unsafe or unpredictable locations.
e) Playing near vehicular travel ways - darting.

Link of interest:
- http://www.walkinginfo.org/enforcement/programs-behaviors.cfm

3. For Bicyclists: In North Carolina, bicycles are legally defined as vehicles. Therefore, traffic violations and penalties defined under State laws and municipal ordinances for vehicular traffic also include bicycles. Municipal ordinances govern rules concerning riding on the sidewalk. Other common traffic and safety violations of bicyclists include, but are not limited to, the following:

a) Failing to follow safety and procedures.
b) Riding against traffic.
c) Disobeying signs and traffic signals.
d) Failing to wear bicycle helmets.
e) Failing to yield to pedestrians.
f) Riding where vehicles have sight obstruction.

Links of interest:
• http://www.saferoutesinfo.org/guide/enforcement/identifying_unsafe_behaviors.cfm
• http://www.ncdot.gov/bikeped/lawspolicies/
• http://www.ncdot.gov/bicycleped/about/training/school_crossing_guard/

### *Priority Enforcement Programs*

1. Begin a crossing guard program at both Cameron Park Elementary and Stanford Middle Schools (as identified in Chapter 3). As improvements are implemented, a crossing guard program should be started at Grady Brown Elementary School. Crossing guards should be located at key roadway crossings where significant numbers of children already cross or are most likely to cross or at crossing locations where it may be difficult for children to find gaps in traffic safely. Once a crossing guard is in place, school policy should be that children only cross the road where the crossing guard is located. Crossing guards provide a number of benefits:

• Create visibility and expectation to motorists that pedestrians will be crossing.

• Instill comfort and confidence in parents to allow their children to walk or bicycle to school.

• Foster a sense of community through the utilization of local crossing guards.

• Serve as role models for children.

All crossing guards, whether paid or volunteer, should be trained. The NCDOT Division of Bicycle and Pedestrian Transportation funded a study on pedestrian issues, including school zone safety, and decided to establish a consistent training program for law enforcement officers responsible for school crossing guards. According to the office of the North Carolina Attorney General, school crossing guards may be considered traffic control officers when proper training is provided as specified in GS20-114.1.

## Priority Enforcement Programs

1. Begin a crossing guard program at both Cameron Park Elementary School and Stanford Middle School.

2. Involve local law enforcement officers and techniques.

Links of interest:
•http://www.saferoutesinfo.org/guide/crossing_guard/index.cfm
•http://www.ncdot.gov/bicycleped/about/training/school_crossing_guard/

2. Involve local law enforcement officers to enforce the law in school zones. Local law enforcement officers should ticket motorists for unlawful behavior such as speeding, passing a stopped school bus, and stopping in a marked crosswalk. Progressive ticketing or higher speeding fines in school zones should be considered. Speed trailers, active speed monitors, and complaint hotlines should also be used in areas where speeding is an issue. Local law enforcement officers can also educate parents and children regarding traffic laws/rules for pedestrians and bicyclists and the proper/safe crossing of roadways.

Links of interest:
• http://www.ncdot.gov/bicycleped/lawspolicies/laws/

•http://www.saferoutesinfo.org/guide/enforcement/role_of_the_enforcement_officer.cfm

•http://www.saferoutesinfo.org/guide/enforcement/law_enforcement_methods.cfm

### *Other Suggested Strategies:*

• Address traffic speeding issues by talking to neighbors and school leaders to determine if they agree there is a problem. Ask the police department to monitor speeds, let the community know that speeding is unacceptable, and consider street redesign to calm traffic. Also provide radar/speed trailers periodically.

• Ensure that all children bicycling are wearing properly fitted bicycle helmets.

• Utilize a network of community members (not just law enforcement) such as students, parents, crossing guards, school personnel, and neighborhood programs to enforce rules for safe walking, bicycling, and driving.

• Provide a complaint hotline for the community to voice concerns and safety issues they see.

• Begin student safety patrols for enforcement of drop off and pick up procedures. AAA has a School Safety Patrol Program that provides an operations manual and other valuable information. Participating in the School Safety Patrol Program provides positive benefits for the students, the schools, and the community.

Link of interest:
• http://www.saferoutesinfo.org/guide/enforcement/index.cfm
• http://www.aaacarolinas.com/Automotive/Safety/school_safety_patrol.htm

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# 6 PROGRAM SUSTAINABILITY

Chapter Outline:



## 6.0 INTRODUCTION

This Action Plan provides the necessary guidance, tools, and steps for implementing a Safe Routes to School Program. By combining the action plan with the SRTS Program resources, both the school and the community benefit through increased awareness for healthful living and environmental stewardship. Likewise, the action plan and the SRTS platform provide avenues for capital improvements within the community by facilitating agency funding. However, actually implementing the plan and sustaining the program are really the critical components in accomplishing the community's goals. Once the Action Plan has been approved and adopted by the Town and school board, the task of implementing and sustaining the program begins.

Each school year brings new opportunities to revitalize the SRTS program as a visible and important part of campus life. Sustaining the SRTS program is a comprehensive phase of the community's plan as it revisits some of the preliminary steps including Engineering, Encouragement, Education and Enforcement. This phase of the SRTS Program also requires the introduction of Evaluation and stakeholder investment strategies to fund its implementation and infrastructure improvements. At the beginning of each school year, the school and community should:

1) Evaluate action items from the plan for effectiveness.
2) Monitor improvement strategies.
3) Challenge and engage staff and students in promotional activities.
4) Explore/review funding resources.

## 6.1 EVALUATION

Evaluation is an important component of any SRTS program. It is used to determine if the aims of the strategies are being met and to assure resources are directed toward efforts that show the greatest likelihood of success. Also, evaluation can identify needed adjustments to the program while it is underway. There are four general benefits to evaluation (taken from http://www.saferoutesinfo.org/guide/evaluation/):

1) Making sure that the underlying problem is identified so that proper strategies to address the problem are picked. Sometimes a SRTS program begins without a good understanding of the underlying issues resulting in a less successful program.

2) Setting reasonable expectations about what the program can do. By knowing the starting point, SRTS programs can set specific and reasonable objectives.

3) Identifying changes that will improve the program. Part of evaluation is monitoring what happens throughout the life of a project so that mid-course corrections can be made, if needed, to improve chances of success.

### Components of a SRTS Annual Evaluation Plan

- Collect Parent Surveys and Student Tally Sheets
- Perform Walkability Audits
- Monitor Program Progress
- Make Changes Where Needed

4) Determining if the program is having the desired results. This is a primary purpose of any evaluation and can be used to inform funding sources, the media, and the public to help build support for SRTS.

Evaluation occurs throughout the lifespan of the SRTS program within each school's community before, during, and after the implementation of the strategies and priority recommendations outlined in this plan. This plan marks the baseline profiles of behaviors, attitudes, and deficiencies based on the existing conditions laid out in Chapter 2. During the implementation of the program, data will be used to track progress and identify ongoing challenges that may require revitalizing the Action Plan. After the program is established, additional evaluation methods and monitoring can be used, like involving the student body in the process, documenting behavior patterns, and identifying indicators for future decisions.

For the purpose of sustaining the SRTS Program, evaluation after program implementation involves the annual distribution of the travel tally and parent survey information, data entry with the National Center for Safe Routes to School, and assessment of any engineering improvements made through the Action Plan. Engaging students in the re-assessment can additionally serve as Education and Encouragement activities. Students can even provide valuable assistance in the collection of data using tools such as walkability checklists or contests to find new improvements.

***Summary of Evaluation Recommendations:***

Prepare a SRTS Evaluation Plan that will identify annual tasks. Components of this plan should minimally include:

• Conduct Annual Parent Surveys and Student Tallies to send to the National Center for Safe Routes to School for processing.

• Conduct Annual Walkability Audits.

• Review surveys and audits to analyze information and adjust strategies and priorities for the following years.

• Follow the step-by-step procedure on a detailed evaluation process developed by the National Center for Safe Routes to School. Visit the National Center's online guide to standard evaluation, including the six step methodology:
http://www.saferoutesinfo.org/guide/evaluation/evaluation_in_six_steps.cfm

Step one and step two of this six step process are addressed as part of this action plan.

## 6.2 PROGRAM MAINTENANCE AND SUSTAINABILITY

A good strategy is critical to implement the SRTS Action Plan and to have a successful SRTS program. The planning process brought together stakeholders, partners, school representatives, and citizens to determine SRTS needs and priorities. A good strategy is necessary to continue those efforts and implement the Action Plan. To sustain SRTS success, consider the following list of strategies:

*Sustainability/Program Maintenance Strategies:*

• Form a permanent, active SRTS Committee in the community or school potentially made up of members of this Action Plan Advisory Committee and other interested parties. This group should meet monthly or quarterly to discuss pertinent issues, set goals, evaluate progress, assist with programming, and implement recommendations of this Plan.

*An active SRTS comittee is an important part of helping the program successfully reach its goals.*

## Sustainability Strategies

- Form a permanent, active SRTS Committee
- Partner with local businesses for support
- Create and maintain an active SRTS website with a calendar of events and other pertinent SRTS news and information
- Re-evaluate the SRTS Program on regular intervals to celebrate accomplishments and redefine priorities
- Maintain a SRTS presence at school events throughout the year
- Continue relationships between the schools, the County, and the Town for Program support

• Partner with local businesses for support. Local businesses can provide key items such as prizes for encouragement programs, bicycle helmet giveaways, sponsorship for bicycle/pedestrian events, etc.

• Create an easy to access SRTS Website with a calendar of events, with at least one event scheduled every month. Provide walking maps, park and walk locations, task force meetings, and useful links. The SRTS Task Force should encourage cross-posting of SRTS events on school websites, Town websites, and social networking sites.

• Re-evaluate your SRTS Program on regular intervals (1 – 3 years) to monitor what has been done, what still needs to be done, and what new projects/priorities should be included. Consider updating the full action plan every five years based on these evaluations.

• Maintain SRTS presence as an active and critical program each school year. This can be accomplished through regular handouts, presentations, PTA/PTO meetings, booths at school registration/events, and local media. Provide success stories/statistics to schools, parents, and community utilizing local media, websites, etc.

• Continue a relationship between local school leaders, school district leaders, and local government staff. Communication between local government and schools is critical for achieving community goals, en-

### 6.3 FUNDING

Funding is needed to maintain the SRTS program and keep moving forward to accomplish goals. When considering possible funding sources for SRTS projects and activities, it is important to consider that it is highly unlikely that all activities (construction and education/encouragement/enforcement programs) will be accomplished from a single funding source since these projects are expected to be in the hundreds of thousands of dollars and accomplished over several years. It will be necessary to consider several sources of funding, that when combined, would support full program implementation. It will also be critical for each school and the school system to continue working closely with the Town to set priorities for SRTS projects through the local government's capital improvement program, grant efforts, and funding request lists. Refer to Appendix B for information on possible funding resources.

#### *Federal Funding*

Federal funding is typically directed through State agencies to local governments either in the form of grants or direct appropriations. Federal SRTS funding has been a major source of funds for both infrastructure and non-infrastructure projects. Other federal programs, such as the Surface Transportation and Congestion Mitigation and Air Quality Programs, provide funding for Bicycle Transportation and Pedestrian Walkways projects, and are managed through NCDOT.

Federal funding can be difficult and costly to pursue outside of the original SRTS grant. Federal-Aid highway funds are authorized by Congress and are used to support construction and improvements on routes designated as part of our National System or provide connectivity to and within National Forests, National Parks, Native American Lands, and other public lands. Bicycle Transportation and Pedestrian Walkways resources are also viable project types for

funding resources. The following is a link to "A Guide to Federal-Aid Programs and Projects".

Link of Interest:
• http://www.fhwa.dot.gov/federalaid/guide/

### *State Funding*

State funding for bicycle and pedestrian projects in North Carolina began with the Bicycle and Bikeway Act of 1974. Under this Act, bicycle facilities were defined as a "bona fide highway purpose, subject to the same rights and responsibilities, and eligible for the same consideration as other highway purposes and functions." In short, this act enabled NCDOT to fund bicycle and pedestrian projects through the same funding resources that historically had been used for more traditional modes of transportation such as roadway, rail and transit.

Today, bicycle and pedestrian projects for new and existing facilities of significance are adopted into the State Transportation Improvement Program (STIP) through a statewide prioritization process to address the existing and emerging needs of communities across the State. As projects are adopted into the STIP, monies are allocated and set aside in the State budget to plan, design and construct the projects. This can take many years as the STIP has a 7-10 year planning period. However, NCDOT has many initiatives that are designed to help municipalities and agencies fund infrastructure improvements, especially pedestrian facilities. A list of NCDOT programs is included in Appendix B.

### *Local Funding*

Local funding for transportation projects can be generated from multiple sources including bonds, taxes, grants or even outside agencies that are indirectly connected with public transportation such as those involved with public health and safety. Likewise, municipal and departmental operating budgets may offer support for maintenance and repair, non-infrastructure programs like law enforcement, crossing guards, safety education and walking/bicycling program promotion. One example of a local funding source is in Portland, Oregon. They raised traffic fines, and a portion of the revenue from the increased fines was dedicated to the City's SRTS Program.

Local planning departments are another resource to consider since SRTS projects provide multimodal transportation facilities, greenways and sidewalks that fit municipal investment strategies for Capital Improvement Projects. Hillsborough and Orange County are a part of the Durham-Chapel Hill-Carrboro Metropolitan Planning Organization (DCHC MPO) which is mandated by federal and state laws to establish Comprehensive Transportation Plans (CTP's) in cooperation with NCDOT. These plans develop and prioritize multimodal projects for inclusion into the State Transportation Improvement Program. SRTS projects fit seamlessly into the goals and visions of these organizations, making them viable projects for incorporation into pedestrian and bicycle CTP's. Note, these are long range plans, and unless a project has immediate prioritization, project deployment may take many years. However, these organizations do have funding available and should be considered in the fund raising process. Funding is a political process, and worthwhile projects require demonstrating needs with strong benefits for the community.

Link of interest: http://www.dchcmpo.org

### *Private Sector*

The private sector is another viable means of funding non-infrastructure aspects of the SRTS program. Area businesses, eager to attract clientele, may be willing to host promotional events, donate merchandise, or even volunteer during special events. It is a great way to build professional networks. Having local officials participate in the SRTS activities is a successful way to attract the support of area businesses. Since SRTS projects promote safety, health and environmental stewardship, local corporations whose mission statements coincide with these principles may support the program with cash, sponsorships, discounts, printing services and the like in exchange for the promotional opportunity. Refer to the appendix for a more detailed list of possible private sector funding sources.

***Institutions and Non-Profits***

There are institutions and non-profits across the country, and even locally, that willingly support educational, community, health and environmental advocates. The National Foundation Center is an excellent data base to search for applicable funding resources as well as the National Center for Charitable Statistics. Even popular internet search engines can often find local foundations through public tax records.

Links of interest:
• http://foundationcenter.org/
• http://nccs.urban.org/

***Grants***

Grants are another way to help fund SRTS initiatives in your community. There are specific grants for SRTS projects which can be used for infrastructure or non-infrastructure priorities. Additionally, SRTS improvements may be eligible for any grant that would support healthy initiatives in a community.

***Volunteers***

Lastly, individuals make up the corner stones of the community and they are ultimately the parents and families of the children that attend the area schools. Local fundraisers serve multiple purposes with the SRTS program and have proven to be one of the best ways to raise funding, awareness and community support.

## 6.3.1 Recommended Sources of Funding for Infrastructure Projects

Funding specifically set aside for SRTS is going to be the best potential funding source for large infrastructure projects. These grants are offered periodically through NCDOT, and the infrastructure awards per project can be as much as $300,000 at this time. It is likely that the next call for projects will be in Fall of 2011. Contact information for this grant reimbursement program is included in Appendix B.

Several of the recommended projects could be funded through various NCDOT funds. The priority projects should be discussed with the NCDOT Division 7 Engineer and District Engineer for Orange County to explore potential funding sources. Contact information for these NCDOT Contacts is listed at the following links:

NCDOT Division 7 Engineer:
https://apps.dot.state.nc.us/dot/directory/authenticated/UnitPage.aspx?id=646

NCDOT District Engineer for Orange County:
https://apps.dot.state.nc.us/dot/directory/authenticated/UnitPage.aspx?id=2083

Various sources of NCDOT funds are included in Appendix B, but the ones that are most likely to be used at this time are as follows:

*Division SRTS Funds*: Each Division has a limited amount of funding for small SRTS projects. This funding can be used for eligible projects up to $100,000. The Division 7 Engineer is the contact person to determine if a project is eligible and the funding is available from this source.

*Contingency Funds*: These funds can be used on State or Town Roads and must have a political sponsor. The funds are controlled by the North Carolina House of Representative, the North Carolina Senate, and the Secretary of Transportation. There is a lot of flexibility with these funds so they could potentially be used for several of the priority projects.

*Small Construction Funds*: These funds are controlled by Board of Transportation members and can be used on projects up to $250,000 per fiscal year. Coordination with the NCDOT Board Member from Division 7 is required. Typical projects for this source of funding include installing pedestrian signals or flashers to alert drivers of pedestrians. The current board members are listed on the NCDOT webpage at the following link:
https://apps.dot.state.nc.us/dot/directory/authenticated/UnitPage.aspx?id=30

*Division Pedestrian Enhancement Funds*: Each Division receives $100,000 a year for pedestrian enhancements. Since these funds will typically be shared between several counties, they are typically

used for smaller projects. The Division 7 Engineer should be contacted about using these funds to improve any of the identified pedestrian crossings.

*Contract Resurfacing Program*: The District Engineer for Orange County will have a listing of the roads that are planned for resurfacing in the next two years. It is recommended that coordination be maintained with the District Engineer to determine if any roads in the SRTS Action Plan are included on this list. With coordination prior to the project beginning, additional pavement markings for pedestrian crossings could be included in the project. Also, all curb ramps will be brought into ADA compliance when the road is resurfaced.

*General Maintenance Funding*: At this time, funding for maintenance is limited, but very small projects like striping crosswalks could potentially be funded through this source. The District Engineer is the contact person for this funding.

Locally, Powell Bill funds may be used for projects on roadways that are not maintained by NCDOT. These funds are utilized by the Town of Hillsborough.

### 6.3.2. Recommended Sources of Funding for Non-Infrastructure Projects

Non-Infrastructure projects tend to be significantly less expensive than infrastructure projects, so there are a lot of options for funding sources. Non-Infrastructure funds are offered periodically through NCDOT through a competitive grant process. NCDOT has awarded as much as $50,000 per project for a non-infrastructure grant. Contact information for this grant is included in Appendix B.

The National Center for Safe Routes to School periodically awards mini-grants ($1,000) for non-infrastructure projects. During the spring and fall of 2010, 25 grants were awarded for qualifying projects. These grants are advertised at the following link: http://www.saferoutesinfo.org/news_room/

There are numerous grants available for programs that will promote healthy lifestyles for children. These can all be tied into SRTS due to the fact that it encourages children to walk or ride their bicycle to and from school. The other health benefits outlined in this Action Plan will help to qualify for these grants. Several grant programs are identified in Appendix B, and new programs are anticipated. It is recommended that grant sources be checked frequently for any that might apply to education, encouragement, and enforcement activities.

Public/private partnerships are a great way to secure funding for non-infrastructure programs. Nearby universities or non-profit organizations may be interested in sponsoring programs. Also, local businesses are usually willing to get involved with school programs. Sometimes, all you have to do is ask! Local bicycle shops, nearby businesses, and businesses run by parents of children attending the school are great places to contact.

Volunteers are also a way to get non-infrastructure programs started. For instance, the walking school bus program can be started by the SRTS Committee, the PTA, or families that are in the walk zone. This project can be done for a very small cost. The big effort is in the coordination... locating interested families, scheduling routes, and providing overall program guidance. Map or advertisement printing is a minimal cost.

For further information on these funding sources, please see Appendix B.

## 6.4 STUDENT ENGAGEMENT

Taking into account statistics depicting our youth's obesity rates and the plummeting activity levels of our children over the last decades, SRTS sets out to change the lifestyles and habits of a generation. The success of this mission depends ultimately upon the success and sustainability of the program school by school across the country and our state. Engaging students to be leaders in their classroom communities is a goal that must be met. Elementary students are likely to follow their parents' lead, and "marketing" strategies geared toward parents are effective for this age group.

Additionally, efforts must be made to ensure that information is provided in all major languages spoken at a school (in most cases English and Spanish). The programs should include all students regardless of their ethnicity and socioeconomic status.

These are a few suggestions compiled by the National Center for Safe Routes to School, which can be effective for engaging middle school students:

• Provide opportunities for self-expression and self-determination. Let the students take charge of designing logos, websites and events.

### Student Involvement Strategies

- Establish a routine "Walk/Ride to School Day"
- Hold annual events
- Send out newletters
- Incorporate SRTS information and activities into classroom curriculum
- Have a place to communicate SRTS updates and events

• Create hands-on learning experiences that are personally relevant. For example, using tools such as the walkability checklist, ask students to identify where changes in sidewalks, crossing guard locations and walking conditions should be improved using GPS devices and digital cameras. Encourage children to voice their opinions about walkability and bikeability at public meetings or letter writing campaigns to local officials.

• Highlight the connection between SRTS and social, cultural or environmental issues that may be important to students. Organize lessons, activities and events about climate change and the health benefits of the program. Use sports celebrities to participate in promotional events as advocates for health and fitness.

• Foster positive interactions between peers and provide opportunities for peer identification and acceptance. Start an afternoon club with a mission that ties to SRTS like a cycling club with scheduled field trips to trails and greenways. Develop a cross-age teaching program and/or mentorship program. This may be a good way to utilize high school students and get them involved in the program as well.

*Student Involvement Strategies for sustaining/growing a SRTS program:*

• Establish a routine "Walk / Ride to School Day" (either weekly or monthly).

• Hold annual events: Logo contests, mileage contests, etc.

• Send out newsletters on a consistent basis (quarterly / monthly).

• Incorporate SRTS information and activities into classroom curriculum.

• Have a place to communicate SRTS updates and events (ie. a website, a blog, or a Facebook page).

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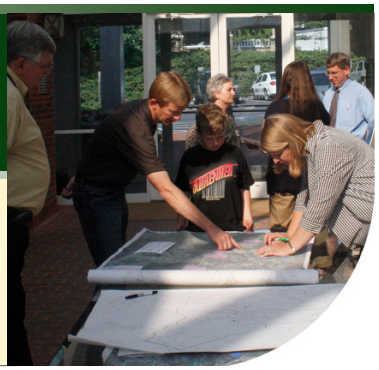
# 7 IMPLEMENTATION ACTION STEPS



Chapter Outline:



## 7.0 OVERVIEW

The successful implementation of this Action Plan will require a comprehensive approach that addresses engineering, education, encouragement, enforcement, and evaluation strategies explained in previous chapters. It will also take the dedication of local government staff, commitment of the school system and local schools, the creation of a SRTS Committee, and the continued support of local advocates and parents. This chapter serves as a simple, working implementation guide with key action steps.

The following steps are integral to achieving the goals and visions of this Plan. As guiding recommendations and the clearest representation of specific items to accomplish, they should be referred to often. With the exception of the first two steps (adoption of Plan), there is no particular order in which these should be addressed.

## 7.1 IMPLEMENTATION ACTION STEPS TABLE

| Task | *Agency/ Support | Details | Cost | Funding | Phase |
|---|---|---|---|---|---|
| Adopt SRTS Action Plan | OCS | Official Resolution of Adoption. Adoption of the Plan identifies it as a legitimate planning document that has been developed by a supported planning process. | Adoption does not require funding but implies the agency will pursue funding sources indicated for projects | N/A | SHORT TERM |
| Adopt SRTS Action Plan | H | Official Resolution of Adoption. Adoption of the Plan identifies it as a legitimate planning document that has been developed by a supported planning process. | Adoption does not require funding but implies the agency will pursue funding sources indicated for projects | N/A | SHORT TERM |
| Adopt SRTS Action Plan | OC | Official Resolution of Adoption. Adoption of the Plan identifies it as a legitimate planning document that has been developed by a supported planning process. | Adoption does not require funding but implies the agency will pursue funding sources indicated for projects | N/A | SHORT TERM |

Agency Support: OC – Orange County; H – Town of Hillsborough; OCS – Orange County Schools; OCHD – Orange County Health Dept.; HPD – Hillsborough Police Dept.; DCHC MPO – Durham-Chapel Hill-Carrboro Metropolitan Planning Organization; Comm. – Committee

| Task | *Agency/ Support | Details | Cost | Funding | Phase |
|---|---|---|---|---|---|
| Establish a Safe Routes to School Advisory Committee | Steering Comm.<br>---<br>OC<br>H<br>OCS | One of the most important steps in implementation is the continuation of a committee that would meet on a monthly or quarterly basis. The core group of the Action Plan's Steering committee could provide the starting point. The SRTS Advisory Committee would be knowledgeable about the Action Plan, and responsible for advocating plan implementation and keeping the plan current and active. The Advisory Committee would assist local government agencies and schools with programming and grant writing; work with schools to implement educational and encouragement programs; evaluate plan progress; and re-examine/update the plan's priorities. | No initial cost. Steering Committee would develop Advisory Committee representation and schedule for approval by County, Town and Schools. Agencies would allocate staff time to work with the Advisory Committee and SRTS implementation. Schools must engage in program to recruit parents in addition to supplying school staff for the Advisory Committee. Continued success of the program will require the school system to maintain a staff position in the Office of the Superintendent to oversee the SRTS programs. | Blue Cross Blue Shield Healthy Active Communities Grant; Orange County Schools | SHORT TERM |
| Include SRTS projects in Comprehensive Transportation Plan and Long Range Transportation Plan of the Durham-Chapel Hill-Carrboro Metropolitan Planning Organization | OC<br>H | Submit engineering projects into regional plans to ensure eligibility for federal and state funding. | No cost to include in plans. | Depends on project | SHORT TERM |

Agency Support: OC – Orange County; H – Town of Hillsborough; OCS – Orange County Schools; OCHD – Orange County Health Dept.; HPD – Hillsborough Police Dept.; DCHC MPO – Durham-Chapel Hill-Carrboro Metropolitan Planning Organization; Comm. – Committee

| Task | *Agency/ Support | Details | Cost | Funding | Phase |
|---|---|---|---|---|---|
| Incorporate and enforce recommended policies and regulations into Town and County land use ordinances | OC<br><br>H | Policy recommendations suggested in Chapter 4 address local ordinance and policies. Suggestions center around incorporating complete streets policies into Orange County and the Town of Hillsborough land use regulations to ensure safe and adequate pedestrian infrastructure around schools. | No cost to implement, but will require additional staff time. Orange County staff and Town of Hillsborough staff review local land development plans and ordinances and coordinate applicable amendments with process for amending respective ordinances. | N/A | MID-TERM |
| Incorporate and enforce recommendations for School District Regulations | OCS | Policy recommendations suggested in Chapter 4 address policies for busing and siting schools that have a tremendous impact on encouraging or discouraging walking and bicycling to school. Town and County staff, school system staff and the SRTS Advisory Committee should discuss and consider the recommendations. In many cases, the recommended policies should not be enforced until adequate and safe infrastructure is provided. | No cost to change policies; however, policy change is dependent on provision of projects that create safe access for pedestrian and bicyclists. See projects for each school. | See projects for each school | MID-TERM<br><br>to<br><br>LONG TERM |

Agency Support: OC – Orange County; H – Town of Hillsborough; OCS – Orange County Schools; OCHD – Orange County Health Dept.; HPD – Hillsborough Police Dept.; DCHC MPO – Durham-Chapel Hill-Carrboro Metropolitan Planning Organization; Comm. – Committee

| Task | *Agency/ Support | Details | Cost | Funding | Phase |
|---|---|---|---|---|---|
| Present this Action Plan to other local agencies and groups | OC<br><br>H | Presenting this plan to other local groups and agencies will help build community awareness and support for ongoing efforts. Groups/organizations targeted for presentations include the Durham-Chapel Hill-Carrboro Metropolitan Planning Organization, the Triangle Area Rural Planning Organization, Orange County Health Department, schools and youth organizations and large neighborhood groups. | No cost to implement, but will require additional staff time. | N/A | SHORT TERM |
| Implement Engineering Priority Projects | OC<br><br>H<br><br>OCS | See Chapter 3 for priority projects for each school | According to project | Will vary | MID-TERM<br><br>to<br><br>LONG TERM |
| Priority Education Programs | OCS | See Chaper 4 for Priority Education Programs | No cost to implement, but will require additional staff time. | N/A | MID-TERM and ON-GOING |
| Integrate bicycle/pedestrian education into the school day | OCS<br><br>------<br><br>OCHD<br><br>HPD | Chapter 5 recommendations give examples of how to incorporate bicycle/pedestrian safety education into the class curriculum. Curriculum should also include hands-on skills training such as simulated street crossings and bicycle handling drills/rodeos . | No cost to implement, but will require additional staff time. | N/A | MID-TERM<br><br>and<br><br>ON-GOING |

Agency Support: OC – Orange County; H – Town of Hillsborough; OCS – Orange County Schools; OCHD – Orange County Health Dept.; HPD – Hillsborough Police Dept.; DCHC MPO – Durham-Chapel Hill-Carrboro Metropolitan Planning Organization; Comm. – Committee

| Task | *Agency/ Support | Details | Cost | Funding | Phase |
|---|---|---|---|---|---|
| Start a comprehensive motorist/pedestrian/ bicyclist safety campaign | DCHC MPO<br>--------<br>OC<br>H | Bicycle and Pedestrian Advisory Committees in the Triangle are working with staff from the Durham-Chapel Hill-Carrboro Metropolitan Planning Organization (DCHC MPO) and the Capital Area Metropolitan Planning Organization (CAMPO) to initiate an ongoing safety campaign in the region to create awareness of bicycle, pedestrian and motor vehicle conflicts and safety behavior. | $125.000 (initially) | FHWA 402 Highway Safety Funds<br>Local Match:<br>DCHC MPO<br>CAMPO | SHORT TERM<br><br>and<br><br>ON-GOING |
| Start a comprehensive motorist/pedestrian/ bicyclist safety campaign (continued) | OCS<br>----------<br><br>OC<br><br>HPD | Locally, conduct an annual campaign:<br>• Create posters with simple, powerful graphics and language about the importance of safety.<br>• Develop handouts and materials to pass out to school children to deliver to their parents.<br>• Hold walking and bicycling events during campaign.<br>• Involve elected officials through organized events and speeches. | Minimal cost | Include cost of printing in school budgets; may require additional staff time. | SHORT TERM<br><br>and<br><br>ON-GOING |
| Priority Encouragement Programs | OCS | See Chapter 4 for Priority Encouragement Programs | No cost to implement but will require additional staff time | N/A | MID-TERM and ON-GOING |

Agency Support: OC – Orange County; H – Town of Hillsborough; OCS – Orange County Schools; OCHD – Orange County Health Dept.; HPD – Hillsborough Police Dept.; DCHC MPO – Durham-Chapel Hill-Carrboro Metropolitan Planning Organization; Comm. – Committee

| Task | *Agency/ Support | Details | Cost | Funding | Phase |
|---|---|---|---|---|---|
| Begin a walking school bus program at Cameron Park Elementary School and C.W. Stanford Middle School | SRTS Comm.<br><br>OCS<br><br>---------<br>OCHD<br><br>HPD | Assemble partnership of school system, parents and members of the community. Work with Hillsborough Police Department and Orange County Sheriff's Department.<br>• Develop a walkability checklist<br>• Exercise hands-on route planning<br>• Plan for participation of people with disabilities<br>• Plan for participation for people outside walk zone | No cost to implement. | N/A | SHORT TERM |
| Begin mileage clubs/ contests | OCS | Logging miles, minutes and even steps with pedometers can give children a sense of accomplishment by earning prizes for achieving established goals. Also, children who live outside the walk zone can participate in mileage clubs. | Minimal costs. | Request prizes from local businesses and bicycle clubs, such as Carolina Tarwheels. | SHORT TERM<br><br>to<br><br>LONG TERM |
| Begin a crossing guard program at both Cameron Park Elementary School and C.W. Stanford Middle School | OCS<br><br>_____<br><br>HPD | • Recruit and train crossing guards<br>• Locate crossing guards at:<br>* St. Mary's Road crosswalk at Thomas Ruffin St.<br>* Future Cameron St. crosswalk at bulb out to Board of Education trail<br>* Future US 70 crosswalk at Orange High School Rd.<br>* Future crosswalk on NC 86 at NC 57<br>* Future crosswalks on US 70 and NC 86 on all approaches to intersection of US 70/NC 86 | Minimal costs for safety vests, signs, etc. | School budgets | SHORT TERM<br><br>to<br><br>LONG TERM |

Agency Support: OC – Orange County; H – Town of Hillsborough; OCS – Orange County Schools; OCHD – Orange County Health Dept.; HPD – Hillsborough Police Dept.; DCHC MPO – Durham-Chapel Hill-Carrboro Metropolitan Planning Organization; Comm. – Committee

| Task | *Agency/ Support | Details | Cost | Funding | Phase |
|---|---|---|---|---|---|
| Involve local law enforcement officers | OCS<br>----------<br>HPD | • Budget for a County Sheriff's Department staff and Town of Hillsborough Police staff to work together to:<br>* Patrol school traffic in mornings and afternoons at least twice a week to enforce the law in school zones.<br>* Coordinate with schools for planned events where law enforcement officers can educate parents and children regarding traffic rules. | The Sheriff's Department routinely patrols elementary schools outside municipal limits. Hillsborough police routinely patrol elementary schools in Hillsborough. If more intense police presence if desired, the Department offers off-duty assignments to policemen at $35 per hour. | Additional police presence included in school budgets. | SHORT TERM<br>To<br>LONG TERM |
| Develop SRTS Bicycle/Walking Maps | OCS<br>_____<br>OC<br>H | SRTS Committees at each school should develop routes. Orange County staff and Hillsborough staff can prepare and update digital bicycle/ walking maps of best routes to school with information denoting sidewalks, crosswalks, etc. | $560 for printing 5,000 hardcopy maps ($1,680 to print maps for all three schools); requires additional staff time. | Town, County and School Departmental Budgets | MID-TERM to<br>LONG TERM |
| Provide bicycle parking on school campuses | SRTS Comm.<br>OCS<br>_____<br>OC<br>H | Bicycle racks at convenient locations near school entrances make it more feasible and convenient for children to bicycle to school. | Bicycle racks are relatively inexpensive ($75 - $360 each, depending on design and size) and installation can be done using Town and County staff | SRTS Mini-grants or other grants; Private donations | SHORT TERM |

Agency Support: OC – Orange County; H – Town of Hillsborough; OCS – Orange County Schools; OCHD – Orange County Health Dept.; HPD – Hillsborough Police Dept.; DCHC MPO – Durham-Chapel Hill-Carrboro Metropolitan Planning Organization; Comm. – Committee

| Task | *Agency/ Support | Details | Cost | Funding | Phase |
|---|---|---|---|---|---|
| Maintain bicycle and pedestrian facilities database and map crash locations, especially around schools. | OC<br><br>H<br>_____<br>SRTS Comm.<br><br>OCS | County and Town GIS staff should maintain the sidewalk database and bicycle facility database.<br>Orange County Sheriff's Dept. and Hillsborough Police Dept. will be responsible for forwarding bicycle and pedestrian crashes to County and Town staff to record crash locations in database<br>Schools and individual cyclists and pedestrians are responsible for reporting crashes not recorded by law enforcement officials. | No additional costs involved, but will take additional effort and staff time on the part of all agencies to ensure reports are made and provided and the database is maintained. | N/A | SHORT TERM<br><br>and<br><br>ON-GOING |
| Evaluate implementation of this plan and ensure program sustainability | SRTS Comm.<br>_____<br>OCS<br><br>OC<br><br>H | | No costs to evaluate this Plan. | N/A | MID-TERM<br><br>to<br><br>LONG TERM |

Agency Support: OC – Orange County; H – Town of Hillsborough; OCS – Orange County Schools; OCHD – Orange County Health Dept.; HPD – Hillsborough Police Dept.; DCHC MPO – Durham-Chapel Hill-Carrboro Metropolitan Planning Organization; Comm. – Committee

# A PUBLIC INPUT

Chapter Outline:



## A.0 OVERVIEW

In order to gain local knowledge and input, a public outreach component was included as an integral part of planning efforts for the Orange County SRTS Action Plan. Public input was used to help craft the existing conditions summary and recommendations of this Plan. Public input was gathered through several different means including the following: Steering Committee meetings, a workshop at Walkable Hillsborough Day, newsletters/flyers, project website, SRTS parent surveys, and SRTS student tallies. This offered the representatives, citizens, parents, and students of Hillsborough/ Orange County opportunity to contribute to the Plan's development.

## A.1 CITIZEN AND STAFF-BASED STEERING COMMITTEE

The Steering Committee was composed of active citizens, Town of Hillsborough staff, Orange County School System staff, Orange County staff, and the Walkable Hillsborough Coalition. The group met twice during the planning process. The group established visions and goals for the Plan and identified areas in need of bicycle and pedestrian improvements. Committee members also identified key opportunities and strategies for engineering, education, encouragement, enforcement, and evaluation improvements. Committee members marked up maps and identified bicycle and pedestrian problem areas and possible solutions. The goals are listed in Chapter 1 and input from the Committee is reflected throughout the recommendations of this planning document.

The Steering Committee also provided comment on the Draft Plan. These comments led to revisions made by the Consultant in the development of the Final Plan.

*In these photos, members of the SRTS Steering Committee look at maps of Orange County and come up with goals and visions at the Kick off meeting.*

## A.2 NEWSLETTERS AND FLYERS

One flyer and one newsletter were developed during this planning process. A flyer (page A-3) was developed for the public input session and distributed in both digital and hardcopy form to invite residents of Hillsborough and Orange County to the input session. The newsletter on pages A-4 and A-5 was two-sided and provided a project digest for citizens of Hillsborough and Orange County. It also listed important dates (such as the public workshop) and contact information.


*Flyer for the public input session.*

SPRING 2010

NEWSLETTER for the ORANGE COUNTY

# SAFE ROUTES TO SCHOOL STRATEGIC ACTION PLAN

*Project Contact Information:*

Ms. Karen Lincoln

*By Mail:*

131 West Margaret Lane, Suite 201
Hillsborough, NC 27278-8181

*By Phone:*

(919) 245-2580

*Email:*

klincoln@co.orange.nc.us

*Website:*

www.greenways.com/srts_orangecounty

## PROJECT BACKGROUND

This study will identify major opportunities and constraints for walking and biking to Cameron Park Elementary, Grady A. Brown Elementary, and CW Stanford Middle Schools. An action plan will be developed that includes recommendations to improve bicycle and pedestrian connectivity and safety. These recommendations will include future sidewalks, crosswalks, bicycle-friendly streets, trails, and programs (education, encouragement, and enforcement).

## PROJECT VISIONS AND GOALS

A project kickoff meeting was held in January 2010 with Orange County staff, Town of Hillsborough staff, consultants, school administrators, and active citizens. Key visions and goals for this project included:

- Create safer walking and biking environments.
- Develop safer crossings of roadways for pedestrians.
- Provide greater connectivity between neighborhoods and schools.
- Educate parents and children about safety and proper rules of the road for pedestrians.
- Provide sidewalks within no walk school zones so that school buses wouldn't have to stop at every individual home.
- Determine appropriate pedestrian improvements, including traffic calming measures and safer crossings in areas with many constraints such as topography, right-of-way, and historic district regulations.


*Above: Mornings at Stanford Middle School (above) and Grady A. Brown Elementary School (below).*


*Above: Images from around the country by Greenways Incorporated and from PBIC Image Library (www.pedbikeimages.org).*

*The Newsletter that provided a project digest for citizens.*

# Work Completed and Next Steps

*About Safe Routes to School:*
The National Center for Safe Routes to School assists communities in enabling and encouraging children to safely walk and bike to school. SRTS programs examine conditions around schools and conduct projects and activities that work to improve safety and accessibility, and reduce traffic and air pollution in the vicinity of schools. As a result, these programs help make bicycling and walking to school safer and more appealing transportation choices thus encouraging a healthy and active lifestyle from an early age.

### *Project Kick-off Meeting*
Project consultants, City staff, and school administrators met in January to learn about the national Safe Routes to School program, discuss visions and goals for Orange County and Hillsborough, and to identify areas of safety concern within the school zones of Cameron Park Elementary, Grady A. Brown Elementary, and CW Stanford Middle School.

### *Existing Conditions Analysis*
Project consultants completed fieldwork in January, examining conditions around the three schools. The fieldwork included a thorough on-site assessment of existing infrastructure within the school zone; and an evaluation of both traffic and behavioral patterns exhibited by roadway users during drop-off and pick-up. The field assessment broadly analyzed school traffic patterns, characteristics of the transportation network users, and the existing infrastructure strengths and weaknesses within the school zone.

***Public Workshop*** The first workshop is **June 5, 2010** during Walkable Hillsborough Day.

***Draft Plan and Final Plan*** During the rest of the spring, and into the summer, project consultants will generate a full draft plan that includes policy recommendations, program ideas, and an implementation strategy. The final plan is scheduled for completion in fall 2010.

# How to Stay Involved

*Project Consultants:*

GREENE TRANSPORTATION SOLUTIONS

GREENWAYS INCORPORATED

1. Check out www.greenways.com/srts_orangecounty for links to additional project information.

2. Stop by the Public Open House:

*When: Saturday, June 5, 2010 9:00 AM - 12:00 PM*
*Where: Cameron Park Elementary, Hillsborough, NC*

3. If you prefer to send a letter with your ideas, make a phone call, or to email, please refer to the contact information on page one.

## A.3 PUBLIC WORKSHOP

One public input workshop was conducted during the planning process. Consultant staff and Committee members conducted an input session during the annual Walkable Hillsborough Day event on June 5, 2010. Input was received in the Cameron Park Elementary School library as part of the day's festivities, which included a guided walk from Stanford Middle School to Cameron Park Elementary School, bicycle rodeo, refreshments, and other events. Approximately 40 people attended to learn about the SRTS plan and to provide input. The input session sought to gather preliminary input from citizens to assist in the development of draft recommendations for the plan. Public input was taken in the form of map markups, visions/goals board edits, written comments, question and answer sessions, and through discussions between citizens, consultant staff, and Town/County staff.

In addition, an education, encouragement, and enforcement board was developed to gather further input. Consultants developed a hard copy comment form, and distributed the forms at each meeting for hand written responses from board members. Board responses from these comment forms helped inform the recommendations in Chapter 5.

Significant and meaningful input was provided by residents, parents, and schoolchildren. Input included:

- Specific locations of sidewalk and crosswalk needs, especially along major roads like US 70
- Specific programs needed, especially walking school buses and incentive programs
- Traffic speed issues (need for calming and enforcement)
- Topographic and ROW constraints
- Neighborhood connectivity improvements to help children avoid having to walk on major roads


*Photos from the public input workshop that took place during the Annual Walkable Hillsborough day.*

## A.4 PROJECT WEBSITE

The planning process used a project website to provide general project background and updated materials tracking plan progress, such as meeting minutes, newsletter and flyer. It also served as an access to the Draft Plan digital version for committee and public review.

## A.5 SRTS PARENT SURVEYS AND STUDENT TALLIES

The National Safe Routes to School Center provides standard parent surveys and student tallies that are being used around the country. At the start of this planning process, Orange County was asked to conduct these surveys at Cameron Park Elementary, Grady Brown Elementary, and Stanford Middle. These were conducted at all three schools. 39% of the distributed parent surveys and 4% of the distributed student tally forms were completed for Cameron Park Elementary. Response statistics are missing for Grady Brown Elementary and Stanford Middle. The schools should work to achieve a higher response rate and to better collect and evaluate their response rate data.

As discussed in Chapter 6, it is recommended that these surveys and tallies be conducted every year as a means to evaluate the SRTS program. The results from these surveys and tallies helped to inform the recommendations of this Plan. The following pages contain the complete results of these survey instruments.

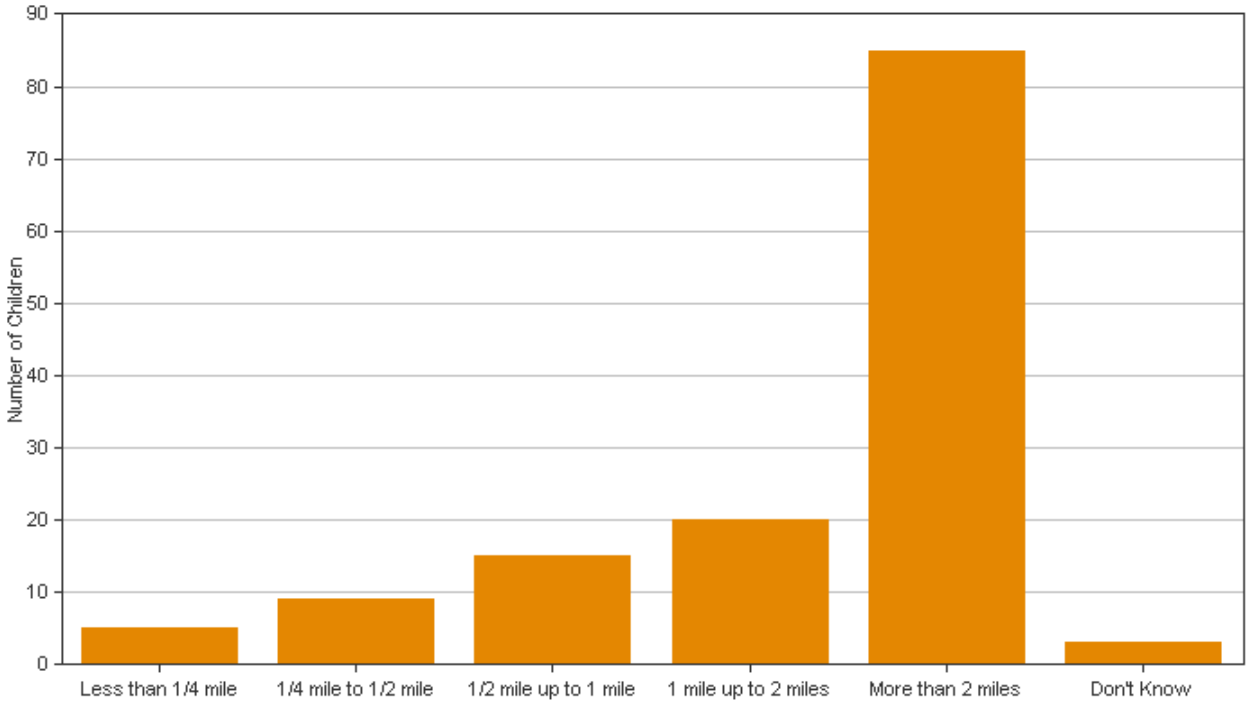
# Parent Survey Summary Report:

## Process Summary Information:

| | | | |
|---|---|---|---|
| **Program Name:** | Orange County | **Survey Data Collected:** | Spring2010 |
| **School Name:** | Grady Brown Elementary | **Data Collection Phase:** (pre = Before program began mid = During program; post = After program ended) | other |
| **Reported Enrollment:** | 0 | **Number of Surveys Distributed:** | 0 |
| **Date Report Generated:** | 05/27/2010 | **Number of Surveys in Report:** | 140 |

This report provides information from parents about their perceptions and attitudes on their child walking and bicycling to school. 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.

