

PEDESTRIAN MASTER PLAN

Town of Marshall, North Carolina



Submitted to:
Town of Marshall

Submitted by:

HNTB

In conjunction with:



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ACKNOWLEDGEMENTS

INTRODUCTION

The development of the Marshall Pedestrian Master Plan could not have been possible without the involvement and support of several individuals and groups. These individuals include members of the Steering Committee, Board of Alderman, Planning Board, Town Staff, the North Carolina Department of Transportation and the citizens of Marshall. Without their involvement, the development of this plan could not have been possible.

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CHAPTER 1

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Chapter 1

INTRODUCTION

OVERVIEW

Located in Madison County is the Town of Marshall, with a current population of 872 (2010 Census). Chosen as the county seat in 1842, Marshall was a stop along the Drover's Road or Buncombe Turnpike. "The historic core of the Town of Marshall is nestled into the mountainside along the French Broad River, creating an unmatched natural setting in comparison with many other small towns. An island with an old school building converted to artists studios is positioned in the river connected by a bridge to historic downtown Marshall. Highlighting the built environment is the dome and cupola of the Historic Courthouse that creates a prominent vista point from all the main entrances into the downtown."ⁱ

"This wonderful setting has mostly been preserved over the years as flood hazards, the availability of buildable land, steep terrain and winding regional transportation routes have limited the potential for urban development on the Town's edges. However, over time, transportation corridors have improved, providing more direct access to developing areas near Marshall."ⁱⁱ

Plan Purpose

The Town of Marshall adopted a Comprehensive Land Use Plan in October 2009. One of the goals listed in the plan stated: "Establish safe, diverse, and efficient transportation networks". The purpose of this plan is to build on the goals and recommendations from the land use plan and to assess the existing pedestrian network, understand the major issues and concerns of the community and develop recommendations to address them.

i Town of Marshall Comprehensive Land Use Plan. Adopted October 19, 2009. Page 1.

ii Town of Marshall Comprehensive Land Use Plan. Adopted October 19, 2009. Page 2.

Scope

The scope of work for this plan will be to develop focused recommendations that address key issue areas. The Town of Marshall faces significant challenges because of the mountainous terrain. Creating a comprehensive pedestrian system that links all parts of the town may not be economically feasible, therefore this plan will develop key recommendations that address specific areas.

GOALS AND OBJECTIVES

Vision and Goals

During the Kick-off Meeting with the Town Staff and Steering Committee, issues, concerns and opportunities were discussed. This discussion and feedback received during the walking audit led to the development of a vision statement and a series of goals:

Goals

- » To improve the safety and accessibility of existing and future pedestrian infrastructure throughout the town.
- » To improve wayfinding and signage for destinations within the town.
- » To improve the maintenance of pedestrian facilities throughout the town.
- » To ensure all key intersections are accessible to all users.
- » To coordinate with the county and other entities to develop

Vision Statement

The Town of Marshall will strive to provide attractive, well maintained and safe pedestrian infrastructure for the town residents and visitors. The Town will continue to provide recreational opportunities that are accessible for all users and will promote a healthy community through collaboration with town residents, business owners and visitors.

greenways that connect key existing and future destinations throughout the town.

- » To improve the safety of all users within downtown by developing traffic calming measures to slow motorists and increase the visibility of pedestrians.
- » To improve the aesthetics along pedestrian and bicycle routes.

BENEFITS OF WALKING

The benefits of walking can improve our overall health, assist in reducing traffic congestion and add to the overall quality of life. According to the Pedestrian and Bicycle Information Center, there are six major categories of walking benefits.

Health Benefits

The health benefits of walking and regular physical activity can help reduce the risk of heart attacks, strokes, diabetes, high blood pressure and other types of health risks. Improved health can also help reduce obesity; thus reducing care costs. Obesity has become a major problem in the United States. In fact, according to the Centers for Disease Control and Prevention, approximately 17% (12