**Number of Children by Distance They Live From School:**

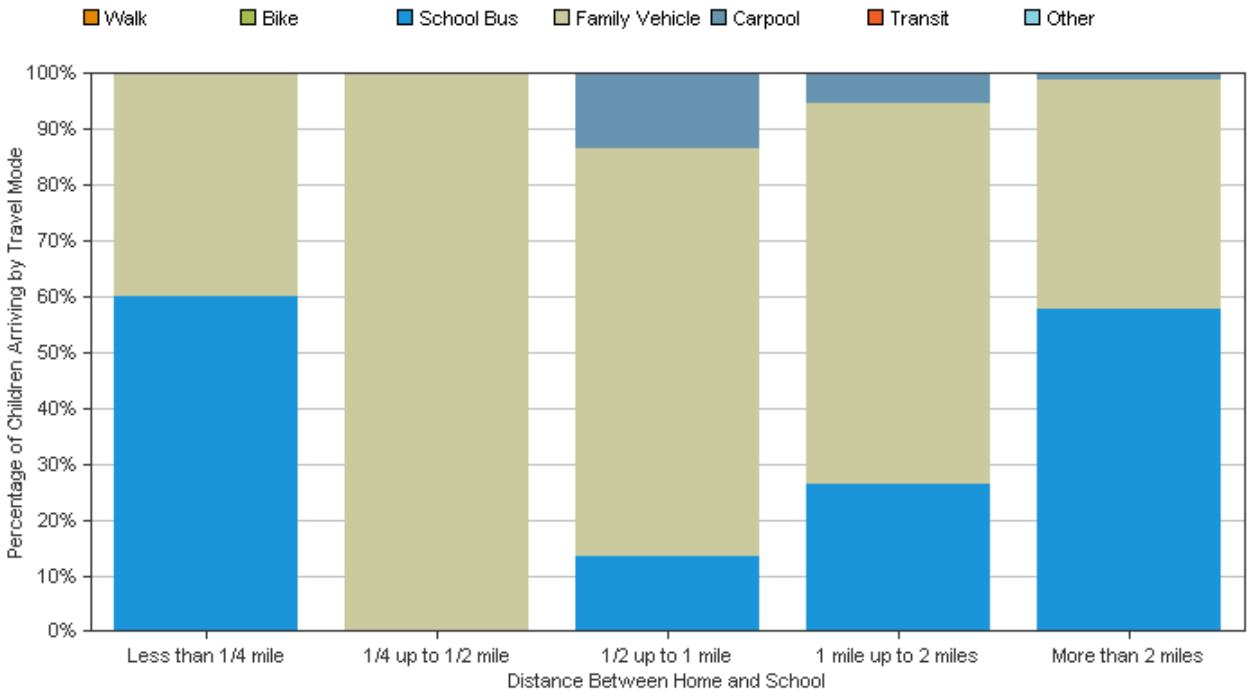



**Number of Children by Distance They Live From School:**

| Distance from School | Number of Children |
|---|---|
| Less than 1/4 mile | 5 (3.6%) |
| 1/4 mile up to 1/2 mile | 9 (6.6%) |
| 1/2 mile up to 1 mile | 15 (10.9%) |
| 1 mile up to 2 miles | 20 (14.6%) |
| More than 2 miles | 85 (62.0%) |
| Don't know | 3 (2.2%) |
| No response: 3 | |

(Percentages may not total 100% due to rounding.)

### Percentage of Children by Travel Mode to School and Distance Between Home and School:



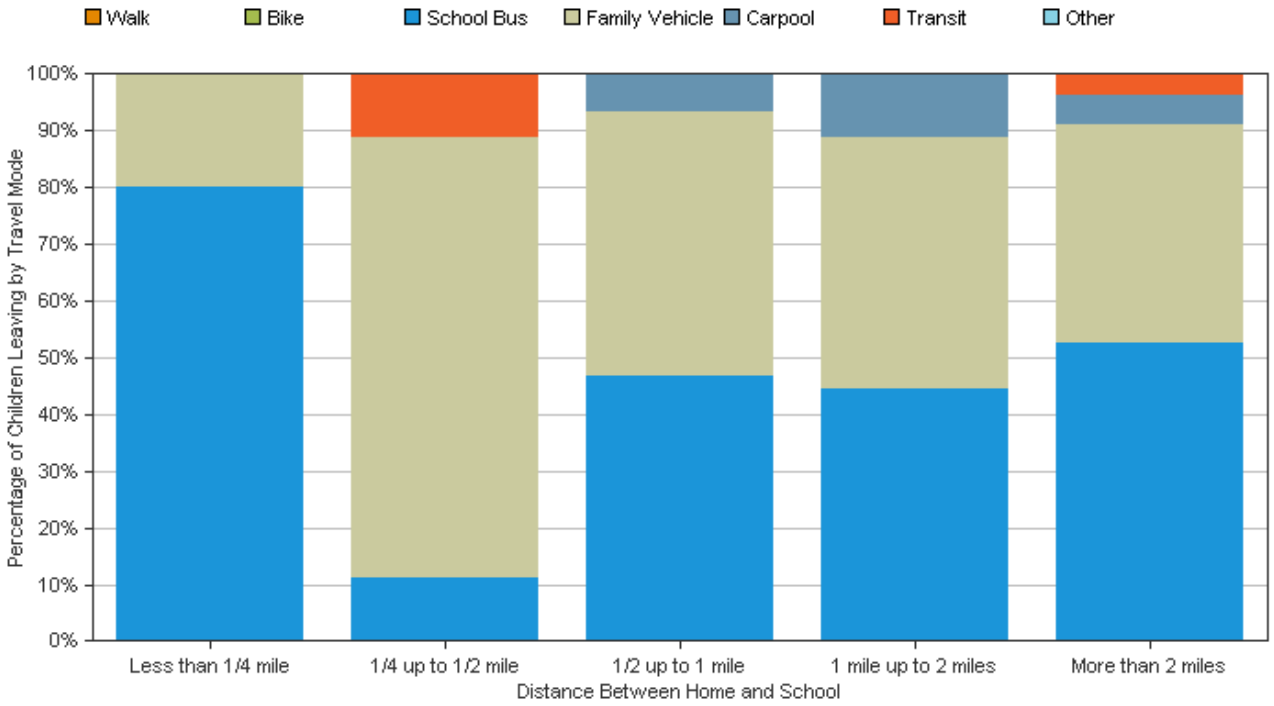

### Number of Children by Travel Mode to School and Distance Between Home and School:

| Mode | 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 | Row Totals by Mode |
|---|---|---|---|---|---|---|
| Walk | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) |
| Bike | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) |
| School Bus | 3 (2.3%) | 0 (0%) | 2 (1.5%) | 5 (3.8%) | 48 (36.1%) | 59 (44.5%) |
| Family Vehicle | 2 (1.5%) | 8 (6.0%) | 11 (8.3%) | 13 (9.8%) | 34 (25.6%) | 70 (52.7%) |
| Carpool | 0 (0%) | 0 (0%) | 2 (1.5%) | 1 (0.8%) | 1 (0.8%) | 4 (3.1%) |
| Transit | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) |
| Other | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) |
| **Column Totals by Distance** | 5 (3.8%) | 8 (6%) | 15 (11.3%) | 19 (14.4%) | 83 (62.5%) | |

*No Response: 7*

(Percentages may not total 100% due to rounding.)

**Percentage of Children by Travel Mode from School and Distance Between Home and School:**




**Number of Children by Travel Mode from School and Distance Between School and Home:**

| Mode | 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 | Row Totals by Mode |
|---|---|---|---|---|---|---|
| Walk | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) |
| Bike | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) |
| School Bus | 4 (3.1%) | 1 (0.8%) | 7 (5.4%) | 8 (6.2%) | 42 (32.3%) | 63 (48.6%) |
| Family Vehicle | 1 (0.8%) | 7 (5.4%) | 7 (5.4%) | 8 (6.2%) | 31 (23.8%) | 56 (43.1%) |
| Carpool | 0 (0%) | 0 (0%) | 1 (0.8%) | 2 (1.5%) | 4 (3.1%) | 7 (5.4%) |
| Transit | 0 (0%) | 1 (0.8%) | 0 (0%) | 0 (0%) | 3 (2.3%) | 4 (3.1%) |
| Other | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) |
| **Column Totals by Distance** | 5 (3.9%) | 9 (7%) | 15 (11.6%) | 18 (13.9%) | 80 (61.5%) | |

*No Response: 10*

(Percentages may not total 100% due to rounding.)

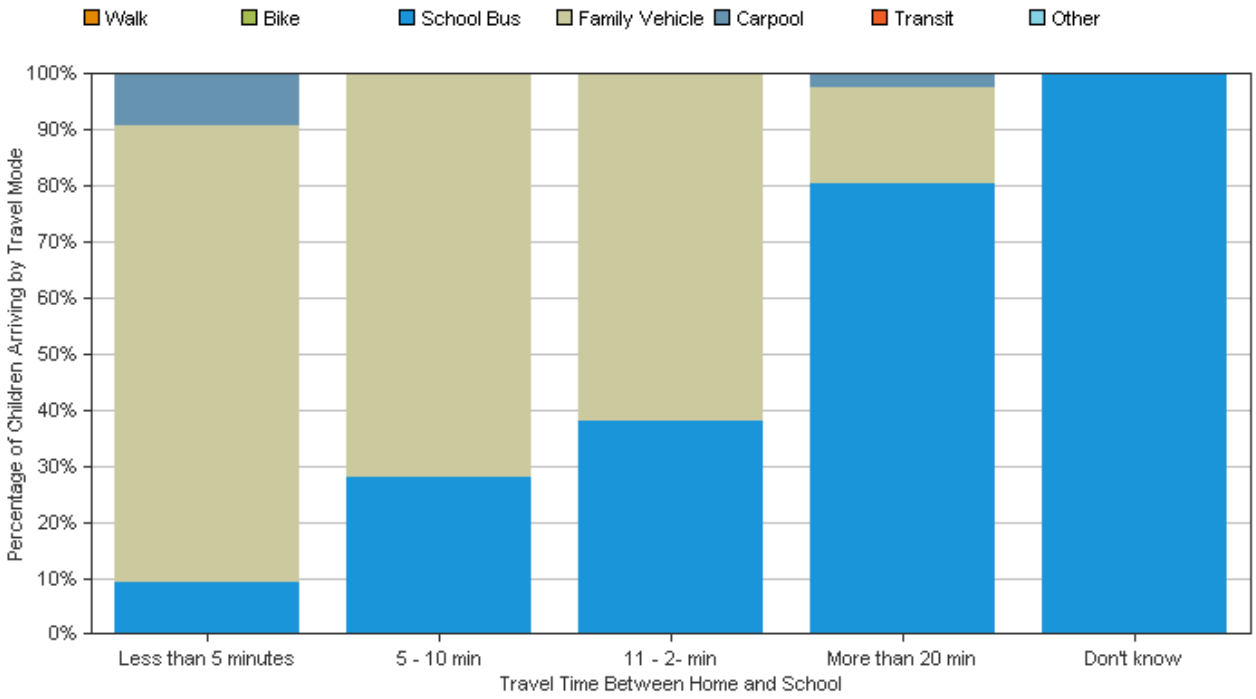
**Number of Children by School Arrival Travel Mode and Travel Time to School:**

| Travel Mode | Less than 5 min | 5 - 10 min | 11 - 20 min | More than 20 min | Don't know | Row Totals by Mode |
|---|---|---|---|---|---|---|
| Walk | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) |
| Bike | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) |
| School Bus | 3 (2.3%) | 7 (5.3%) | 11 (8.3%) | 33 (25.0%) | 4 (3.0%) | 58 (43.9%) |
| Family Vehicle | 27 (20.5%) | 18 (13.6%) | 18 (13.6%) | 7 (5.3%) | 0 (0%) | 70 (53%) |
| Carpool | 3 (2.3%) | 0 (0%) | 0 (0%) | 1 (0.8%) | 0 (0%) | 4 (3.1%) |
| Transit | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) |
| Other | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) |
| **Column Totals by Time** | 33 (25.1%) | 25 (18.9%) | 29 (21.9%) | 41 (31.1%) | 4 (3%) | |

*No Response: 8*

(Percentages may not total 100% due to rounding.)

### Percentage of Children by Travel Time to School and School Arrival Travel Mode:



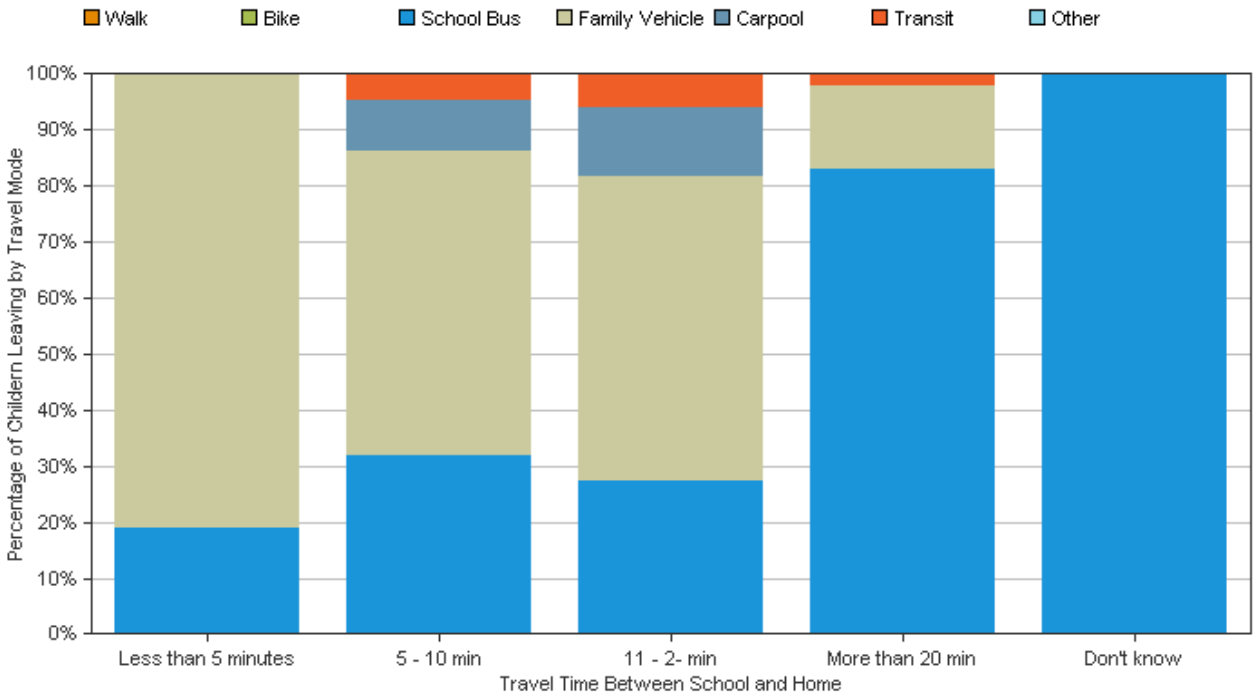

### Number of Children by School Departure Mode and Travel Time from School:

| Travel Mode | Less than 5 min | 5 - 10 min | 11 - 20 min | More than 20 min | Don't know | Row Totals by Mode |
|---|---|---|---|---|---|---|
| Walk | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) |
| Bike | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) |
| School Bus | 4 (3.2%) | 7 (5.6%) | 9 (7.3%) | 39 (31.5%) | 1 (0.8%) | 60 (48.4%) |
| Family Vehicle | 17 (13.7%) | 12 (9.7%) | 18 (14.5%) | 7 (5.6%) | 0 (0%) | 54 (43.5%) |
| Carpool | 0 (0%) | 2 (1.6%) | 4 (3.2%) | 0 (0%) | 0 (0%) | 6 (4.8%) |
| Transit | 0 (0%) | 1 (0.8%) | 2 (1.6%) | 1 (0.8%) | 0 (0%) | 4 (3.2%) |
| Other | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) |
| **Column Totals by Time** | 21 (16.9%) | 22 (17.7%) | 33 (26.6%) | 47 (37.9%) | 1 (0.8%) | |

*No Response: 16*

(Percentages may not total 100% due to rounding.)

**Percentage of Children by Travel Time from School and School Departure Travel Mode:**




**Number of Children Who Have Asked Their Parent for Permission to Walk or Bike to/from School in the Last Year Separated by Distance They Live from School:**

| Distance from School | Have Asked | Have Not Asked |
|---|---|---|
| Less than 1/4 mile | 2 (1.6%) | 3 (2.3%) |
| 1/4 mile up to 1/2 mile | 0 (0%) | 6 (4.7%) |
| 1/2 mile up to 1 mile | 2 (1.6%) | 11 (8.6%) |
| 1 mile up to 2 miles | 5 (3.9%) | 15 (11.7%) |
| More than 2 miles | 4 (3.1%) | 77 (60.2%) |
| *No Response: 12* | | |

(Percentages may not total 100% due to rounding.)

**Grade When Parent Would Allow Child Walk or Bike to/from School without an Adult Separated by Distance They Live from School:**

| Grade | 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 |
|---|---|---|---|---|---|
| Kindergarten | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) |
| 1st Grade | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) |
| 2nd Grade | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) |
| 3rd Grade | 0 (0%) | 2 (1.7%) | 0 (0%) | 2 (1.7%) | 2 (1.7%) |
| 4th Grade | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 3 (2.5%) |
| 5th Grade | 0 (0%) | 0 (0%) | 1 (0.8%) | 2 (1.7%) | 2 (1.7%) |
| 6th Grade | 0 (0%) | 1 (0.8%) | 0 (0%) | 2 (1.7%) | 6 (5.1%) |
| 7th Grade | 0 (0%) | 0 (0%) | 1 (0.8%) | 3 (2.5%) | 2 (1.7%) |
| 8th Grade | 0 (0%) | 0 (0%) | 1 (0.8%) | 0 (0%) | 2 (1.7%) |
| Not at any Grade | 5 (4.2%) | 2 (1.7%) | 8 (6.8%) | 10 (8.5%) | 58 (49.2%) |
| *No Response: 22* | | | | | |

(Percentages may not total 100% due to rounding.)

**Issues which Affect Parent's Decision to Allow or Not Allow Their Child to Walk or Bike to/from School Separated by Children who Do and Do Not Already Walk or Bike To/From School:**

| Issue | Child walks/bikes to school | Child does not walk/bike to school |
|---|---|---|
| Distance | 0 (0.0%) | 77 (74.0%) |
| Convenience of driving | 0 (0.0%) | 11 (10.6%) |
| Time | 0 (0.0%) | 38 (36.5%) |
| Before/after-school activities | 0 (0.0%) | 14 (13.5%) |
| Traffic speed along route to school | 0 (0.0%) | 67 (64.4%) |
| Traffic volume along route | 0 (0.0%) | 59 (56.7%) |
| Adults to walk/bike with | 0 (0.0%) | 26 (25.0%) |
| Sidewalks or pathways | 0 (0.0%) | 57 (54.8%) |
| Safety of intersections & crossings | 0 (0.0%) | 54 (51.9%) |
| Crossing guards | 0 (0.0%) | 25 (24.0%) |
| Violence or crime | 0 (0.0%) | 38 (36.5%) |
| Weather or climate | 0 (0.0%) | 37 (35.6%) |
| Number of Respondents Per Category | 0 | 104 |
| *No Response: 36* | | |

(Percentages may not total 100% due to rounding.)

**For Parents Whose Children Do Not Walk or Bike to/from School, Number of Parents Responding to question: Would You Probably let Your Child Walk or Bike to/from School Issues Were Changed or Improved?**

| | Number of parents reporting that: | | |
|---|---|---|---|
| **Issue** | **Change Would affect decision** | **Change Would Not affect decision** | **Not Sure if change would affect decision** |
| Distance | 43 (33.9%) | 56 (44.1%) | 27 (21.3%) |
| Convenience of driving | 8 (6.3%) | 39 (30.7%) | 13 (10.2%) |
| Time | 20 (15.7%) | 43 (33.9%) | 16 (12.6%) |
| Before/after-school activities | 10 (7.9%) | 39 (30.7%) | 10 (7.9%) |
| Traffic speed along route to school | 43 (33.9%) | 51 (40.2%) | 23 (18.1%) |
| Traffic volume along route | 37 (29.1%) | 45 (35.4%) | 21 (16.5%) |
| Adults to walk/bike with | 22 (17.3%) | 34 (26.8%) | 13 (10.2%) |
| Sidewalks or pathways | 48 (37.8%) | 39 (30.7%) | 22 (17.3%) |
| Safety of intersections & crossings | 50 (39.4%) | 31 (24.4%) | 18 (14.2%) |
| Crossing guards | 27 (21.3%) | 32 (25.2%) | 15 (11.8%) |
| Violence or crime | 18 (14.2%) | 39 (30.7%) | 13 (10.2%) |
| Weather or climate | 22 (17.3%) | 43 (33.9%) | 12 (9.4%) |
| Number of Respondents That Selected at Least 1 Issue: 127 | | | |
| *No Response: 13* | | | |

(Percentages may not total 100% due to rounding.)

**Number of Parents Who Feel Their Child's School Encourages or Discourages Walking and Biking to/from School:**

| | Strongly Encourage | Encourage | Neutral | Discourage | Strongly Discourage |
|---|---|---|---|---|---|
| Number | 4 (3.3%) | 9 (7.4%) | 94 (77.7%) | 8 (6.6%) | 6 (5.0%) |

*No Response: 19*

**Number of Parents Reporting the Level of Fun Walking and Biking to/from School is for Their Child:**

| | Very Fun | Fun | Neutral | Boring | Very Boring |
|---|---|---|---|---|---|
| Number | 16 (14.5%) | 27 (24.5%) | 59 (53.6%) | 6 (5.5%) | 2 (1.8%) |

*No Response: 30*

**Number of Parents Reporting How Healthy Walking and Biking to/from School is for Their Child:**

| | Very Healthy | Healthy | Neutral | Unhealthy | Very Unhealthy |
|---|---|---|---|---|---|
| **Number** | 52 (44.1%) | 2 (1.7%) | 18 (15.3%) | 2 (1.7%) | 3 (2.7%) |

*No Response: 22*

## Parent Comments

This table displays the comments provided by parents as part of this Parent Survey. These comments have been entered in two ways — they may have been entered by the local program, or they may have been scanned and processed by the National Center for Safe Routes to School (NCSRTS). Comments scanned and processed by NCSRTS may have not been edited for content, spelling, and other typographical errors that may have as part of the scanning and handwriting recognition process.

Comments from: Grady Brown Elementary

| SurveyID | Comment |
|---|---|
| 1667461 | PEOPLE DRIVING CARS BLOW THROUGH THE SCHOOL BUS STOP ARM I CAN'T IMAGINE PUTTING ANY OF MY CHILDREN ON THE ROAD WALKING OR BIKING GAB - IS IN ABAD LOCATION FOR THAT. |
| 1667466 | I'D LOVE TO SEE MORE WALKABILITY IN OUR COMMUNITY. I'D LOVE TO BENEFIT OF COURSE BUT WOULD BE HAPPY ENOUGH TO SEE MORE PEOPLE OUT WALKING! |
| 1667469 | ORANGE GROVE RD IS TOO BUSY FOR CHILDREN TO BE WALKING OR RIDING BIKES TO SCHOOL EVEN IF SIDEWALKS ARE PROVIDED. |
| 1667472 | WE ARE AT THE OUTER LIMIT FOR THE SCHOOL BUT WOULD SUPPORT ANY PLAN TO HELP STUDENTS WALK OR BIKE TO SCHOOL SAFELY. |
| 1667474 | BUS ROUTES NEED WORK. MY CHILD LEAVES FOR SCHOOL AT 6:50 FOR A 15-20 MINUTE BUS RIDE AND HER SCHOOL CONVENES @ 7:55. WAY TOO EARLY. EVEN WORSE MY SON @ GRAVELLY GETS ON THE BUS @ 6:45 TO CONVENE AT SCHOOL AT 8:20 - NOT GOOD |
| 1667480 | QUESTION #13 - TOO FAR! |
| 1667484 | IF WE LIVED CLOSE ENOUGH WE DEFINITELY COULD WALK OR BIKE. |
| 1667491 | WE LIVE 10 MILES AWAY FROM SCHOOL SO IT IS NOT POSSIBLE FOR MY CHILD TO WALK TO SCHOOL |
| 1667504 | WE LIVE 13 MILES FROM THE SCHOOL. SHEER DISTANCE PREVENTS WALKING & BIKING |
| 1667506 | QUESTION #10 - NO SIDEWALKS! |
| 1667507 | AN AERIAL WALKWAY FROM CRHS TO BRADY BROWN WOULD BE MORE HELPFUL THAN SIDEWALKS AT THIS POINT ESPECIALLY IF FUNDING IS AN ISSUE. DISAPPOINTED NOT TO SEE COST REDUCTION TO SCHOOL DISTRICT IF FEWER BUSES ARE NEEDED. QUESTION #9 - ROAD TRAFFIC IS TOO FAST!! |
| 1667508 | WE LIVE TOO FAR FROM ALL SCHOOLS FOR WALKING/BIKING TO BE APPROPRIATE (5+ MILES FROM ELEMENTARY ~ 8 MILES FROM MIDDLE) |
| 1667509 | WE LIVE TOO FAR AWAY TO EVER BIKE/WALK TO SCHOOL. I DO THINK THAT THOSE THAT CAN BIKE/WALK SHOULD BE ABLE TO DO SO AND SAFELY! |
| 1667512 | IT SEEMS TO ME THAT MOST KIDS LIVE TOO FAR FROM THE SCHOOL (GAB) TO WALK. QUESTION #14 - SHE WOULD HAVE TO WALK BACK AS SOON AS SHE GET THERE |
| 1667514 | MY CHILD LIVES TOO FAR FROM HER SCHOOL FOR WALKING OR BIKING TO EVER BE AN OPTION. |

| | |
|---|---|
| 1667515 | WE LIVE ON THE FAR SIDE OF THE COUNTY. BUT I DO THINK THIS IS IMPORTANT FOR THOSE WHO LIVE CLOSER TO THE SCHOOL - MAINLY SIDEWALKS AND BIKE LANES. I THINK MANY PEOPLE WOULD LIKE/ENJOY TO WALK WITH THEIR CHILD TO SCHOOL. FOR GRADY BROWN THIS WOULD ALSO HELP STUDENTS IN H.S. QUESTION #10 - DISTANCE-NOT MUCH YOU CAN DO ABOUT THIS |
| 1667517 | ES UNO BUENA OBSION PARO LOS NINOS QUE LES GUSTA SALIR EN BISICLETAS Y MOS QUE NADA PARA SALIR A CAMINAR CONELLOS PARO LA ESCUELA |
| 1667519 | ESTARIA PERFECTO QUE MI HIJA PUDIERA VIAJAR EN BICICLETA ALA ESCUELA PERO ESTAMOS MUY LEJOS DE LA ESCUELA. |
| 1667520 | WE LIVE TOO FAR (12.5 MI.) FROM GAB FOR US TO EVEN CONSIDER OUR 1ST GRADER TO WALK. WE REALLY NEED A SOUTH COUNTY ELEM. SCHOOL. ALL SCHOOLS ARE CONCENTRATED NEAR HILLSBOROUGH. |
| 1667528 | TOO FAR TO WALK OR BIKE DON'T KNOW MANY AT GRADY BROWN THAT WOULD. QUESTION #10 - 12 MILES FROM SCHOOL |
| 1667529 | MI OPINON ES. QUE LOS NINOS EVON MAS CEGUROS EN EL AUTOBUS POR QUE ASI NO COREN NINGON PELIGRO. |
| 1667530 | NO MEGUSTARIA QUE MI NINA CAMINE ALA ESCUELA ME ES MAS FACIL LLEVARLA EN MI CARRO ES MAS COMODO Y PARA MI NO ME PREOCUPO DE QUE LE VALLA A PASAR ALGO |
| 1667531 | WE ARE NOT IN WALKING DISTANCE OF HIS SCHOOL. THERE IS NO WAY FOR HIM TO WALKING OR BIKE 10 MILES. |
| 1667534 | BUENO YO PIENSP QUE ES MUY SARA DIVERTIDO PARO NO ESTOY SEGURA PARA QUE ANDEN SOLOS EN BISICLETA POR LOS AUTOS AY POCA PANQUETA PARA ANDAR CON BISICLETA. |
| 1667536 | BIKE SAFETY PROGRAMS SPONSORED BY SCHOOL OR PTA AND BIKE RACKS ETC WOULD ALSO MAKE THIS MORE OF AN OPTION. |
| 1667539 | I WOULDNOT LET MY CHILD WALK OR BIKE TO SCHOOL UNTIL SHE WAS MUCH OLDER FOR SAFETY REASONS. WE WOULD ALSO NEED TO LIVE CLOSER AND HAVE ADULT SUPERVISION FOR WHOLE ROUTE. |
| 1667540 | MY CHILD IS TO YOUNG TO WALK BY HERSELF. BUT IF SIDEWALKS WERE PUT IN PLACE WE WOULD WALK WITH HER SHE LOVES TO WALK. |
| 1667541 | I DO NOT FEEL THAT BIKE ROUTES NEED TO BE PLACED IN THE AREA OF GRADY A BROWN. I'D RATHER SEE A BETTER PARKING LOT FORMED. |
| 1667542 | UNDER NO CIRCUMSTANCES WILL HE WALK OR RIDE A BIKE ON OAKDALE DRIVE & ORANGE GROVE ROAD |
| 1667546 | WALKING OR RIDING TO SCHOOL IS NOT AN OPTION FOR MY CHILDREN WHO LIVE 18 MILE FROM SCHOOL. HOWEVER I AM CONCERNED FOR THE SAFETY OF THOSE CHILDREN I SEE WALKING OR RIDING TO SCHOOL. |
| 1667549 | OUR CHILD IS A TRANSFER STUDENT SO THIS SURVEY DOESN'T APPLY TO US DUE TO THE DISTANCE. |
| 1667550 | WE STRONGLY ENCOURAGE KIDS TO BE ABLE TO WALK & BIKE MORE PLACES. |
| 1667554 | PEOPLE DRIVE LIKE IDIOTS ON ORANGE GROVE RD AM & PM TO & FROM SCHOOL. I THINK ITS VERY WRONG FOR ANY OF THE KIDS TO WALK TO & FROM SCHOOL K-12 IN THAT AREA. |

| | |
|---|---|
| 1667556 | QUESTION #9 - W/OTHER KIDS!! BUT I WOULD STILL FEEL UNCOMFORT. B/C OF PREDATORS |
| 1667560 | WE WOULD LOVE TO SEE A SIDEWALK ALONG OAKDALE & ORANGE GROVE RD. MY CHILDREN (CRHS HIGH SCHOOL & GAB ELEM.) WOULD LOVE TO RIDE THEIR BIKES BUT THE ROUTE IS ALONG TWO LANE ROADS NO SIDEWALKS. PLEASE CONSIDER THIS. THANKS! |
| 1667567 | CAN'T REALLY ANSWER BACK QUESTIONS BECAUSE WE LIVE 23 MILES FROM SCHOOL & HE WOULD NEVER WALK. |
| 1667569 | SIDEWALKS ALONG ORANGE GROVE WOULD GREATLY IMPROVE THE HEALTH OF ALL OUR CHILDREN. OUR STREET HAS 12 CHILDREN THAT ATTEND ORANGE COUNTY SCHOOLS. THEY COULD WALK/RIDE TOGETHER. |
| 1667570 | #9. ORANGE GROVE RD IS A VERY DANGEROUS ROAD. CARS ALWAYS EXCEED THE SPEED LIMIT & A HIGH SCHOOL GIRL WAS WALKING TO SCHOOL & GOT HIT IN FRONT OF OUR HOUSE A YEAR AGO - THIS ROAD IS NOT SAFE! THE SPEED LIMIT IS NOT ENFORCED ON OUR ROAD! NEAR THE SCHOOL. |
| 1667571 | #13 - IF WE DON'T WALK/RIDE ALREADY HOW DO WE KNOW HOW FUN IT WOULD BE? #14 - IS THIS A "DUH" QUESTION? #12 - GAB HAS NO BIKE RACKS ETC THAT WE'RE AWARE OF. BUT THEN AGAIN SHE'S ONLY IN 1ST GRADE SO SHE WOULDN'T WALK/RIDE ANYWAY. #10 - NEEDS AN AGE CHOICE |
| 1667573 | ME AND MY DAUGHTER WOULD WALK IF THERE WERE SIDEWALKS NOW! I WOULD STRONGLY ENCOURAGE HER TO WALK WITH ME TO SCHOOL. |
| 1667575 | WE LIVE TO FAR FOR BIKE OR WALKING TO SCHOOL. |
| 1667576 | MOST QUESTIONS ABOVE DON'T APPLY BECAUSE OF THE DISTANCE FROM THE SCHOOL. WOULD ANSWER DIFFERENTLY IF WE LIVED CLOSER |
| 1667577 | WE LIVE ACROSS TOWN. WALKING OR BIKING WOULD NOT BE AN OPTION FOR US BUT I THINK IT WOULD BE NICE TO HAVE THE OPTION IF WE DID LIVE CLOSER. |
| 1667579 | I WOULD NOT AGREE THAT "MANY" KIDS LIVE CLOSE ENOUGH TO GAB TO WALK OR BIKE EVEN IF THEY DID THE TRAFFIC GOING & OUT OF CEDAR RIDGE WOULD BE TOO DANGEROUS. WE WOULD LOVE TO HAVE A SCHOOL CLOSE ENOUGH TO DO THIS BUT WE LOVE OUR COUNTRY LIVING SO IT IS A TRADE OFF. QUESTION #9 - UNLESS IT WAS OUR NEIGHBORHOOD. QUESTION #10 - WE LIVE TOO FAR |
| 1667580 | I THINK THAT THE WORLD IS WAY TO UNSAFE FOR MY CHILD TO BE WALKING DOWN THE ROAD |
| 1667583 | WE LIVE IN THE COUNTRY & PREFER THAT SPEED HAS BEEN DECREASED IN OUR ROADS ALREADY. WAY TO MANY BIKES ON THESE BUSY COUNTRY ROADS ALREADY TO NOW ADD CHILDREN. SHOULDERS HAVE BEEN EXTENDED. QUESTION #11 - WON'T CHANGE |
| 1667584 | A MI HIJO LE GUSTARIA QUE YO LO LLEVE CAMINANDO A LA ESCUELA PERO COMO NO HAY BANQUETAS NO LO LLEVO CAMINANDO. QUESTION #9 - CON COMPANIA DE UN ADULTO |
| 1667586 | I WORK AT CEDAR RIDGE AND OFTEN WALK ACROSS THE STREET. IT WOULD SAFER TO HAVE A SIDEWALK CONNECTING THE 2 SCHOOLS. WITH A CROSSGUARD PERHAPS HE COULD WALK OVER TO MY SCHOOL AT THE END OF THE DAY. |
| 1667588 | I'D LOVE TO SEE MORE KIDS WALKING/BIKING TO SCHOOL. THERE ARE TOO MANY THAT ARE DRIVEN THERE BY PARENTS |
| 1667596 | WE LIVE TOO FAR AWAY FROM SCHOOL. |

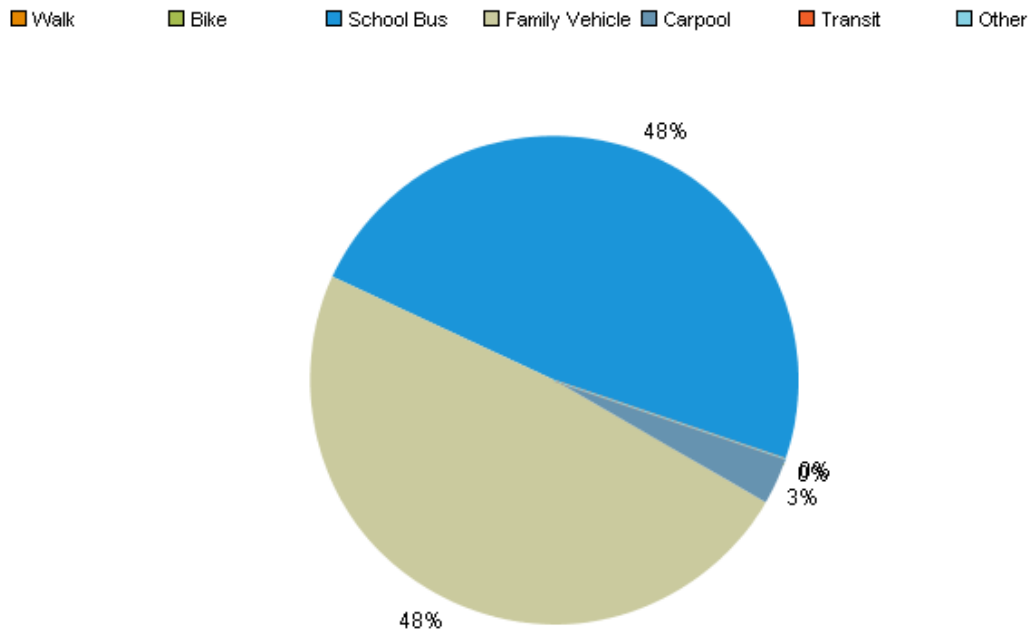
| | |
|---|---|
| 1667597 | IF BIKING TO SCHOOL WERE POSSIBLE SCHOOL WILL ALSO NEED TO CONSIDER THE ADDITIONAL ISSUES SUCH AS BIKE RACKS AVAILABLE AND POSSIBLE CLAIMS OF STOLEN BIKES. |
| 1667598 | WE HAVE BEEN HOPING AND PRAYING FOR BIKE ROUTES AND SIDEWALKS LEADING TO/SURROUNDING GRADY BROWN ELEMENTARY PLEASE PROVIDE THEM FOR THE BENEFIT OF THE COMMUNITY!! |

## End of Report

# Student Travel Summary

| | | | |
|---|---|---|---|
| **Program Name:** | Orange County | **Season Collected:** | Spring2010 |
| **School Name:** | Grady Brown Elementary | **Data Type *(Pre/Mid/Post)*:** | other |
| | | **Reported School Enrollment:** | 0 |
| | | **Number Classrooms:** | 0 |
| | | **Number of Tallies Reported:** | 23 |

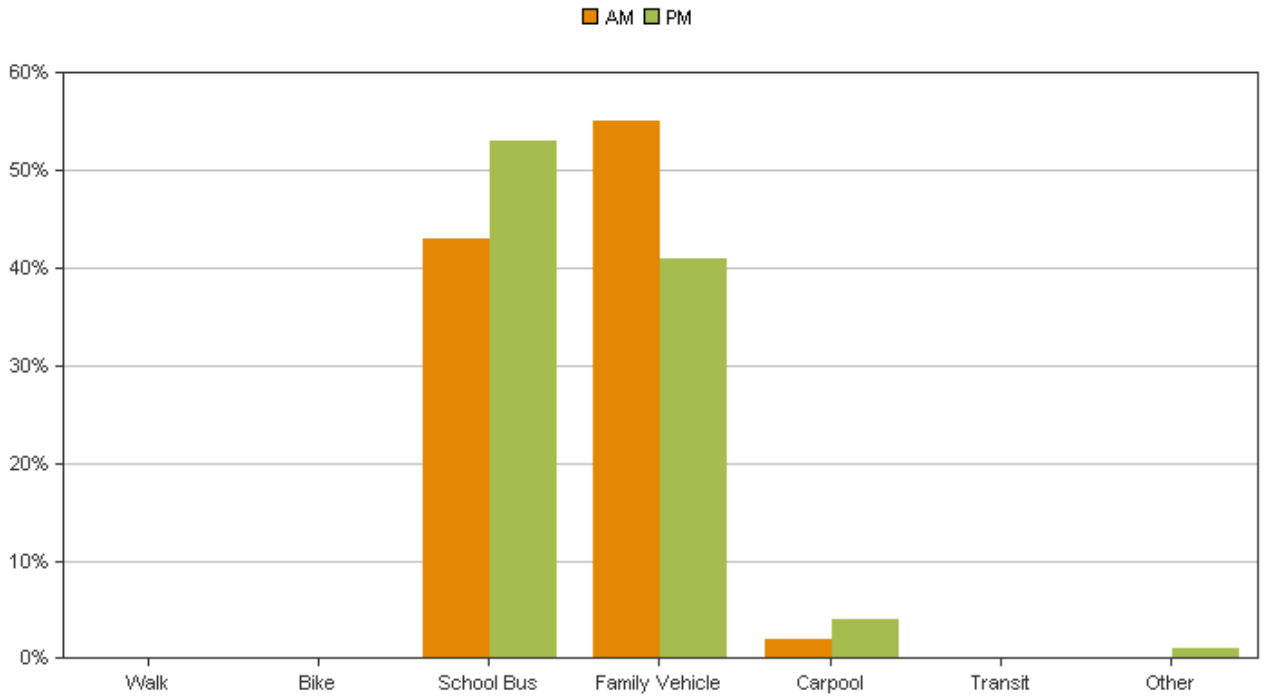
## Students Traveling by Each Mode (across all reported days)




| | Walk | Bike | School Bus | Family Vehicle | Carpool | Transit | Other |
|---|---|---|---|---|---|---|---|
| **Average Number of Student Trips for Morning and Afternoon** | 0.3 | 0.0 | 201.2 | 202.0 | 12.7 | 0.3 | 1.3 |
| **Percent** | 0.1% | 0.0% | 48.1% | 48.3% | 3.0% | 0.1% | 0.3% |

Average number of students per day responding to in-class tally counts: **417.8**

### Morning to Afternoon Travel Mode Comparison




| | Walk | Bike | School Bus | Family Vehicle | Carpool | Transit | Other |
|---|---|---|---|---|---|---|---|
| **Morning** | 0.2% | 0.0% | 43.1% | 55.2% | 1.6% | 0.0% | 0.0% |
| **Afternoon** | 0.0% | 0.0% | 53.2% | 41.5% | 4.5% | 0.2% | 0.6% |

## Number of students by travel mode to and from school:

| | Number of Students | Walk | Bike | School Bus | Family Vehicle | Carpool | Transit | Other |
|---|---|---|---|---|---|---|---|---|
| **Tues AM** | 432 | 0 | 0 | 184 | 239 | 9 | 0 | 0 |
| **Tues PM** | 422 | 0 | 0 | 232 | 169 | 17 | 1 | 3 |
| **Wed AM** | 429 | 2 | 0 | 186 | 235 | 6 | 0 | 0 |
| **Wed PM** | 426 | 0 | 0 | 223 | 181 | 20 | 0 | 2 |
| **Thur AM** | 399 | 0 | 0 | 173 | 221 | 5 | 0 | 0 |
| **Thur PM** | 399 | 0 | 0 | 209 | 167 | 19 | 1 | 3 |

## Averages for classes submitting travel tallies:

| | Number of Students | Walk | Bike | School Bus | Family Vehicle | Carpool | Transit | Other |
|---|---|---|---|---|---|---|---|---|
| **Tues AM** | 18.8 | 0.0 | 0.0 | 8.0 | 10.4 | 0.4 | 0.0 | 0.0 |
| **Tues PM** | 18.3 | 0.0 | 0.0 | 10.1 | 7.3 | 0.7 | 0.0 | 0.1 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Wed AM** | 18.7 | 0.1 | 0.0 | 8.1 | 10.2 | 0.3 | 0.0 | 0.0 |
| **Wed PM** | 18.5 | 0.0 | 0.0 | 9.7 | 7.9 | 0.9 | 0.0 | 0.1 |
| **Thur AM** | 17.3 | 0.0 | 0.0 | 7.5 | 9.6 | 0.2 | 0.0 | 0.0 |
| **Thur PM** | 17.3 | 0.0 | 0.0 | 9.1 | 7.3 | 0.8 | 0.0 | 0.1 |

## Percentages of students by travel mode to and from school:

| | Number of Students | Walk | Bike | School Bus | Family Vehicle | Carpool | Transit | Other |
|---|---|---|---|---|---|---|---|---|
| **Tues AM** | 432 | 0.0% | 0.0% | 42.6% | 55.3% | 2.1% | 0.0% | 0.0% |
| **Tues PM** | 422 | 0.0% | 0.0% | 55.0% | 40.0% | 4.0% | 0.2% | 0.7% |
| **Wed AM** | 429 | 0.5% | 0.0% | 43.4% | 54.8% | 1.4% | 0.0% | 0.0% |
| **Wed PM** | 426 | 0.0% | 0.0% | 52.3% | 42.5% | 4.7% | 0.0% | 0.5% |
| **Thur AM** | 399 | 0.0% | 0.0% | 43.4% | 55.4% | 1.3% | 0.0% | 0.0% |
| **Thur PM** | 399 | 0.0% | 0.0% | 52.4% | 41.9% | 4.8% | 0.3% | 0.8% |

## End of Report

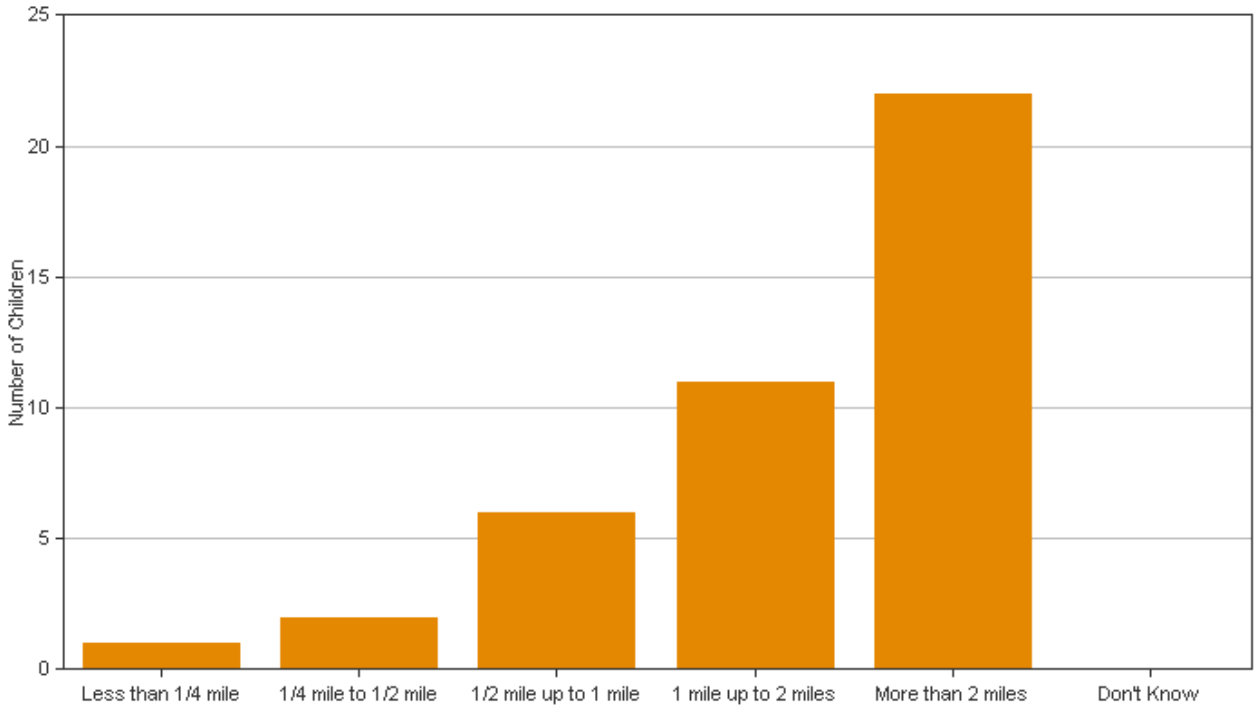
# Parent Survey Summary Report:

## Process Summary Information:

| | | | |
|---|---|---|---|
| **Program Name:** | Orange County | **Survey Data Collected:** | Spring2010 |
| **School Name:** | C.W. Stanford Middle | **Data Collection Phase:** (pre = Before program began mid = During program; post = After program ended) | other |
| **Reported Enrollment:** | 0 | **Number of Surveys Distributed:** | 0 |
| **Date Report Generated:** | 05/27/2010 | **Number of Surveys in Report:** | 43 |

This report provides information from parents about their perceptions and attitudes on their child walking and bicycling to school. 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.

### Number of Children by Distance They Live From School:

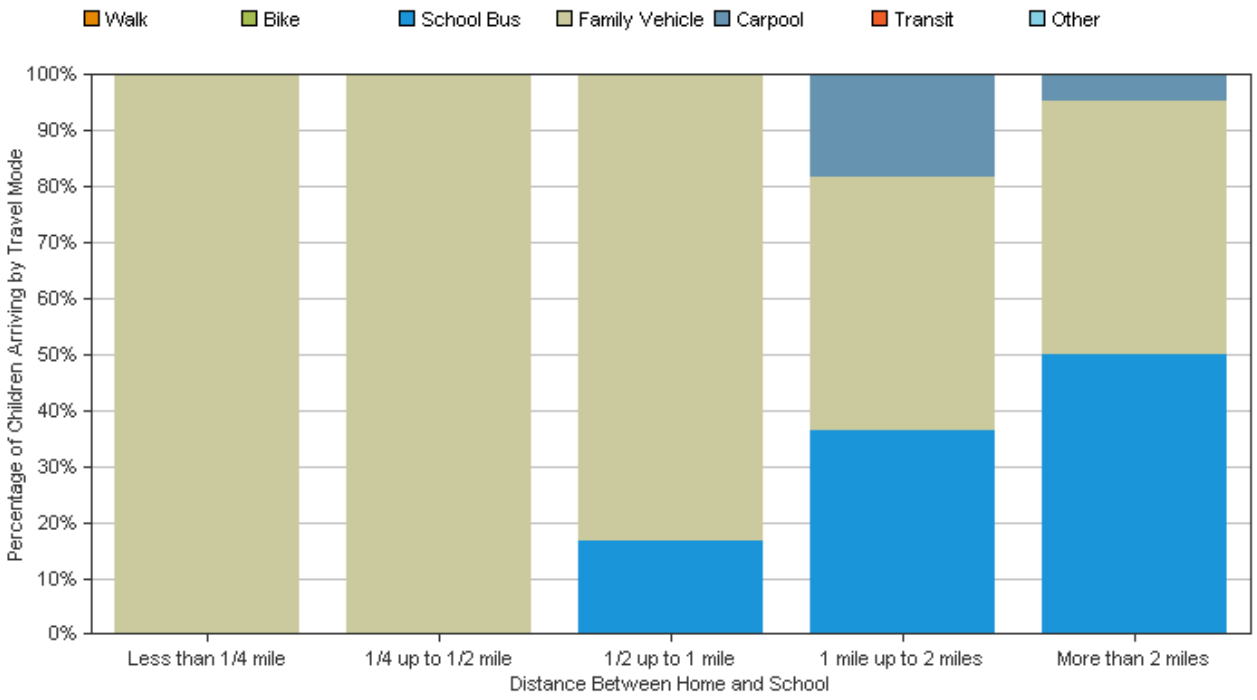



### Number of Children by Distance They Live From School:

| Distance from School | Number of Children |
|---|---|
| Less than 1/4 mile | 1 (2.4%) |
| 1/4 mile up to 1/2 mile | 2 (4.8%) |
| 1/2 mile up to 1 mile | 6 (14.3%) |
| 1 mile up to 2 miles | 11 (26.2%) |
| More than 2 miles | 22 (52.4%) |
| Don't know | 0 (0%) |
| No response: 1 | |

(Percentages may not total 100% due to rounding.)

### Percentage of Children by Travel Mode to School and Distance Between Home and School:



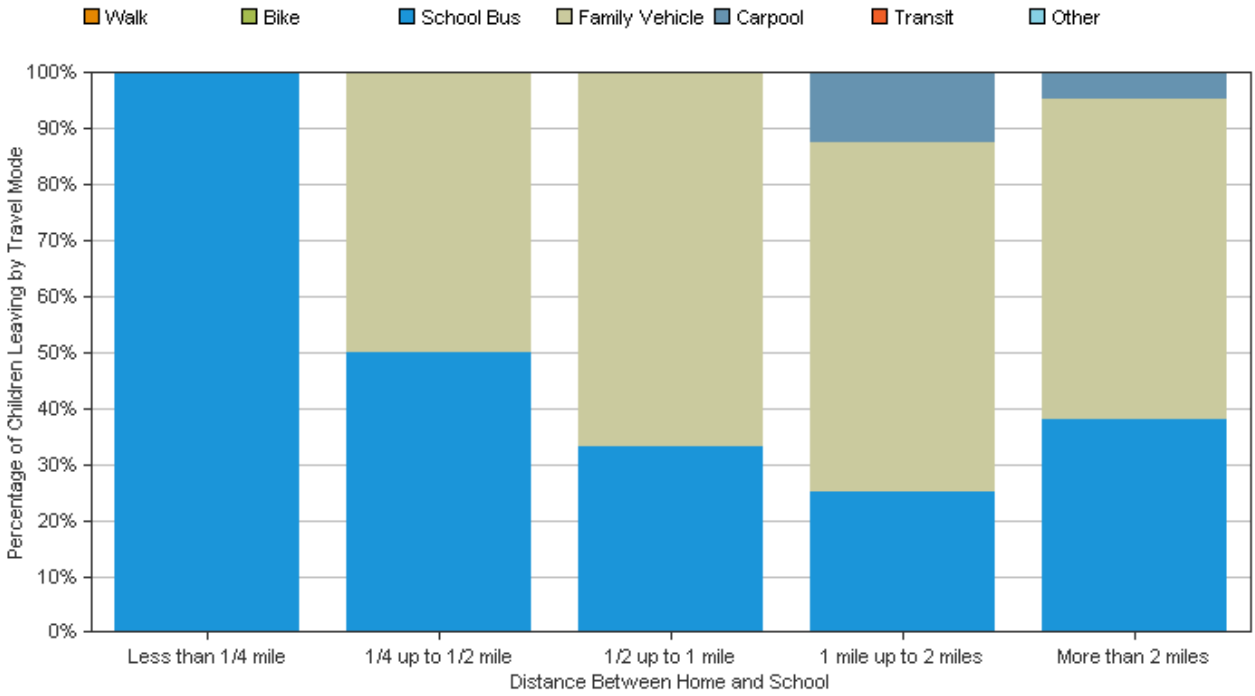

### Number of Children by Travel Mode to School and Distance Between Home and School:

| Mode | 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 | Row Totals by Mode |
|---|---|---|---|---|---|---|
| Walk | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) |
| Bike | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) |
| School Bus | 0 (0%) | 0 (0%) | 1 (2.4%) | 4 (9.5%) | 11 (26.2%) | 16 (38.1%) |
| Family Vehicle | 1 (2.4%) | 2 (4.8%) | 5 (11.9%) | 5 (11.9%) | 10 (23.8%) | 23 (54.8%) |
| Carpool | 0 (0%) | 0 (0%) | 0 (0%) | 2 (4.8%) | 1 (2.4%) | 3 (7.2%) |
| Transit | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) |
| Other | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) |
| **Column Totals by Distance** | 1 (2.4%) | 2 (4.8%) | 6 (14.3%) | 11 (26.2%) | 22 (52.4%) | |

*No Response: 1*

(Percentages may not total 100% due to rounding.)

**Percentage of Children by Travel Mode from School and Distance Between Home and School:**




**Number of Children by Travel Mode from School and Distance Between School and Home:**

| Mode | 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 | Row Totals by Mode |
|---|---|---|---|---|---|---|
| Walk | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) |
| Bike | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) |
| School Bus | 1 (2.6%) | 1 (2.6%) | 2 (5.3%) | 2 (5.3%) | 8 (21.1%) | 14 (36.9%) |
| Family Vehicle | 0 (0%) | 1 (2.6%) | 4 (10.5%) | 5 (13.2%) | 12 (31.6%) | 22 (57.9%) |
| Carpool | 0 (0%) | 0 (0%) | 0 (0%) | 1 (2.6%) | 1 (2.6%) | 2 (5.2%) |
| Transit | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) |
| Other | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) |
| **Column Totals by Distance** | 1 (2.6%) | 2 (5.2%) | 6 (15.8%) | 8 (21.1%) | 21 (55.3%) | |

*No Response: 5*

(Percentages may not total 100% due to rounding.)

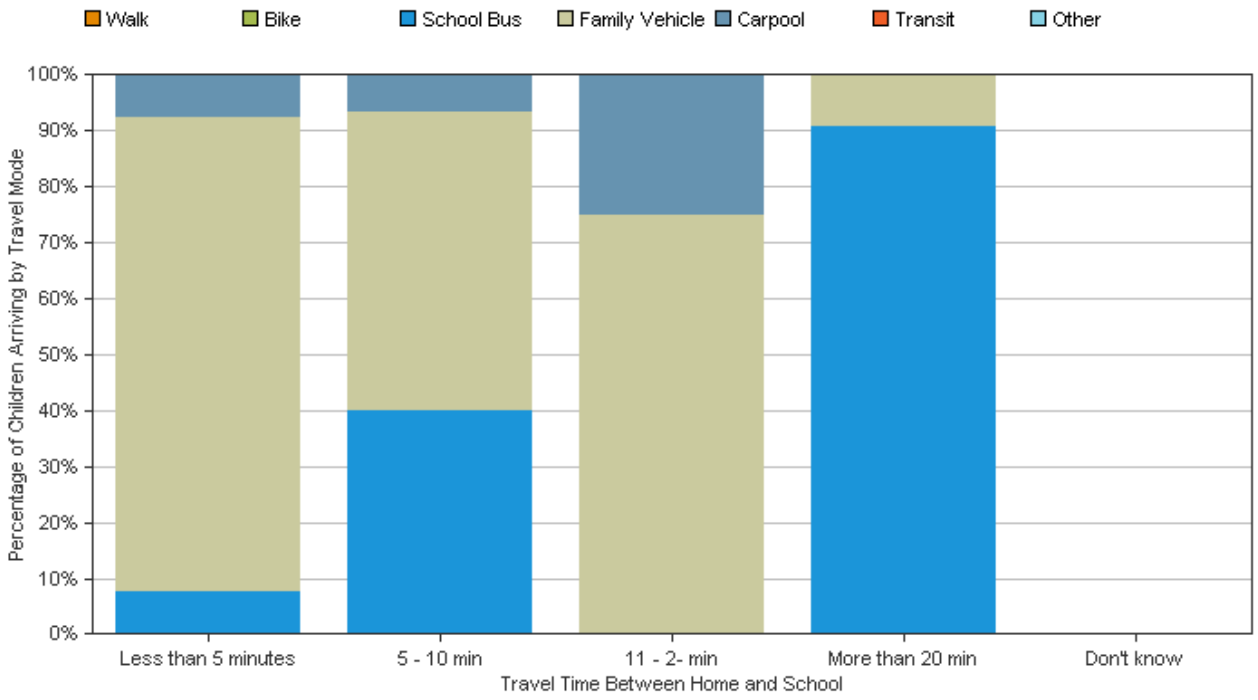
**Number of Children by School Arrival Travel Mode and Travel Time to School:**

| Travel Mode | Less than 5 min | 5 - 10 min | 11 - 20 min | More than 20 min | Don't know | Row Totals by Mode |
|---|---|---|---|---|---|---|
| Walk | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) |
| Bike | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) |
| School Bus | 1 (2.3%) | 6 (14.0%) | 0 (0%) | 10 (23.3%) | 0 (0%) | 17 (39.6%) |
| Family Vehicle | 11 (25.6%) | 8 (18.6%) | 3 (7.0%) | 1 (2.3%) | 0 (0%) | 23 (53.5%) |
| Carpool | 1 (2.3%) | 1 (2.3%) | 1 (2.3%) | 0 (0%) | 0 (0%) | 3 (6.9%) |
| Transit | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) |
| Other | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) |
| **Column Totals by Time** | 13 (30.2%) | 15 (34.9%) | 4 (9.3%) | 11 (25.6%) | 0 (0%) | |

*No Response: 0*

(Percentages may not total 100% due to rounding.)

### Percentage of Children by Travel Time to School and School Arrival Travel Mode:



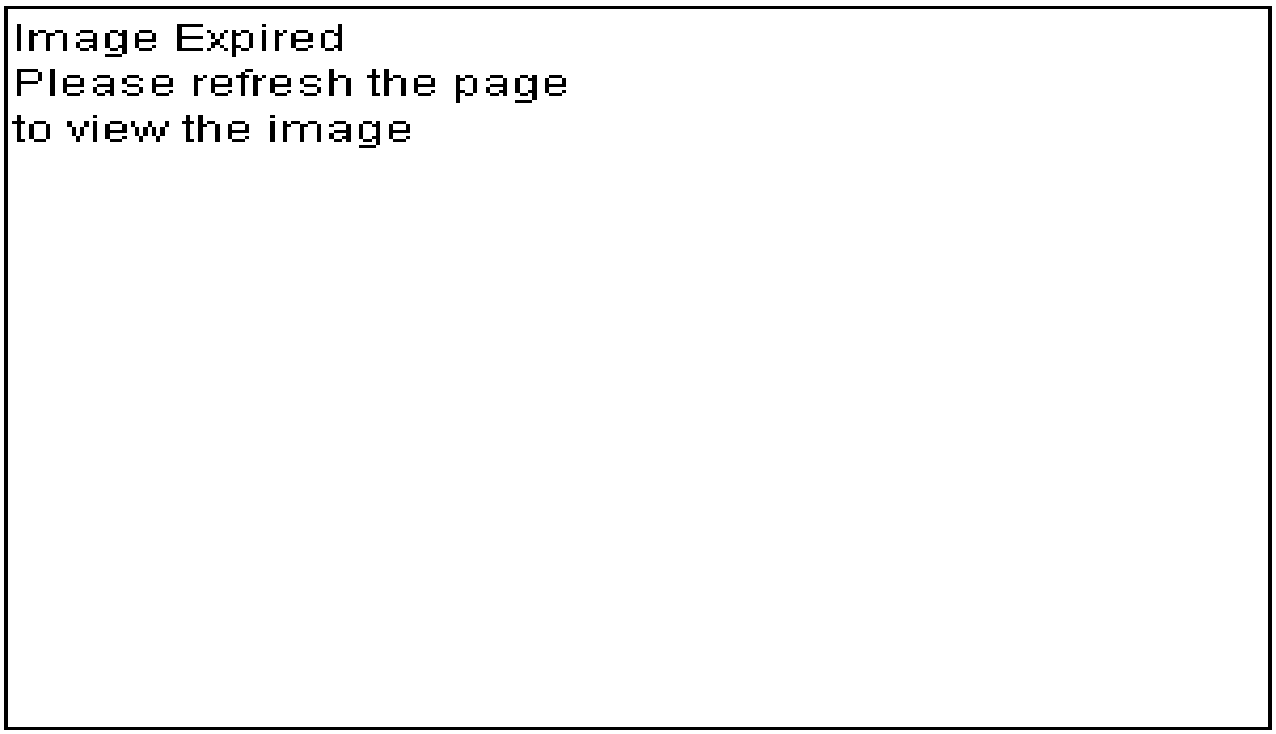

### Number of Children by School Departure Mode and Travel Time from School:

| Travel Mode | Less than 5 min | 5 - 10 min | 11 - 20 min | More than 20 min | Don't know | Row Totals by Mode |
|---|---|---|---|---|---|---|
| Walk | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) |
| Bike | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) |
| School Bus | 2 (5.4%) | 3 (8.1%) | 1 (2.7%) | 8 (21.6%) | 0 (0%) | 14 (37.8%) |
| Family Vehicle | 6 (16.2%) | 9 (24.3%) | 5 (13.5%) | 1 (2.7%) | 0 (0%) | 21 (56.7%) |
| Carpool | 1 (2.7%) | 1 (2.7%) | 0 (0%) | 0 (0%) | 0 (0%) | 2 (5.4%) |
| Transit | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) |
| Other | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) |
| **Column Totals by Time** | 9 (24.3%) | 13 (35.1%) | 6 (16.2%) | 9 (24.3%) | 0 (0%) | |

*No Response: 6*

(Percentages may not total 100% due to rounding.)

**Percentage of Children by Travel Time from School and School Departure Travel Mode:**




**Number of Children Who Have Asked Their Parent for Permission to Walk or Bike to/from School in the Last Year Separated by Distance They Live from School:**

| Distance from School | Have Asked | Have Not Asked |
|---|---|---|
| Less than 1/4 mile | 0 (0%) | 1 (2.4%) |
| 1/4 mile up to 1/2 mile | 1 (2.4%) | 1 (2.4%) |
| 1/2 mile up to 1 mile | 3 (7.3%) | 3 (7.3%) |
| 1 mile up to 2 miles | 2 (4.9%) | 9 (22.0%) |
| More than 2 miles | 0 (0%) | 21 (51.2%) |
| *No Response: 2* | | |

(Percentages may not total 100% due to rounding.)

**Grade When Parent Would Allow Child Walk or Bike to/from School without an Adult Separated by Distance They Live from School:**

| Grade | 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 |
|---|---|---|---|---|---|
| Kindergarten | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) |
| 1st Grade | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) |
| 2nd Grade | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) |
| 3rd Grade | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) |
| 4th Grade | 0 (0%) | 1 (2.7%) | 0 (0%) | 0 (0%) | 0 (0%) |
| 5th Grade | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 1 (2.7%) |
| 6th Grade | 0 (0%) | 0 (0%) | 1 (2.7%) | 2 (5.4%) | 0 (0%) |
| 7th Grade | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 1 (2.7%) |
| 8th Grade | 1 (2.7%) | 0 (0%) | 0 (0%) | 0 (0%) | 1 (2.7%) |
| Not at any Grade | 0 (0%) | 1 (2.7%) | 3 (8.1%) | 7 (18.9%) | 18 (48.6%) |
| *No Response: 6* | | | | | |

(Percentages may not total 100% due to rounding.)

**Issues which Affect Parent's Decision to Allow or Not Allow Their Child to Walk or Bike to/from School Separated by Children who Do and Do Not Already Walk or Bike To/From School:**

| Issue | Child walks/bikes to school | Child does not walk/bike to school |
|---|---|---|
| Distance | 0 (0.0%) | 19 (59.4%) |
| Convenience of driving | 0 (0.0%) | 5 (15.6%) |
| Time | 0 (0.0%) | 8 (25.0%) |
| Before/after-school activities | 0 (0.0%) | 9 (28.1%) |
| Traffic speed along route to school | 0 (0.0%) | 26 (81.3%) |
| Traffic volume along route | 0 (0.0%) | 25 (78.1%) |
| Adults to walk/bike with | 0 (0.0%) | 6 (18.8%) |
| Sidewalks or pathways | 0 (0.0%) | 16 (50.0%) |
| Safety of intersections & crossings | 0 (0.0%) | 16 (50.0%) |
| Crossing guards | 0 (0.0%) | 8 (25.0%) |
| Violence or crime | 0 (0.0%) | 17 (53.1%) |
| Weather or climate | 0 (0.0%) | 17 (53.1%) |
| Number of Respondents Per Category | 0 | 32 |
| *No Response: 11* | | |

(Percentages may not total 100% due to rounding.)

**For Parents Whose Children Do Not Walk or Bike to/from School, Number of Parents Responding to question: Would You Probably let Your Child Walk or Bike to/from School Issues Were Changed or Improved?**

| | Number of parents reporting that: | | |
|---|---|---|---|
| **Issue** | **Change Would affect decision** | **Change Would Not affect decision** | **Not Sure if change would affect decision** |
| Distance | 13 (30.2%) | 24 (55.8%) | 9 (20.9%) |
| Convenience of driving | 5 (11.6%) | 21 (48.8%) | 8 (18.6%) |
| Time | 10 (23.3%) | 19 (44.2%) | 6 (14.0%) |
| Before/after-school activities | 7 (16.3%) | 20 (46.5%) | 6 (14.0%) |
| Traffic speed along route to school | 18 (41.9%) | 18 (41.9%) | 5 (11.6%) |
| Traffic volume along route | 18 (41.9%) | 19 (44.2%) | 5 (11.6%) |
| Adults to walk/bike with | 11 (25.6%) | 16 (37.2%) | 6 (14.0%) |
| Sidewalks or pathways | 22 (51.2%) | 12 (27.9%) | 3 (7.0%) |
| Safety of intersections & crossings | 22 (51.2%) | 12 (27.9%) | 3 (7.0%) |
| Crossing guards | 15 (34.9%) | 15 (34.9%) | 5 (11.6%) |
| Violence or crime | 10 (23.3%) | 18 (41.9%) | 10 (23.3%) |
| Weather or climate | 9 (20.9%) | 20 (46.5%) | 9 (20.9%) |
| Number of Respondents That Selected at Least 1 Issue: 43 | | | |
| *No Response: 0* | | | |

(Percentages may not total 100% due to rounding.)

**Number of Parents Who Feel Their Child's School Encourages or Discourages Walking and Biking to/from School:**

| | Strongly Encourage | Encourage | Neutral | Discourage | Strongly Discourage |
|---|---|---|---|---|---|
| Number | 0 (0%) | 2 (4.8%) | 33 (78.6%) | 3 (7.1%) | 4 (9.5%) |

*No Response: 1*

**Number of Parents Reporting the Level of Fun Walking and Biking to/from School is for Their Child:**

| | Very Fun | Fun | Neutral | Boring | Very Boring |
|---|---|---|---|---|---|
| Number | 1 (2.8%) | 9 (25.0%) | 19 (52.8%) | 1 (2.8%) | 6 (16.7%) |

*No Response: 7*

**Number of Parents Reporting How Healthy Walking and Biking to/from School is for Their Child:**

| | Very Healthy | Healthy | Neutral | Unhealthy | Very Unhealthy |
|---|---|---|---|---|---|
| **Number** | 16 (43.2%) | 11 (29.7%) | 9 (24.3%) | 0 (0%) | 1 (2.8%) |

*No Response: 6*

## Parent Comments

This table displays the comments provided by parents as part of this Parent Survey. These comments have been entered in two ways — they may have been entered by the local program, or they may have been scanned and processed by the National Center for Safe Routes to School (NCSRTS). Comments scanned and processed by NCSRTS may have not been edited for content, spelling, and other typographical errors that may have as part of the scanning and handwriting recognition process.

Comments from: C.W. Stanford Middle

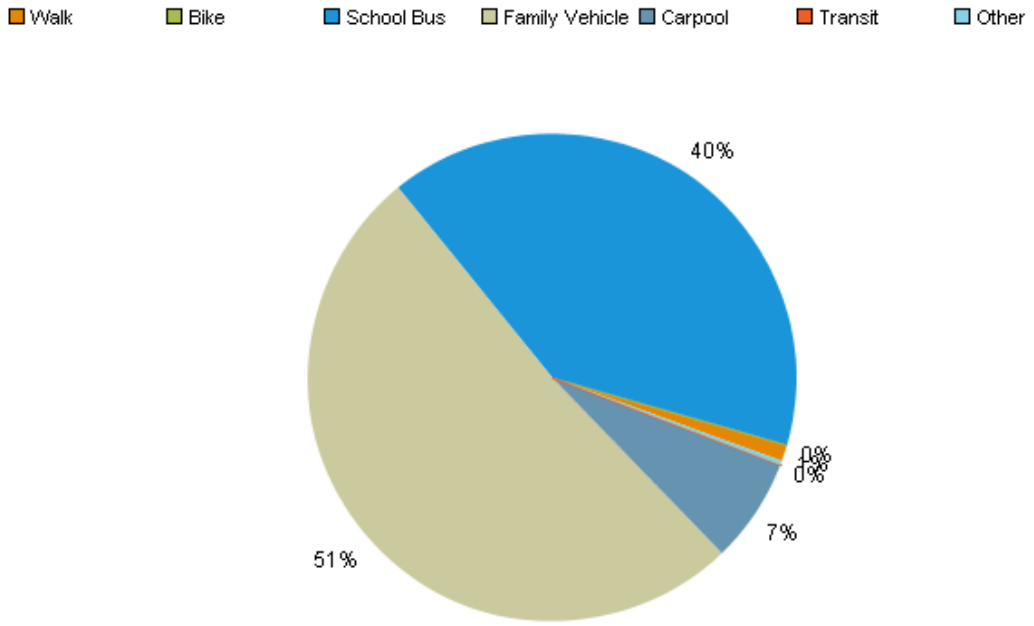
| SurveyID | Comment |
|---|---|
| 1667416 | SIDEWALKS ARE NEEDED AROUND HERE! PEOPLE DRIVE TOO FAST (ESPEC. THE HIGH SCHOOLERS) ON THESE SIDE STREETS. OUR STREET IS A SPEED LIMIT OF 25 BUT 99% GO ABOUT 40 OR HIGHER! |
| 1667417 | WE LIVE IN WAKE COUNTY THEREFORE IT WOULD BE IMPOSSIBLE FOR MY CHILD TO WALK OR BIKE TO SCHOOL. |
| 1667419 | SIDEWALKS ARE DESPERATELY NEEDED ON MILLER ROAD AND ORANGE HIGH ROAD. VEHICLES GO MUCH TOO FAST ON BOTH ROADS (ESPECIALLY TEEN DRIVERS) |
| 1667422 | BECAUSE WE LIVE TOO FAR AWAY FROM SCHOOL MY CHILD WILL NOT BE ABLE TO WALK NOR BIKE TO SCHOOL. IF WE LIVE A MILE OR 2 AWAY THEN I'LL PROBABLY LET THE KID BIKE TO SCHOOL! |
| 1667424 | WE DO RIDE BIKES INTO TOWN ON THE WEEKENDS BUT HAVING TO AVOID THE TREACHEROUS STRETCH OF ST. MARY'S FROM NEW SHARON TO HWY 70 ADDS MANY MILES TO OUR ROUTE. A SAFE WALKING ROUTE FROM SCHOOL TO TOWN IS MOST NEEDED. |
| 1667426 | QUESTION #14 - DRUG ADDICTS LURK CRAZY DRIVERS |
| 1667429 | NEED SIDEWALKS ON PATHWAYS ON HWY 70 AND SAFETY INTERSECTIONS AND CROSSINGS CONTROL VIOLENCE OR CRIME. |
| 1667431 | MY CHILD RIDE THE BUS WOULDN'T LET HER WALK IF SHE COULD. |
| 1667432 | WHY DOES IT MATTER ABOUT MY EDUCATION? THIS IS INAPROPRIATE. |
| 1667433 | IF WE LIVED IN A LOCATION THAT WAS POSSIBLE TO BIKE TO SCHOOL I'M SURE MY SON WOULD DO SO. THERE IS NO SAFE ROUTE FROM OUR HOUSE TO CW STANFORD THOUGH SO IT'S NOT AN OPTION. IT'S A GREAT IDEA THOUGH TO SUPPORT BIKING/WALKING TO SCHOOL! |
| 1667436 | CROSSING GUARD NOT ON DUTY UNTIL CLOSE TO 8 AM. STUDENT DROPPED AT SCHOOL OR WOULD BIKE BEFORE CROSSING GUARD ON DUTY. CARS SPEED AND FAIL TO SLOW OR STOP ON ORANGE HIGH RD. FOR BIKERS/WALKERS. |
| 1667443 | THIS IS IMPORTANT THANKS FOR SURVEYING. |
| 1667457 | CHILD BAR WALKED HOME BEFORE CUTTING THROUGH THE HIGH SCHOOL. |

## End of Report

# Student Travel Summary

| | | | |
|---|---|---|---|
| **Program Name:** | Orange County | **Season Collected:** | Spring2010 |
| **School Name:** | C.W. Stanford Middle | **Data Type *(Pre/Mid/Post)*:** | other |
| | | **Reported School Enrollment:** | 0 |
| | | **Number Classrooms:** | 0 |
| | | **Number of Tallies Reported:** | 12 |

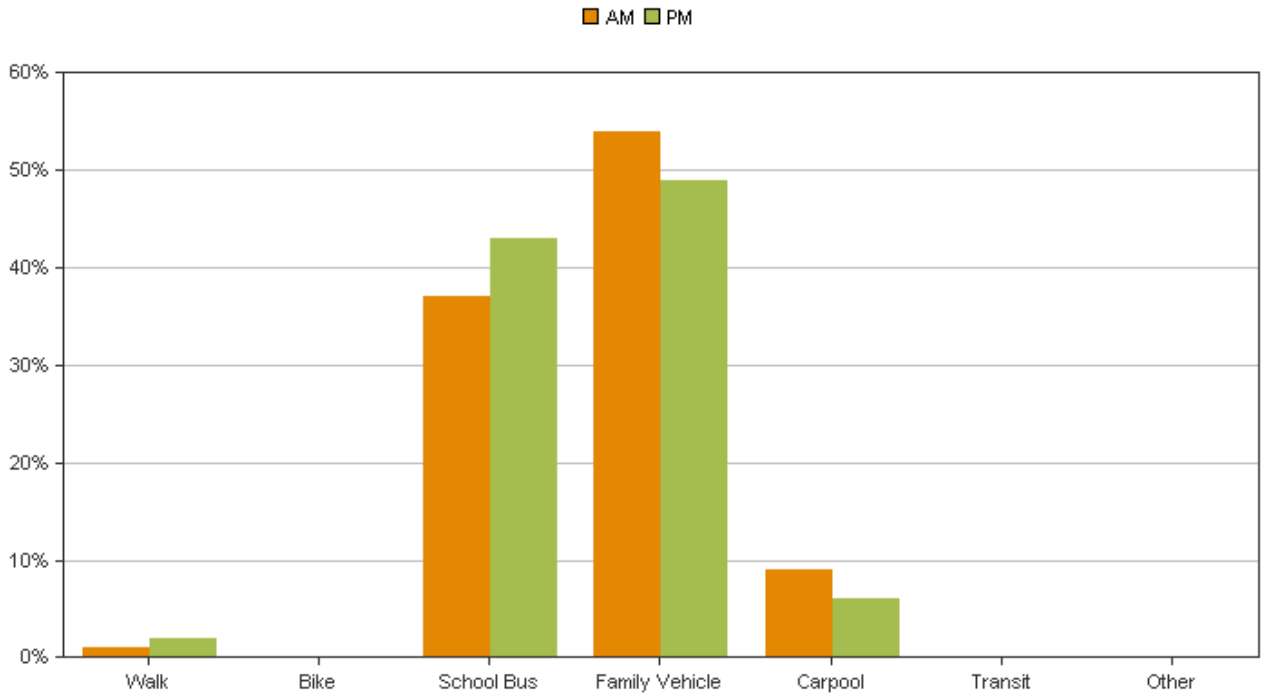
## Students Traveling by Each Mode (across all reported days)




| | Walk | Bike | School Bus | Family Vehicle | Carpool | Transit | Other |
|---|---|---|---|---|---|---|---|
| **Average Number of Student Trips for Morning and Afternoon** | 2.2 | 0.0 | 68.2 | 88.0 | 12.5 | 0.3 | 0.0 |
| **Percent** | 1.3% | 0.0% | 39.8% | 51.4% | 7.3% | 0.2% | 0.0% |

Average number of students per day responding to in-class tally counts: **171.2**

### Morning to Afternoon Travel Mode Comparison




| | Walk | Bike | School Bus | Family Vehicle | Carpool | Transit | Other |
|---|---|---|---|---|---|---|---|
| **Morning** | 0.6% | 0.0% | 36.5% | 54.1% | 8.8% | 0.0% | 0.0% |
| **Afternoon** | 2.0% | 0.0% | 43.3% | 48.6% | 5.8% | 0.4% | 0.0% |

## Number of students by travel mode to and from school:

| | Number of Students | Walk | Bike | School Bus | Family Vehicle | Carpool | Transit | Other |
|---|---|---|---|---|---|---|---|---|
| **Tues AM** | 203 | 2 | 0 | 74 | 112 | 15 | 0 | 0 |
| **Tues PM** | 192 | 4 | 0 | 90 | 84 | 13 | 1 | 0 |
| **Wed AM** | 185 | 1 | 0 | 72 | 87 | 25 | 0 | 0 |
| **Wed PM** | 172 | 4 | 0 | 75 | 83 | 10 | 0 | 0 |
| **Thur AM** | 135 | 0 | 0 | 45 | 84 | 6 | 0 | 0 |
| **Thur PM** | 140 | 2 | 0 | 53 | 78 | 6 | 1 | 0 |

## Averages for classes submitting travel tallies:

| | Number of Students | Walk | Bike | School Bus | Family Vehicle | Carpool | Transit | Other |
|---|---|---|---|---|---|---|---|---|
| **Tues AM** | 16.9 | 0.2 | 0.0 | 6.2 | 9.3 | 1.3 | 0.0 | 0.0 |
| **Tues PM** | 16.0 | 0.3 | 0.0 | 7.5 | 7.0 | 1.1 | 0.1 | 0.0 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Wed AM** | 15.4 | 0.1 | 0.0 | 6.0 | 7.3 | 2.1 | 0.0 | 0.0 |
| **Wed PM** | 14.3 | 0.3 | 0.0 | 6.3 | 6.9 | 0.8 | 0.0 | 0.0 |
| **Thur AM** | 11.3 | 0.0 | 0.0 | 3.8 | 7.0 | 0.5 | 0.0 | 0.0 |
| **Thur PM** | 11.7 | 0.2 | 0.0 | 4.4 | 6.5 | 0.5 | 0.1 | 0.0 |

## Percentages of students by travel mode to and from school:

| | Number of Students | Walk | Bike | School Bus | Family Vehicle | Carpool | Transit | Other |
|---|---|---|---|---|---|---|---|---|
| **Tues AM** | 203 | 1.0% | 0.0% | 36.5% | 55.2% | 7.4% | 0.0% | 0.0% |
| **Tues PM** | 192 | 2.1% | 0.0% | 46.9% | 43.8% | 6.8% | 0.5% | 0.0% |
| **Wed AM** | 185 | 0.5% | 0.0% | 38.9% | 47.0% | 13.5% | 0.0% | 0.0% |
| **Wed PM** | 172 | 2.3% | 0.0% | 43.6% | 48.3% | 5.8% | 0.0% | 0.0% |
| **Thur AM** | 135 | 0.0% | 0.0% | 33.3% | 62.2% | 4.4% | 0.0% | 0.0% |
| **Thur PM** | 140 | 1.4% | 0.0% | 37.9% | 55.7% | 4.3% | 0.7% | 0.0% |

## End of Report

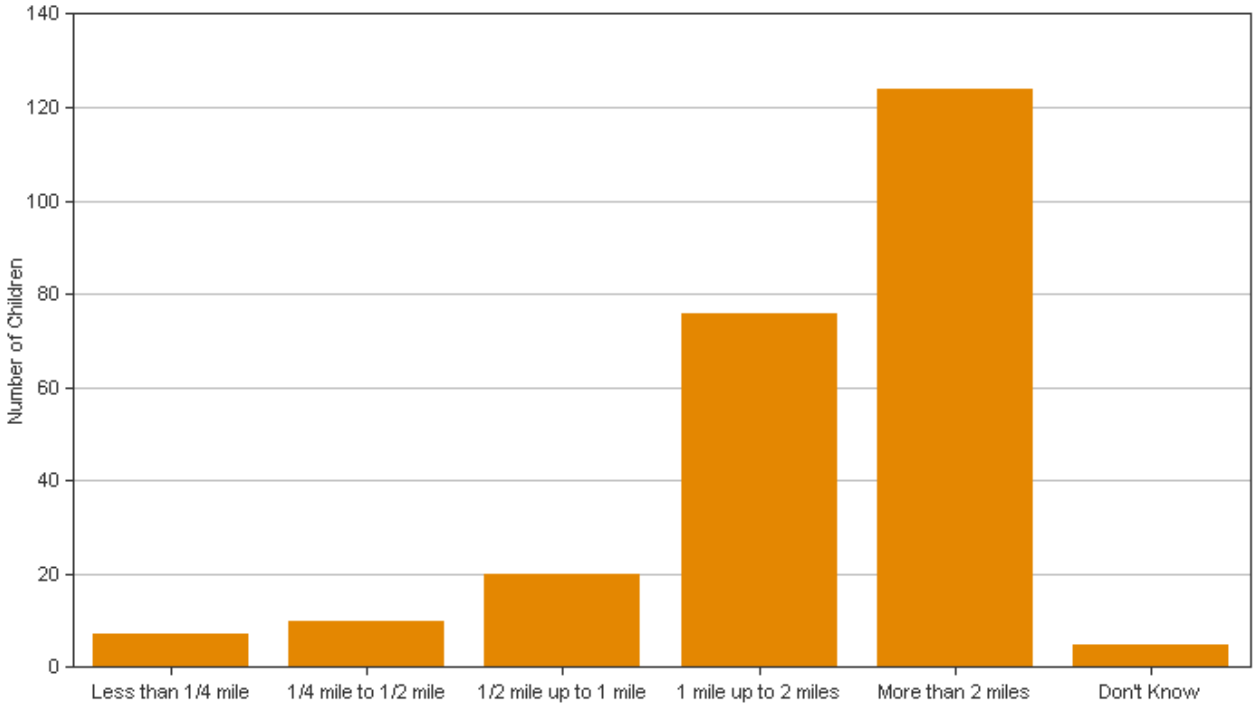
# Parent Survey Summary Report:

## Process Summary Information:

| | | | |
|---|---|---|---|
| **Program Name:** | Orange County | **Survey Data Collected:** | Spring2010 |
| **School Name:** | Cameron Park Elem | **Data Collection Phase:** (pre = Before program began mid = During program; post = After program ended) | mid |
| **Reported Enrollment:** | 632 | **Number of Surveys Distributed:** | 0 |
| **Date Report Generated:** | 05/27/2010 | **Number of Surveys in Report:** | 246 |

This report provides information from parents about their perceptions and attitudes on their child walking and bicycling to school. 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.

### Number of Children by Distance They Live From School:

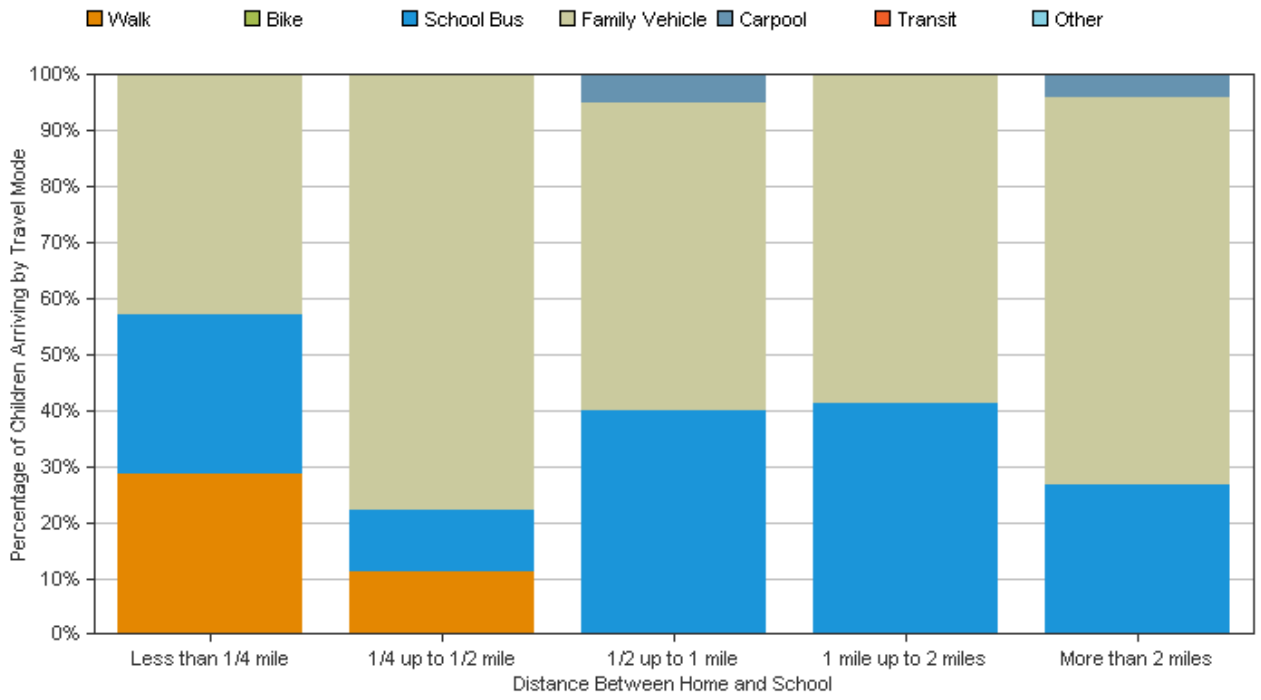



### Number of Children by Distance They Live From School:

| Distance from School | Number of Children |
|---|---|
| Less than 1/4 mile | 7 (2.9%) |
| 1/4 mile up to 1/2 mile | 10 (4.1%) |
| 1/2 mile up to 1 mile | 20 (8.3%) |
| 1 mile up to 2 miles | 76 (31.4%) |
| More than 2 miles | 124 (51.2%) |
| Don't know | 5 (2.1%) |
| No response: 4 | |

(Percentages may not total 100% due to rounding.)

### Percentage of Children by Travel Mode to School and Distance Between Home and School:



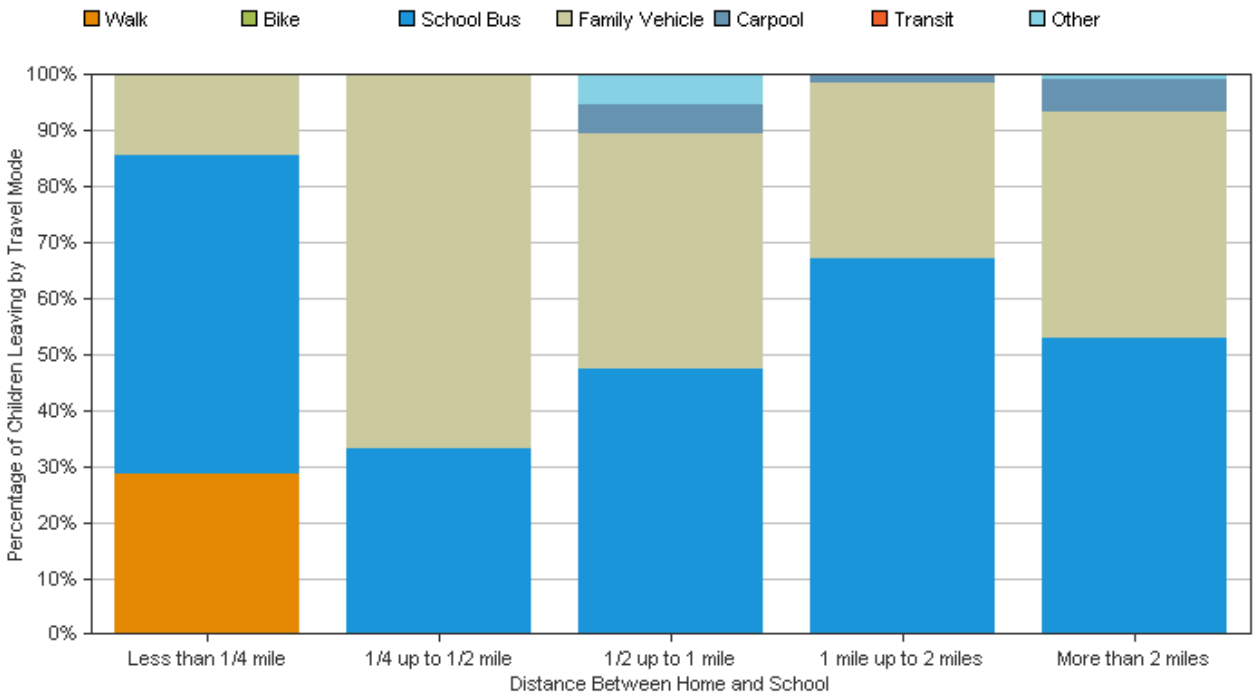

### Number of Children by Travel Mode to School and Distance Between Home and School:

| Mode | 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 | Row Totals by Mode |
|---|---|---|---|---|---|---|
| Walk | 2 (0.8%) | 1 (0.4%) | 0 (0%) | 0 (0%) | 0 (0%) | 3 (1.2%) |
| Bike | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) |
| School Bus | 2 (0.8%) | 1 (0.4%) | 8 (3.4%) | 31 (13.0%) | 33 (13.9%) | 79 (33.2%) |
| Family Vehicle | 3 (1.3%) | 7 (2.9%) | 11 (4.6%) | 44 (18.5%) | 85 (35.7%) | 150 (63%) |
| Carpool | 0 (0%) | 0 (0%) | 1 (0.4%) | 0 (0%) | 5 (2.1%) | 6 (2.5%) |
| Transit | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) |
| Other | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) |
| **Column Totals by Distance** | 7 (2.9%) | 9 (3.7%) | 20 (8.4%) | 75 (31.5%) | 123 (51.7%) | |

*No Response: 8*

(Percentages may not total 100% due to rounding.)

**Percentage of Children by Travel Mode from School and Distance Between Home and School:**




**Number of Children by Travel Mode from School and Distance Between School and Home:**

| Mode | 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 | Row Totals by Mode |
|---|---|---|---|---|---|---|
| Walk | 2 (0.9%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 2 (0.9%) |
| Bike | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) |
| School Bus | 4 (1.7%) | 3 (1.3%) | 9 (3.9%) | 49 (21.2%) | 63 (27.3%) | 132 (57.1%) |
| Family Vehicle | 1 (0.4%) | 6 (2.6%) | 8 (3.5%) | 23 (10.0%) | 48 (20.8%) | 86 (37.3%) |
| Carpool | 0 (0%) | 0 (0%) | 1 (0.4%) | 1 (0.4%) | 7 (3.0%) | 9 (3.8%) |
| Transit | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) |
| Other | 0 (0%) | 0 (0%) | 1 (0.4%) | 0 (0%) | 1 (0.4%) | 2 (0.8%) |
| **Column Totals by Distance** | 7 (3%) | 9 (3.9%) | 19 (8.2%) | 73 (31.6%) | 119 (51.5%) | |

*No Response: 15*

(Percentages may not total 100% due to rounding.)

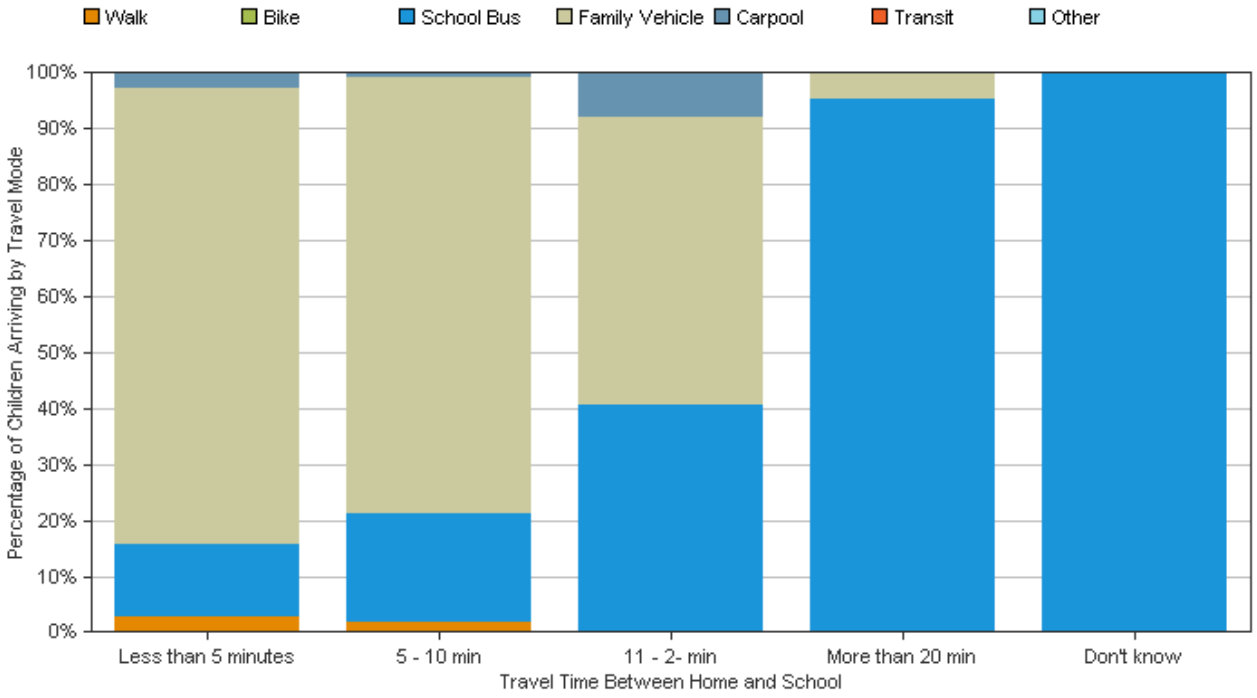
**Number of Children by School Arrival Travel Mode and Travel Time to School:**

| Travel Mode | Less than 5 min | 5 - 10 min | 11 - 20 min | More than 20 min | Don't know | Row Totals by Mode |
|---|---|---|---|---|---|---|
| Walk | 1 (0.4%) | 2 (0.8%) | 0 (0%) | 0 (0%) | 0 (0%) | 3 (1.2%) |
| Bike | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) |
| School Bus | 5 (2.1%) | 21 (8.8%) | 26 (10.9%) | 20 (8.4%) | 6 (2.5%) | 78 (32.7%) |
| Family Vehicle | 31 (13.0%) | 85 (35.7%) | 33 (13.9%) | 1 (0.4%) | 0 (0%) | 150 (63%) |
| Carpool | 1 (0.4%) | 1 (0.4%) | 5 (2.1%) | 0 (0%) | 0 (0%) | 7 (2.9%) |
| Transit | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) |
| Other | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) |
| **Column Totals by Time** | 38 (15.9%) | 109 (45.7%) | 64 (26.9%) | 21 (8.8%) | 6 (2.5%) | |

*No Response: 8*

(Percentages may not total 100% due to rounding.)

### Percentage of Children by Travel Time to School and School Arrival Travel Mode:



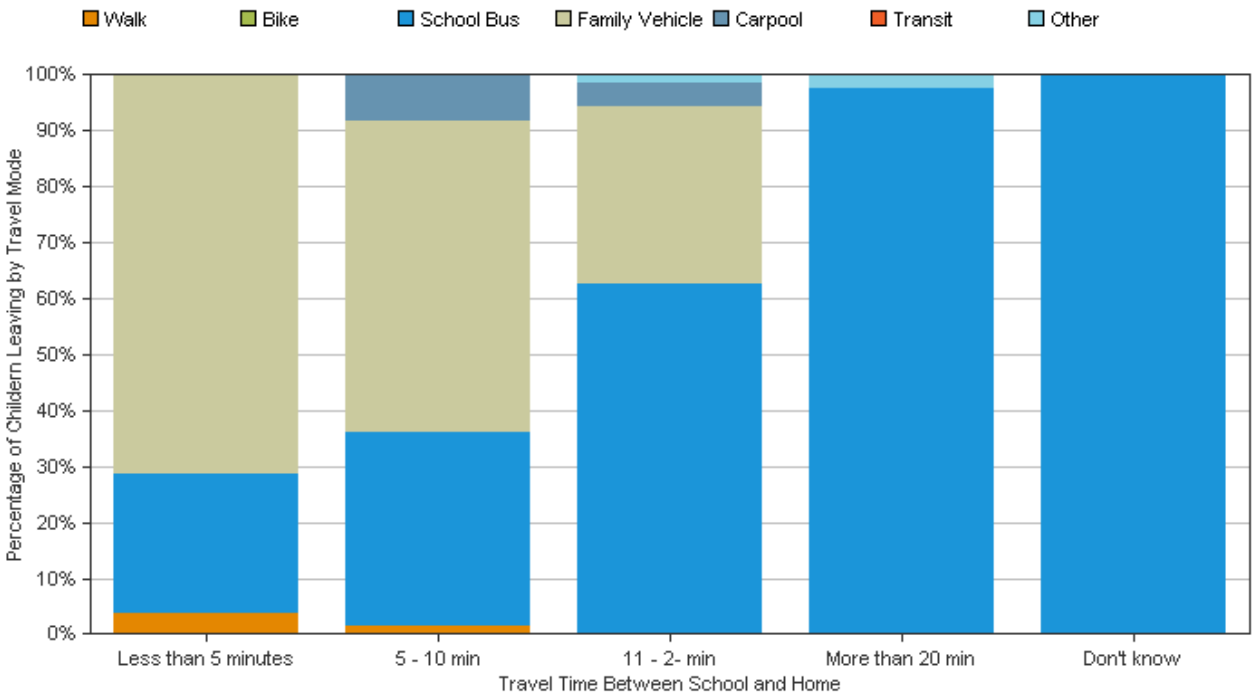

### Number of Children by School Departure Mode and Travel Time from School:

| Travel Mode | Less than 5 min | 5 - 10 min | 11 - 20 min | More than 20 min | Don't know | Row Totals by Mode |
|---|---|---|---|---|---|---|
| Walk | 1 (0.5%) | 1 (0.5%) | 0 (0%) | 0 (0%) | 0 (0%) | 2 (1%) |
| Bike | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) |
| School Bus | 7 (3.2%) | 25 (11.3%) | 45 (20.4%) | 41 (18.6%) | 7 (3.2%) | 125 (56.7%) |
| Family Vehicle | 20 (9.0%) | 40 (18.1%) | 23 (10.4%) | 0 (0%) | 0 (0%) | 83 (37.5%) |
| Carpool | 0 (0%) | 6 (2.7%) | 3 (1.4%) | 0 (0%) | 0 (0%) | 9 (4.1%) |
| Transit | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) |
| Other | 0 (0%) | 0 (0%) | 1 (0.5%) | 1 (0.5%) | 0 (0%) | 2 (1%) |
| **Column Totals by Time** | 28 (12.7%) | 72 (32.6%) | 72 (32.7%) | 42 (19.1%) | 7 (3.2%) | |

*No Response: 25*

(Percentages may not total 100% due to rounding.)

**Percentage of Children by Travel Time from School and School Departure Travel Mode:**




**Number of Children Who Have Asked Their Parent for Permission to Walk or Bike to/from School in the Last Year Separated by Distance They Live from School:**

| Distance from School | Have Asked | Have Not Asked |
|---|---|---|
| Less than 1/4 mile | 4 (1.7%) | 3 (1.3%) |
| 1/4 mile up to 1/2 mile | 5 (2.1%) | 5 (2.1%) |
| 1/2 mile up to 1 mile | 4 (1.7%) | 16 (6.7%) |
| 1 mile up to 2 miles | 10 (4.2%) | 64 (26.9%) |
| More than 2 miles | 8 (3.4%) | 114 (47.9%) |
| *No Response: 8* | | |

(Percentages may not total 100% due to rounding.)

**Grade When Parent Would Allow Child Walk or Bike to/from School without an Adult Separated by Distance They Live from School:**

| Grade | 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 |
|---|---|---|---|---|---|
| Kindergarten | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) |
| 1st Grade | 0 (0%) | 1 (0.5%) | 2 (0.9%) | 0 (0%) | 0 (0%) |
| 2nd Grade | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) |
| 3rd Grade | 0 (0%) | 0 (0%) | 2 (0.9%) | 3 (1.4%) | 4 (1.8%) |
| 4th Grade | 2 (0.9%) | 1 (0.5%) | 1 (0.5%) | 2 (0.9%) | 2 (0.9%) |
| 5th Grade | 2 (0.9%) | 1 (0.5%) | 0 (0%) | 6 (2.7%) | 2 (0.9%) |
| 6th Grade | 0 (0%) | 0 (0%) | 2 (0.9%) | 9 (4.1%) | 4 (1.8%) |
| 7th Grade | 0 (0%) | 1 (0.5%) | 0 (0%) | 4 (1.8%) | 3 (1.4%) |
| 8th Grade | 0 (0%) | 0 (0%) | 0 (0%) | 2 (0.9%) | 4 (1.8%) |
| Not at any Grade | 3 (1.4%) | 5 (2.3%) | 12 (5.5%) | 42 (19.1%) | 93 (42.3%) |
| *No Response: 26* | | | | | |

(Percentages may not total 100% due to rounding.)

**Issues which Affect Parent's Decision to Allow or Not Allow Their Child to Walk or Bike to/from School Separated by Children who Do and Do Not Already Walk or Bike To/From School:**

| Issue | Child walks/bikes to school | Child does not walk/bike to school |
|---|---|---|
| Distance | 1 (50.0%) | 130 (73.4%) |
| Convenience of driving | 0 (0.0%) | 27 (15.3%) |
| Time | 0 (0.0%) | 61 (34.5%) |
| Before/after-school activities | 0 (0.0%) | 28 (15.8%) |
| Traffic speed along route to school | 1 (50.0%) | 136 (76.8%) |
| Traffic volume along route | 0 (0.0%) | 133 (75.1%) |
| Adults to walk/bike with | 0 (0.0%) | 44 (24.9%) |
| Sidewalks or pathways | 1 (50.0%) | 98 (55.4%) |
| Safety of intersections & crossings | 1 (50.0%) | 123 (69.5%) |
| Crossing guards | 1 (50.0%) | 60 (33.9%) |
| Violence or crime | 0 (0.0%) | 67 (37.9%) |
| Weather or climate | 0 (0.0%) | 70 (39.5%) |
| Number of Respondents Per Category | 2 | 177 |
| *No Response: 67* | | |

(Percentages may not total 100% due to rounding.)

**For Parents Whose Children Do Not Walk or Bike to/from School, Number of Parents Responding to question: Would You Probably let Your Child Walk or Bike to/from School Issues Were Changed or Improved?**

| | Number of parents reporting that: | | |
|---|---|---|---|
| **Issue** | **Change Would affect decision** | **Change Would Not affect decision** | **Not Sure if change would affect decision** |
| Distance | 75 (32.9%) | 110 (48.2%) | 30 (13.2%) |
| Convenience of driving | 26 (11.4%) | 71 (31.1%) | 14 (6.1%) |
| Time | 47 (20.6%) | 79 (34.6%) | 22 (9.6%) |
| Before/after-school activities | 24 (10.5%) | 80 (35.1%) | 10 (4.4%) |
| Traffic speed along route to school | 91 (39.9%) | 92 (40.4%) | 25 (11.0%) |
| Traffic volume along route | 98 (43.0%) | 85 (37.3%) | 23 (10.1%) |
| Adults to walk/bike with | 61 (26.8%) | 46 (20.2%) | 10 (4.4%) |
| Sidewalks or pathways | 112 (49.1%) | 51 (22.4%) | 14 (6.1%) |
| Safety of intersections & crossings | 106 (46.5%) | 69 (30.3%) | 17 (7.5%) |
| Crossing guards | 74 (32.5%) | 52 (22.8%) | 9 (3.9%) |
| Violence or crime | 38 (16.7%) | 82 (36.0%) | 21 (9.2%) |
| Weather or climate | 48 (21.1%) | 81 (35.5%) | 12 (5.3%) |
| Number of Respondents That Selected at Least 1 Issue: 228 | | | |
| *No Response: 14* | | | |

(Percentages may not total 100% due to rounding.)

**Number of Parents Who Feel Their Child's School Encourages or Discourages Walking and Biking to/from School:**

| | Strongly Encourage | Encourage | Neutral | Discourage | Strongly Discourage |
|---|---|---|---|---|---|
| Number | 11 (4.9%) | 49 (21.8%) | 152 (67.6%) | 8 (3.6%) | 5 (2.2%) |

*No Response: 21*

**Number of Parents Reporting the Level of Fun Walking and Biking to/from School is for Their Child:**

| | Very Fun | Fun | Neutral | Boring | Very Boring |
|---|---|---|---|---|---|
| Number | 24 (11.9%) | 56 (27.9%) | 110 (54.7%) | 8 (4.0%) | 3 (1.5%) |

*No Response: 45*

**Number of Parents Reporting How Healthy Walking and Biking to/from School is for Their Child:**

| | Very Healthy | Healthy | Neutral | Unhealthy | Very Unhealthy |
|---|---|---|---|---|---|
| **Number** | 118 (54.9%) | 2 (0.9%) | 39 (18.1%) | 2 (0.9%) | 2 (1.0%) |

*No Response: 31*

## Parent Comments

This table displays the comments provided by parents as part of this Parent Survey. These comments have been entered in two ways — they may have been entered by the local program, or they may have been scanned and processed by the National Center for Safe Routes to School (NCSRTS). Comments scanned and processed by NCSRTS may have not been edited for content, spelling, and other typographical errors that may have as part of the scanning and handwriting recognition process.

Comments from: Cameron Park Elem

| SurveyID | Comment |
|---|---|
| 1668095 | I HAVE A OLDER CHILD THAT HAS WALKED TO SCHOOL SINCE 6TH GRADE AND CONTINUES TO WALK SINCE ENTERING HIGH SCHOOL. I FEEL GETTING SIDEWALKS ON ORANGE HIGH SCHOOL RD. WOULD BE VERY SMART IDEA. |
| 1668096 | CHILDREN GET HIT EVERYDAY BY DRIVERS NOT PAYING ATTENTION OR JUST IN A HURRY. |
| 1668097 | WE NEED MORE BIKE PATHS & SIDEWALKS. WE WOULD BOTH BIKE EVERYDAY IF WE COULD! I SUPPORT BIKE PATHS & SIDEWALKS 100%. I USED TO LIVE IN A CITY IN CALIFORNIA WHERE THE ENTIRE CITY WAS BIKE FRIENDLY! |
| 1668106 | FROM WHERE WE LIVE I WOULD NOT LET MY CHILD WALK TO SCHOOL @ ANYTIME. |
| 1668108 | TOO FAR OF A WALK FROM OUR NEIGHBORHOOD NO SIDEWALKS AND TOO MUCH TRAFFIC. |
| 1668109 | MY DAUGHTER LIVES TO FAR TO WALK OR BIKE RIDE. |
| 1668112 | THERE SHOULD BE SIDEWALK ALONG THOMAS RUFFIN AND A CROSSING GUARD ACROSS ST. MARY. AND A SAFE ROUTE ON SCHOOL PROPERTY TO THE FRONT DOOR. QUESTION #10 - WITHOUT AN ADULT |
| 1668116 | IT WOULD BE VERY DANGEROUS FOR OUR DAUGHTER TO BIKE TO SCHOOL! NO SIDEWALK ON ST. MARY'S RD OR HWY 70 AND ST. MARY'S IS NARROW ROAD AND PEOPLE SPEED ALL THE TIME! THE WORST SPEEDERS & PEOPLE WHO DON'T PAY ATTENTION WHILE DRIVING THE ROADS ARE THE PARENTS TAKING THEIR KIDS TO SCHOOL! |
| 1668117 | I WOULD LOVE TO LET MY SON WALK TO SCHOOL (WITH ME). SIDEWALKS WOULD BE AMAZING! |
| 1668127 | IF WE LIVED CLOSED IT WOULD BE MORE OF AN ISSUE. I SEE CHILDREN WALKING TO SCHOOL WITH THERE PARENTS. THIS IS GOOD. |
| 1668130 | A SIDEWALK FROM CHURTON GROVE TO CAMERON PARK WOULD BE GREATLY UTILIZED BY OUR COMMUNITY. THANK YOU! |
| 1668132 | STILL TO YOUNG BUT WOULD CONSIDER IF SAFETY COULD BE SEEN |
| 1668134 | QUESTION #9 - (GIVEN THE BUSY ROADS) |
| 1668135 | N/A |
| 1668136 | OUR CHILDREN WILL NOT BE ABLE TO WALK OR BIKE DUE TO UNCHANGEABLE DISTANCE AND MAJOR ROADS TO CROSS. |
| 1668137 | WE LIVE TOO FAR FROM THE SCHOOL - BUT IT WOULD BE AN OPTION PARENTAL SUPERVISION & GOOD PATHWAYS IF WE LIVED CLOSER |

| | |
|---|---|
| 1668146 | BIGGEST FACTOR IN THIS DECISION IS CRIME. WHILE WE LIVE IN A RELATIVELY SAFE PLACE; THERE ARE ALWAYS THOSE INDIVIDUALS WHO PREY ON OUR CHILDREN & JUST WOULDN'T FEEL SAFE. |
| 1668147 | I WISH THE CROSSWALKS AT CAMERON PARK WERE SUPERVISED - THE TRAFFIC PATTERNS AT PICKUP AND DROPOFF GET CRAZY AND I WOULD NOT FEEL COMFORTABLE ALLOWING MY KIDS TO WALK ALONG EVEN THOUGH WE LIVE ONLY A FEW BLOCKS FROM THE SCHOOL. QUESTION #9 - DUE TO TRAFFIC & UNMONITORED CROSSWALK. |
| 1668148 | ST MARY'S ROAD IS NOT SAFE! ACCESS TO CAMERON PARK SCHOOL IS DANGEROUS - 2 AUTO ACCIDENTS LAST 12 MONTHS - GUARD WAS STRUCT - FOOT RUN OVER BY CAR! QUESTION #9 - ST MARY'S NOT SAFE. QUESTION #13 - NOT SAFE: NOT FUN |
| 1668151 | IT WOULD BE GREAT FOR THE CHILDREN TO GO TO SCHOOL WITH THEIR BIKE! I WOULD STRONGLY ENCOURAGE THEM TO DO SO IF THE ROAD WERE LESS NARROW AND WITH BIKE LANE OR WITH SIDEWALKS |
| 1668152 | WE SUPPORT THIS EFFECT BUT WE LIVE 8 MILES FROM SCHOOL WHICH IS TOO FAR TO WALK/BIKE. |
| 1668153 | WE LIVE WITHIN 1 MILE OF STANFORD MIDDLE & ORANGE HIGH. I'D LIKE MY CHILDREN TO WALK TO SCHOOL WHEN THEY ARE OLD ENOUGH TO ATTEND THESE SCHOOLS. HOWEVER |
| 1668154 | TOO MUCH TRAFFIC ON ST. MARY'S RD AND SHE'D HAVE TO CROSS HWY 70 |
| 1668159 | THANK YOU FOR GATHERING INPUT ON THIS. I THINK EVEN IF KIDS DO NOT WALK BIKE TO SCHOOL DURING THE WEEK - IT WOULD BE NICE FOR THEM BE ABLE TOGETHER AFTER SCHOOL OR ON WEEKENDS FOR EVENTS. QUESTION #9 - TRAFFIC - TOO DANGEROUS CURRENTLY. |
| 1668162 | WOULD CONSIDER CYCLING TO SCHOOL IF THERE WAS A SAFE WAY TO CROSS HIGHWAY 70. |
| 1668164 | THIS IS A N/A AS WE LIVE TOO FAR. IF WE LIVED IN TOWN WOULD DEFINITELY WALK/RIDE TO SCHOOL. |
| 1668165 | CURRENTLY A CHALLENGE TO GET DAUGHTER MOVING IN THE MORNING. SOMETIMES DRIVE PARTWAY & WALK THE REST. ST MARY'S ROADS VERY DANGEROUS FOR BICYCLISTS & NEARLY IMPOSSIBLE TO USE FOR PEDESTRIANS. |
| 1668166 | WE LIVE 15 MILES AWAY FROM THE SCHOOL SO THIS IS NOT AN OPTION FOR US. HOWEVER I WOULD SUPPORT MORE SIDEWALKS AND OTHER INITIATIVES FOR HELPING KIDS WALK TO SCHOOL. |
| 1668169 | IF WE LIVED CLOSER ALONG THE SIDE STREETS WE COULD PROBABLY WALK TO SCHOOL. TRAFFIC IS A MAJOR CONCERN NEAR THE SCHOOL THOUGH. |
| 1668171 | IS A STUDENT IN MEXICO. MY CHILDREN DO NOT GO ON THE BIKES AT THE SCHOOL I AM LIVING 15 TO 20 MINUTES LITTLE BOY IS 6 YEARS? |
| 1668173 | MY SON LIVES TOO FAR TO WALK OR RIDE A BIKE. |
| 1668178 | WE WALKED TO SCHOOL IN ANOTHER COMMUNITY WHERE THERE WERE SIDEWALKS. THERE AREN'T ANY SIDEWALKS ON ST. MARY'S RD - THE MAJOR (ONLY) ARTERY TO CAMERON PK. |
| 1668185 | WE LIVE TOO FAR FOR MY ELEMENTARY KIDS TO RIDE TO SCHOOL BUT NOT TOO FAR FOR MY MIDDLE SCHOOL AGED KIDS. THIS WOULD BE GREAT! |

| | |
|---|---|
| 1668189 | I THINK WE NEED PLENTY OF SIDEWALKS TO STAY VERY HEALTHY AND WALK TO THE STORES AND SAVE MONEY THANK YOU FOR YOUR HELP. |
| 1668191 | WE JUST LIVE TOO FAR TO CONVENIENTLY WALK. |
| 1668192 | WALKING TO/FROM SCHOOL WITH MY CHILD WOULD BE MORE FUN IF IT WEREN'T SO DANGEROUS. MANY PARENTS DRIVING TO/FROM SCHOOL SPEED AND SEEM PREOCUPIED WITH CELL PHONES AND PASSENGERS. THERE IS NO FLASHING LIGHTS IN FRONT OF THE SCHOOL OR ANY ENCOURAGEMENT TO SLOW DOWN. |
| 1668195 | QUESTION #5 SHOULD BE QUESTION #1 AND IF THE ANSWER IS MORE THAN 2 OR 3 MILES THE REST IS REALLY IRRELEVANT. |
| 1668204 | PLEASE NOTE CHILD (SEX OFFENDERS) REGARDING CHILDREN WALKING OR BIKING TO SCHOOL |
| 1668209 | WALKING TO SCHOOL WOULD NEVER BE AN OPTION FOR OUR FAMILY BECAUSE OF LOCATION. |
| 1668214 | CURRENTLY IT IS NOT POSSIBLE TO SAFELY BIKE OR WALK. THIS WOULD BE GREAT FOR THE CHILDREN'S HEALTH AND THE ENVIRONMENT. |
| 1668215 | I WOULD WALK WITH MY CHILD DAILY IF THERE WERE SIDEWALKS! QUESTION #11 - WITH ADULT |
| 1668216 | TRAFFIC ON ST. MARY'S RD WOULD KEEP US FROM WALKING/BIKING TO SCHOOL. |
| 1668218 | WE ARE WITHIN 1 MILE OF STANFORD AND I WOULD LIKE MY CHILDREN TO WALK TO SCHOOL WHEN THEY ARE MIDDLE SCHOOL AGE. HOWEVER |
| 1668230 | I WOULD FEEL COMFORTABLE ALLOWING MY CHILD TO BIKE TO SCHOOL IF WE LIVED CLOSER THERE WERE SIDEWALKS I WOULD SUPERVISE HIM UNTIL AGE 11 IF I FELT HE COULD SAFELY CROSS THE STREETS. I WISH HILLSBOROUGH HAD MORE SIDEWALKS AROUND OUR SCHOOLS. |
| 1668233 | WE LIVE TOO FAR AWAY FROM SCHOOL TO BIKE OR WALK TO SCHOOL. IF WE LIVED CLOSER & DID NOT HAVE TO INVOLVE HWY 70 I WOULD ENCOURAGE BIKING OR WALKING - A GREAT IDEA! |
| 1668235 | WE LIVE TOO FAR FOR HIM TO WALK TO SCHOOL BUT HE DOES WALK - 1/4 ML TO THE BUS STOP. I STRONGLY SUPPORT ANY EFFORTS TO IMPROVE WALKING/BIKING ACCESS FOR KIDS WHO ARE ABLE. |
| 1668238 | LOCATION OF CURRENT SCHOOLS THAT WE ARE ASSIGNED TO & DISTANCE ARE NOT CONDUCIVE TO ALLOWING YOUNGER CHILDREN TO WALK TO SCHOOL. ALSO LENGTH OF BUS RIDES & TIME OF PICK UP ARE DISCOURAGING FOR PARENTS TO PUT THEIR CHILDREN ON THE BUS. |
| 1668239 | WE LIVE NEAR HIGHWAY 70 SO WALKING FROM OUR HOUSE TO C.P. REALLY ISN'T POSSIBLE. TIME IS ALSO A HUGE FACTOR FOR US. WE STRUGGLE TO GET TO SCHOOL ON TIME NOW. |
| 1668241 | I THINK EVERY CHILD WHO CAN SHOULD WALK OR BIKE TO SCHOOL BUT IT WOULD BE IMPOSSIBLE FOR MY CHILD DUE TO DISTANCE. THANKS FOR YOUR CONCERN! |
| 1668242 | IF I DIDN'T HAVE TO GO TO WORK EARLY TOO I WOULD REALLY TRY TO WALK THEM EVERYDAY - IT SEEMS A SHAME THAT THE CULTURE HAS GONE SO FAR FROM THIS REALITY. |
| 1668244 | I LIVE TOO FAR FOR MY CHILD TO WALK OR BIKE RIDING AT ALL |
| 1668246 | SIMPLY NOT SAFE. I STAY AT HOME AND CONSIDER IT WITH PRIVILEDGE TO DRIVE TO & FROM/KIDS - QUALITY TIME |

| | |
|---|---|
| 1668256 | I THINK WE NEED PLENTY OF SIDEWALKS TO STAY VERY HEALTHY AND IS GOOD FOR WALK TO THE STORE AND SAVE MONEY THANK YOU FOR YOUR HELP. |
| 1668259 | A SAFE ROUTE FROM CHURTON GROVE TO CAMERON PARK WOULD CERTAINLY ENCOURAGE MANY STUDENTS & FAMILY MEMBERS TO COMMUTE VIA BIKE TO & FROM SCHOOL. |
| 1668262 | THERE IS A LOT OF FAST MOVING TRAFFIC FROM OUR HOUSE TO THE SCHOOL. I WOULD LOVE FOR THEM TO WALK OR BIKE TO SCHOOL BUT I DON'T THINK IT WOULD BE SAFE AT ALL. WE ARE TO FAR FOR ME TO WALK THEM EVERYDAY. |
| 1668264 | WE WALK TO SCHOOL EVERY FEW WEEKS. I THINK IT'S IMPORTANT FOR BOTH PERSONAL HEALTH & THE HEALTH OF THE NATURAL ENVIRONMENT |
| 1668268 | SHE WOULD HAVE TO TRAVEL ON ST. MARY'S - VERY UNSAFE ROAD |
| 1668269 | IF WE WERE CLOSER TO SCHOOL I WOULD GLADLY LET MY CHILD WALK OR BIKE TO SCHOOL. |
| 1668271 | STILL IN SCHOOL |
| 1668274 | I THINK IT IS RIDICULOUS TO HAVE A CHILD WALK TO SCHOOL. CHILDREN DISAPPEAR EVERYDAY AND THIS WOULD JUST INCREASE THOSE STATISTICS. VERY UNSAFE AND I WOULD NEVER ALLOW IT. THIS IS INSANE. TAXPAYERS PAY FOR THE BUS ROUTE CORRECT? |
| 1668278 | IT IS PRIMARY THE AMOUNT OF TRAFFIC - MUCH OF IT CARS BRINGING CHILDREN TO SCHOOL - COMBINED WITH THE LACK OF SHOULDER/SIDEWALKS ON ST. MARY'S THAT PREVENT US FROM BIKING. |
| 1668279 | MY CHILD WOULD LOVE TO BE ABLE TO RIDE A BIKE TO SCHOOL. THANK YOU FOR THE CONSIDERATION. |
| 1668281 | WE LIVE 8-10 MILES FROM SCHOOL WHICH I WOULD CONSIDER TO FAR FOR AN ELEMENTARY-AGED CHILD TO WALK OR BIKE ALONE. |
| 1668285 | I THINK THIS IS A WONDERFUL IDEA - UNFORTUNATELY WE LIVE IN CHURTON GROVE OF THE TRAFFIC ALONG HWY 70 IS TO BUSY FOR CHILD BIKE RIDERS (AND WOULD TAKE TOO LONG TO WALK) |
| 1668286 | WE LIVE TOO FAR AWAY TO CONSIDER WALKING/BIKING. |
| 1668287 | WE RIDE BIKES HOME FROM SCHOOL TOGETHER IN THE WARM WEATHER BUT IT IS TOUGH BECAUSE THERE IS NO BIKE LANE/SIDEWALK FOR WALKING OR BIKE RIDING. |
| 1668290 | MY OTHER SON WALKS TO MIDDLE SCHOOL (STANFORD) AND MY DAUGHTER WALKS TO ORANGE HIGH SCHOOL. THE ENVIRONMENT & IT'S CARE NEEDS TO BE ON THE SURVEY TOO. WE TRY TO CONSERVE GAS & NOT POLLUTE WHEN WE WALK |
| 1668294 | NEED CROSSING GUARD AT ST. MARY'S (TO RUFFIN) & SIGNS STATING THAT IT IS A LAW TO STOP FOR PEDESTRIANS IN CROSSWALK. |
| 1668295 | WE LIVE TOO FAR FROM SCHOOL & BIKING OR WALKING TO CAMERON PARK FROM OUR HOME WILL NEVER BE FEASIBLE DUE TO HEAVY TRAFFIC/BUSY RT. 70. BIKING OR WALKING TO MIDDLE SCHOOL & HIGH SCHOOL WILL BE THE NORM |
| 1668298 | WE ARE JUST TOO FAR AWAY FOR WALKING OR BIKING. BIKING IS UNSAFE DUE TO TRAFFIC ON ST. MARY'S RD. QUESTION #9 - WE ARE MORE THAN 10 MILES AWAY |
| 1668299 | I FEEL WITH CROSSING GUARDS AND SIDEWALKS IT IS A GREAT EXPERIENCE FOR CHILDREN AND GIVES THEM INDEPENDENCE BUT @ A SAFE LEVEL. |

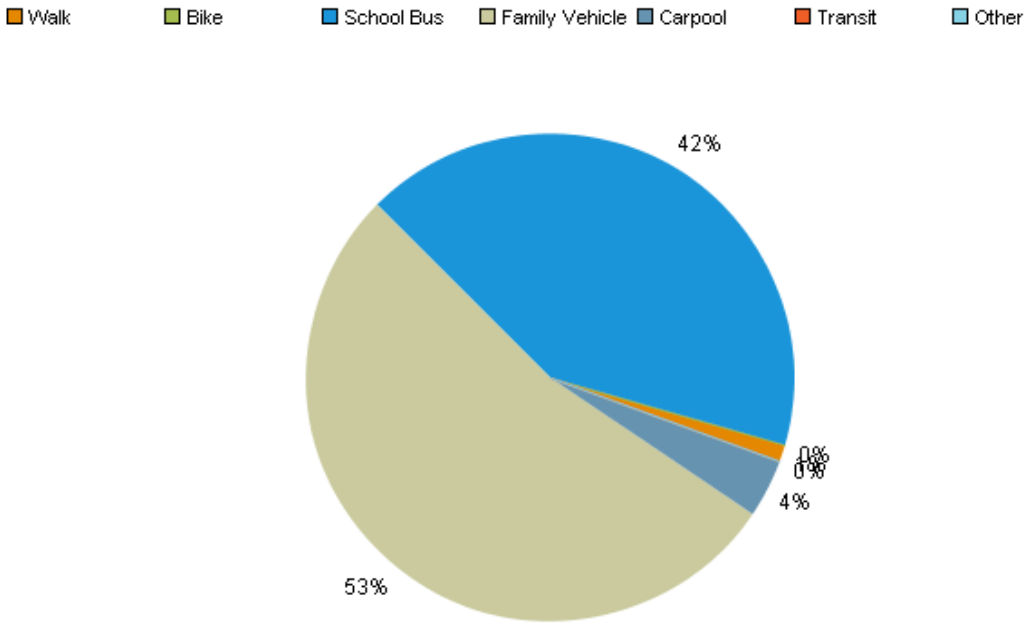
| | |
|---|---|
| 1668302 | IT WOULD BE GREAT TO BE ABLE TO RIDE THE BIKE TO AND FROM SCHOOL! I WILL STRONGLY ENCOURAGE MY CHILDREN TO DO SO IF THERE WAS SOME SIDEWAYS OR BICYCLE LANES ON ST MARY ROAD! (WEATHER PERMITTING OF COURSE). |
| 1668308 | WE LIVE 15 MILES FROM THE SCHOOL SO THIS IS NOT AN OPTION FOR US. HOWEVER I THINK IT WOULD BE GREAT TO PROVIDE THIS OPTION FOR MORE FAMILIES THROUGH THE SRTS PROJECT. |
| 1668312 | IF WE LIVED CLOSER TO SCHOOL WE WOULD DEFINITELY WALK. MY CHILD WOULD ALWAYS WALK OR BIKE WITH AN ADULT THROUGHOUT ELEMENTARY. |
| 1668313 | WE WOULD WALK OR BIKE TO SCHOOL WITH OUR DAUGHTER & WOULD ESPECIALLY UTILIZE IT FOR EVENTS IF THERE WERE PLACES TO WALK. |
| 1668315 | MY CHILD WOULD HAVE TO CROSS RT. 70 AND BE ON VERY BUSY SIDE ROADS (ST. MARY'S RD.) ORANGE HIGH SCHOOL RD.) WITH NO SIDEWALKS ETC. TIME NEEDED BEFORE SCHOOL IS ALSO AN ISSUE - SCHOOL ALREADY BEGINS VERY EARLY (7:55). |
| 1668317 | #14 IS TRUE ONLY IF CRIME & TRAFFIC ARE NOT PROBLEMS |
| 1668328 | I WOULD SUPPORT MY CHILD TO WALK TO MIDDLE SCHOOL AND HIGH SCHOOL IF THERE WERE SIDEWALKS AND SOME FORM OF ADULT OVERSIGHT (TO MIDDLE SCHOOL) |

## End of Report

# Student Travel Summary

| | | | |
|---|---|---|---|
| **Program Name:** | Orange County | **Season Collected:** | Spring2010 |
| **School Name:** | Cameron Park Elem | **Data Type *(Pre/Mid/Post)*:** | mid |
| | | **Reported School Enrollment:** | 632 |
| | | **Number Classrooms:** | 0 |
| | | **Number of Tallies Reported:** | 28 |

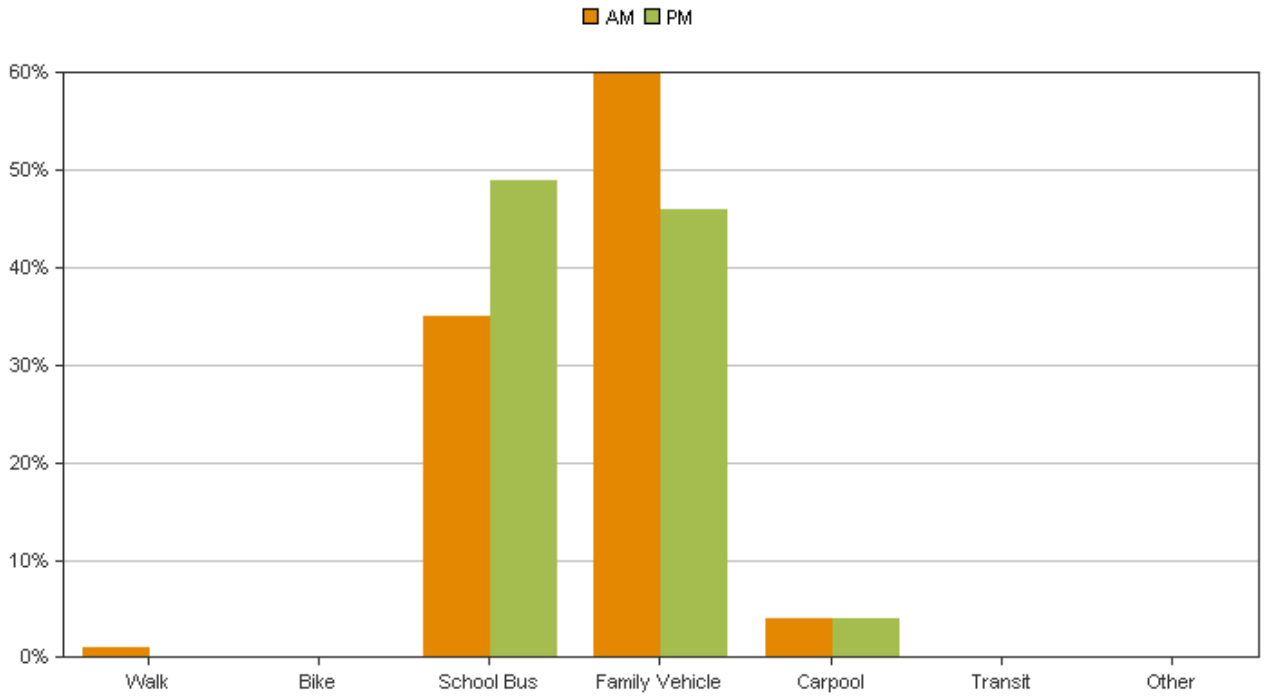
### Students Traveling by Each Mode (across all reported days)




| | Walk | Bike | School Bus | Family Vehicle | Carpool | Transit | Other |
|---|---|---|---|---|---|---|---|
| **Average Number of Student Trips for Morning and Afternoon** | 2.8 | 0.0 | 187.2 | 236.5 | 19.2 | 0.8 | 0.0 |
| **Percent** | 0.6% | 0.0% | 41.9% | 53.0% | 4.3% | 0.2% | 0.0% |

Average number of students per day responding to in-class tally counts: **446.5**

### Morning to Afternoon Travel Mode Comparison




| | Walk | Bike | School Bus | Family Vehicle | Carpool | Transit | Other |
|---|---|---|---|---|---|---|---|
| **Morning** | 0.9% | 0.0% | 35.0% | 59.7% | 4.4% | 0.0% | 0.0% |
| **Afternoon** | 0.4% | 0.0% | 48.9% | 46.1% | 4.2% | 0.4% | 0.0% |

## Number of students by travel mode to and from school:

| | Number of Students | Walk | Bike | School Bus | Family Vehicle | Carpool | Transit | Other |
|---|---|---|---|---|---|---|---|---|
| **Tues AM** | 480 | 3 | 0 | 167 | 285 | 25 | 0 | 0 |
| **Tues PM** | 474 | 1 | 0 | 238 | 207 | 23 | 5 | 0 |
| **Wed AM** | 457 | 5 | 0 | 161 | 273 | 18 | 0 | 0 |
| **Wed PM** | 444 | 2 | 0 | 208 | 219 | 15 | 0 | 0 |
| **Thur AM** | 413 | 4 | 0 | 145 | 248 | 16 | 0 | 0 |
| **Thur PM** | 411 | 2 | 0 | 204 | 187 | 18 | 0 | 0 |

## Averages for classes submitting travel tallies:

| | Number of Students | Walk | Bike | School Bus | Family Vehicle | Carpool | Transit | Other |
|---|---|---|---|---|---|---|---|---|
| **Tues AM** | 17.1 | 0.1 | 0.0 | 6.0 | 10.2 | 0.9 | 0.0 | 0.0 |
| **Tues PM** | 16.9 | 0.0 | 0.0 | 8.5 | 7.4 | 0.8 | 0.2 | 0.0 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Wed AM** | 16.3 | 0.2 | 0.0 | 5.8 | 9.8 | 0.6 | 0.0 | 0.0 |
| **Wed PM** | 15.9 | 0.1 | 0.0 | 7.4 | 7.8 | 0.5 | 0.0 | 0.0 |
| **Thur AM** | 14.8 | 0.1 | 0.0 | 5.2 | 8.9 | 0.6 | 0.0 | 0.0 |
| **Thur PM** | 14.7 | 0.1 | 0.0 | 7.3 | 6.7 | 0.6 | 0.0 | 0.0 |

## Percentages of students by travel mode to and from school:

| | Number of Students | Walk | Bike | School Bus | Family Vehicle | Carpool | Transit | Other |
|---|---|---|---|---|---|---|---|---|
| **Tues AM** | 480 | 0.6% | 0.0% | 34.8% | 59.4% | 5.2% | 0.0% | 0.0% |
| **Tues PM** | 474 | 0.2% | 0.0% | 50.2% | 43.7% | 4.9% | 1.1% | 0.0% |
| **Wed AM** | 457 | 1.1% | 0.0% | 35.2% | 59.7% | 3.9% | 0.0% | 0.0% |
| **Wed PM** | 444 | 0.5% | 0.0% | 46.8% | 49.3% | 3.4% | 0.0% | 0.0% |
| **Thur AM** | 413 | 1.0% | 0.0% | 35.1% | 60.0% | 3.9% | 0.0% | 0.0% |
| **Thur PM** | 411 | 0.5% | 0.0% | 49.6% | 45.5% | 4.4% | 0.0% | 0.0% |

## End of Report

# B FUNDING

Chapter Outline:



## B.0 OVERVIEW

When considering possible funding sources for SRTS engineering and program projects, it is important to consider that it is highly unlikely that all activities (construction and education/encouragement/enforcement programs) will be accomplished from a single funding source since these projects are expected to be in the hundreds of thousands of dollars and accomplished over several years. It will be necessary to consider several sources of funding, that when combined, would support full project construction. The local schools and school system must continue to work closely with local governments to establish priority for SRTS projects through the local governments's capital improvement programs, grant efforts, and funding request lists. This appendix outlines the most likely sources of funding for the projects at the federal, state and local government levels and from the private sector.

## B.1 FEDERAL AND STATE FUNDING

### *Changing Funding Landscape In 2013*

In June 2013 the Strategic Mobility Formula (SMF) legislation was adopted and signed into law by the Governor, providing major changes regarding how transportation projects are funded throught the state. The new formula is accompanied by a revised/updated scoring methodology that institutes major changes to the inputs and weights used to rank projects for consideration and inclusion within North Carolina's Statewide Transportation Improvement Program (STIP). The new formula is scheduled for full implemented by July 1, 2015, at which time a STIP containing all projects programmed for implementatinthrough 2025 is scheduled to be adopted by the State's Board of Transportation (BOT). All funded bicycle/pedestrian projects will be required to be in a locally adopted plan such as the Safe Routes to School Plan.

In addition, a $15 billion health law prevention fund was established in 2010. Currently, there is a debate on how to spend this money over the next ten years. There is a good chance that bicycle and pedestrian improvements and SRTS programs will get a boost from this program as a means to improve exercise for youth.

With the Strategic Mobility Formula (SMF), the $15 billion health prevention fund, and others likely focused on livability and multi-modal approaches, monies will likely flow to communities that are addressing bicycle, pedestrian, and SRTS issues. Having this plan in place and adopted is one clear sign that this community plans to address these issues.

### *Federal And State Funding Process*

Federal funding is typically directed through State agencies to local governments either in the form of grants or direct appropriations. The following is a list of possible Federal and State funding sources that could be used to support construction of the many pedestrian projects. Federal funding typically requires a 20% local match, however this is not always the case (for example, recent stimulus money does not require a match). Since these funding categories are difficult to forecast, it is recommended that the school system and town continue to work with the local MPO to get SRTS bicycle and pedestrian projects listed in the TIP (Transportation Improvement Program), as discussed below.

*Safe Routes To School Program (SRTS):* The Safe Routes to School Program managed by NCDOT is a federally funded program that was initiated by the passing of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) in 2005, which established a national SRTS program to distribute funding and institutional support to implement SRTS programs in states and communities across the country. SRTS programs facilitate the planning, development, and implementation of projects and activities that will improve safety and reduce traffic, fuel consumption, and air pollution in the vicinity of schools. On July 6, 2012, the new Moving Ahead for Progress in the 21st Century Act (MAP-21) was signed into law. MAP-21 extended SAFETEA-LU for the remainder of FY 2012, with new provisions for FY 2013 and beyond. Funding levels are maintained at FY 2012 levels, plus minor adjustments for inflation. Starting in FY 2015 MAP-21 will replace the SAFETEA-LU program.

The Transportation Mobility and Safety Divisin at NCDOT is charged with disseminating SRTS funding and running the SRTS program in North Carolina. North Carolina received approximately $15 million in SRTS federal funding apportionments for fiscal years 2005 through 2009. This program is 100% federally funded; therefore, no local matching funds are required. In 2009, more than $3.6 million went to 22 municipalities and local agencies for infrastructure and non-infrastructure projects. All proposed projects must relate to walking or biking to and from schools serving any grade K-8. An example of a non-infrastructure project is an education or encouragement program to improve rates of walking and biking to school. An example of an infrastructure project is construction of sidewalks around a school. Funds are available for infrastructure or non-infrastructure projects. Infrastructure improvements under this program must be made within 2 miles of an elementary or middle school. The state requires the completion of a competitive application to apply for funding.

Finally, each NCDOT Division received an allotment of funds ($430,000) for SRTS “spot” improvements. In some divisions, this money has not been spent yet. This is another source of SRTS money that should be explored by this community.

For more information on the SRTS program contact:

Transportation Mobility an Safety Division
Municipal and School Transportation Assistance (MSTA) Group
Safe Routes to School Coordinator: Ed Johnson, ASLA, RLA
(direct line: 919-662-4344)

*Bicycle Transportation And Pedestrian Walkways Program*: The purpose of this Federal program is to improve conditions and safety for bicycling and walking. The bicycle transportation and pedestrian walkways projects are broadly eligible for all of the major funding programs where they compete with other transportation projects for available funding at the State and Metropolitan Planning Organization (MPO) levels. Eligible Activities Include:

- Bicycle and pedestrian plan
- Bicycle parking facilities
- Signed bicycle route
- Spot improvement program
- Bicycle storage/service center
- Traffic calming
- Safety/education position
- Safety brochure/book
- Bicycle lanes on roadway
- Trail/highway intersection
- Shared-use path/trail
- Maps
- Crosswalks, new or retrofit
- Coordinator position
- Police Patrol
- Sidewalks, new or retrofit
- Paved Shoulders
- Single track hike/bicycle trail
- Bicycle racks on buses
- Signal improvements
- Safety/educatino postion
- Helmet Promotion

*Community Transformation Grant (CTG) Program*: The Community Transformation Grant (CTG) Program supports communities in the development and implementatin of initiatives to create healthier communities and reduce chronic disease throughout North Carolina. The CTG project is funded by the Centers for Disease Control and Prevention (CDC) and supports public health efforts to reduce preventable chronic diseases by decreasing tobacco use, increasing physical activity, improving nutrition and increasing access to evidence-based clinical preventative services. The aim of the project is to create equal access to healthy living opportunities for all North Carolinians including racial and ethnic minorities, those

of low socioeconomic status and individuals living in rural North Carolina. Under the project, North Carolina counties have been divided into multi-county regions. Region 5 includes Orange, Alamance, Caswell, Chatham, Durham, Guilford, Person and Rockingham counties. CTG is funded by the Affordable Care Act's Prevention and Public Health Fund. The CDC supports and enables awardees to design and implement community-level programs that prevent chronic diseases. Exmples of community interventions in sidewalks and street lighting to make it safe and easy for people to walk and ride bikes. In FY 2012 the North Carolina Division of Public Health was awarded $7,466,092 to implement broad, sustainable program strategies.

*Congestion Mitigation and Air Quality Improvement Program (CMAQ):* The purpose of the Federal CMAQ program is to fund transportation projects or programs that will contribute to attainment or maintenance of the national ambient air quality standards for ozone, carbon monoxide, and particulate matter. Therefore, funds are only available in locations that are determined to be a nonattainment area. Bicycle and pedestrian facilities and programs are eligible activities for this funding source.

*Highway Safety Improvement Program (HSIP):* The HSIP authorized a new core Federal-aid funding program that began in Fiscal Year 2006 to achieve a significant reduction in traffic fatalities and serious injuries on all public roads. Funds may be used for projects on any public road or publicly owned bicycle and pedestrian pathway or trail.

*High Risk Rural Roads (HRRR) Program:* To be eligible for these Federal funds, States must identify High Risk Rural Roads based on specific criteria. Funds may be used for projects on any public road or publicly owned bicycle and pedestrian pathway or trail. The projects must achieve a significant reduction in traffic fatalities and serious injuries.

*Transportation Community and System Preservation (TCSP) Program:* The purpose of this Federal program is to investigate the relationship between transportation, community, and system preservation plans and practices and identify private sector-based initiatives to improve such relationships. Bicycle and pedestrian projects are eligible for this funding.

*Recreational Trails Program (RTP):* The purpose of this Federal program is to develop and maintain recreations trails and trail-related facilities for both nonmotorized and motorized recreational trail uses.

### *NC Department Of Transportation (NCDOT)*

The most likely source of funding for the SRTS projects would come from the North Carolina Department of Transportation through the previous federal funding program SAFETEA-LU or the new MAP-21 program. Some of the sub-programs within NCDOT are listed below:

*NCDOT Transportation Improvement Program (TIP):* This is the traditional funding source for major transportation projects located on NCDOT roadways; however, it appears that NCDOT will be focusing on strategic highway corridors and regionally significant roadways in the future. To be identified as a potential TIP project, the project must have support from the Metropolitan Planning Organization (MPO), Division Engineer, and Board of transportation Member.

MAP-21 created the *Transportation Alternative Program (TAP)*, which replaces the Transportation Enhancements, Safe Routes to Schools, and the Recreational Trails programs. The TAP provides funding for programs and projects defined as transportation alternatives, including on- and off-road pedestrian and bicycle facilities, infrastructure projects for improving non-driver access to public transportation and enhanced mobility, community improvement activities, and environmental mitigation; recreational trail program projects; and safe routes to school projects. A portion of the TAP funding is sub-allocated to the MPOs over 200,000 population (including the Durham-Chapel Hill-Carrboro Metropolitan Planning Organization (DCHC MPO). MPOs have discretion about how to establish project priorities, or whether to fund particular categories.

*NCDOT Contingency Fund:* These funds are controlled by elected or appointed officials; therefore projects must have a political sponsor. Requests are received from municipalities, counties, businesses, schools, industrial entities, and DOT staff. The President Pro-Tem of Senate, Speaker of the House and the Transportation Secretary approve projects from this fund. Typically, there is a total of $15 million in this fund. $5 million is controlled by the House, $5 million is controlled by the Senate, and $5 million is controlled by the Secretary of Transportation. Funds are administered by the NCDOT Secretary. These funds can be used on both state roads and municipal roads.

*NCDOT Spot Safety Program:* According to the NCDOT website, the Spot Safety Program is used to fund smaller improvement projects to address safety, potential safety, and operational issues. The program is funded with state funds and currently receives approximately $9 million per state fiscal year. The maximum allowable contribution of Spot Safety funds per project is $250,000. A Safety Oversight Committee (SOC) reviews and recommends Spot Safety projects to the Board of Transportation (BOT) for approval and funding. Criteria used by the SOC to select projects for recommendation to the BOT include, but are not limited to, the frequency of correctable crashes, severity of crashes, delay, congestion, number of signal warrants met, effect on pedestrians and schools, division and region priorities, and public interest.

*NCDOT Bicycle and Pedestrian Planning Grant Initiative:* This initiative is a matching grant program that encourages municipalities to develop comprehensive bicycle plans and pedestrian plans. The Division of Bicycle and Pedestrian Transportation (DBPT) and the Transportation Planning Branch (TPB) sponsor this grant. Calls for proposals open annually in the fall. For municipalities with population less than 10,000, NCDOT provides 80% of the funding and the local municipality provides 20% of the funding. The program has granted funds for over 100 communities since its inception in 2004 and a total of approximately $2.5 million.

*NCDOT Bicycle and Pedestrian Projects:* Funds for bicycle and pedestrian projects come from several different sources. Allocation of funds depends on the type of project/program and other criteria. Projects can include independent and incidental projects.

*General Maintenance Funding:* Although funding is currently very tight with NCDOT, there are some potential upgrades that could be done with general maintenance funding. For example, crosswalk markings could be updated when faded. Resurfacing monies are also available for pavement preservation on State routes.

*NCDOT Small Construction Funds:* Each Board of Transportation Member receives approximately $0.5 million a year to spend on transportation projects in their area. Requests are received from municipalities, counties, businesses, schools, industrial entities and DOT staff. The maximum amount per request per fiscal year is $250,000. Right of way should be provided at no cost to NCDOT. The local town government is required to provide utility relocation. Work must occur on state right of way. Eligible types of work that would benefit pedestrian and bicycle programs include widening shoulders, installing traffic flashers to alert drivers (i.e. school, truck turnout, pedestrian crossing), and installing pedestrian signals.

While NCDOT Powell Bill supplement from the Highway Trust Fund will be discontinued with the new Strategic Mobility Formula, the appropriation to provide state-aid for municipal streets will continue as it currently exists. Funds shall continue to be expended for the purposes of maintaining, repairing, constructing, reconstructing or widening of local streets that are the responsibility of municipalities or for planning, construction, and maintenance of bikeways or sidewalks along public street and highways.

*NCDOT Contract Resurfacing:* Each year every Division is provided an allocation of funds for the preservation of the state paved road network. In accordance with current legislation, up to 15% of the funds may be used for widening existing narrow pavements, which may provide additional space for bicycle facilities or a wide-paved shoulder for pedestrian use in very rural areas.

*Economic Development Funds:* This fund was enacted by the General Assembly in 2005 and has been funded each year prior to Fiscal Year 2008/09; however, no funding has been approved since that time. The 2007/08 allocation was $1 million per Division. Projects funded from this source should contribute to further economic growth and development by attracting new businesses and industries or expanding existing businesses and industries that increase employment opportunity. Funds not needed for economic development projects shall be used on spot safety needs. These funds are controlled by the Board Member and the Division.

*NCDOT Division Funds:* Pedestrian Enhancements - Each Division typically receives $100,000 per year to be used for pedestrian enhancements. These funds are administered by the Division Engineer.

Safe Routes to School (SRTS) Enhancements – To date, each of the 14 Divisions have been allocated funds for eligible projects.

### *NC Department Of Environment – Recreational Trails And Adopt-A-Trail Grants*

The State Trails Program is a section of the N.C. Division of Parks and Recreation. The program originated in 1973 with the North Carolina Trails System Act and is dedicated to helping citizens, organizations and agencies plan, develop and manage all types of trails ranging from greenways and trails for hiking, biking and horseback riding to river trails and off-highway vehicle trails. The Recreation Trails Program awards grants up to $75,000 per project. The Adopt-A-Trail Program awards grants up to $5,000 per project.

### *N.C. Parks And Recreation Trust Fund (PARTF)*

The Parks and Recreation Trust Fund (PARTF) provide dollar-for-dollar matching grants to local governments for parks and recreational projects to serve the general public. Counties, incorporated municipalities and public authorities, as defined by G.S. 159-7, are eligible applicants.

A local government can request a maximum of $500,000 with each application. An applicant must match the grant dollar-for-dollar, 50% of the total cost of the project, and may contribute more than 50%. The appraised value of land to be donated to the applicant can be used as part of the match. The value of in-kind services, such as volunteer work, cannot be used as part of the match. http://www.ncparks.gov/About/grants/partf_main.php

### *Community Development Block Grant Funds*

Community Development Block Grant (CDBG) funds are available to local municipal or county governments for projects that enhance the viability of communities by providing decent housing and suitable living environments and by expanding economic opportunities, principally for persons of low- and moderate-income. State CDBG funds are provided by the U.S. Department of Housing and Urban Development (HUD) to the state of North Carolina. Some urban counties and cities in North Carolina receive CDBG funding directly from HUD. Each year, CDBG provides funding to local governments for hundreds of critically-needed community improvement projects throughout the state. These community improvement projects are administered by the Division of Community Assistance and the Commerce Finance Center under eight grant categories. Two categories might be of support to the SRTS Projects: infrastructure and community revitalization.

### *Department Of Energy (DOE)*

The Department of Energy's Energy Efficiency and Conservation Block Grants (EECBG) grants may be used to reduce energy use and fossil fuel emissions and for improvements in energy efficiency. Section 7 of the funding announcement states that these grants provide opportunities for the development and implementation of transportation programs to conserve energy used in transportation including development of infrastructure such as bicycle lanes and pathways and pedestrian walkways. More information can be found at http://www.eecbg.energy.gov/

### *Land And Water Conservation Trust Fund*

The Land and Water Conservation Fund (LWCF) has historically been a primary funding source of the US Department of the Interior for outdoor recreation development and land acquisition by local governments and state agencies. In North Carolina, the program is administered by the Department of Environment and Natural Resources.

## B.2 LOCAL GOVERNMENT

Local funding sources that would support SRTS, bicycle, and pedestrian facility project construction will most likely be limited but should be explored.

### *Local Area Rural Planning Organization (RPO) Or Metropolitan Planning Organization (MPO)*

The local MPO manages the transportation planning process required by Federal law. The MPO plans for the area's surface transportation needs, including highways, transit, bicycle, and pedestrian facilities. There are two subcommittees of the MPO: the Technical Advisory Committee and the Technical Coordinating Committee. An important part of the transportation planning process is to identify transportation needs and to explore feasible alternatives to meet those needs. Plans and programs are often conducted in partnership with the NC Department of Transportation to identify needs and projects to enhance the area's transportation infrastructure.

The SRTS group, school leaders and local government staff must work closely with the regional planning organizations (RPO/MPO) to get SRTS projects listed in Transportation Improvement Program (TIP) priority requests list since the TIP is the primary document for programming and funding for projects. Typically, projects funded with federal aid require a 20 percent local match.

### *Local Government Capital Improvement Programming And Reserve Funds*

Local government may have funding available to support some elements of construction or repair. It will be important to meet with local government representatives (Planner and Town Manager) to judge the availability of this funding.

### *Other Local Funding Options*

- Bonds/Loans
- Taxes
- Impact fees
- Exactions
- Tax increment financing
- Partnerships

## B.3 PRIVATE SECTOR

Many communities have solicited bicycle, pedestrian, and greenway funding assistance from private foundations and other conservation-minded benefactors. Below are several examples of private funding opportunities available. Additional local businesses and corporations should be considered as well.

### *Land For Tomorrow Campaign*

Land for Tomorrow is a diverse partnership of businesses, conservationists, farmers, environmental groups, health professionals and community groups committed to securing support from the public and General Assembly for protecting land, water and historic places. The campaign is asking the North Carolina General Assembly to support issuance of a bond for $200 million a year for five years to preserve and protect its special land and water resources. Land for Tomorrow will enable North Carolina to reach a goal of ensuring that working farms and forests; sanctuaries for wildlife; land bordering streams, parks and greenways; land that helps strengthen communities and promotes job growth; historic downtowns and neighborhoods; and more, will be there to enhance the quality of life for generations to come. Website: http://www.landfortomorrow.org/

### *The Robert Wood Johnson Foundation*

The Robert Wood Johnson Foundation was established as a national philanthropy in 1972, and today it is the largest U.S. foundation devoted to improving the health and health care of all Americans. Grant making is concentrated in four areas:

• To assure that all Americans have access to basic health care at a reasonable cost

• To improve care and support for people with chronic health conditions

• To promote healthy communities and lifestyles

• To reduce the personal, social and economic harm caused by substance abuse: tobacco, alcohol, and illicit drugs

For more specific information about what types of projects are funded and how to apply, visit http://www.rwjf.org/applications/.

### *North Carolina Community Foundation*

The North Carolina Community Foundation, established in 1988, is a statewide foundation seeking gifts from individuals, corporations, and other foundations to build endowments and ensure financial security for nonprofit organizations and institutions throughout the state. Based in Raleigh, North Carolina, the foundation also manages a number of community affiliates throughout North Carolina, that make grants in the areas of human services, education, health, arts, religion, civic affairs, and the conservation and preservation of historical, cultural, and environmental resources. The foundation also manages various scholarship programs statewide. Web site: http://nccommunityfoundation.org/

### *Z. Smith Reynolds Foundation*

This Winston-Salem-based Foundation has been assisting the environmental projects of local governments and non-profits in North Carolina for many years. They have two grant cycles per year and generally do not fund land acquisition. However, they may be able to offer support in other areas of open space and greenways development. More information is available at www.zsr.org.

### *Bank of America Charitable Foundation, Inc.*

The Bank of America Charitable Foundation is one of the largest in the nation. The primary grants program is called Neighborhood Excellence, which seeks to identify critical issues in local communities. Another program that applies to greenways is the Community Development Programs, and specifically the Program Related Investments. This program targets low and moderate income communities and serves to encourage entrepreneurial business development. Visit the web site for more information: www.bankofamerica.com/foundation.

### *Duke Energy Foundation*

Funded by Duke Energy shareholders, this non-profit organization makes charitable grants to selected non-profits or governmental subdivisions. Each annual grant must have:

• An internal Duke Energy business “sponsor”

• A clear business reason for making the contribution

The grant program has three focus areas: Environment and Energy Efficiency, Economic Development, and Community Vitality. Related to this project, the Foundation would support programs that support conservation, training and research around environmental and energy efficiency initiatives. Web site: http://www.duke-energy.com/community/foundation.asp.

### *American Greenways Eastman Kodak Awards*

The Conservation Fund's American Greenways Program has teamed with the Eastman Kodak Corporation and the National Geographic Society to award small grants ($250 to $2,000) to stimulate the planning, design and development of greenways. These grants can be used for activities such as mapping, conducting ecological assessments, surveying land, holding conferences, developing brochures, producing interpretive displays, incorporating land trusts, and building trails. Grants cannot be used for academic research, institutional support, lobbying or political activities. For more information visit The Conservation Fund's website at: www.conservationfund.org.

### *National Trails Fund*

American Hiking Society created the National Trails Fund in 1998, the only privately supported national grants program providing funding to grassroots organizations working toward establishing, protecting and maintaining foot trails in America. 73 million people enjoy foot trails annually, yet many of our favorite trails need major repairs due to a $200 million backlog of badly needed maintenance. National Trails Fund grants help give local organizations the resources they need to secure access, volunteers, tools and materials to protect America's cherished public trails. To date, American Hiking has granted more than $240,000 to 56 different trail projects across the U.S. for land acquisition, constituency building campaigns, and traditional trail work projects. Awards range from $500 to $10,000 per project.

Projects the American Hiking Society will consider include:

• Securing trail lands, including acquisition of trails and trail corridors, and the costs associated with acquiring conservation easements.

• Building and maintaining trails which will result in visible and substantial ease of access, improved hiker safety, and/or avoidance of environmental damage.

• Constituency building surrounding specific trail projects - including volunteer recruitment and support.
Web site: www.americanhiking.org/alliance/fund.html.

### *The Conservation Alliance*

The Conservation Alliance is a non-profit organization of outdoor businesses whose collective annual membership dues support grassroots citizen-action groups and their efforts to protect wild and natural areas. One hundred percent of its member companies' dues go directly to diverse, local community groups across the nation - groups like Southern Utah Wilderness Alliance, Alliance for the Wild Rockies, The Greater Yellowstone Coalition, the South Yuba River Citizens' League, RESTORE: The North Woods and the Sinkyone Wilderness Council (a Native American-owned/operated wilderness park). For these groups, who seek to protect the last great wild lands and waterways from resource extraction and commercial development, the Alliance's grants are substantial in size (about $35,000 each), and have often made the difference between success and defeat. Since its inception in 1989, The Conservation Alliance has contributed $4,775,059 to grassroots environmental groups across the nation, and its member companies are proud of the results: To date the groups funded have saved over 34 million acres of wild lands and 14 dams have been either prevented or removed-all through grassroots community efforts.

The Conservation Alliance is a unique funding source for grassroots environmental groups. It is the only environmental grant maker whose funds come from a potent yet largely untapped constituency for protection of ecosystems - the non-motorized outdoor recreation industry and its customers. This industry has great incentive to protect the places in which people use the clothing, hiking boots, tents and backpacks it sells. The industry is also uniquely positioned to educate outdoor enthusiasts about threats to wild places, and engage them to take action. Finally, when it comes to decision-makers - especially those in the Forest Service, National Park Service, and Bureau of Land Management, this industry has clout - an important tool that small advocacy groups can wield.

The Conservation Alliance Funding Criteria: The Project should be focused primarily on direct citizen action to protect and enhance our natural resources for recreation. We're not looking for mainstream education or scientific research projects, but rather for active campaigns. All projects should be quantifiable, with specific goals, objectives and action plans and should include a measure for evaluating success. The project should have a good chance for closure or significant measurable results over a fairly short term (one to two years). Funding emphasis may not be on general operating expenses or staff payroll.

Web site: www.conservationalliance.com/index.m.
E-mail: john@conservationalliance.com.

### *National Fish And Wildlife Foundation (NFWF)*

The National Fish and Wildlife Foundation (NFWF) is a private, nonprofit, tax-exempt organization chartered by Congress in 1984. The National Fish and Wildlife Foundation sustains, restores, and enhances the Nation's fish, wildlife, plants and habitats. Through leadership conservation investments with public and private partners, the Foundation is dedicated to achieving maximum conservation impact by developing and applying best practices and innovative methods for measurable outcomes.

The Foundation awards matching grants under its Keystone Initiatives to achieve measurable outcomes in the conservation of fish, wildlife, plants and the habitats on which they depend. Awards are made on a competitive basis to eligible grant recipients, including federal, tribal, state, and local governments, educational institutions, and non-profit conservation organizations. Project proposals are received on a year-round, revolving basis with two decision cycles per year. Grants generally range from $50,000-$300,000 and typically require a minimum 2:1 non-federal match.

Funding priorities include bird, fish, marine/coastal, and wildlife and habitat conservation. Other projects that are considered include controlling invasive species, enhancing delivery of ecosystem services in agricultural systems, minimizing the impact on wildlife of emerging energy sources, and developing future conservation leaders and professionals. Website: http://www.nfwf.org/AM/Template.cfm?Section=Grants where additional grant programs are described.

### *The Trust For Public Land*

Land conservation is central to the mission of the Trust for Public Land (TPL). Founded in 1972, the Trust for Public Land is the only national nonprofit working exclusively to protect land for human enjoyment and well being. TPL helps conserve land for recreation and spiritual nourishment and to improve the health and quality of life of American communities. TPL's legal and real estate specialists work with landowners, government agencies, and community groups to:

• Create urban parks, gardens, greenways, and riverways

• Build livable communities by setting aside open space in the path of growth

• Conserve land for watershed protection, scenic beauty, and close-to home recreation safeguard the character of communities by preserving historic landmarks and landscapes.

The following are TPL's Conservation Services:

• Conservation Vision: TPL helps agencies and communities define conservation priorities, identify lands to be protected, and plan networks of conserved land that meet public need.

• Conservation Finance: TPL helps agencies and communities identify and raise funds for conservation from federal, state, local, and philanthropic sources.

• Conservation Transactions: TPL helps structure, negotiate, and complete land transactions that create parks, playgrounds, and protected natural areas.

• Research and Education: TPL acquires and shares knowledge of conservation issues and techniques to improve the practice of conservation and promote its public benefits.

Since 1972, TPL has worked with willing landowners, community groups, and national, state, and local agencies to complete more than 3,000 land conservation projects in 46 states, protecting more than 2 million acres. Since 1994, TPL has helped states and communities craft and pass over 330 ballot measures, generating almost $25 billion in new conservation-related funding. For more information, visit http://www.tpl.org/.

### *Blue Cross Blue Shield Of North Carolina Foundation (BCBS)*

Blue Cross Blue Shield (BCBS) focuses on programs that use an outcome approach to improve the health and well-being of residents. The Health of Vulnerable Populations grants program focuses on improving health outcomes for at-risk populations. The Healthy Active Communities grant concentrates on increased physical activity and healthy eating habits. Eligible grant applicants must be located in North Carolina, be able to provide recent tax forms and, depending on the size of the nonprofit, provide an audit.

Blue Cross Blue Shield of NC Foundation
P.O Box 2291
Durham, NC 27702
919-765-7347
http://www.bcbsncfoundation.org/

### *Local Trail Sponsors*

A sponsorship program for trail amenities allows smaller donations to be received from both individuals and businesses. Cash donations could be placed into a trust fund to be accessed for certain construction or acquisition projects associated with the greenways and open space system. Some recognition of the donors is appropriate and can be accomplished through the placement of a plaque, the naming of a trail segment, and/or special recognition at an opening ceremony. Types of gifts other than cash could include donations of services, equipment, labor, or reduced costs for supplies.

### *Volunteer Work*

It is expected that many citizens will be excited about the development of SRTS improvements, including trail corridors. Individual volunteers from the community can be brought together with groups of volunteers form church groups, civic groups, scout troops and environmental groups to work on greenway development on special community workdays. Volunteers can also be used for fund-raising, maintenance, and programming needs.

# C FEDERAL/STATE POLICIES


Chapter Outline:



## C.0 OVERVIEW

A number of federal and state pedestrian policies have been developed in recent years. This appendix covers a number of these policies that are intended to better integrate walking and bicycling into transportation infrastructure.

## C.1 UNITED STATES DEPARTMENT OF TRANSPORTATION BICYCLE AND PEDESTRIAN POLICY (MARCH 2010)

A United States Department of Transportation (USDOT) policy statement regarding the integration of bicycling and walking into transportation infrastructure recommends that, "bicycling and walking facilities will be incorporated into all transportation projects" unless exceptional circumstances exist. The Policy Statement was drafted by the USDOT in response to Section 1202 (b) of the Transportation Equity Act for the 21st Century (TEA-21) with the input and assistance of public agencies, professional associations and advocacy groups. USDOT hopes that public agencies, professional associations, advocacy groups, and others adopt this approach as a way of committing themselves to integrating bicycling and walking into the transportation mainstream. The full statement reads as follows, with some minor adjustments for applicability in the Town of Hillsborough/Orange County:

1. Bicycle and pedestrian ways shall be established in new construction and reconstruction projects in all urbanized areas unless one or more of three conditions are met:

- Bicyclists and pedestrians are prohibited by law from using the roadway. In this instance, a greater effort may be necessary to accommodate bicyclists and pedestrians elsewhere within the right of way or within the same transportation corridor.

- The cost of establishing bikeways or walkways would be excessively disproportionate to the need or probable use. Excessively disproportionate is defined as exceeding 20% of the cost of the larger transportation project.

- Where sparsity of population or other factors indicate an absence of need. For example, on low volume, low speed residential streets, or streets with severe topographic or natural resource constraints.

2. In rural areas, paved shoulders should be included in all new construction and reconstruction projects on roadways used by more than 1,000 vehicles per day. Paved shoulders have safety and operational advantages for all road users in addition to providing a place for bicyclists and pedestrians to operate. Rumble strips are not recommended where shoulders are used by bicyclists unless there is a minimum clear path of four feet in which a bicycle may safely operate.

3. Sidewalks, shared use paths, street crossings (including over- and undercrossings), pedestrian signals, signs, street furniture, transit stops and facilities, and all connecting pathways shall be designed, constructed, operated and maintained so that all pedestrians, including people with disabilities, can travel safely and independently.

4. The design and development of the transportation infrastructure shall improve conditions for bicycling and walking through the following additional steps:

- Planning projects for the long-term. Transportation facilities are long-term investments that remain in place for many years. The design and construction of new facilities that meet the criteria in item above should anticipate likely future demand for bicycling and walking facilities and not preclude the provision of future improvements. For example, a bridge that is likely to remain in place for 50 years, might be built with sufficient width for safe bicycle and pedestrian use in anticipation that facilities will be available at either end of the bridge even if that is not currently the case.

- Addressing the need for bicyclists and pedestrians to cross corridors as well as travel along them. Even where bicyclists and pedestrians may not commonly use a particular travel corridor that is being improved or constructed, they will likely need to be able to cross that corridor safely and conveniently. Therefore, the design of intersections and interchanges shall accommodate bicyclists and pedestrians in a manner that is safe, accessible and convenient.

- Getting exceptions approved at a senior level. Exceptions for the non-inclusion of bikeways and walkways shall be approved by a senior manager and be documented with supporting data that indicates the basis for the decision.

- Designing facilities to the best currently available standards and guidelines. The design of facilities for bicyclists and pedestrians should follow design guidelines and standards that are commonly used, such as the AASHTO Guide for the Development of Bicycle Facilities, AASHTO's A Policy on Geometric Design of Highways and Streets, and the ITE Recommended Practice "Design and Safety of Pedestrian Facilities. (Many of these guidelines are summarized in Chapter 4: Bicycle Facility Standards)

(Retrieved from http://www.fhwa.dot.gov/environment/bikeped/design.htm on 5/6/2008)

## C.2 UNITED STATES DEPARTMENT OF TRANSPORTATION POLICY STATEMENT ON BICYCLE AND PEDESTRIAN ACCOMMODATION REGULATIONS AND RECOMMENDATIONS (MARCH 2010)

*Purpose*

The United States Department of Transportation (USDOT) is providing this Policy Statement to reflect the Department's support for the development of fully integrated active transportation networks. The establishment of well-connected walking and bicycling networks is an important component for livable communities, and their design should be a part of Federal-aid project developments. Walking and bicycling foster safer, more livable, family-friendly communities; promote physical activity and health; and reduce vehicle emissions and fuel use. Legislation and regulations exist that require inclusion of bicycle and pedestrian policies and projects into transportation plans and project development. Accordingly, transportation agencies should plan, fund, and implement improvements to their walking and bicycling networks, including linkages to transit. In addition, DOT encourages transportation agencies to go beyond the minimum requirements, and proactively provide convenient, safe, and context-sensitive facilities that foster increased use by bicyclists and pedestrians of all ages and abilities, and utilize universal design characteristics when appropriate. Transportation programs and facilities should accommodate people of all ages and abilities, including people too young to drive, people who cannot drive, and people who choose not to drive.

*Policy Statement*

The DOT policy is to incorporate safe and convenient walking and bicycling facilities into transportation projects. Every transportation agency, including DOT, has the responsibility to improve conditions and opportunities

for walking and bicycling and to integrate walking and bicycling into their transportation systems. Because of the numerous individual and community benefits that walking and bicycling provide — including health, safety, environmental, transportation, and quality of life — transportation agencies are encouraged to go beyond minimum standards to provide safe and convenient facilities for these modes.

*Authority*

This policy is based on various sections in the United States Code (U.S.C.) and the Code of Federal Regulations (CFR) in Title 23—Highways, Title 49—Transportation, and Title 42—The Public Health and Welfare. These sections, provided in the Appendix, describe how bicyclists and pedestrians of all abilities should be involved throughout the planning process, should not be adversely affected by other transportation projects, and should be able to track annual obligations and expenditures on nonmotorized transportation facilities.

*Recommended Actions*

The DOT encourages States, local governments, professional associations, community organizations, public transportation agencies, and other government agencies, to adopt similar policy statements on bicycle and pedestrian accommodation as an indication of their commitment to accommodating bicyclists and pedestrians as an integral element of the transportation system. In support of this commitment, transportation agencies and local communities should go beyond minimum design standards and requirements to create safe, attractive, sustainable, accessible, and convenient bicycling and walking networks. Such actions should include:

- Considering walking and bicycling as equals with other transportation modes: The primary goal of a transportation system is to safely and efficiently move people and goods. Walking and bicycling are efficient transportation modes for most short trips and, where convenient intermodal systems exist, these nonmotorized trips can easily be linked with transit to significantly increase trip distance. Because of the benefits they provide, transportation agencies should give the same priority to walking and bicycling as is given to other transportation modes. Walking and bicycling should not be an afterthought in roadway design.

- Ensuring that there are transportation choices for people of all ages and abilities, especially children: Pedestrian and bicycle facilities should meet accessibility requirements and provide safe, convenient, and interconnected transportation networks. For example, children should have safe and convenient options for walking or bicycling to school and parks. People who cannot or prefer not to drive should have safe and efficient transportation choices.

- Going beyond minimum design standards: Transportation agencies are encouraged, when possible, to avoid designing walking and bicycling facilities to the minimum standards. For example, shared-use paths that have been designed to minimum width requirements will need retrofits as more people use them. It is more effective to plan for increased usage than to retrofit an older facility. Planning projects for the long-term should anticipate likely future demand for bicycling and walking facilities and not preclude the provision of future improvements.

- Integrating bicycle and pedestrian accommodation on new, rehabilitated, and limited-access bridges: DOT encourages bicycle and pedestrian accommodation on bridge projects including facilities on limited-access bridges with connections to streets or paths.

- Collecting data on walking and bicycling trips: The best way to improve transportation networks for any mode is to collect and analyze trip data to optimize investments. Walking and bicycling trip data for many communities are lacking. This data gap can be overcome by establishing routine collection of nonmotorized trip information. Communities that routinely collect walking and bicycling data are able to track trends and prioritize investments to ensure the success of new facilities. These data are also valuable in linking walking and bicycling with transit.

• Setting mode share targets for walking and bicycling and tracking them over time: A byproduct of improved data collection is that communities can establish targets for increasing the percentage of trips made by walking and bicycling.

• Removing snow from sidewalks and shared-use paths: Current maintenance provisions require pedestrian facilities built with Federal funds to be maintained in the same manner as other roadway assets. State Agencies have generally established levels of service on various routes especially as related to snow and ice events.

• Improving nonmotorized facilities during maintenance projects: Many transportation agencies spend most of their transportation funding on maintenance rather than on constructing new facilities. Transportation agencies should find ways to make facility improvements for pedestrians and bicyclists during resurfacing and other maintenance projects.

*Conclusion*

Increased commitment to and investment in bicycle facilities and walking networks can help meet goals for cleaner, healthier air; less congested roadways; and more livable, safe, cost-efficient communities. Walking and bicycling provide low-cost mobility options that place fewer demands on local roads and highways. DOT recognizes that safe and convenient walking and bicycling facilities may look different depending on the context — appropriate facilities in a rural community may be different from a dense, urban area. However, regardless of regional, climate, and population density differences, it is important that pedestrian and bicycle facilities be integrated into transportation systems. While DOT leads the effort to provide safe and convenient accommodations for pedestrians and bicyclists, success will ultimately depend on transportation agencies across the country embracing and implementing this policy.

Ray LaHood, United States Secretary of Transportation
http://www.fhwa.dot.gov/environment/bikeped/policy_accom.htm

## C.3 FHWA MEMORANDUM ON MAINSTREAMING BICYCLE AND PEDESTRIAN PROJECTS

(See pages C-5 through C-7)

# U.S. Department of Transportation Federal Highway Administration

# Memorandum

**Subject:** ACTION: Transmittal of Guidance on Bicycle and Pedestrian Provisions of the Federal-aid Program

**Date:** February 24, 1999

**From:** Kenneth R. Wykle
Federal Highway Administrator

**In reply, refer to:** HEPH-30

**To:**
Division Administrators
Federal Lands Highway Division Engineers

This memorandum transmits the Federal Highway Administration's (FHWA) Guidance on the Bicycle and Pedestrian Provisions of the Federal-aid Program and reaffirms our strong commitment to improving conditions for bicycling and walking. The nonmotorized modes are an integral part of the mission of FHWA and a critical element of the local, regional, and national transportation system. Bicycle and pedestrian projects and programs are eligible for but not guaranteed funding from almost all of the major Federal-aid funding programs. We expect every transportation agency to make accommodation for bicycling and walking a routine part of their planning, design, construction, operations and maintenance activities.

The Transportation Equity Act for the 21st Century (TEA-21) continues the call for the mainstreaming of bicycle and pedestrian projects into the planning, design, and operation of our Nation's transportation system. Under the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA), Federal spending on bicycle and pedestrian improvements increased from $4 million annually to an average of $160 million annually. Nevertheless, the level of commitment to addressing the needs of bicyclists and pedestrians varies greatly from State to State.

The attached guidance explains how bicycle and pedestrian improvements can be routinely included in federally funded transportation projects and programs. I would ask each division office to pass along this guidance to the State DOT and to meet with them to discuss ways of expediting the implementation of bicycle and pedestrian projects. With the guidance as a basis for action, States can then decide the most appropriate ways of mainstreaming the inclusion of bicycle and pedestrian projects and programs.

Bicycling and walking contribute to many of the goals for our transportation system we have at FHWA and at the State and local levels. Increasing bicycling and walking offers the potential for cleaner air, healthier people, reduced congestion, more liveable communities, and more efficient use of precious road space and resources. That is why funds in programs such as Congestion Mitigation and Air Quality Improvement, Transportation Enhancements, and the National Highway System, are eligible to be used for bicycling and

walking improvements that will encourage use of the two modes.

We also have a responsibility to improve the safety of bicycling and walking as the two modes represent more than 14 percent of the 41,000 traffic fatalities the nation endures each year. Pedestrian and bicycle safety is one of FHWA's top priorities and this is reflected in our 1999 Safety Action Plan. As the attached guidance details, TEA-21 has opened up the Hazard Elimination Program to a broader array of bicycle, pedestrian, and traffic calming projects that will improve dangerous locations. The legislation also continues funding for critical safety education and enforcement activities under the leadership of the National Highway Traffic Safety Administration. If we are successful in improving the real and perceived safety of bicyclists and pedestrians, we will also increase use.

You will see from the attached guidance that the Federal-aid Program, as amended by TEA-21, offers an extraordinary range of opportunities to improve conditions for bicycling and walking. Initiatives such as the Transportation and Community and System Preservation Pilot Program and the Access to Jobs program offer exciting new avenues to explore.

Bicycling and walking ought to be accommodated, as an element of good planning, design, and operation, in all new transportation projects unless there are substantial safety or cost reasons for not doing so. Later this year (1999), FHWA will issue design guidance language on approaches to accommodating bicycling and pedestrian travel that will, with the cooperation of AASHTO, ITE, and other interested parties, spell out ways to build bicycle and pedestrian facilities into the fabric of our transportation infrastructure from the outset. We can no longer afford to treat the two modes as an afterthought or luxury.

The TEA-21 makes a great deal possible. However, in the area of bicycling and walking in particular, we must work hard to ensure good intentions and fine policies translate quickly and directly into better conditions for bicycling and walking. While FHWA has limited ability to mandate specific outcomes, I am committed to ensuring that we provide national leadership in three critical areas.

- The FHWA will encourage the development and implementation of bicycle and pedestrian plans as part of the overall transportation planning process. Every statewide and metropolitan transportation plan should address bicycling and walking as an integral part of the overall system, either through the development of a separate bicycle and pedestrian element or by incorporating bicycling and walking provisions throughout the plan. Further, I am instructing each FHWA division office to closely monitor the progress of projects from the long-range transportation plans to the STIPs and TIPs. In the coming months, FHWA will disseminate exemplary projects, programs, and plans, and we will conduct evaluations in selected States and MPOs to determine the effectiveness of the planning process.

- The FHWA will promote the availability and use of the full range of streamlining mechanisms to increase project delivery. The tools are in place for States and local government agencies to speed up the delivery of bicycle and pedestrian projects - it makes no sense to treat installation of a bicycle rack or curb cut the same way we treat a new Interstate highway project - and our division offices must take a lead in promoting and administering these procedures.

- The FHWA will help coordinate the efforts of Federal, State, metropolitan, and other relevant agencies to improve conditions for bicycling and walking. Once again, our division offices must ensure that those involved in implementing bicycle and pedestrian projects at the State and local level are given maximum opportunity to get their job done, unimpeded by regulations and red tape from the Federal level. I am asking each of our division offices to facilitate a dialogue among each State's bicycle and pedestrian coordinator, Transportation Enhancements program manager, Recreational Trails Program administrator, and their local and FHWA counterparts to identify and remove obstacles to the implementation of bicycle and pedestrian projects and programs.

In less than a decade, bicycling and walking have gone from being described by my predecessor Tom Larson as "the forgotten modes" to becoming a serious part of our national transportation system. The growing acceptance of bicycling and walking as modes to be included as part of the transportation mainstream started with passage of ISTEA in 1991 and was given a considerable boost by the Congressionally-mandated National Bicycling and Walking Study. That study, released in 1994, challenges the U.S. Department of Transportation to double the percentage of trips made by foot and bicycle while simultaneously reducing fatalities and injuries suffered by these modes by 10 percent - and we remain committed to achieving these goals.

The impetus of ISTEA and the National Bicycling and Walking Study is clearly reinforced by the bicycle and pedestrian provisions of the TEA-21. The legislation confirms the vital role bicycling and walking must play in creating a balanced, accessible, and safe transportation system for all Americans.

**FHWA Guidance (1999) - Bicycle and Pedestrian Provisions of Federal Transportation Legislation**

To provide Feedback, Suggestions, or Comments for this page contact Gabe Rousseau at gabe.rousseau@dot.gov.

## C.4 NORTH CAROLINA DEPARTMENT OF TRANSPORTATION COMPLETE STREETS POLICY

In 2009, NCDOT unveiled its efforts to routinely provide for all users of the roads - pedestrians, bicyclists, public transportation users, and motorists of all ages and abilities. The new document:

• Explains the scope and applicability of the policy ("all transportation facilities within a growth area of a town or city funded by or through NCDOT, and planned, designed, or constructed on state maintained facilities, must adhere to this policy");

• Asserts the Department's role as a partner to local communities in transportation projects;

• Addresses the need for context-sensitivity;

• Sets exceptions (where specific travelers are prohibited and where there is a lack of current or future need) and a clear process for granting them (approval by the Chief Deputy Secretary); and

• Establishes a stakeholders group, including transportation professionals and interest groups, tasked to create comprehensive planning and design guidelines in support of the policy.

In 2012, NCDOT released its first version of the Complete Streets Design Guidelines as a follow-up to the Complete Streets Policy. These Design Guidelines should be consulted with the design guidelines of this plan (Appendix D).

Visit www.ncdot.gov for the full policy document: http://www.ncdot.org/doh/preconstruct/highway/roadway/policymemos/Design%5CCompleteStreetsPolicy.pdf. Visit http://www.nccompletestreets.org/ for the 2012 Complete Streets Guidelines.

## C.5 NCDOT BOARD OF TRANSPORTATION RESOLUTION: BICYCLING AND WALKING IN NORTH CAROLINA: A CRITICAL PART OF THE TRANSPORTATION SYSTEM

(ADOPTED BY THE BOARD OF TRANSPORTATION ON SEPTEMBER 8, 2000)

The North Carolina Board of Transportation strongly reaffirms its commitment to improving conditions for bicycling and walking, and recognizes nonmotorized modes of transportation as critical elements of the local, regional, and national transportation system.

WHEREAS, increasing bicycling and walking offers the potential for cleaner air, healthier people, reduced congestion, more liveable communities, and more efficient use of road space and resources; and

WHEREAS, crashes involving bicyclists and pedestrians represent more than 14 percent of the nation's traffic fatalities; and

WHEREAS, the Federal Highway Administration (FHWA) in its policy statement "Guidance on the Bicycle and Pedestrian Provisions of the Federal-Aid Program" urges states to include bicycle and pedestrian accommodations in its programmed highway projects; and

WHEREAS, bicycle and pedestrian projects and programs are eligible for funding from almost all of the major Federal-aid funding programs; and

WHEREAS, the Transportation Equity Act for the 21st Century (TEA-21) calls for the mainstreaming of bicycle and pedestrian projects into the planning, design and operation of our Nation's transportation system;

NOW, THEREFORE, BE IT RESOLVED, the North Carolina Board of Transportation concurs that bicycling and walking accommodations shall be a routine part of the North Carolina Department of Transportation's planning, design, construction, and operations activities and supports the Department's study and consideration of meth-

ods of improving the inclusion of these modes into the everyday operations of North Carolina's transportation system; and

BE IT FURTHER RESOLVED, North Carolina cities and towns are encouraged to make bicycling and pedestrian improvements an integral part of their transportation planning and programming.

## C.6 NCDOT ADMINISTRATIVE ACTION TO INCLUDE LOCAL ADOPTED GREENWAYS PLANS IN THE NCDOT HIGHWAY PLANNING PROCESS

(ADOPTED JANUARY 1994)

In 1994 the NCDOT adopted administrative guidelines to consider greenways and greenway crossings during the highway planning process. This policy was incorporated so that critical corridors which have been adopted by localities for future greenways will not be severed by highway construction. Following are the text for the Greenway Policy and Guidelines for implementing it.

In concurrence with the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 and the Board of Transportation's Bicycle Policy of 1978 (updated in 1991) and Pedestrian Policy of 1993, the North Carolina Department of Transportation recognizes the importance of incorporating local greenways plans into its planning process for the development and improvement of highways throughout North Carolina.

NCDOT Responsibilities: The Department will incorporate locally adopted plans for greenways into the ongoing planning processes within the Statewide Planning (thoroughfare plans) and the Planning and Environmental (project plans) Branches of the Division of Highways. This incorporation of greenway plans will be consistent throughout the department. Consideration will be given to including the greenway access as a part of the highway improvement.

Where possible, within the policies of the Department, within the guidelines set forth in provisions for greenway crossings, or other greenway elements, will be made as a part of the highway project or undertaken as an allowable local expenditure.

Local Responsibilities: Localities must show the same commitment to building their adopted greenway plans as they are requesting when they ask the state to commit to providing for a certain segment of that plan. It is the responsibility of each locality to notify the Department of greenway planning activity and adopted greenway plans and to update the Department with all adopted additions and changes in existing plans.

It is also the responsibility of each locality to consider the adopted transportation plan in their greenways planning and include its adopted greenways planning activities within their local transportation planning process. Localities should place in priority their greenways construction activities and justify the transportation nature of each greenway segment. When there are several planned greenway crossings of a proposed highway improvement, the locality must provide justification of each and place the list of crossings in priority order. Where crossings are planned, transportation rights of way should be designated or acquired separately to avoid jeopardizing the future transportation improvements.

## C.7 GUIDELINES FOR NCDOT TO COMPLY WITH ADMINISTRATIVE DECISION TO INCORPORATE LOCAL GREENWAYS INTO HIGHWAY PLANNING PROCESS

• Thoroughfare plans will address the existence of greenways planning activity, which has been submitted by local areas. Documentation of mutually agreed upon interface points between the thoroughfare plan and a greenway plan will be kept, and this information will become a part of project files.

• Project Planning Reports will address the existence of locally adopted greenways segment plans, which may affect the corridor being planned for a highway improvement. It is, however, the responsibility of the locality to

notify the Department of the adopted greenways plans (or changes to its previous plans) through its current local transportation plan, as well as its implementation programs.

• Where local greenways plans have not been formally adopted or certain portions of the greenways plans have not been adopted, the Department may note this greenway planning activity but is not required to incorporate this information into its planning reports.

• Where the locality has included adopted greenways plans as a part of its local transportation plan and a segment (or segments) of these greenways fall within the corridor of new highway construction or a highway improvement project, the feasibility study and/or project planning report for this highway improvement will consider the effects of the proposed highway improvement upon the greenway in the same manner as it considers other planning characteristics of the project corridor, such as archeological features or land use.

• Where the locality has justified the transportation versus the leisure use importance of a greenway segment and there is no greenway alternative of equal importance nearby, the project planning report will suggest inclusion of the greenway crossing, or appropriate greenway element, as an incidental part of the highway expenditure.

• Where the locality has not justified the transportation importance of a greenway segment, the greenway crossing, or appropriate greenway element, may be included as a part of the highway improvement plan if the local government covers the cost.

• A locality may add any appropriate/acceptable greenway crossing or greenway element at their own expense to any highway improvement project as long as it meets the design standards of the NCDOT.

• The NCDOT will consider funding for greenway crossings, and other appropriate greenway elements only if the localities guarantee the construction of and/or connection with other greenway segments. This guarantee should be in the form of inclusion in the local capital improvements program or NCDOT/municipal agreement.

• If the state pays for the construction of a greenway incidental to a highway improvement and the locality either removes the connecting greenway segments from its adopted greenways plans or decides not to construct its agreed upon greenway segment, the locality will reimburse the state for the cost of the greenway incidental feature. These details will be handled through a municipal agreement.

• Locality must accept maintenance responsibilities for state-built greenways, or portions thereof. Details will be handled through a municipal agreement.

## C.8 NCDOT PEDESTRIAN POLICY GUIDELINES

(See pages C-11 through C-12)

## C.9 NCDOT ONLINE PEDESTRIAN PLANNING AND DESIGN RESOURCES LIST

(See pages C-13 through C-14)

# DEPARTMENT OF TRANSPORTATION
# PEDESTRIAN POLICY GUIDELINES
## EFFECTIVE OCTOBER 1, 2000

These guidelines provide an updated procedure for implementing the Pedestrian Policy adopted by the Board of Transportation August 1993 and the Board of Transportation Resolution September 8, 2000. The resolution reaffirms the Department's commitment to improving conditions for bicycling and walking, and recognizes non-motorized modes of transportation as critical elements of the local, regional, and national transportation system. The resolution encourages North Carolina cities and towns to make bicycling and pedestrian improvements an integral part of their transportation planning and programming.

**REQUIREMENTS FOR DOT FUNDING:**

REPLACEMENT OF EXISTING SIDEWALKS:

The Department will pay 100% of the cost to replace an existing sidewalk that is removed to facilitate the widening of a road.

TIP INCIDENTAL PROJECTS:

DEFINED: Incidental pedestrian projects are defined as TIP projects where pedestrian facilities are included as part of the roadway project.

REQUIREMENTS:

1. The municipality and/or county notifies the Department in writing of its desire for the Department to incorporate pedestrian facilities into project planning and design. Notification states the party's commitment to participate in the cost of the facility as well as being responsible for all maintenance and liability. Responsibilities are defined by agreement. Execution is required prior to contract let.

   The municipality is responsible for evaluating the need for the facility (ie: generators, safety, continuity, integration, existing or projected traffic) and public involvement.

2. Written notification must be received by the **Project Final Field Inspection (FFI) date**. Notification should be sent to the Deputy Highway Administrator - Preconstruction with a copy to the Project Engineer and the Agreements Section of the Program Development Branch. Requests received after the project FFI date will be incorporated into the TIP project, if feasible, and only if the requesting party commits by agreement to pay 100% of the cost of the facility.

3. The Department will review the feasibility of including the facility in our project and will try to accommodate all requests where the Department has acquired appropriate right of way on curb and gutter sections and the facility can be installed in the current project berm width. The standard project section is a 10-ft berm (3.0-meter) that accommodates a 5-ft sidewalk. In accordance with

AASHTO standards, the Department will construct 5-ft sidewalks with wheelchair ramps. Betterment cost (ie: decorative pavers) will be a Municipal responsibility.

4. If the facility is not contained within the project berm width, the Municipality is responsible for providing the right of way and/or construction easements as well as utility relocations, at no cost to the Department. This provision is applicable to all pedestrian facilities including multi-use trails and greenways.

5. A cost sharing approach is used to demonstrate the Department's and the municipality's/county's commitment to pedestrian transportation (sidewalks, multi-use trails and greenways). The matching share is a sliding scale based on population as follows:

| MUNICIPAL POPULATION | DOT PARTICIPATION | LOCAL PARTICIPATION |
|---|---|---|
| > 100,000 | 50% | 50% |
| 50,000 to 100,000 | 60% | 40% |
| 10,000 to 50,000 | 70% | 30% |
| < 10,000 | 80% | 20% |

Note: The cost of bridges will not be included in the shared cost of the pedestrian installation if the Department is funding the installation under provision 6 - pedestrian facilities on bridges.

6. For bridges on streets with curb and gutter approaches, the Department will fund and construct sidewalks on both sides of the bridge facility if the bridge is less than 200 feet in length. If the bridge is greater than 200 feet in length, the Department will fund and construct a sidewalk on one side of the bridge structure. The bridge will also be studied to determine the costs and benefits of constructing sidewalks on both sides of the structure. If in the judgement of the Department sidewalks are justified, funding will be provided for installation. The above provision is also applicable to dual bridge structures. For dual bridges greater than 200 ft in length, a sidewalk will be constructed on the outside of one bridge structure. The bridges will also be studied to determine if sidewalks on the outside of both structures are justified.

7. FUNDING CAPS are no longer applicable.

8. This policy does not commit the Department to the installation of facilities in the Department's TIP projects where the pedestrian facility causes an unpractical design modification, is not in accordance with AASHTO standards, creates an unsafe situation, or in the judgement of the Department is not practical to program.

INDEPENDENT PROJECTS

DEFINED: The DOT has a separate category of funds for all independent pedestrian facility projects in North Carolina where installation is unrelated to a TIP roadway project. An independent pedestrian facility project will be administered in accordance with Enhancement Program Guidelines.

# Useful On-Line Pedestrian Planning and Design Resources

| | |
|---|---|
| **NCDOT Division of Bicycle & Pedestrian Transportation** | ***http://www.ncdot.org/transit/bicycle/*** |
| Board of Transportation Resolution on Mainstreaming | *http://www.ncdot.org/transit/bicycle/laws/laws_resolution.html* |
| NCDOT Pedestrian Policy Guidelines | *http://www.ncdot.org/transit/bicycle/laws/ped_guide.pdf* |
| NCDOT Greenways - Administrative Process | *http://www.ncdot.org/transit/bicycle/laws/laws_greenway_admin.html* |
| Funding | *http://www.ncdot.org/transit/bicycle/funding/funding_intro.html* |
| Project Types | *http://www.ncdot.org/transit/bicycle/projects/project_types/bpt_intro.html* |
| Crash Data | *http://www.ncdot.org/transit/bicycle/safety/safety_crashdata.html* |
| DBPT Long Range Plan | *http://www.ncdot.org/transit/bicycle/projects/intro/projects_long_range.html* |
| Safe Routes to School Program | *http://www.ncdot.org/transit/bicycle/saferoutes/SafeRoutes.html* |
| **NCDOT Division of Highways** | ***http://www.ncdot.org/doh/*** |
| **Alternative Delivery Unit – Publications for Download** | ***http://www.ncdot.org/doh/preconstruct/altern/value/manuals/*** |
| Bridge Policy 2000 | *http://www.ncdot.org/doh/preconstruct/altern/value/manuals/bpe2000.doc* |
| Curb Cuts & Ramps for Disabled Persons | *http://www.ncdot.org/doh/preconstruct/altern/value/manuals/handi.pdf* |
| Traditional Neighborhood Development Manual | *http://www.ncdot.org/doh/preconstruct/altern/value/manuals/tnd.pdf* |
| ADA – Detectable Warnings | *http://www.ncdot.org/doh/preconstruct/ps/std_draw/06english/08/default.html* |
| Highway Design Branch – Design Manual | *http://www.ncdot.org/doh/preconstruct/altern/value/manuals/designmanual.html* |
| Policy and Procedure Manual (See Section 28) | *http://www.ncdot.org/doh/preconstruct/altern/value/manuals/ppm/* |
| Policy on Street & Driveway Access | *http://www.ncdot.org/doh/preconstruct/altern/value/manuals/pos.pdf* |
| **Traffic Engineering and Safety Systems Branch** | ***http://www.ncdot.org/doh/preconstruct/traffic/*** |
| NC Supplement to the Manual on Uniform Traffic Control Devices | *http://www.ncdot.org/doh/preconstruct/traffic/MUTCD/* |
| Crosswalks/Mid-Block Signing and Pavement Markings | *http://www.ncdot.org/doh/preconstruct/traffic/teppl/Topics/C-36/C-36.html* |

| | |
|---|---|
| **UNC Highway Safety Research Center** | ***http://www.hsrc.unc.edu*** |
| **Pedestrian & Bicycle Information Center** | ***http://www.pedbikeinfo.org/index.htm*** |
| Walking | *http://www.walkinginfo.org/* |
| Engineer Pedestrian Facilities | *http://www.walkinginfo.org/engineering* |
| Pedestrian Safety Guide & Countermeasure Selection System (PEDSAFE) | *http://www.walkinginfo.org/pedsafe/* |
| Develop Plans and Policies | *http://www.walkinginfo.org/develop* |
| National Center for Safe Routes to School | *http://www.saferoutesinfo.org* |
| **Federal Highway Administration Bicycle & Pedestrian Program** | ***http://www.fhwa.dot.gov/environment/bikeped/*** |
| Bicycle and Pedestrian Provisions of Federal Transportation Legislation | *http://www.fhwa.dot.gov/environment/bikeped/bp-guid.htm* |
| Bicycle & Pedestrian Programs | *http://www.fhwa.dot.gov/environment/bikeped/overview.htm* |
| Program & Design Guidance | *http://www.fhwa.dot.gov/environment/bikeped/guidance.htm* |
| Links to Other Resources | *http://www.fhwa.dot.gov/environment/bikeped/bipedlnk.htm* |
| Publications | *http://www.fhwa.dot.gov/environment/bikeped/publications.htm* |
| Pedestrian Safety | *http://safety.fhwa.dot.gov/ped_bike/ped/index.htm* |
| Pedestrian & Bicycle Safety Research Page | *http://www.tfhrc.gov/safety/pedbike/index.htm* |
| **National Highway Traffic Safety Administration – Traffic Safety: Pedestrians** | ***http://www.nhtsa.gov/portal/site/nhtsa/menuitem.dfedd570f698cabbbf30811060008a0c/*** |
| **National Center for Bicycling & Walking** | ***http://www.bikewalk.org/*** |

# D DESIGN GUIDELINES

Chapter Outline:



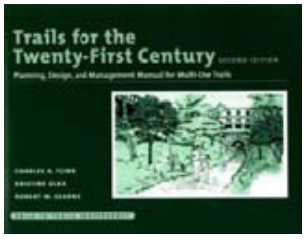
## D.0 OVERVIEW

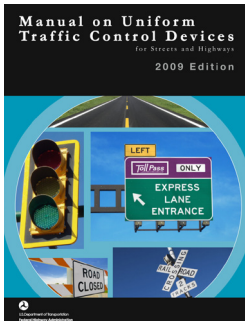
These recommended guidelines originate from and adhere to national design standards as defined by the American Association of State Highway Transportation Officials (AASHTO), the Americans with Disabilities Act (ADA), the Federal Highway Administration (FHWA) Pedestrian Facilities Users Guide, the Manual on Uniform Traffic Control Devices (MUTCD), and the NCDOT. Another major source of information in this chapter is the Pedestrian and Bicycle Information Center, found online at http://www.walkinginfo.org. Should the national standards be revised in the future and result in discrepancies with this chapter, the national standards should prevail for all design decisions. A qualified engineer or landscape architect should be consulted for the most up to date and accurate cost estimates.

The sections below serve as an inventory of pedestrian and bicycle design elements/treatments and provide guidelines for their development. These treatments and design guidelines are important because they represent minimum standards for creating a pedestrian and bicycle-friendly, safe, accessible community. The guidelines are not, however, a substitute for a more thorough evaluation by a landscape architect or engineer upon implementation of facility improvements. Some improvements may also require cooperation with the NCDOT for specific design solutions.

Pedestrian and Bicycle Information Center

AASHTO
THE VOICE OF TRANSPORTATION




*The Pedestrian and Bicycle Information Center, AASHTO, the MUTCD, nationally recognized trail standards, and other sources have all informed the content of this chapter.*

D

## D.1 SIDEWALKS AND WALKWAYS

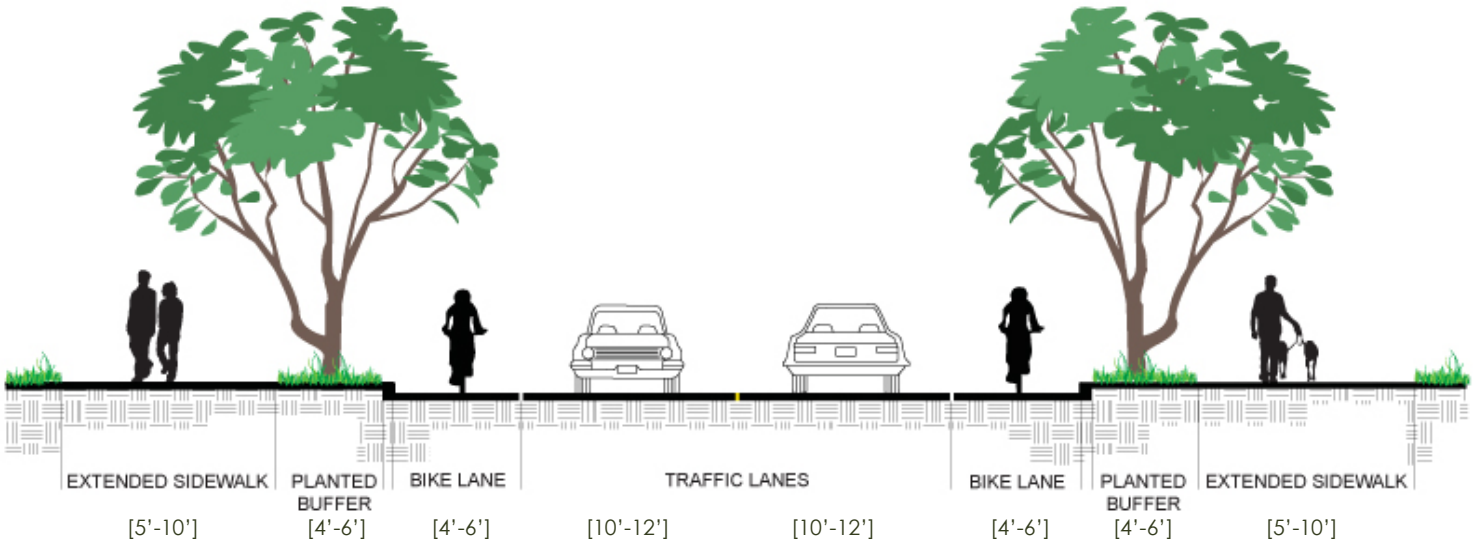
Sidewalks and walkways are extremely important public right-of-way components often times adjacent to, but separate from automobile traffic. In many ways, they act as the seam between private residences, stores, businesses, and the street.

There are a number of options for different settings, for both downtown and more rural and/or suburban areas. From a wide promenade to, in the case of a more rural environment, a simple asphalt or crushed stone path next to a secondary road, walkway form and topography can vary greatly. In general, sidewalks are constructed of concrete although there are some successful examples where other materials such as asphalt, crushed stone, or other slip resistant material have been used. The width of the walkways should correspond to the conditions present in any given location (i.e. level of pedestrian traffic, building setbacks, or other important natural or cultural features). The Federal Highway Administration (FHWA) and the Institute of Transportation Engineers both suggest five feet as the minimum width for a sidewalk. This is considered ample room for two people to walk abreast or for two pedestrians to pass each other. Often downtown areas, near schools, transit stops, or other areas of high pedestrian activity call for much wider sidewalks.

*A well designed residential sidewalk will have a width of at least five feet. (Image from http://www.walkinginfo.org)*

*Sidewalk with a vegetated buffer zone. Notice the sense of enclosure created by the large canopy street trees. (Image from http://www.walkinginfo.org)*

*Below: Typical street with bicycle lanes and adjacent sidewalk.*



## SIDEWALKS AND WALKWAY GUIDELINES:

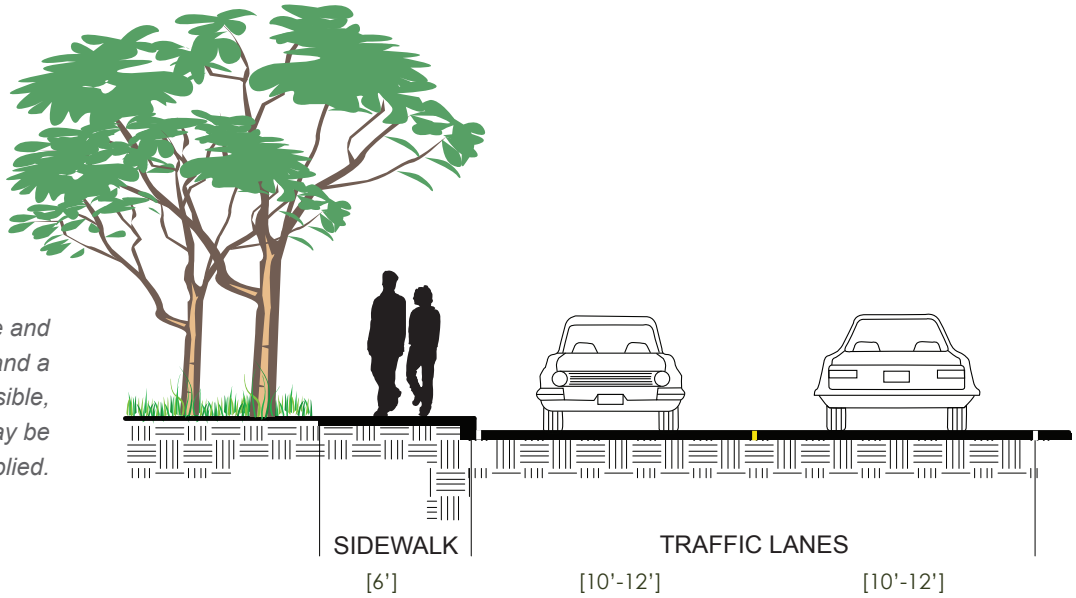
*Sidewalk Guideline Sources:*

*American Association of State Highway and Transportation Officials. (2004). Guide for the Planning, Design, and Operation of Pedestrian Facilities.*

*Metro Regional Government. (2005). Portland, Oregon: Transportation Information Center. http://www.oregonmetro.gov*

- Concrete is preferred surface, providing the longest service life and requiring the least maintenance. Permeable pavement such as porous concrete may be considered to improve water quality.
- Sidewalks should be built as flat as possible to accommodate all pedestrians; they should have a running grade of 5% or less; with a 2% maximum cross-slope.
- Concrete sidewalks should be built to minimum depth of four inches; six inches at driveways.
- Sidewalks should be a minimum of five feet wide; sidewalks serving mixed use and commercial areas shall be a minimum of 8 ft in width (12–15 feet is required in front of retail storefronts). The maximum cross-slope should be no more than 2% (1:50)*.
- Buffer zone of two to four feet in local or collector streets; five to six feet in arterial or major streets and up to eight feet in busy streets and downtown to provide space for light poles, street trees,f and other street furniture. See the Landscaping section later in this chapter for shade and buffer opportunities of trees and shrubs.
- Motor vehicle access points should be kept to minimum.
- If a sidewalk with buffer on both sides is not feasible due to topography and right-of-way constraints, then a sidewalk on one side is better than no facility. Each site should be examined in detail to determine placement options.

** If a greater slope is anticipated because of unusual topographic or existing conditions, the designer should maintain the preferred slope of 1:50 within the sidewalk area, if possible. This can be accomplished either by raising the curb so that the cross-slope of the entire sidewalk can be 1:50, or by placing the more steeply angled slope within the area between the sidewalk and the road.*




*Right: Where space and topography are limiting and a planted buffer is not possible, this cross section may be applied.*

## D.2 GREENWAY TRAILS

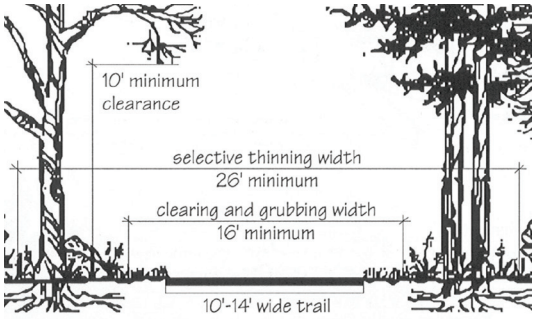
A greenway is defined as a linear corridor of land that can be either natural, such as rivers and streams, or manmade, such as abandoned railroad beds and utility corridors. Many greenways contain trails. Greenway trails can be paved or unpaved, and can be designed to accommodate a variety of trail users, including bicyclists, walkers, hikers, joggers, skaters, horseback riders, and those confined to wheelchairs. Single-tread, multi-use trails are the most common trail type in the nation. These trails vary in width and can accommodate a wide variety of users.

*Note: A greenway trail located along a roadway corridor is sometimes referred to as a 'sidepath'.*

TRAIL GUIDELINES:

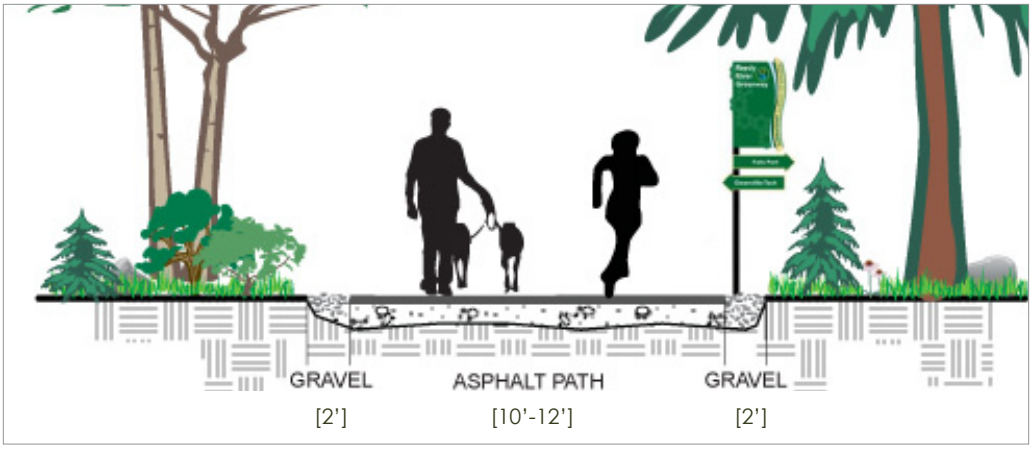
- The minimum width for two-directional trails is 10', however 12'-14' widths are preferred where heavy traffic is expected. Vertical clearance under bridges and other structures should be 8' to 10'.
- Centerline stripes should be considered for paths that generate substantial amounts of pedestrian traffic, or along curved portions of the trail, where sight-lines are limited. Radii minimums should also be considered depending on the different user groups.
- While the vegetative clearing needed for these trails varies with the width of the trail, the minimum width for clearing and grubbing a 10' wide trail is 16'. Selective thinning increases sight lines and distances and enhances the safety of the trail user. This practice includes removal of underbrush and limbs to create open pockets within a forest canopy, but does not include the removal of the forest canopy itself.
- Crossings should be a safe enough distance from neighboring intersections to not interfere (or be interfered) with traffic flow.
- A roadway with flat topography is desirable to increase motorist visibility of the path crossing.
- Motorists and trail users should be warned, such as with signage (including trail stop signs), changes in pavement texture, flashing beacons, raised crossings, striping, etc.
- A refuge is needed where crossing distance is excessive and in conditions exhibiting high volumes/speeds and where the primary user group crossing the roadway requires additional time, such as schoolchildren and the elderly.
- The crossing should occur as close to perpendicular (90 degrees) to the roadway as possible.
- If possible, it may be desirable to bring the path crossing up to a nearby signalized crossing in situations with high speeds/ADT and design and/or physical constraints.
- Signalized crossings may be necessary on trails with significant usage when intersecting with demanding roadways, but MUTCD warrants must be met for the installation of a signalized crossing.

*Below: Vegetation clearing guidelines*



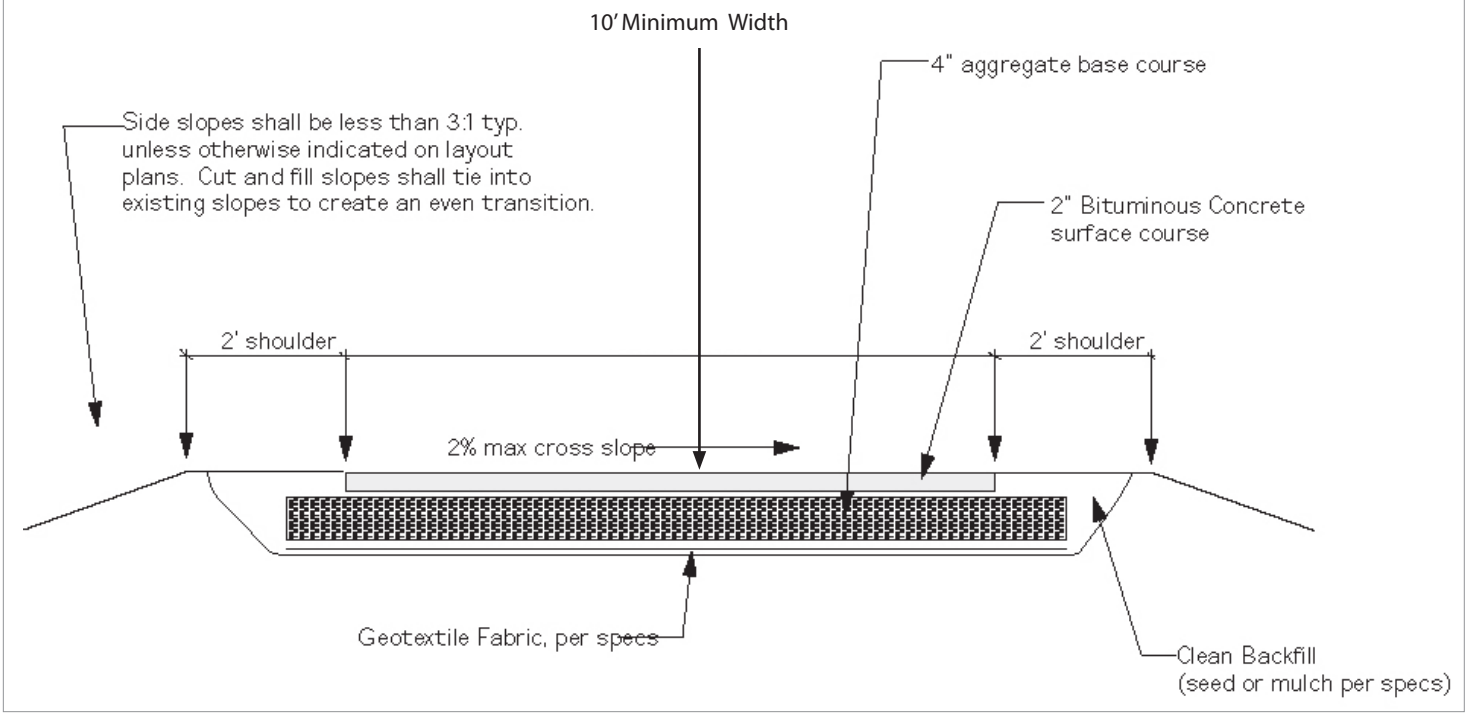

*(continued on page D-6)*

*Right: Typical asphalt path section*



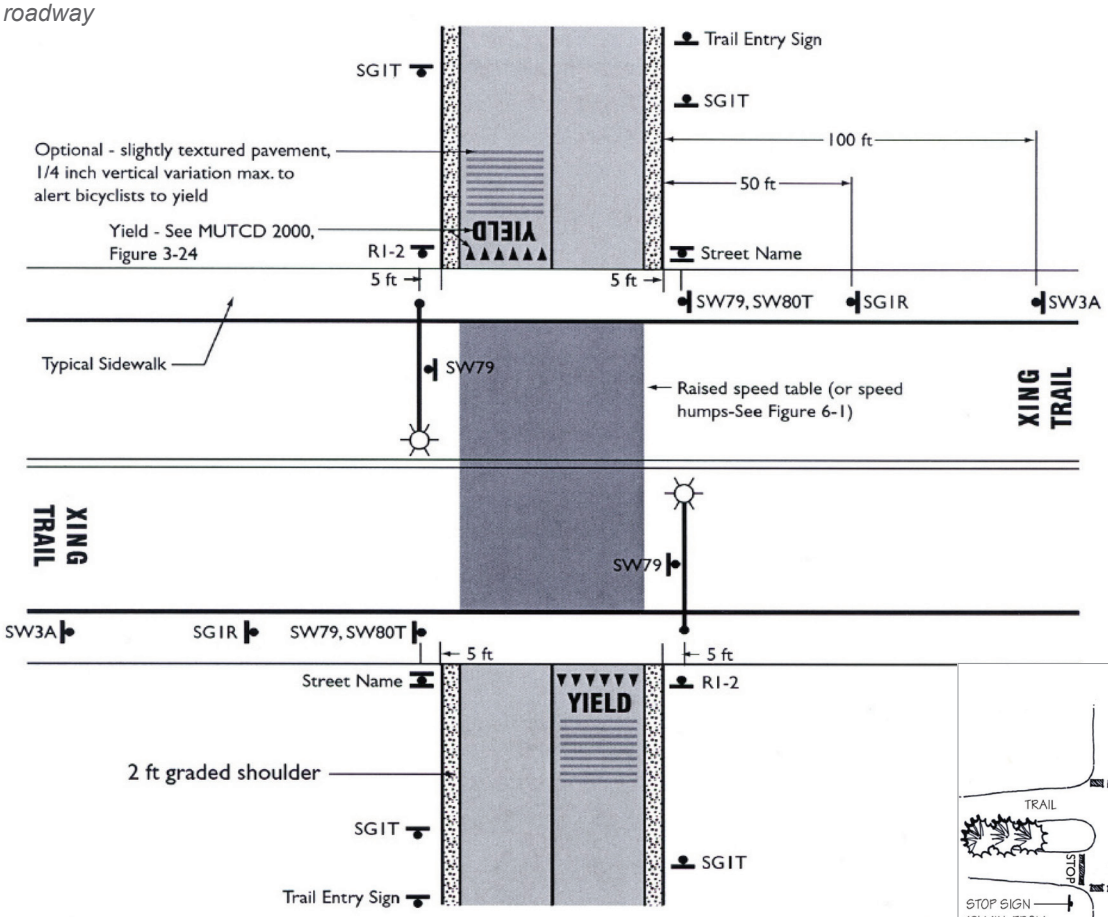

*Right: Typical natural surface trail section*

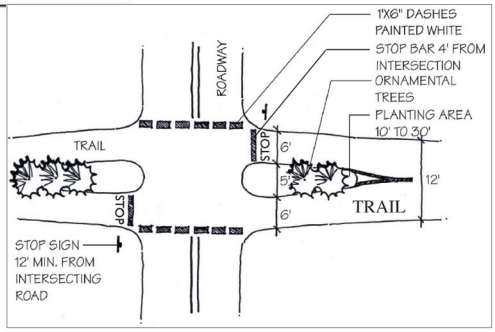

*Below: Asphalt pavement construction detail*



- Sidepaths should be constructed along corridors with relatively few intersections and driveways, reducing conflict points.
- Typical pavement design for a paved, off-road, multi-use trail should be based upon the specific loading and soil conditions for each project. Asphalt or concrete trails should be designed to withstand the loading requirements of occasional maintenance and emergency vehicles.
- Concrete Trail: In areas prone to frequent flooding, it is recommended that concrete be used because of its excellent durability. Concrete surfaces are capable of withstanding the most powerful environmental forces. They hold up well against the erosive action of water, root intrusion and subgrade deficiencies such as soft soils. Most often, concrete is used for intensive urban applications. Of all surface types, it is the strongest and has the lowest maintenance requirement, if it is properly installed.
- Asphalt Trail: Asphalt is a flexible pavement and can be installed on virtually any slope. One important concern for asphalt trails is the deterioration of trail edges. Installation of a geotextile fabric beneath a layer of aggregate base course (ABC) can help to maintain the edge of a trail. It is important to provide a 2' wide graded shoulder to prevent trail edges from crumbling.
- Trail and Roadway Intersections: The images below present detailed specifications for the layout of intersections between trail corridors and roadways. Signage rules for such intersections are available in the Manual on Uniform Traffic Control Devices (MUTCD).

*Below: Typical greenway trail approaches to a roadway*



## TRAIL-ROADWAY INTERSECTIONS

• Site the crossing area at a logical and visible location; the crossing should be a safe enough distance from neighboring intersections to not interfere (or be interfered) with traffic flow; crossing at a roadway with flat topography is desirable to increase motorist visibility of the path crossing; the crossing should occur as close to perpendicular (90 degrees) to the roadway as possible.

• Warn motorists of the upcoming trail crossing and trail users of the upcoming intersections; motorists and trail users can be warned with signage (including trail stop signs), changes in pavement texture, flashing beacons, raised crossings, striping, etc.

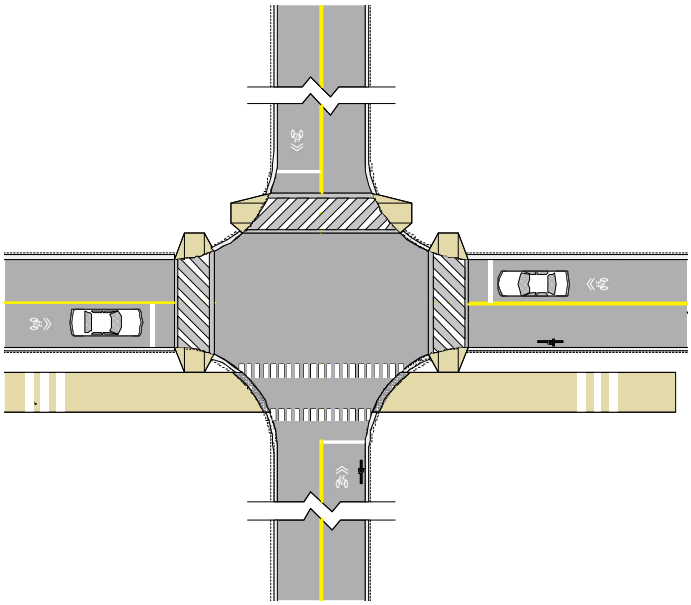
• Maintain visibility between trail users and motorists by clearing or trimming any vegetation that obstructs the view between them.

• Intersection approaches should be made at relatively flat grades so that cyclists are not riding down hill into intersections.

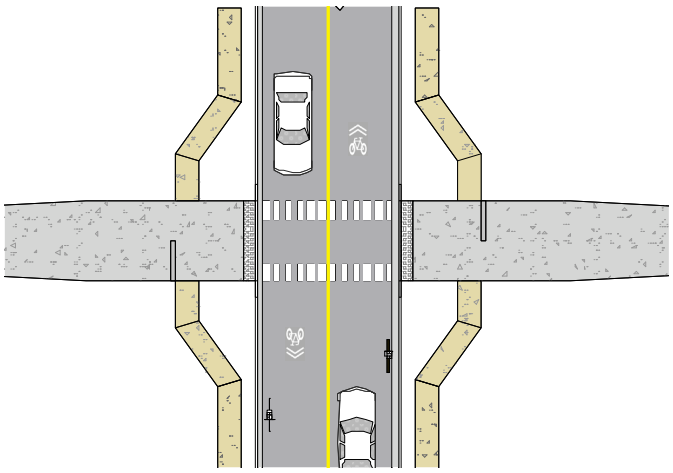
• If the intersection is more than 75 feet from curb to curb, it is preferable to provide a center median refuge area; a refuge is needed in conditions exhibiting high volumes/speeds and where the primary user group crossing the roadway requires additional time, such as schoolchildren and the elderly.

• If possible, it may be desirable to bring the path crossing up to a nearby signalized crossing in situations with high speeds/ADT and design and/or physical constraints.

• In 4-way Intersection Crossing with Shared Use Path (diagram at right) – This is also a depiction of a "sidepath" intersecting a roadway. Trail users would navigate this crossing like a common pedestrian.

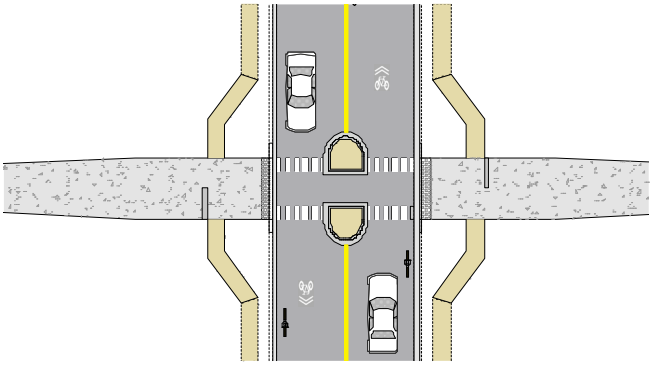


*4-Way Intersection Crossing*
*Shared Use Path*

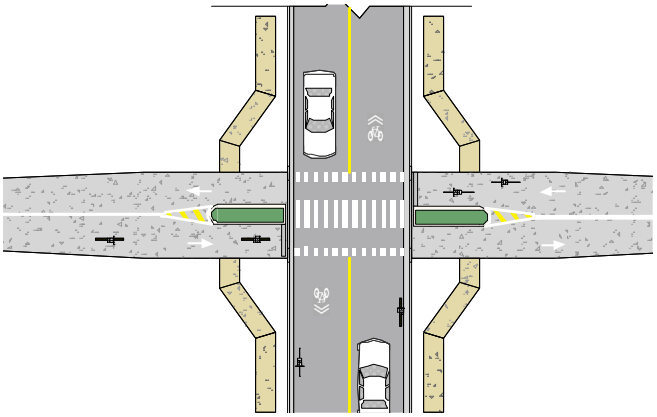


*Mid-block Intersection*
*Shared Use Path with Sidewalks*

## TRAIL-ROADWAY INTERSECTIONS (CONTINUED)



*Median Refuge*
*Shared Use Path with Sidewalks*

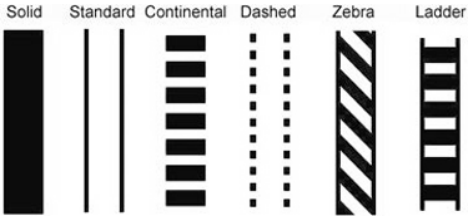



*Mid-block Crossing*
*Shared Use Path with Sidewalks and Medians*

## TRAIL-ROADWAY INTERSECTIONS (SIGNALIZED)

• Signalized crossings may be necessary on trails with significant usage when intersecting with demanding roadways, but MUTCD warrants must be met for the installation of a signalized crossing. Consult the MUTCD or NCDOT Division of Bicycle and Pedestrian Transportation for signal, sign and light placement.

• FHWA issued an interim approval for the optional use of rectangular rapid flashing beacons (RRFBs, shown at left) as warning beacons supplementing pedestrian crossing or school crossing warning signs at crossings across uncontrolled approaches. An analysis by the Center for Education and Research in Safety found them to have much higher levels of effectiveness in making drivers yield at crosswalks than the standard over-head and side-mount round flashing beacons.




*A variety of patterns are possible in designating a crosswalk; an example of a 'continental' design is shown above.*

## D.3 MARKED CROSSWALKS

A marked crosswalk designates a pedestrian right-of-way across a street. It is often installed at controlled intersections or at key locations along the street (a.k.a. mid-block crossings). Every attempt should be made to install crossings at the specific point at which pedestrians are most likely to cross: a well-designed traffic calming location is not effective if pedestrians are instead using more seemingly convenient and potentially dangerous location to cross the street. Marked pedestrian crosswalks may be used under the following conditions: 1) At locations with stop signs or traffic signals, 2) At non-signalized street crossing locations in designated school zones, and 3) At non-signalized locations where engineering judgment dictates that the use of specifically designated crosswalks are desirable.

There is a variety of form, pattern, and materials to choose from when creating a marked crosswalk. It is important however to provide crosswalks that are not slippery, are free of tripping hazards, or are otherwise difficult to maneuver by any person including those with physical mobility or vision impairments. Although attractive materials such as inlaid stone or certain types of brick may provide character and aesthetic value, the crosswalk can become slippery. Potential materials can be vetted by requesting case studies from suppliers regarding where the materials have been successfully applied. Also, as some materials degrade from use or if they are improperly installed, they may become a hazard for the mobility or vision impaired.

*Crosswalk Guideline Sources:*

*American Association of State Highway and Transportation Officials. (2004). Guide for the Planning, Design, and Operation of Pedestrian Facilities.*

*Metro Regional Government. (2005). Portland, Oregon: Transportation Information Center. www.oregonmetro.gov*

CROSSWALK GUIDELINES:

- Should not be installed in an uncontrolled environment [at intersections without traffic signals] where speeds exceed 40 mph. (AASHTO, 2004)
- Crosswalks alone may not be enough and should be used in conjunction with other measures to improve pedestrian crossing safety, particularly on roads with average daily traffic (ADT) above 10,000
- Width of marked crosswalk should be at least six feet; ideally ten feet or wider in downtown areas.
- Curb ramps and other sloped areas should be fully contained within the markings.
- Crosswalk markings should extend the full length of the crossings.
- Crosswalk markings should be white per MUTCD.
- Either the 'continental' or 'ladder' patterns are recommended for intersection improvements for aesthetic and visibility purposes. Lines should be one to two feet wide and spaced one to five feet apart.
- NCDOT typically requires pedestrian facilities (sidewalks) on both sides of a roadway when placing crosswalks.

D

## D.4 CURB RAMPS

Curb ramps are critical features that provide access between the sidewalk and roadway for wheelchair users, people using walkers, crutches, or handcarts, people pushing bicycles or strollers, and pedestrians with mobility or other physical impairments. In accordance with the 1973 Federal Rehabilitation Act and to comply with the 1990 Federal ADA requirements, curb ramps must be installed at all intersections and mid-block locations where pedestrian crossings exist (Pedestrian and Bicycle Information Center: http://www.walkinginfo.org/engineering/roadway-ramps.cfm). In addition, these federal regulations require that all new constructed or altered roadways include curb ramps.

Two separate curb ramps should be provided at each intersection (see image below). With only one large curb ramp serving the entire corner, there is not safe connectivity for the pedestrian. Dangerous conditions exist when the single, large curb ramp inadvertently directs a pedestrian into the center of the intersection, or in front of an unsuspecting, turning vehicle.

CURB RAMP GUIDELINES:

- Two separate curb ramps, one for each crosswalk, should be provided at corner of an intersection.
- Curb ramp should have a slope no greater than 1:12 (8.33%). Side flares should not exceed 1:10 (10%); it is recommended that much less steep slopes be used whenever possible.

## D.5 RAISED OR LOWERED MEDIANS

Medians are barriers in the center portion of a street or roadway. When used in conjunction with mid-block or intersection crossings, they can be used as a crossing island to provide a place of refuge for pedestrians. They also provide opportunities for landscaping that in turn can help to slow traffic. A center turn lane can be converted into a raised or lowered median thus increasing motorist safety.

*Curb Ramp Guideline Sources:*

*Metro Regional Government. (2005). Portland, Oregon: Transportation Information Center. http://www.oregonmetro.gov*

*Left: The curb ramps shown have two separate ramps at the intersection (visable across the street) (Image from http://www.walkinginfo.org).*

*For additional information on curb ramps see Accessible Rights-of-Way: A Design Guide, by the U.S. Access Board and the Federal Highway Administration, and Designing Sidewalks and Trails for Access, Parts I and II, by the Federal Highway Administration. Visit: www.access-board.gov for the Access board's right-of-way report.*

A continuous median can present several problems when used inappropriately. If all left-turn opportunities are removed, there runs a possibility for increased traffic speeds and unsafe U-turns at intersections. Additionally, the space occupied may be taking up room that could be used for bicycle lanes or other treatments. An alternative to the continuous median is to create a segmented median with left turn opportunities.

Raised or lowered medians are best suited for high-volume, high-speed roads, and they should provide ample cues for people with visual impairments to identify the boundary between the crossing island and the roadway.

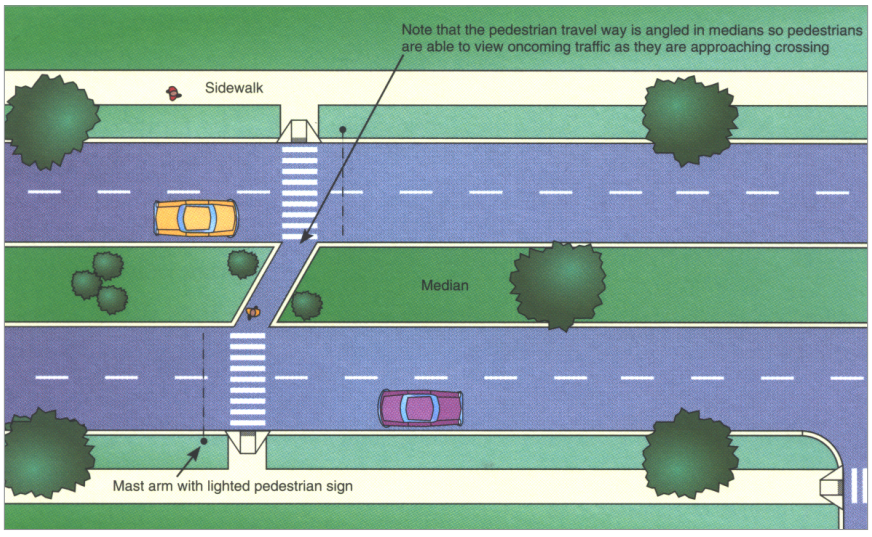
MEDIAN GUIDELINES:

- Median pedestrian refuge islands should be provided as a place of refuge for pedestrians crossing busy or wide roadways at either mid-block locations or intersections. They should be utilized on high speed and high volume roadways.
- Medians should incorporate trees and plantings to change the character of the street and reduce motor vehicle speed.
- Landscaping should not obstruct the visibility between motorists and pedestrians.
- Median crossings should provide ramps or cut-throughs for ease of accessibility for all pedestrians.
- Median crossings should be at least 6 feet wide in order to accommodate more than one pedestrian, while a width of 10 feet (where feasible) should be provided for bicycles, wheelchairs, and groups of pedestrians.
- Median crossings should possess a minimum of a 4 foot square level landing to provide a rest point for wheelchair users.
- Pedestrian push-buttons should be located in the median of all signalized mid-block crossings, where the roadway width is in excess of 60 feet.

*Median Guideline Sources:*

*American Association of State Highway and Transportation Officials. (2004). Guide for the Planning, Design, and Operation of Pedestrian Facilities.*

*Metro Regional Government. (2005). Portland, Oregon: Transportation Information Center. http://www.oregonmetro.gov*




*Above: A median used in conjunction with mid-block crossing, serving as a refuge for pedestrians. (Image from AASHTO).*

D

## D.6 MID-BLOCK CROSSINGS

A Mid-Block Crosswalk is any crosswalk that is not located within an intersection. Midblock crossings are often installed in areas with heavy pedestrian traffic to provide more frequent crossing opportunities. They may also be added near major pedestrian destinations, such as schools or busy commercial areas, where people might otherwise cross at unmarked locations.

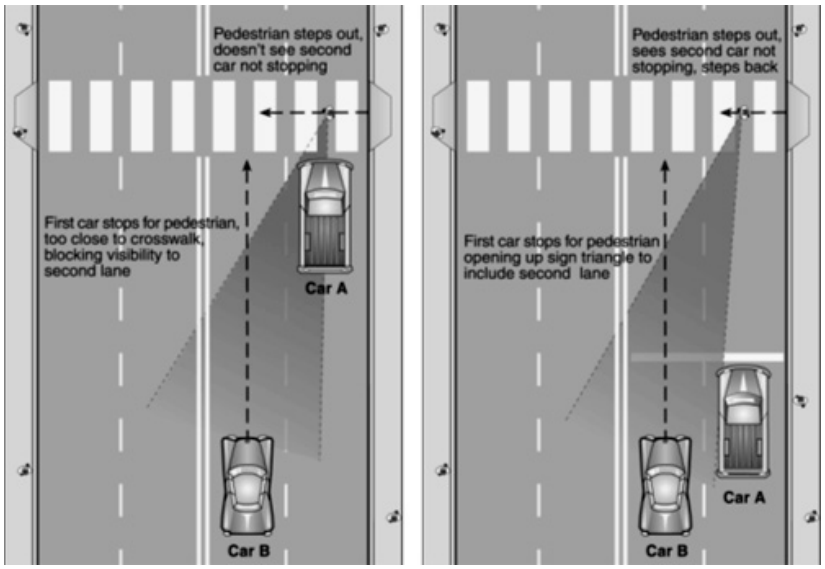
### MID-BLOCK CROSSING GUIDELINES:

- Crosswalks at mid-block should not be installed within 300 ft. of another signalized crossing point.
- Utilize advance warning signs when mid-block crossings are present.
- Raised crosswalks are typically used on two-lane streets with less than 35 MPH speed limit.
- It will be the standard practice of NCDOT to install Mid-Block Crosswalks based on an engineering study. All Mid-Block Crosswalks shall be signed and marked in compliance with the Manual on Uniform Traffic Control Devices (MUTCD), the North Carolina Supplement to the MUTCD, the current NCDOT Roadway Standard Drawings, and the standards the NCDOT Policy on Mid-Block Crossings.
- The NCDOT Policy on Mid-Block Crossings can be found at www.ncdot.gov/doh/preconstruct/traffic/teppl/topics/C-36/C-36_pr.pdf

## D.7 ADVANCE STOP BARS

Moving the vehicle stop bar 15–30 feet back from the pedestrian crosswalk at signalized crossings and mid-block crossings increases vehicle and pedestrian visibility. Advance stop bars are 1–2 feet wide and they extend across all approach lanes at intersections. The time and distance created allows a buffer in which the pedestrian and motorist can interpret each other's intentions. Studies have shown that this distance translates directly into increased safety for both motorist and pedestrian. One study in particular claims that by simply adding a "Stop Here for Pedestrians" sign reduced pedestrian motorist conflict by 67%. When this was used in conjunction with advance stop lines, it increased to 90% (Pedestrian and Bicycle Information Center: http://www.walkinginfo.org/engineering/crossings-enhancements.cfm).

*Below: Advance stop bars enhance visibility for pedestrians (Image from www.walkinginfo.org).*



## D.8 BULB-OUTS

A bulb-out, or curb extension, is a place where the sidewalk extends into the parking lane of a street. Because these curb extensions physically narrow the roadway, a pedestrian's crossing distance—and consequently the time spent in the street—is reduced. They can be placed either at mid-block crossings or at intersections.

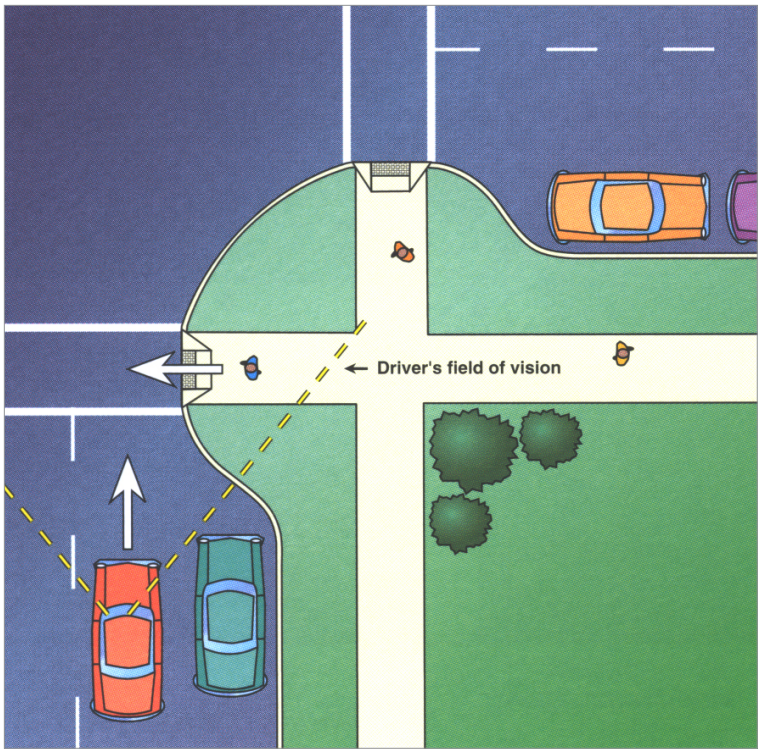
**The curb radius of a street corner affects traffic speed and crosswalk length. In general, a smaller (narrow) curb radius is better for pedestrians. A larger (wide) curb radius creates a greater crosswalk length and allows vehicles to move faster around the turn. Reducing the curb radius, especially across busy multi-lane arterials, can increase pedestrian safety by slowing vehicles and minimizing pedestrian crossing distances.*

Sightlines and pedestrian visibility are reduced when motor vehicle parking encroaches too close to corners creating a dangerous situation for pedestrians. When placed at an intersection, bulb-outs preclude vehicle parking too close to a crosswalk. Also, bulb-outs at intersections can greatly reduce turning speed, especially if curb radii are set as tight as possible (Pedestrian and Bicycle Information Center: www.walkinginfo.org/engineering/crossings-curb.cfm). Finally, bulb-outs also reduce travel speeds when used in mid-block crossings because of the reduced street width.

Bulb-outs should only be used where there is an existing on-street parking lane and should never encroach into travel lanes, bicycle lanes, or shoulders (Pedestrian and Bicycle Information Center).

BULB-OUT GUIDELINES:

- Bulb-outs should be used on crosswalks in heavy pedestrian areas where parking may limit the driver's view of the pedestrian.
- Where used, sidewalk bulb-outs should extend into the street for the width of a parking lane (a minimum five feet) in order to provide for a shorter crossing width, increased pedestrian visibility, more space for pedestrian queuing, and a place for sidewalk amenities and planting.
- Curb extensions should be used on mid-block crossing where feasible.
- Curb extensions may be inappropriate for use on corners where frequent right turns are made by trucks or buses.




*Above: By reducing a pedestrian's crossing distance, less time is spent in the roadway, and pedestrian vehicle conflicts are reduced (Image from AASHTO).*

## D.9 PEDESTRIAN OVERPASS/UNDERPASS

Pedestrian overpasses and underpasses efficiently allow for pedestrian movement across busy thoroughfares. These types of facilities are problematic in many regards and should only be considered under suitable circumstances or where no other solution is possible. Perhaps the best argument for using them sparingly is that research proves pedestrians will avoid using such a facility if they perceive the ability to cross at grade as taking about the same amount of time (Pedestrian and Bicycle Information Center:http://www.walkinginfo.org/engineering/crossings-overpasses.cfm).

The other areas of contention arise with the high cost of construction. There are also ADA requirements for stairs, ramps, and elevators that in many cases once complied with result in an enormous structure that is visually disruptive and difficult to access.

Overpasses work best when existing topography allows for smooth transitions. Underpasses as well work best with favorable topography when they are open and accessible, and exhibit a sense of safety. Each should only be considered with rail lines, high volume traffic areas such as freeways, and other high volume arteries.

*Example trail overpass (above) and underpass (below).*

OVERPASS/UNDERPASS GUIDELINES:

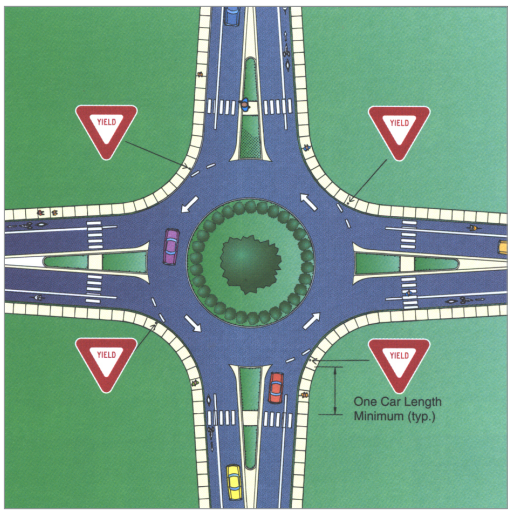
- Over and underpasses should be considered only for crossing arterials with greater than 20,000 vehicle trips per day and speeds 35 - 40 mph and over.
- Minimum widths for over and underpasses should follow the guidelines for sidewalk width.
- Underpasses should have a daytime illuminance minimum of 10- foot-candle (fc) achievable through artificial and/or natural light provided through an open gap to sky between the two sets of highway lanes, and a night time level of 4 fc.
- Consider acoustics measures within underpasses to reduce noise impacts to pedestrians and bicyclists.

## D.10 ROUNDABOUTS

A roundabout is a circular intersection that maneuvers traffic around in a counterclockwise direction so that cars make a right-hand turn onto a desired street. Vehicles from approaching streets are generally not required to stop although approaching vehicles are required to yield to motorists in the roundabout. It is believed that this system eliminates certain types of crashes at traditional intersections.

Every effort must be made to prompt motorists to yield to pedestrians crossing the roundabout. A low design speed is required to improve pedestrian safety. Splitter islands and single lane approaches both lend to pedestrian safety as well as other urban design elements discussed in this chapter.

*Typical roundabout (Image from AASHTO)*




Problems also arise with the vision-impaired because there are not proper audible cues associated with when to cross. Studies are underway to develop and test solutions. Auditory accessible pedestrian signals placed on sidewalks and splitter islands are one solution, but again there is no research to prove their efficacy.

### ROUNDABOUT GUIDELINES:

- The recommended maximum entry design speed for roundabouts ranges from 15 mph for 'mini-roundabouts' in neighborhood settings, to 20 mph for single-lane roundabouts in urban settings, to 25 mph for single-lane roundabouts in rural settings.
- Refer to roundabout diagram for typical crosswalk placement.
- Please refer to FHWA's report, Roundabouts, an Information Guide, available online through: www.fhrc.gov. The report provides information on general design principles, geometric elements, and provides detailed specifications for the various types of roundabouts.

*Above: A pedestrian walks through a pedestrian refuge island, as part of a roundabout.*

## D.11 TRAFFIC SIGNALS

Traffic signals assign the right of way to motorists and pedestrians and produce openings in traffic flow, allowing pedestrians time to cross the street. When used in conjunction with pedestrian friendly design, proper signalization should allow for an adequate amount of time for an individual to cross the street. The suggested amount of pedestrian travel speed recommended in the Manual on Uniform Traffic Control Devices (MUTCD) is 4ft/sec; however, this does not address the walking speed of the elderly or children. Therefore, it is suggested that a lower speed of 3.5ft/sec be used whenever there are adequate numbers of elderly and children using an area.

Engineering, as well as urban design judgment, must be used when determining the location of traffic signals and the accompanying timing intervals. Although warrants for pedestrian signal timing have been produced by the MUTCD, each site must be analyzed for factors including new facility and amenity construction (i.e. a popular new park or museum) to allow for potential future pedestrian traffic volume. In addition, creating better access to existing places may in fact generate a higher pedestrian volume.

Fixed timed sequencing is often used in high traffic volume commercial or downtown areas to allow for a greater efficiency of traffic flow. In such instances, the pedestrian speed must be carefully checked to ensure safety.

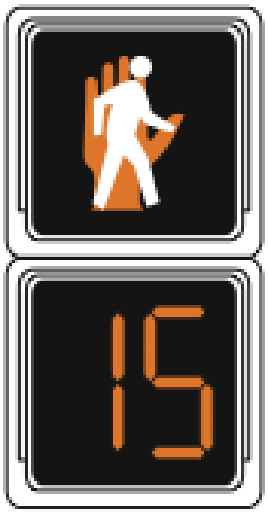

*A low cost sign that restricts right-hand turns at a red light (Image from http://www.walkinginfo.org).*

### RIGHT TURN ON RED RESTRICTIONS

Introduced in the 1970s as a fuel saving technique, the Right Turn on Red (RTOR) law is thought to have had a detrimental effect on pedestrians. The issue is not the law itself but rather the relaxed enforcement of certain caveats within the law such as coming to a complete stop and yielding to pedestrians. Often motorists will either nudge into a crosswalk to check for oncoming traffic without looking for pedestrians or slow, but not stop, for the red-light while making the turn.

There is legitimate concern that eliminating an RTOR will only increase the number of right-turn-on-green conflicts where all of the drivers who would normally have turned on red, now are anxious to turn on green. Leading pedestrian intervals (LPI) or exclusive pedestrian intervals my help to alleviate this problem. More information on LPI's can be found in the following section. Eliminating RTOR should be considered on a case-by-case basis and only where there are high pedestrian volumes. This can be done by simple sign postings as illustrated at right.

## D.12 PEDESTRIAN SIGNALS




*Typical Pedestrian Signal Indicators (with countdown display).*

There are a host of traffic signal features and enhancements that can greatly improve the safety and flow of pedestrian traffic. Some include countdown signals, the size of traffic signals, positioning of traffic signals, audible cues, and timing intervals which are discussed below (Pedestrian and Bicycle Information Center: http://www.walkinginfo.org/engineering/crossings-signals.cfm).

As of 2008, new federal policy requires all new pedestrian signals to be of the countdown variety. In addition, all existing signals must be updated to countdown within 10 years (updated in MUTCD). Countdown signals have proven to be an effective measure of crash reduction (25% crash reduction in 2007 FHWA study).

Countdown signals are pedestrian signals that show how many seconds the pedestrian has remaining to cross the street. The countdown can begin at the beginning of the WALK phase, perhaps flashing white or yellow, or at the beginning of the clearance, or DON'T WALK phase, flashing yellow as it counts down. Audible cues can also be used to pulse along with a countdown signal.

*Audible cues can also be used to pulse along with a countdown signal.*

Signals should be of adequate size, clearly visible, and, in some circumstances, accompanied by an audible pulse or other messages to make crossing safe for all pedestrians. Consideration should be paid to the noise impact on the surrounding neighborhoods when deciding to use audible signals.

The timing of these or other pedestrian signals needs to be adapted to a given situation. In general, shorter cycle lengths and longer walk intervals provide better service to pedestrians and encourage better signal compliance. For optimal pedestrian service, fixed-time signal operation usually works best. Pedestrian pushbuttons may be installed at locations where pedestrians are expected intermittently. Quick response to the pushbutton or feedback to the pedestrian (e.g.- indicator light comes on) should be programmed into the system. When used, pushbuttons should be well-signed and within reach and operable from a flat surface for pedestrians in wheelchairs and with visual disabilities. They should be conveniently placed in the area where pedestrians wait to cross. Section 4E.09 within the MUTCD provides detailed guidance for the placement of pushbuttons to ensure accessibility (Pedestrian and Bicycle Information Center: http://www.walkinginfo.org/engineering/crossings-signals.cfm).

There are three types of signal timing generally used: concurrent, exclusive, and leading pedestrian interval (LPI). The strengths and weaknesses of each will be discussed with an emphasis on when they are best employed.

When high-volume turning situations conflict with pedestrian movements, the exclusive pedestrian interval is the preferred solution. The exclusive

pedestrian intervals stop traffic in all directions. In order to keep traffic flowing regularly, there is often a greater pedestrian wait time associated with this system. Although it has been shown that pedestrian crashes have been reduced by 50% in some areas by using these intervals, the long wait times can encourage some to cross when there is a lull in traffic (Pedestrian and Bicycle Information Center: http://www.walkinginfo.org/engineering/crossings-signals.cfm).

An LPI gives pedestrians an advance walk signal before the motorists get a green light, giving the pedestrian several seconds to start in the crosswalk where there is a concurrent signal. This makes pedestrians more visible to motorists and motorists more likely to yield to them. This advance crossing phase approach has been used successfully in several places, such as New York City, for two decades and studies have demonstrated reduced conflicts for pedestrians. The advance pedestrian phase is particularly effective where there is a two-lane turning movement. There are some situations where an exclusive pedestrian phase may be preferable to an LPI, such as where there are high-volume turning movements that conflict with the pedestrians crossing.

The use of infrared or microwave pedestrian detectors has increased in many cities worldwide. These devices replace the traditional push-button system. They appear to be improving pedestrian signal compliance as well as reducing the number of pedestrian and vehicle conflicts. The best use of these devices is when they are employed to extend crossing time for slower moving pedestrians.

## PEDESTRIAN SIGNAL GUIDELINES:

- Pedestrian signals should be placed in locations that are clearly visible to all pedestrians.
- Larger pedestrian signals should be utilized on wider roadways, to ensure readability.
- Pedestrian signal pushbuttons should be well-signed and visible.
- Pedestrian signal pushbuttons should clearly indicate which crossing direction they control.
- Pedestrian signal pushbuttons should be reachable from a flat surface, at a maximum height of 3.5 feet and be located on a level landing to ensure ease of operation by pedestrians in wheelchairs.
- Walk intervals should be provided during every cycle, especially in high pedestrian traffic areas.

## D.13 LANDSCAPING

*Landscaping used on the Sea Street in Seattle, Washington shows how stormwater treatment can be tied to aesthetically pleasing plantings. (Image from Seattle, WA, Public Utilities: Seattle.gov)*

*Street trees buffer and soften often urban environments in a number of psychological, physical, and ecological ways; their shade is particularly helpful to pedestrians in North Carolina during summer months.*

The introduction of vegetation in an urban environment can provide a welcomed intervention of nature into a place that is otherwise hardened from buildings, concrete, and asphalt. It can be used to provide a separation buffer between pedestrians and motorists, reduce the width of a roadway, calm traffic by creating a visual narrowing of the roadway, enhance the street environment, and help to generate a desired aesthetic.

Street trees and other plantings provide comfort, a sense of place, and a more natural and inviting setting for pedestrians. Landscaping and street furniture make people feel welcome.

There are also some instances where islands of vegetation are created to collect and filter stormwater from nearby streets and buildings. These islands are referred to as constructed wetlands, rain gardens, and/or bioswales. When these devices are employed, the benefits listed above are coupled with economic and ecologic benefits of treating stormwater at its source. There are many examples of this in Oregon and Washington, particularly Seattle's Green Streets Program. Using thoughtful design to treat stormwater as an amenity rather than waste to be disposed of in an environmentally harmful manner is gaining popularity nationwide.

An issue with this or any landscaping treatment is that of ongoing maintenance. The responsibility often falls on local municipalities although there are instances where local community groups have provided funding and volunteers for maintenance. The best way to address the maintenance issue is to design using native plant material that is already adapted to the local soil and climate. Growth pattern and space for maturation, particularly with larger tree plantings, are important to avoid cracking sidewalks and other pedestrian obstructions.

D

## D.14 ROADWAY LIGHTING IMPROVEMENTS

Proper lighting in terms of quality, placement, and sufficiency can greatly enhance a nighttime urban experience as well as create a safe environment for motorists and pedestrians. Two-thirds of all pedestrian fatalities occur during low-light conditions (AASHTO, 2004: Guide for the Planning, Design, and Operation of Pedestrian Facilities). Attention should be paid to crossings so that there is sufficient ambience for motorists to see pedestrians. To be most effective, lighting should be consistent, adequately spaced, and distinguished, providing adequate light.

In most cases, roadway street lighting can be designed to illuminate the sidewalk area as well. The visibility needs of both pedestrian and motorist should be considered. In commercial or downtown areas and other areas of high pedestrian volumes, the addition of lower level, pedestrian-scale lighting to streetlights with emphasis on crossings and intersections may be employed to generate a desired ambiance. A variety of lighting choices include mercury vapor, incandescent, or less expensive high-pressure sodium lighting for pedestrian level lighting. Roadway streetlights can range from 20-40 feet in height while pedestrian-scale lighting is typically 10-15 feet.

*Above: An example of pedestrian-scale lighting.*

It is important to note that every effort should be made to address and prevent light pollution. Also known as photo pollution, light pollution is 'excess or obtrusive light created by humans'.

GUIDELINES:

- Ensure pedestrian walkways and crossways are sufficiently lit.
- Consider adding pedestrian-level lighting in areas of higher pedestrian volumes, downtown, and at key intersections.
- Install lighting on both sides of streets in commercial districts.
- Use uniform lighting levels
- Use full cut-off light fixtures to avoid excess light pollution

## D.15 STREET FURNITURE AND WALKING ENVIRONMENT

As part of a comprehensive sidewalk and walkway design, all street furniture should be placed in a manner that allows for a safe, pleasurable, and accessible walking environment. Good-quality street furniture will show that the community values its public spaces and is more cost-effective in the long run. Street furniture includes benches, trash bins, signposts, newspaper racks, water fountains, bicycle racks, restaurant seating, light posts, and other ornaments that are found within an urban street environment. Street furniture should mostly be considered in the downtown area and other important pedestrian-active areas.

In addition to keeping areas free of obstruction from furniture, a walking environment should be clean and well maintained. Attention to removing debris, trimming vegetation, allowing for proper stormwater drainage, providing proper lighting and sight angles, and repairing or replacing broken or damaged paving material can make an enormous difference in pedestrian perception of safety and aesthetics. Special attention should be paid to the needs of the visually impaired so that tripping hazards and low hanging obstructions are removed.

*The street furniture shown here is placed in such a manner so as to create a safe, pleasurable, and accessible walking environment*

GUIDELINES:

- Ensure proper placement of furniture; do not block pedestrian walkway or curb ramps or create sightline problems.
- Wall mounted Objects = not to protrude more than 4” from a wall between 27” and 7’ from the ground
- Single post mounted Objects = not to protrude more than 4” from each side of the post between 27” and 7’ from the ground
- Multiple Post Mounted Objects = lowest edge should be no higher than 27” and no lower than 7’
- Place street furniture at the end of on-street parking spaces rather than in middle to avoid vehicle-exiting conflict.

## D.16 TRANSIT STOP TREATMENTS

Where transit opportunities are available, it is appropriate to consider some of the basic elements of a well designed, accessible, and functional transit stop.

Bus or other transit stops should be located in places that are most suitable for the passengers. For example, stops should be provided near higher density residential areas, commercial or business areas, and schools, and connected to these areas by sidewalk. Some of the most important elements to consider are the most basic: sidewalk connectivity to the stops, proper lighting, legible and adequate transit stop signage, shelter, seating, trash bins, bicycle and even car parking. Transit stops create an area of activity and may generate additional business and pedestrian traffic. Therefore, an opportunity is created to provide adequate sidewalks and other pedestrian oriented design elements. At a minimum, marked crosswalks (especially at mid-block stops), curb ramps, and proper sidewalk widths should be considered.

As with any human scale design element discussed, safety is an important factor to consider when locating bus stops. In the case of a bus stop, special attention should be paid to the number of lanes and direction of traffic when deciding to locate a stop on the near or far side of an intersection. Also special consideration must be paid to the wheelchair lifts in terms of how and where the mobility impaired will exit and enter the bus.

Local walking and bicycling maps should also be provided at bus stops, so that people are aware of the nearby destinations and how best to get there without an automobile.

*This typical transit stop has all of the key features of shelter, ample seating, bicycle parking, landscaping, and trash bins (Image from http://www.walkinginfo.org).*

*For a step-by-step guide to help non-professionals participate in the process of developing and designing a signage system, as well as information on the range of signage types, visit the Project for Public Places website: http://www.pps.org/info/amenities_bb/signage_guide*

## D.17 PEDESTRIAN SIGNS AND WAYFINDING

Signage provides important safety and wayfinding information to motorist and pedestrian residents and tourists. From a safety standpoint, motorists should be given advance warning of upcoming pedestrian crossings or of traffic calming areas. Signage of any type should be used and regulated judiciously. An inordinate amount of signs creates visual clutter. Under such a condition, important safety or wayfinding information may be ignored resulting in confusion and possible pedestrian vehicle conflict. Regulations should also address the orientation, height, size, and sometimes even style of signage to comply with a desired local aesthetic.

Regulatory signage is used to inform motorists or pedestrians of a legal requirement and should only be used when a legal requirement is not otherwise apparent (AASHTO, 2004: Guide for the Planning, Design, and Operation of Pedestrian Facilities).

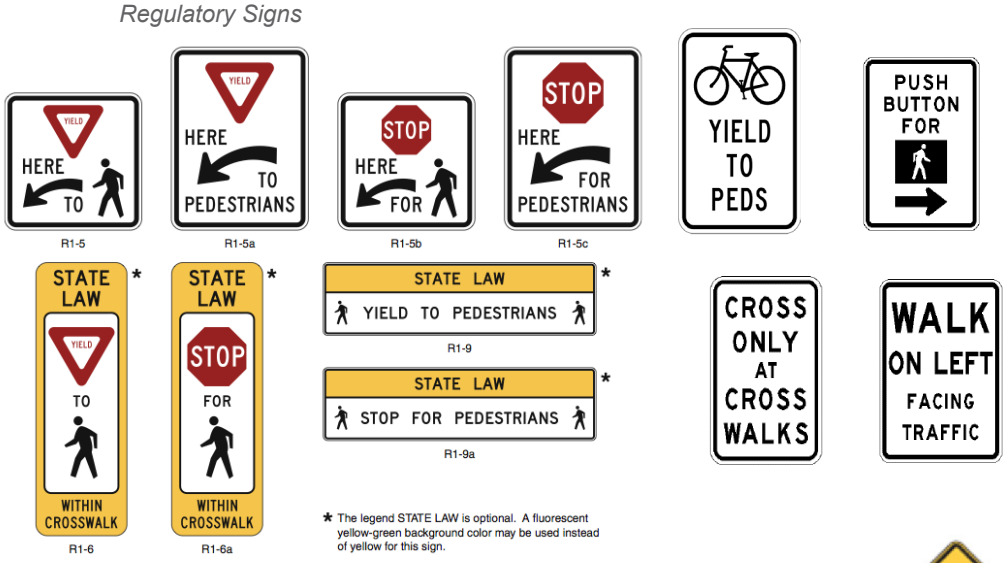
*Below: Typical traffic signs found around pedestrian friendly places.*

| Sign | MUTCD Code | MUTCD Section | Conventional Road | |
|---|---|---|---|---|
| Yield here to Peds | R1-5 | 2B.11 | 450x450 (18x18) | Regulatory |
| Yield here to Peds | R1-5a | 2B.11 | 450x600 (18x24) | |
| In-Street Ped Crossing | R1-6, R1-6a | 2B.12 | 300x900 (12x36) | |
| Peds and Bicycles Prohibited | R5-10b | 2B.36 | 750x450 (30x18) | |
| Peds Prohibited | R5-10c | 2B.36 | 600x300 (24x12) | |
| Walk on Left Facing Traffic | R9-1 | 2B.43 | 450x600 (18x24) | |
| Cross only at Crosswalks | R9-2 | 2B.44 | 300x450 (12x18) | |
| No Ped Crossing | R9-3a | 2B.44 | 450x450 (18x18) | |
| No Hitch Hiking | R9-4 | 2B.43 | 450x600 (18x24) | |
| No Hitch Hiking (symbol) | R9-4a | 2B.43 | 450x450 (18x18) | |
| Bicycles Yield to Peds | R9-6 | 9B.10 | 300x450 (12x18) | |
| Ped Traffic Symbol | R10-4b | 2B.45 | 225x300 (9x12) | |
| | | | | |
| School Advance Warning | S1-1 | 7B.08 | 900x900 (36x36) | School, Warning, Informational |
| School Bus Stop Ahead | S3-1 | 7B.10 | 750x750 (30x30) | |
| Pedestrian Traffic | W11-2 | 2C.41 | 750x750 (30x30) | |
| Playground | W15-1 | 2C.42 | 750x750 (30x30) | |
| Hiking Trail | I-4 | -- | 600x600 (24x24) | |

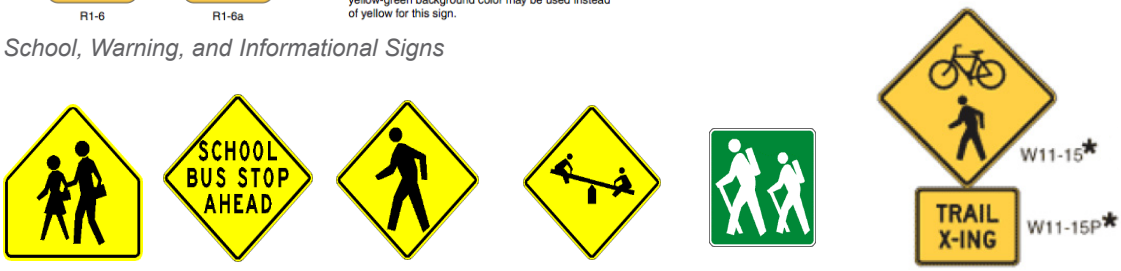
1. Larger signs may be used when appropriate.
2. Dimensions are shown in millimeters followed by inches in parentheses and are shown as width x height.
3. First dimension in millimeters; dimensions in parentheses are in inches.
4. All information in table taken directly from MUTCD.

D

*Regulatory Signs*




*School, Warning, and Informational Signs*

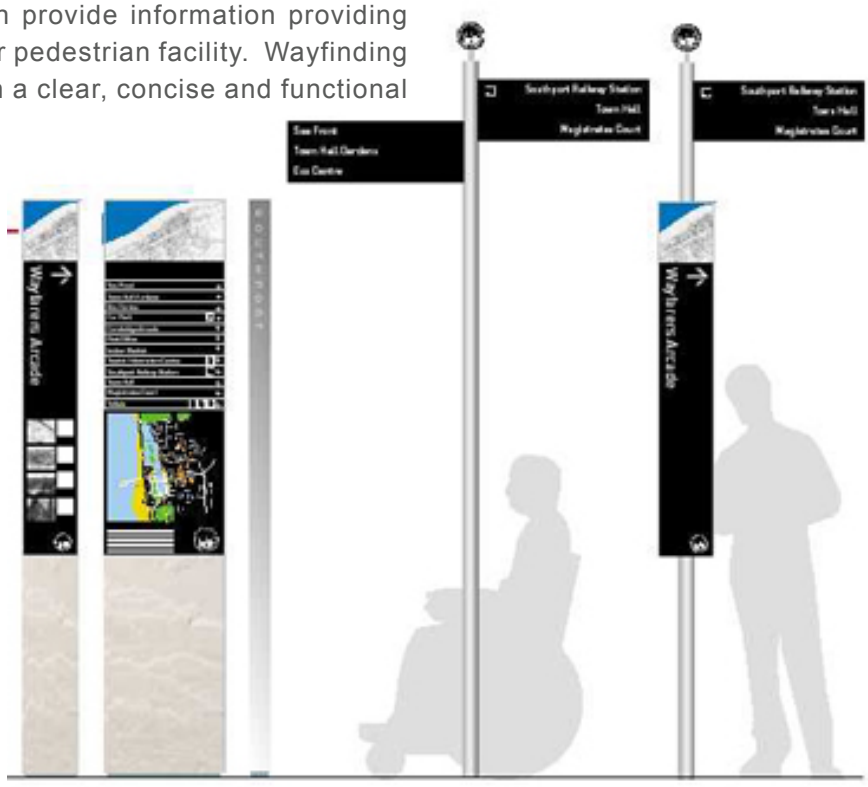



Warning signage is used to inform motorists and pedestrians of unexpected or unusual conditions. When used, they should be placed to provide adequate response times. These include school warning signs and pedestrian crossing signs3.

Informational and wayfinding signage can provide information providing guidance to a location along a trail or other pedestrian facility. Wayfinding signage should orient and communicate in a clear, concise and functional manner. It should enhance pedestrian circulation and direct visitors and residents to important destinations. In doing so, the goal is to increase the comfort of visitors and residents while helping to convey a local identity.

Maintenance of signage is as important as walkway maintenance. Clean, graffiti free, and relevant signage enhances guidance, recognition, and safety for pedestrians.

*Below: Wayfinding signs promote aesthetics as well as provide important information (image from Stefton, UK: http://www.sefton.gov.uk*



## D.18 BRIDGES

Provisions should always be made to include a walking facility as a part of vehicular bridges, underpasses, or tunnels, especially if the facility is part of the Pedestrian Network. All new or replacement bridges, other than those for controlled access roadways, should accommodate pedestrians with wide sidewalks on both sides of the bridge. Even though bridge replacements do not occur regularly, it is important to consider these in longer-term pedestrian planning.

It is DOT bridge policy that within Urban Area boundaries (which are ambiguously defined as the "outer limits of potential urban growth"), sidewalks shall be included on new bridges with curb and gutter approach roadways with no controlled access. Sidewalks should not be included on controlled access facilities. A determination on whether to provide sidewalks on one or both sides of new bridges will be made during the planning process according to the DOT Pedestrian Policy Guidelines. When a sidewalk is justified, it should be a minimum of five to six feet wide with a minimum handrail height of 42".

It is also DOT bridge policy that bridges within the Federal-aid urban boundaries with rural-type roadway sections (shoulder approaches) may warrant special consideration. To allow for future placement of ADA acceptable sidewalks, sufficient bridge deck width (typically 7.5' for one side) should be considered on new bridges in order to accommodate the placement of sidewalks. The full Bridge Policy for DOT can be download as a Microsoft Word document at this address:

www.ncdot.org/doh/preconstruct/altern/value/manuals/bpe2000.doc

BRIDGE GUIDELINES:

- Sidewalks should be included on roadway bridges with no controlled access with curb and gutter approach in Urban Areas.
- Sufficient bridge deck width should be considered on new bridges with rural-type shoulder approaches for future placement of sidewalks.
- Sidewalk should be 5' to 6' wide.
- Minimum handrail height should be 42''

## D.19 HIGH-INTENSITY ACTIVATED CROSSWALK (HAWK) SIGNAL


*Above: HAWK signal.*

The FHWA's Office of Safety Research recently completed a report on the High Intensity Activated Crosswalk (HAWK) — also known as the Pedestrian Hybrid Signal in the Manual on Uniform Traffic Control Devices (MUTCD). The HAWK is a pedestrian activated beacon located on the roadside and on mast arms over major approaches to an intersection. The HAWK signal head consists of two red lenses over a single yellow lens. It displays a red indication to drivers when activated, which creates a gap for pedestrians to use to cross a major roadway. The HAWK is not illuminated until it is activated by a pedestrian, triggering the warning flashing yellow lens on the major street. From the evaluation that considered data for 21 HAWK sites and 102 unsignalized intersections, the following changes in crashes were found after the HAWK was installed: a 29% reduction in total crashes, a 15% reduction in severe crashes, and a 69% reduction in pedestrian crashes. The HAWK is now an MUTCD approved device, so a request for experimentation is not necessary.

For more details, visit this website: http://mutcd.fhwa.dot.gov/htm/2009/part4/part4f.htm
(Source: FHWA Office of Safety, Pedestrian Forum, Fall 2010)

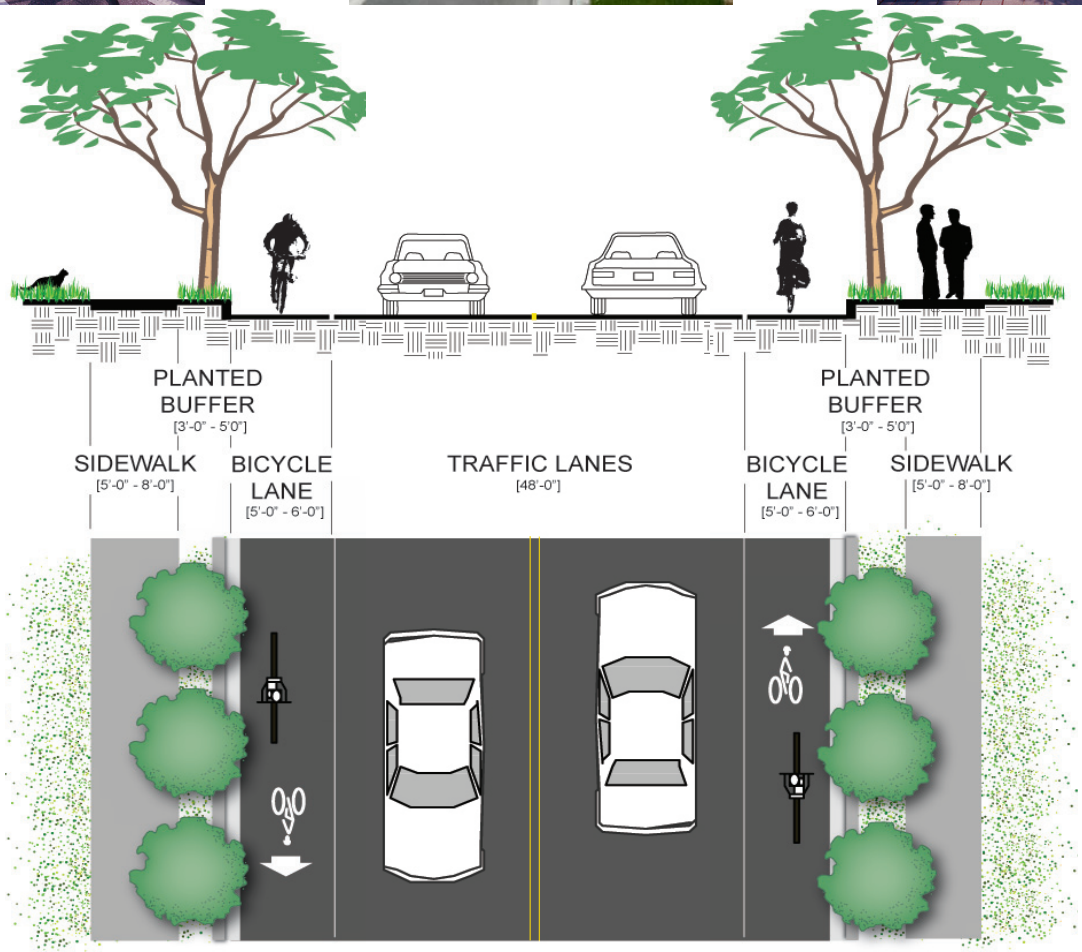
## D.20 BICYCLE FACILITIES

BICYCLE LANE

A bicycle lane is a portion of the roadway that has been designated by striping, signing, and pavement markings for the preferential and exclusive use of bicyclists. Bicycle lanes are always located on both sides of the road (except one way streets), and carry bicyclists in the same direction as adjacent motor vehicle traffic. The minimum width for a bicycle lane is four feet; five- and six-foot bicycle lanes are typical for collector and arterial roads (greater width is needed for bicycle lanes where traffic volume and speed are higher).

NCDOT recommends a bicycle lane width of:

- 6’ from the curb face when a gutter pan is present (or 4’ from the edge of the gutter pan)
- 4’ from the curb face when no gutter pan is present
- Should be used on roadways with 3,000 or more ADT
- Not suitable where there are a high number of commercial driveways
- Suitable for 2-lane facilities and 4-lane divided facilities



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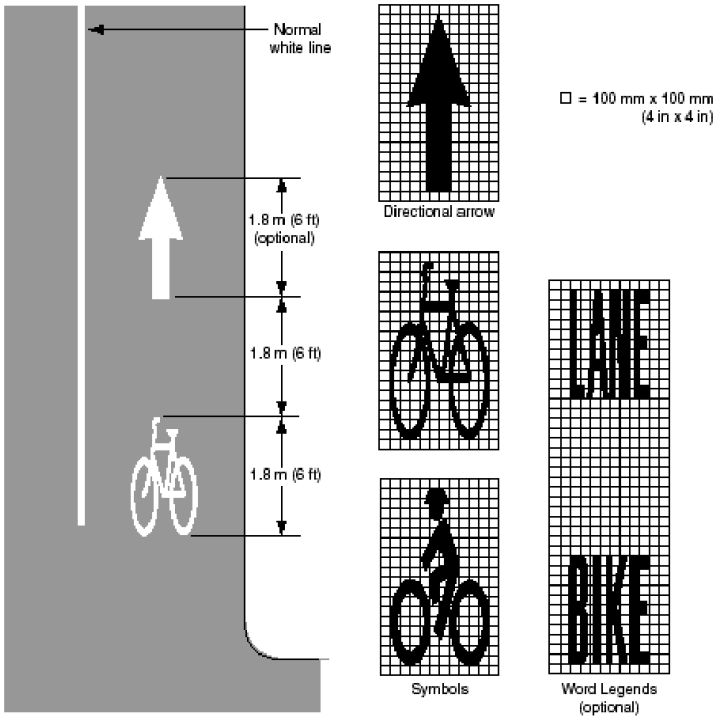
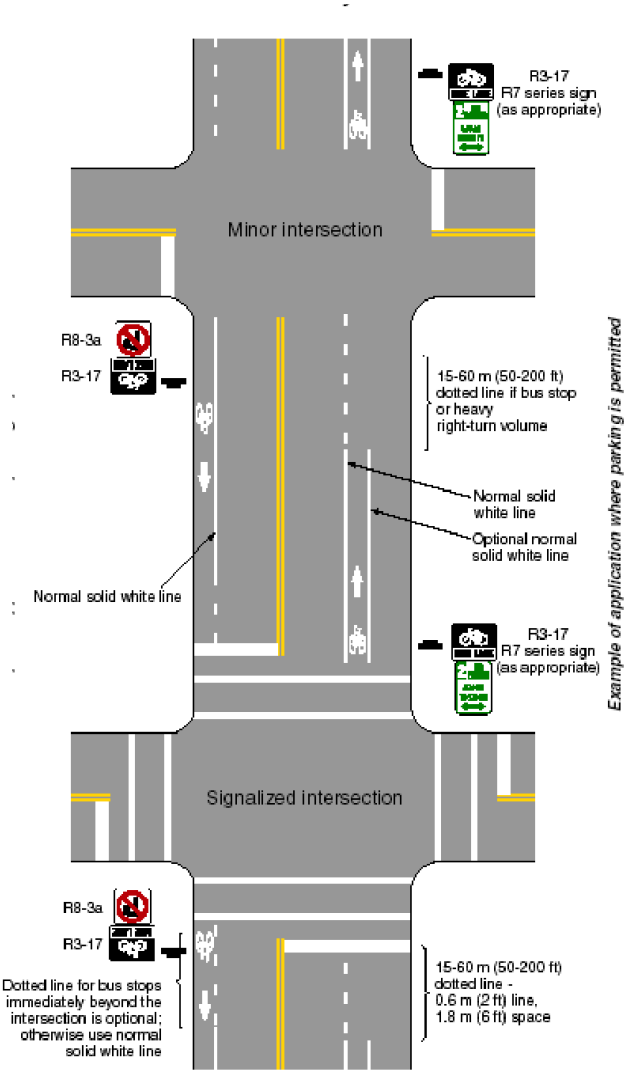
## TYPICAL PAVEMENT MARKINGS AND INTERSECTION CONFIGURATION FOR BICYCLE LANES

The Manual on Uniform Traffic Control Devices (MUTCD) provides guidance for lane delineation, intersection treatments, and general application of pavement wording and symbols for on-road bicycle facilities and off-road paths (http://mutcd.fhwa.dot.gov/pdfs/millennium/12.18.00/9.pdf).



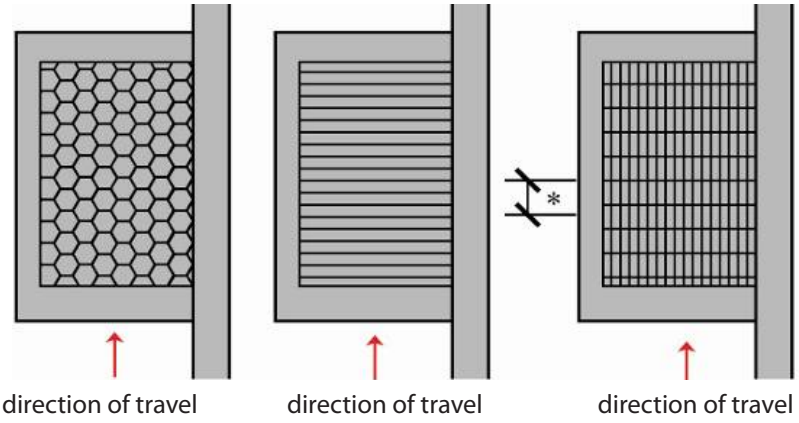

*MUTCD examples of optional word and symbol pavement markings for bicycle lanes.*



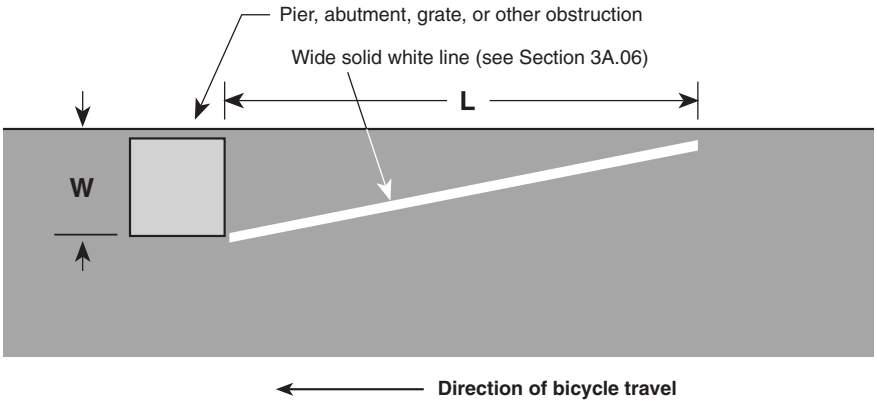
## BICYCLE FRIENDLY DRAINAGE GRATES

Drainage grates usually occupy portions of roadways, such as bicycle lanes, where bicycles frequently travel. Often drainage grates are poorly maintained or are of a design that can damage a bicycle wheel or in severe circumstances, cause a bicyclist to crash. Improper drainage grates create an unfriendly obstacle a cyclist must navigate around, often forcing entrance into a motor vehicle lane in severe cases. Bicycle friendly drainage grates should be installed in all new roadway projects and problem grates should be identified and replaced.

*Right: Bicycle Friendly Drainage Grate Designs*




*Right: MUTCD example of obstruction pavement marking; if dangerous drainage grates (or other obstructions) are not to be fixed in the short term, then this pavement marking should direct cyclists away from the obstruction.*




*Dangerous Drainage Grate Condition; this example is dangerous due to the grate running parallel to the roadway, creating a trap for bicycle tires.*

*Dangerous Drainage Grate Condition; this example is dangerous due to the surrounding paving condition (when the road was resurfaced the drainage grate remained at the same height).*

*Bicycle-Friendly Drainage Grate*

## SHARED LANE MARKING

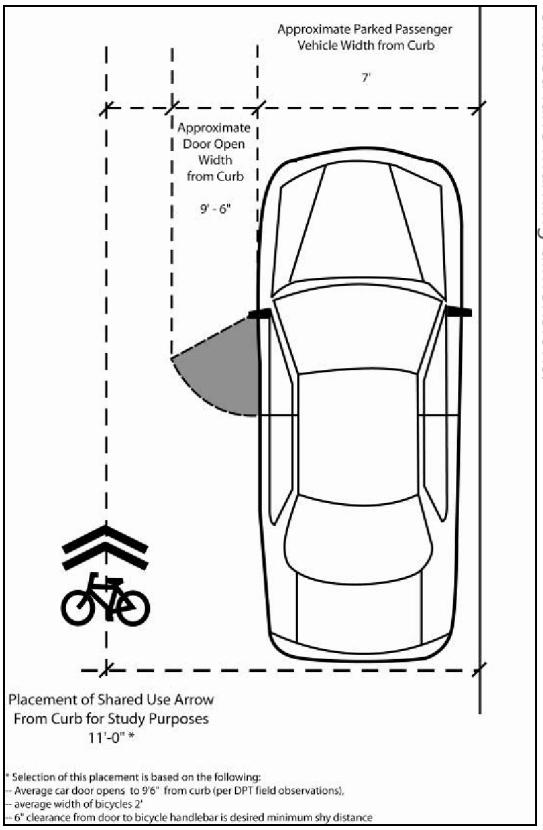
A bicycle shared lane marking (or 'sharrow') can serve a number of purposes, such as making motorists aware of bicycles potentially traveling in their lane, showing bicyclists the appropriate direction of travel, and, with proper placement, reminding bicyclists to bicycle further from parked cars to prevent "dooring" collisions. The shared lane marking stencil is used:

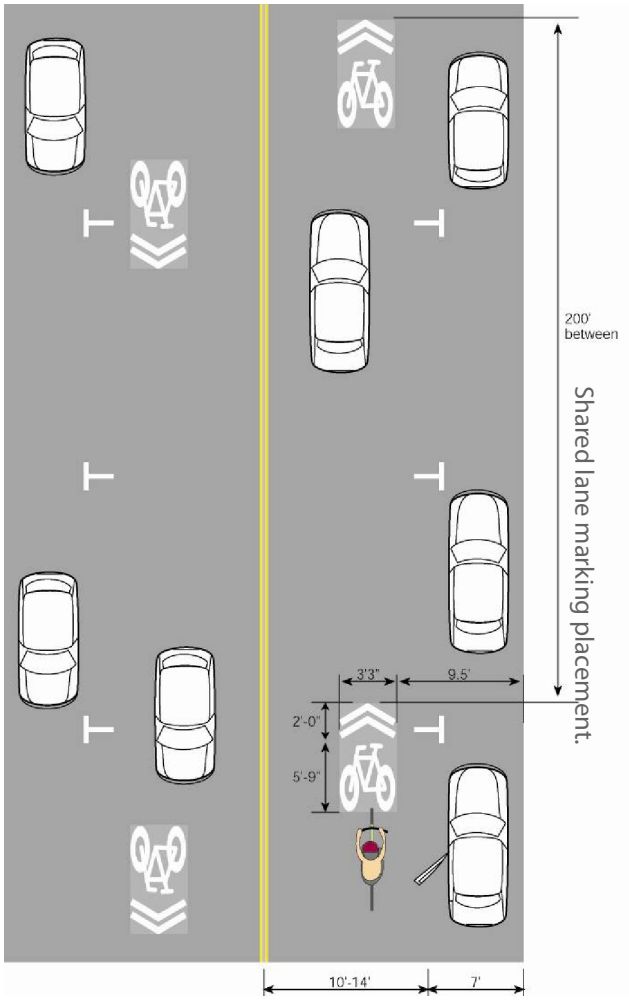
- Where lanes are too narrow for striping bicycle lanes
- Where the speed limit does not exceed 35 MPH
- With or without on-street parking

Cities such as Denver, San Francisco, Portland, and Los Angeles have effectively used this treatment for several years. As of this writing, the sharrow treatment is now included in the 2009/2010 update of the MUTCD. However, until official action is taken by the FHWA to finalize approval and adoption of shared lane markings in the next edition of the MUTCD, the use of these markings is still considered experimental. The markings are not authorized for use except under written experimental authorization by the FHWA.

Shared lane markings should also be considered for use on suburban roadway segments that connect bicycle lanes on either side, but do not have width for bicycle lanes.

It is recommended that shared lane markings be approached incrementally as a new facility treatment. Precedent studies and guidelines should be examined.

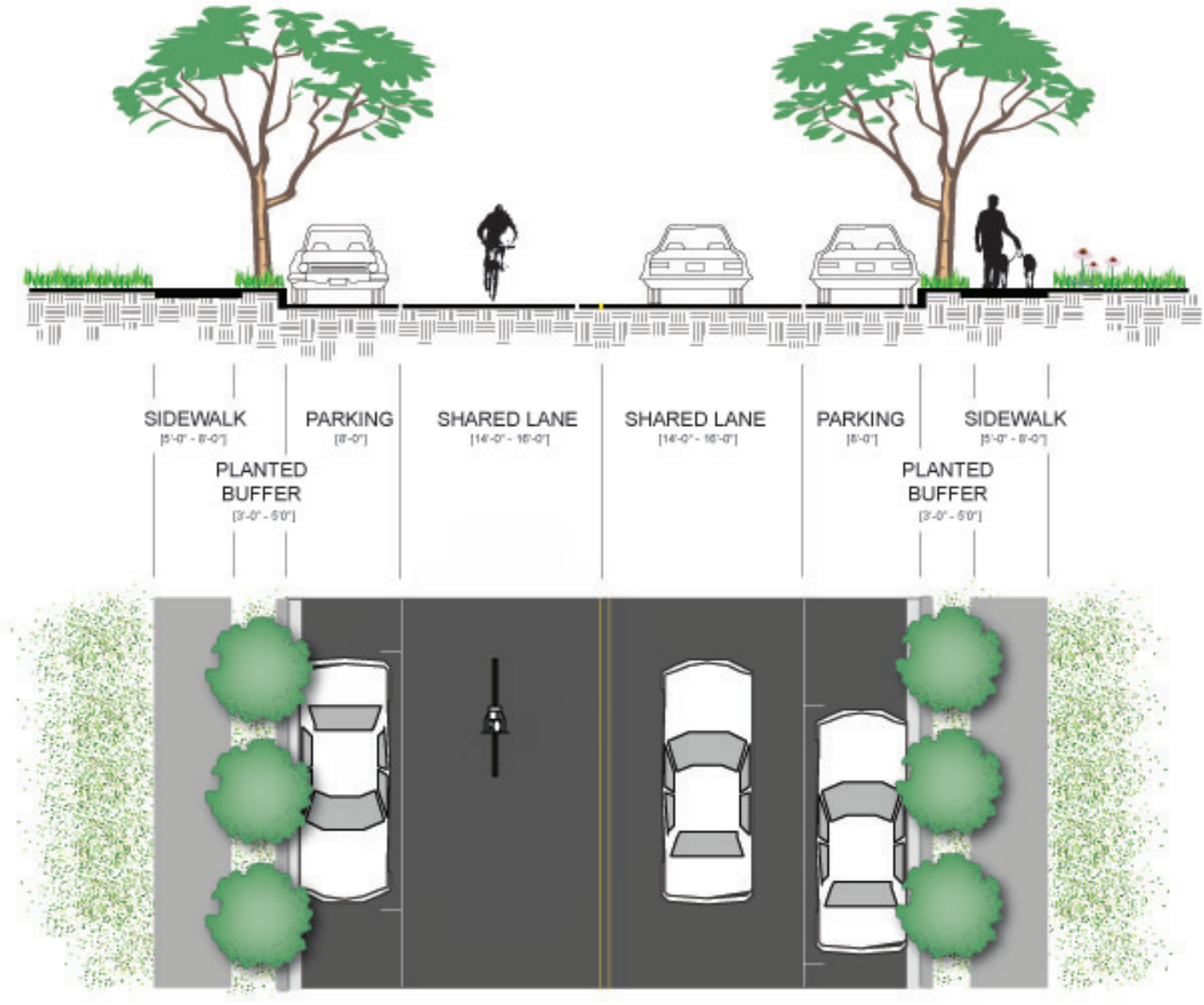



*Shared lane markings installed on lanes that are too narrow for striping designated bicycle lanes.*

## SIGNED/SHARED ROADWAY

• May either be a low volume (less than 3000 cars per day) roadway with traffic calming and signage to create a safe shared use environment, OR a higher volume roadway with wide (14') outside lanes.



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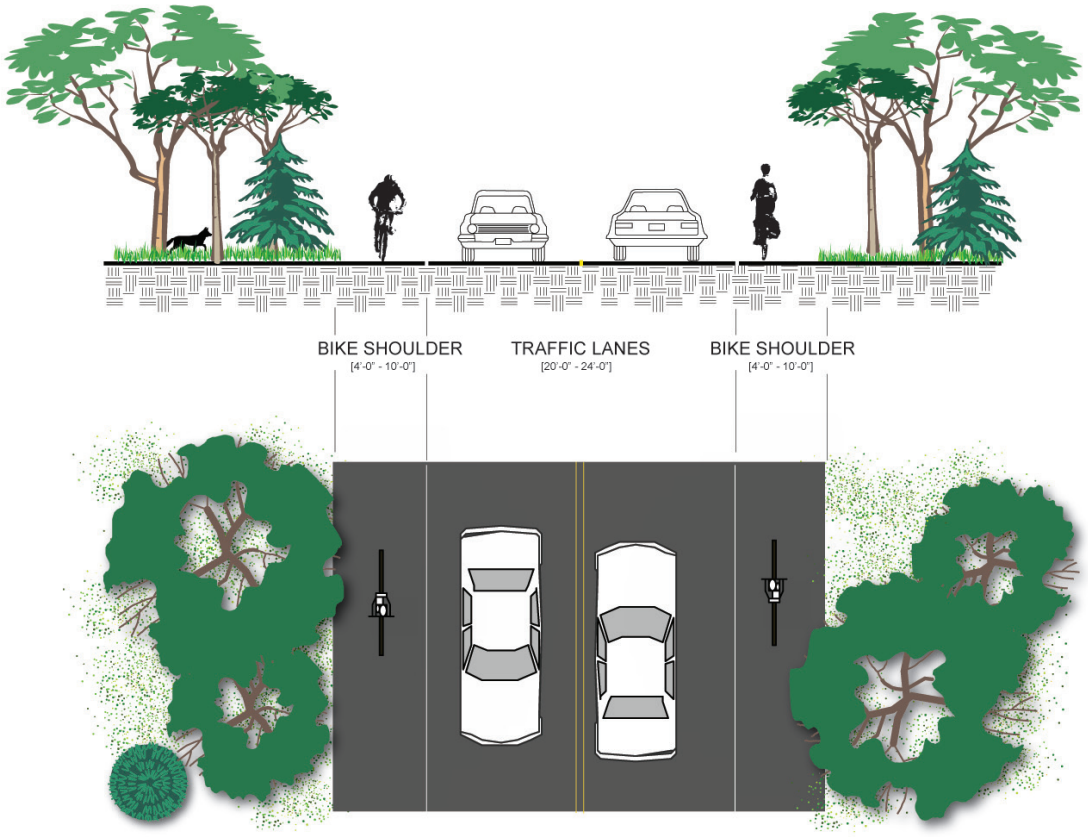
## PAVED SHOULDER

Paved shoulders are the part of a roadway which is contiguous and on the same level as the regularly traveled portion of the roadway. There is no minimum width for paved shoulders, however a width of at least four feet is preferred. Ideally, paved shoulders should be include in the construction of new roadways and/or the upgrade of existing roadways, especially where there is a need to more safely accommodate bicycles.

- Most often used in rural environments, although not confined to any particular setting
- Should be delineated by a solid white line, and provided on both sides of the road
- Should be contiguous and on the same level as the regularly traveled portion of the roadway
- 4' minimum width; however for speeds higher than 40 MPH with high ADT, a shoulder width of more than 4' is recommended.
- Rumble strips should be avoided, but if used, then a width of more than 4' is needed.
- Paved shoulders should not be so wide as to be confused with a full automobile travel lane



## SIDEPATH

Multi-use paths located within the roadway corridor right-of-way, or adjacent to roads, are called 'Sidepaths'. Sidepaths are most appropriate in corridors with few driveways and intersections. Bicycle routes where side paths are recommended should also have adequate on-road bicycle facilities (such as paved shoulders or bicycle lanes), so that all types of users are accommodated.

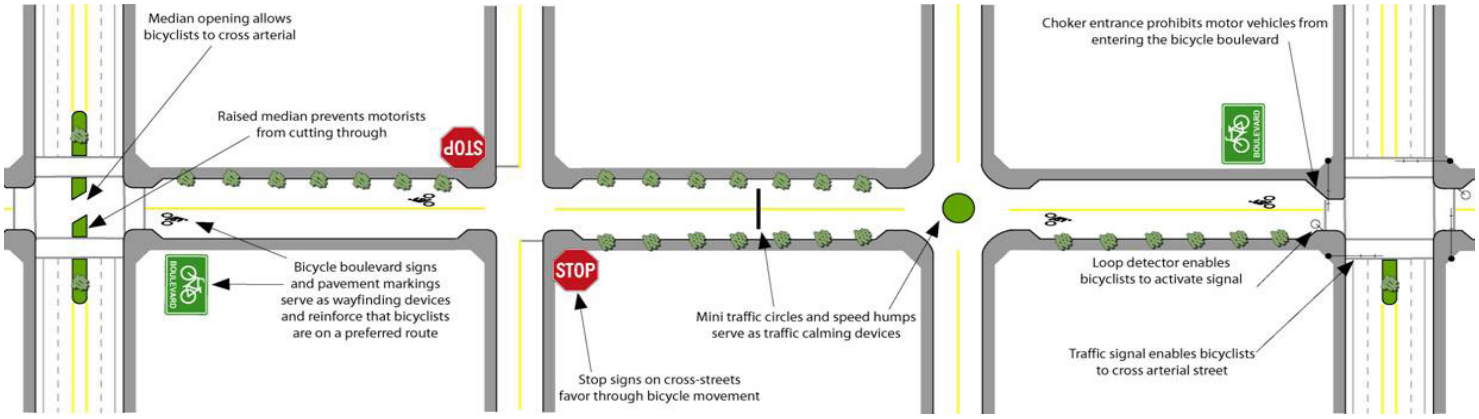
- This type of facility works best in corridors where there are limited driveway/intersection crossings and more desirable destinations along one side of the roadway, or where no roadway space is available to provide bicycle lanes.
- A !0' minimum width is necessary on sidepaths for bicyclists to pass one another safely (12' for areas expecting high use)
- A 3-5' (preferably 6') vegetated buffer between the sidepath and the roadway should be provided where possible.
- Well-designed transitions from sidepaths to on-road facilities will direct bicyclists to the correct side of the roadway.

D

## BICYCLE BOULEVARDS

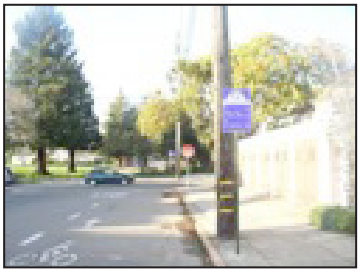
To further identify preferred routes for bicyclists, the operation of lower volume roadways may be modified to function as a through street for bicycles while maintaining local access for automobiles. Traffic calming devices reduce traffic speeds and through trips while limiting conflicts between motorists and bicyclists, as well as give priority to through bicycle movement.

Bicycle boulevards are often located on roadways that parallel a major roadway.




*A bicycle boulevard.*



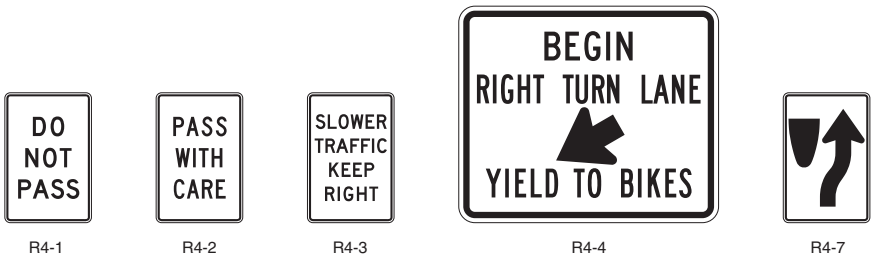


*Bicycle boulevard route signs and/or pavement markings can be used to direct bicyclists.*

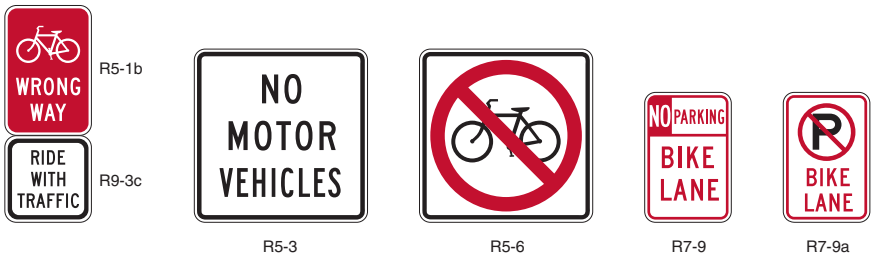
## BICYCLE REGULATORY/ WARNING SIGNS

Regulatory and warning bicycle signage should conform to the Manual on Uniform Traffic Control Devices (MUTCD). The signs to the right are examples of regulatory signs for bicycle (their labels are sign reference numbers for the MUTCD).


R1-1 R1-2 R3-17 R3-17a R3-17b




R4-1 R4-2 R4-3 R4-4 R4-7




R5-1b R9-3c R5-3 R5-6 R7-9 R7-9a


## SPECIAL PURPOSE SIGNAGE

The "Share the Road" sign (below), is designed to advise motorists that bicyclists are allowed to share and have the right to cycle on narrow roadways with motor vehicles. For more on the "Share the Road Initiative" go to: http://ncdot.org/transit/bicycle/safety/programs_initiatives/share.html

Innovative signage is often developed to increase bicycle awareness and improve visibility (such as 'Bicycles Allowed Use of Full Lane', bottom right).


*Share the Road signs remind motorists that bicyclists have the right to ride on the roadway*


*The "Bicycles Allowed Use of Full Lane" sign is currently used on an experimental basis in several cities.*

## 1. The Rack Element

Definition: **the rack element is the part of the bike rack that supports one bicycle.**

The rack element should:

- Support the bicycle upright by its frame in two places
- Prevent the wheel of the bicycle from tipping over
- Enable the frame and one or both wheels to be secured
- Support bicycles without a diamond-shaped frame with a horizontal top tube (e.g. a mixte frame)
- Allow front-in parking: a U-lock should be able to lock the front wheel and the down tube of an upright bicycle
- Allow back-in parking: a U-lock should be able to lock the rear wheel and seat tube of the bicycle

Comb, toast, school-yard, and other wheel-bending racks that provide no support for the bicycle frame are NOT recommended.

The rack element should resist being cut or detached using common hand tools, especially those that can be concealed in a backpack. Such tools include bolt cutters, pipe cutters, wrenches, and pry bars.

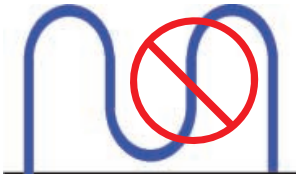
**INVERTED "U"**
One rack element supports two bikes.

**"A"**
One rack element supports two bikes.

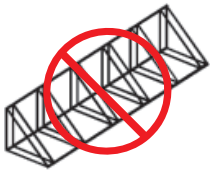
**POST AND LOOP**
One rack element supports two bikes.

**COMB**
One rack element is a vertical segment of the rack.

Not recommended

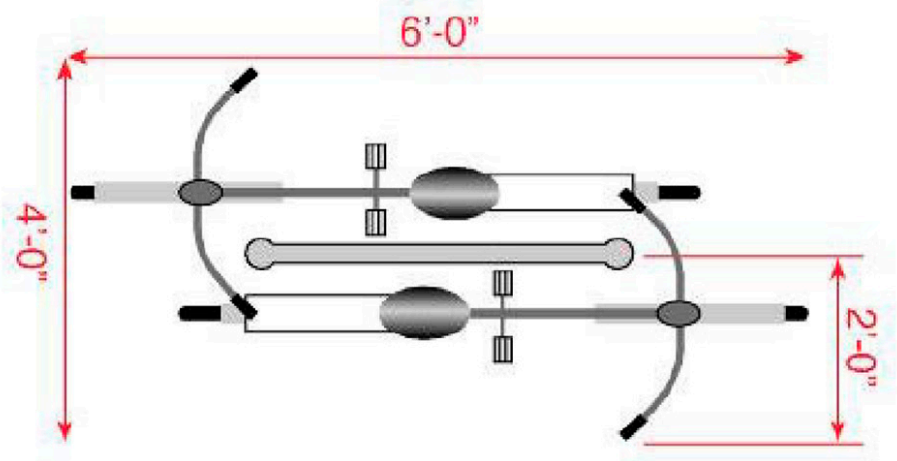


**WAVE**
One rack element is a vertical segment of the rack.
(see additional discussion on page 3)

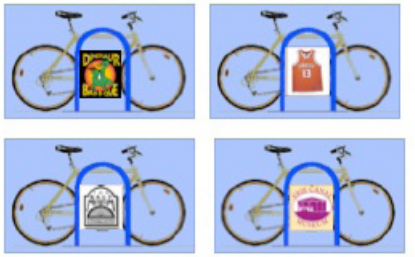


**TOAST**
One rack element holds one wheel of a bike.

*Recommended guidelines for bicycle parking from the Association of Pedestrian and Bicycle Professionals, 2002, www.apbp.org.*




**Custom Design**



*Bicycle racks that incorporate advertising can be sponsored by local merchants.*

*Provision of shelter from rain greatly increases usefulness of this bicycle parking facility during inclement weather.*

*A single inverted "U" rack can accommodate two bicycles.*

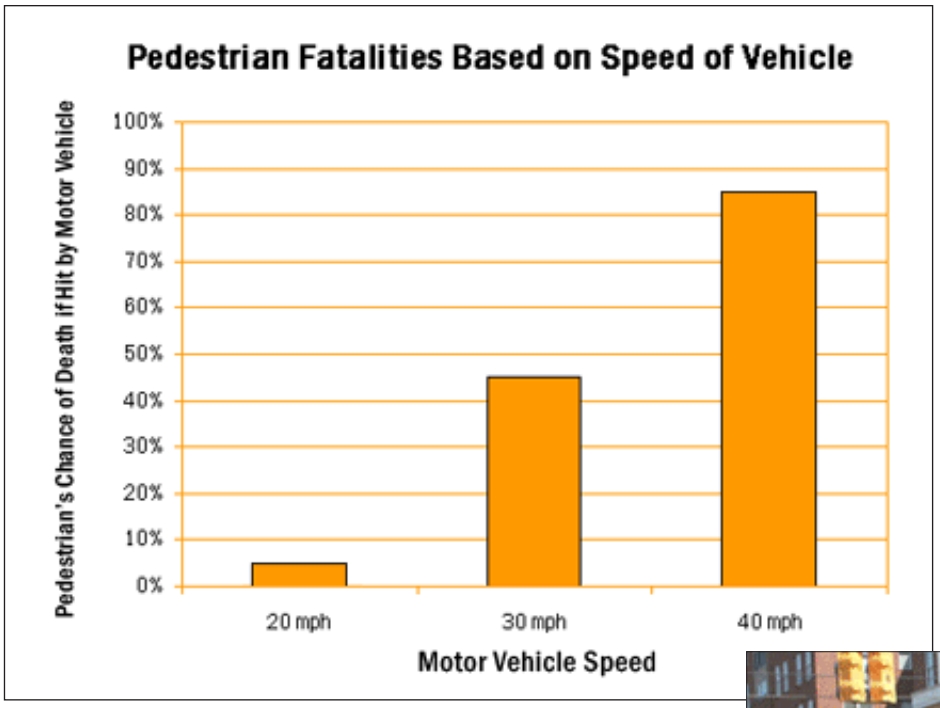
*Example of a bicycle rack in Durham, NC, serving as a piece of utilitarian public art.*

## D.21 TRAFFIC CALMING TREATMENTS

Traffic calming is a procedure in which the arrangement of the street and its elements encourages slower traffic to ensure safe speeds. Typically, compliance with traffic control devices are optional but with the use of physical and visual cues that traffic calming introduces, drivers are forced to respond to the calming procedures.

Research on effective traffic calming in the U.S. suggests that traffic calming can effectively reduce the speed of vehicular traffic, decrease the number of automobile accidents, and contribute to noise reduction. Research also supports that the use of multiple traffic calming procedures will exponentially reduce the number of crashes.

The following pages describe typical traffic calming measures.




*Above: Graph from Killing Speed and Saving Lives, U.K. Department of Transportation, London, 1987.*

*Right: Example of multi-modal intersection with traffic calming elements.*


*The curb extension makes motorist reduce speeds for turning and provides street parking.*

## CURB EXTENSIONS (BULB OUTS)

A curb extension (also known as a bulb out) is the additional sidewalk space allocated along the street as a traffic calming measure. By extending the curb, the street becomes more narrow to vehicular traffic thus slowing down traffic speeds. The curb extension also reduces the crossing distance for a pedestrian decreasing the time of a pedestrian in the street. The extension also improves the visibility of both motorist and pedestrians.

Curb extensions also prevent motorists from parking vehicles too close to crosswalks and curb ramps leaving the space open for pedestrian movement. Motor vehicles, parked too close to corners, present a threat to pedestrian safety, since they block sight lines, obscure visibility of pedestrians and other vehicles, and make turning particularly difficult for emergency vehicles and trucks.

Extensions to the curb are only recommended where parking exists. Curb extensions must not intervene with the adjacent drive lanes, bicycle lanes, or roadway shoulders. The turning needs of larger vehicles, such as school buses, need to be considered in curb extension design as well.

*The curb extension narrows the width of the street and can be used in combination with crosswalk markings.*

## CHOKERS

Chokers are a design tool used to widen sidewalks or planting beds along vehicular corridors to decrease the width of the travel lane. By narrowing the street, effectively reducing the travel lanes by half of a lane width, the choker forces motorist to yield to each other and slow down. In order for this to function effectively, the width of the travel lane cannot be wide enough for two cars to pass. Sixteen feet is typically effective (and will permit emergency vehicles to pass unimpeded).

Chokers can be created by bringing both curbs in, or they can be done by more dramatically widening one side at a midblock location. They can also be used at intersections, creating a gateway effect when entering a street.

*The choker produces a narrow passage for vehicular traffic.*

*This choker narrows the street from two lanes to one. Traffic is forced to slow down and, in some cases, wait for an approaching vehicle to pass before proceeding.*

# CROSSING ISLANDS (CENTER ISLANDS, PEDESTRIAN ISLANDS, MEDIAN SLOW POINTS)

*Crossing islands allow pedestrians to be concerned with one direction of traffic at a time. The roadway markings in the design shown here also help make motorists aware that a pedestrian may be crossing.*

Crossing islands are pedestrian refuge areas raised to curb height typically located in the center of street, intersections or midblock crossways. Center crossing islands protect pedestrians from vehicles and subsequently allow users to watch one direction of traffic at a time.

Where midblock or intersection crosswalks are installed at uncontrolled locations (i.e., where no traffic signals or stop signs exist), crossing islands should be considered as a supplement to the crosswalk. They are also appropriate at signalized crossings. If there is enough width, center crossing islands and curb extensions can be used together to create a highly improved pedestrian crossing.

Curb extensions may be built in conjunction with center crossing islands where there is street parking. Care should be taken to maintain bicycle access. Bicycle lanes must not be eliminated or squeezed in order to create the curb extensions or islands.

*Crossing islands may be added to the middle of a street when the street is very wide.*

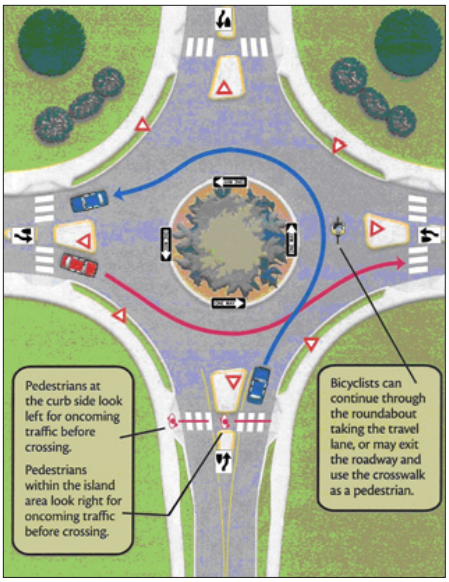
*Crossing island allows pedestrians to stop before completely crossing a road.*

## CHICANE

A chicane is a traffic method used to narrow and/or turn the roadway with the use of divergent paths and shifting parking lanes. When motorists are prevented from driving in a direct linear fashion, their speeds are normally reduced. Using chicanes is a successful way to force motorist to shift travel lanes and restrict direct forward movement. Shifts can be created by moving street parking from one side to the other or by building landscaped islands that gradually cause the motorist to maneuver the obstacles in order to continue progression.

*A chicane on a one-lane road.*

*This chicane narrows the street to fewer lanes and requires traffic to move slowly.*




*Movement within a roundabout.*

*A traffic mini-circle helps reduce vehicle speeds, but still allows cars and emergency vehicles to pass through the intersection with little difficulty.*

## MINI CIRCLES (ROUNDABOUTS)

Mini-circles are traffic islands raised to curb height, located at the center of an intersection. The design of a mini-circle is intended to force motorists to reduce speed in order to turn in a circular motion. Drivers making left turns are directed to go on the far side of the circle prior to making the turn. Drivers going straight must go around the circle before proceeding. And drivers going right must yield to traffic that is in the mini-circle.

The center portion of the mini-circle is usually landscaped with various plant materials that allow motorists and pedestrians clear sights to all sides of the intersection. In locations where landscaping is not feasible, traffic circles can be enhanced through specific pavement materials.

Mini-circles are designed to slow traffic but because they do not have the capability of controlling right turns at the intersection, pedestrians and cyclists do encounter potential risk. In order to compensate for this risk, right curb radii should complement this treatment to discourage high speed right turn maneuvers. Large vehicles (i.e. delivery and fire trucks) can be accommodated with a roll-curb on the mini-circle.

Cyclist and pedestrian needs can also be accommodated by moving crosswalks away from the mini-circle to a mid-block crossing or next intersection.

*Roundabouts (and other circular intersection types) allow for landscaping, monuments, and other aesthetic uses within the central island.*

*Vehicles entering the roundabout give way to vehicles in the roundabout.*

## SPEED HUMPS

Speed humps are 3”-4” raised mounds that extend the width of the street to deter motorists from excessive speeds. Speed humps should not be confused with the speed “bump” that is often found in mall parking lots. Generally, speed humps are 12” to 14” in height and span the width of the road. The length and height of the speed humps determine the speed at which traffic will travel over the devices. Shorter lengths and greater heights slow cars most drastically.

The traditional 12” hump has a design speed of 15 to 20 mph, a 14” hump a few miles per hour higher, and a 22” table has a design speed of 25 to 30 mph. The longer humps are much gentler for larger vehicles.

*A warning sign notifies motorists before humps. Humps generally have pavement markings to enhance visibility and a taper edge near the curb to allow a gap for drainage.*



*Speed humps are used on streets to reduce speed, causing motorists to slow down.*

D

## RAISED INTERSECTION

A raised intersection is a speed table that spans the area of the entire intersection. Each side of the intersection has a ramp for the vehicle approach, which elevates the entire intersection to the level of the sidewalk. They can be built with a variety of materials, including asphalt, concrete, stamped concrete, or pavers. The crosswalks on each approach are also elevated as part of the treatment to enable pedestrians to cross the road at the same level as the sidewalk, eliminating the need for curb ramps. Use detectable warnings to mark the boundary between the sidewalk and the street.

*A raised intersection slows all vehicular movements through the intersection and improves pedestrian crossings in all directions.*

*The raised intersection above enhances the pedestrian environment at the urban crossings.*

*Raised intersections, like the one above, reduce vehicle speeds at busy intersections.*

## RAISED PEDESTRIAN CROSSING

A raised pedestrian crossing is also a speed table, with a flat portion the width of a crosswalk, usually 10' to 15'. Raised intersections and crosswalks encourage motorists to yield to the vehicular ramp and elevated pedestrians.

*A raised pedestrian crossing provides a continuous route for the pedestrian at the same level as the sidewalk. Pavement markings may be used on the slope to make the crossing visible to motorists.*

*The raised crosswalk helps reduce vehicle speeds and the measures tend to have a predictable speed reduction solution.*

## SPEED TABLE

A speed table is a broad portion of a speed hump, used as a pedestrian crossing. The speed table can either be parabolic, making it more like a speed hump, or trapezoidal, which creates the flat table like surface. Speed tables can be used in combination with curb extensions where street parking exists.

*The speed table (above) causes less of a delay than humps and are typically preferred by fire departments over speed humps.*

*The speed table design (above) allows cars to pass without slowing as significantly as with speed humps.*

D

## GATEWAYS

A gateway is a physical landmark that indicates a change in environment from a higher speed major roadway to a minor road (lower speed district). Gateways can include different traffic calming techniques such as of street narrowing, medians, signing, archways, roundabouts, or other identifiable features. Gateways reveal to motorist that an area of slower speeds has been reached. This can help achieve the goal of meeting expectations and preparing motorists for a different driving environment. Gateways are only an introduction and slower speeds are not likely to be maintained unless the entire area has been redesigned or other traffic-calming features are used.

*Gateways produce an expectation for motorists to drive more slowly and watch for pedestrians when entering a commercial, business, or residential district from a higher speed roadway.*

*Creative gateways help establish a unique image for an area.*

## LANDSCAPING

Landscaping along the corridor can work as a buffer to separate pedestrians from vehicles, reduce the visual width of the roadway (which encourages slower speeds), and provide an aesthetic appeal to the street. This can include a variety of trees, bushes, and/or flowerpots, which can be planted in the buffer area between the sidewalk or walkway and the street.

Choosing appropriate plants, providing adequate space for maturation, and preparing the ground can help ensure that the plants survive with minimal maintenance and don't buckle the sidewalks as they mature. The following guidelines should be considered: plants should be adapted to the local climate and fit the character of the surrounding area—they should survive without protection or intensive irrigation; and the plant's growth patterns should not obscure signs or pedestrians' and motorists' views of each other.

*The landscaping enhances the street environment.*

*The landscaping on this street calms traffic by creating a visual narrowing of the roadway.*

*Landscaping with low shrubs, ground cover, and mature trees that are properly pruned can add shade, color, and visual interest to a street.*

D

## PAVING MATERIALS

Paving materials are important to the function and look of a street, both in the road and on the sidewalk. Paving materials can also increase crosswalk visibility and act as a physical traffic calming device when using paved brick or cobblestone. Textured crosswalks should be marked with reflective lines since these types of crosswalks are not as visible, especially at night or on rainy days.

Smooth travel surfaces are best for all pedestrians. The pedestrian path material should be firm, planar, and slip-resistant. Concrete is the preferred walking surface. A different look can be achieved by using stamped concrete or concrete pavers, which are available in a variety of colors and shapes. Colored paving can often enhance the function of portions of the roadway, such as a colored bicycle lane. This can create the perception of street narrowing, in addition to enhancing the travel facility for bicyclists.

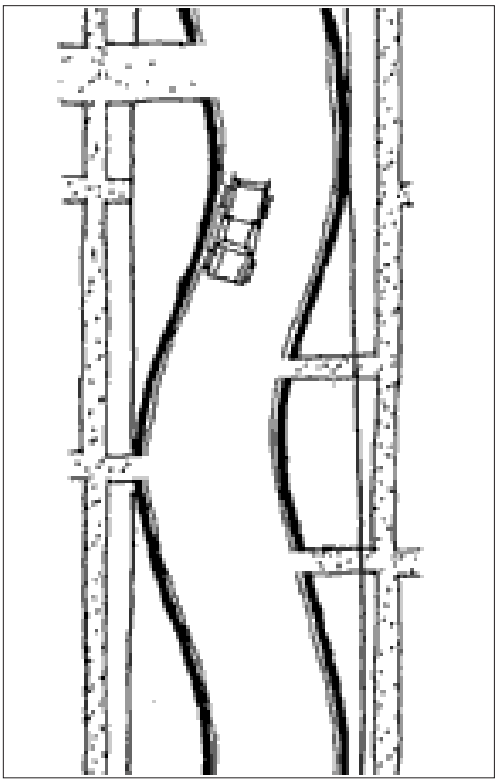

*Brick or cobblestone streets help slow traffic and create a feeling that the street is not a highway or fast-moving arterial.*

*This paving creates an aesthetic enhancement to the street.*

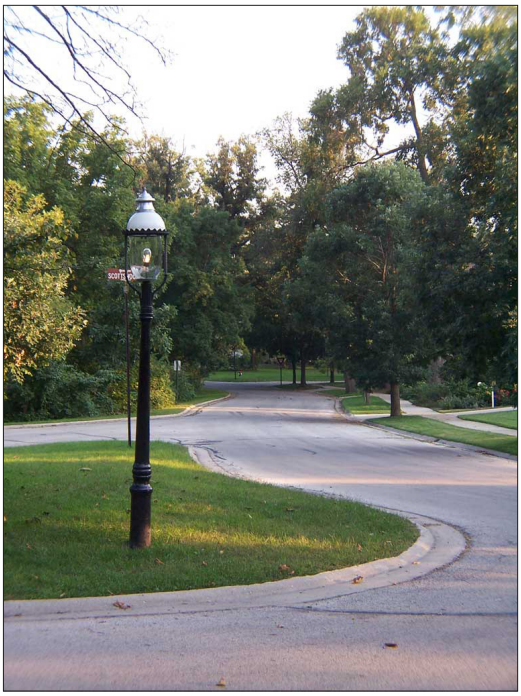
## SERPENTINE DESIGN

Serpentine roadway design is when a street is aligned in a wave fashion to shift traffic left and right with the use of built-in visual enhancements. This allows movement but forces vehicles to reduce speed. The opportunities for significant landscaping can be used to create a park-like atmosphere.

Such designs are usually implemented with construction of a new neighborhood street or during reconstruction of an existing street corridor. This type of design can be more expensive than other traffic-calming options and needs to be coordinated with driveway access.



*The serpentine design changes the entire look of a street to send a message to drivers that the road is not for fast driving.*



*The serpentine street is a curving roadway that helps slow traffic through the use of curbs and landscaping.*

*The opportunities for significant landscaping can be used to create a park-like atmosphere.*

D

## WOONERF

A woonerf ("Street for living") is a Dutch term for a common space created to be shared by pedestrians, bicyclists, and low-speed motor vehicles.

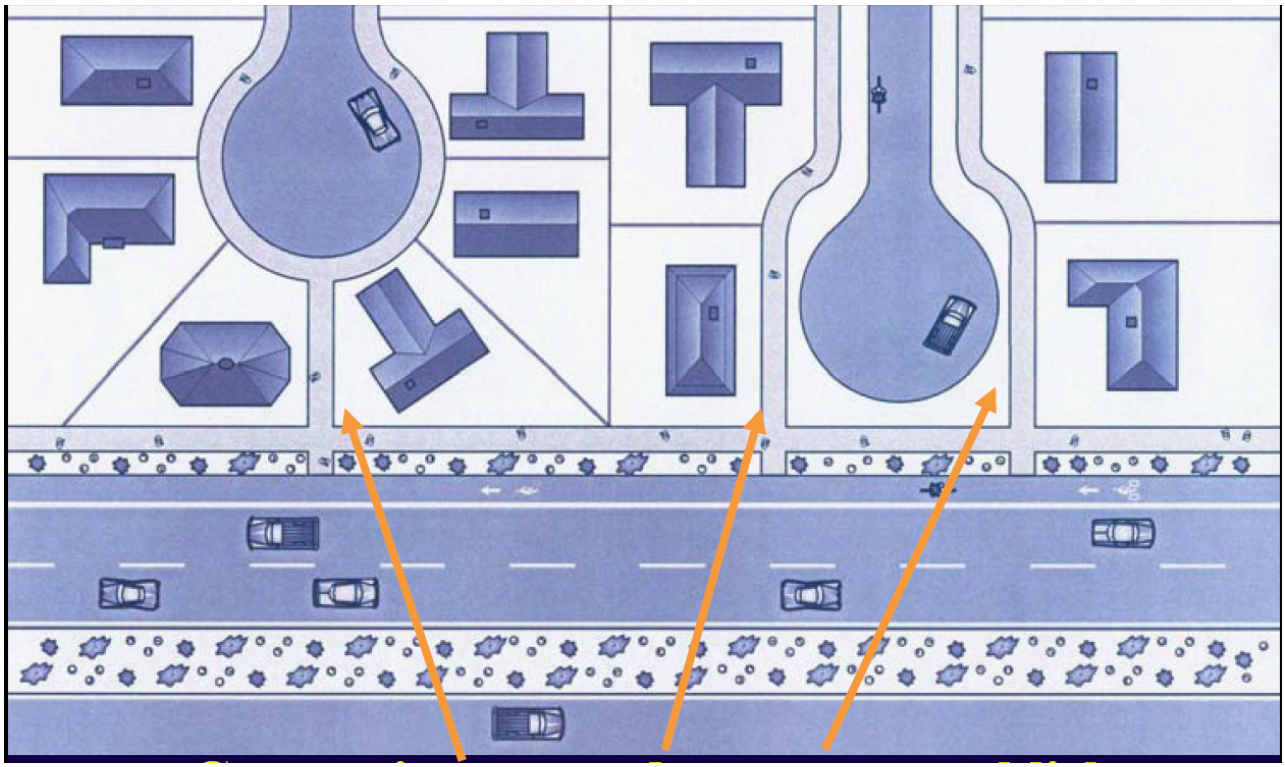
They are typically narrow streets without curbs and sidewalks. Vehicles are slowed by placing trees, planters, parking areas, and other obstacles in the street. Motorists become the intruders and must travel at very low speeds below 10 mph. This makes a street available for public use that is essentially only intended for local residents. A woonerf identification sign is placed at each street entrance.

Consideration must be given to provide access by fire trucks, sanitation vehicles and other service vehicles if needed.

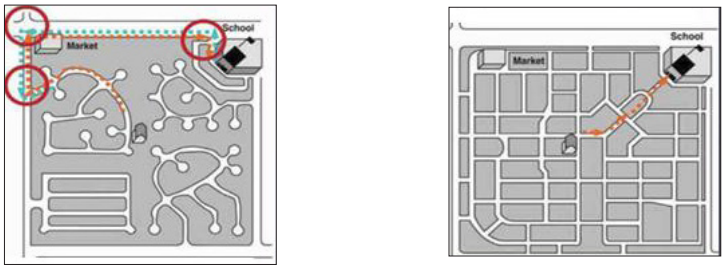
*Motorists, cyclists, and pedestrians share the space on this woonerf or living street.*

## D.22 LAND USE AND PEDESTRIAN TRAVEL

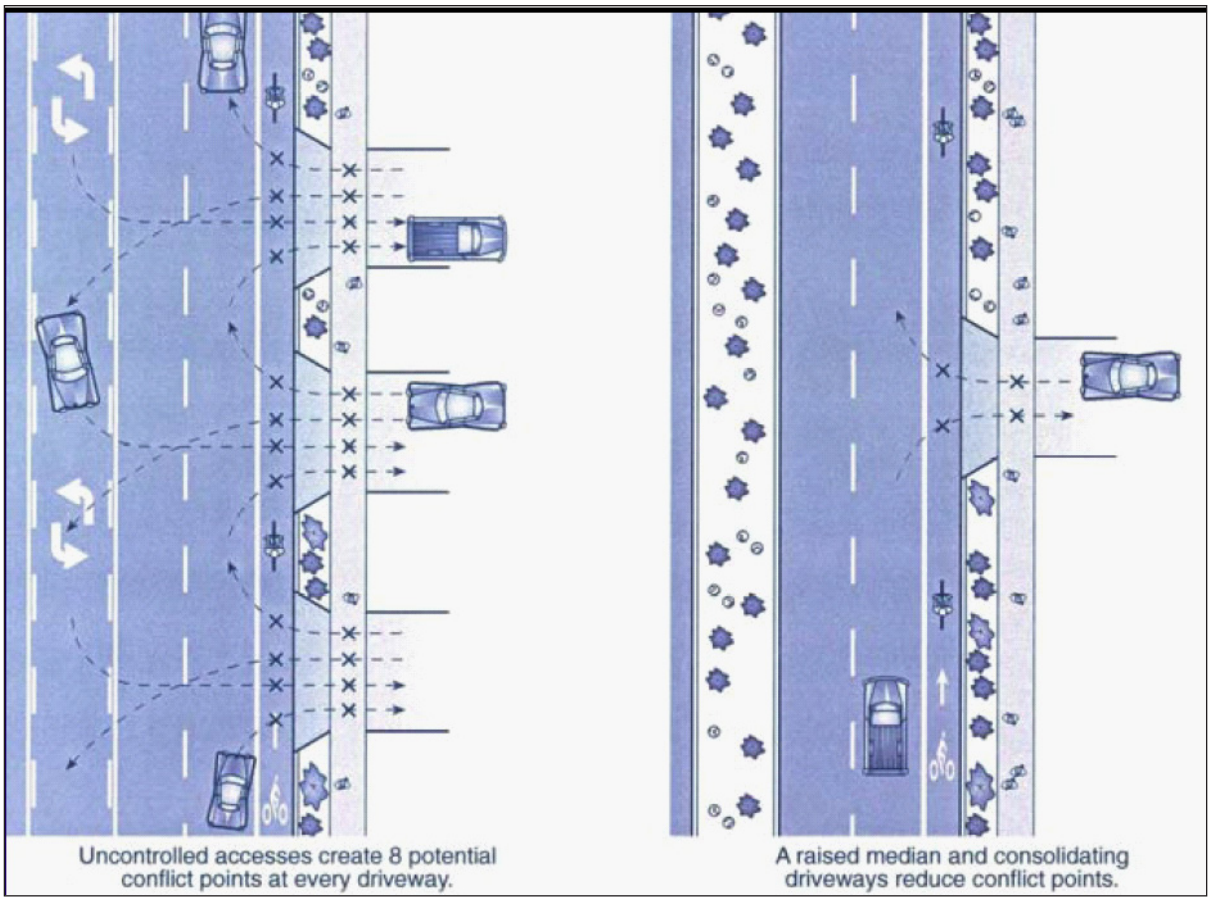
The land use and development environment plays a major role in the walkability of an area. The following are brief examples of the importance of connectivity, not only along corridors and across roadways, but also between neighborhoods and into commercial sites.



*The above example shows the effectiveness of connecting a traditional cul-de-sac neighborhood to a collector or arterial road.*




*The above example communicates the difference between a connected street and pedestrian network (on right) versus separated cul-de-sac neighborhoods. A person living in the scenario to the left will have a longer trip to school and will likely be forced to travel by automobile. A person living in the scenario on the right could walk to school safely and easily. This scenario, used consistently, would significantly reduce traffic.*




*Driveway access management is a key issue throughout the United States. A high number of driveway accesses and/or wide driveway accesses create more conflict points between motorists, bicyclists, and pedestrians. Every effort should be made to retrofit and build new development with the goal of achieving the scenario to the right.*

*Pedestrian connectivity is critical not only between destinations but within destinations. The example shown above shows an excellent commercial area with clear pedestrian pathways of travel.*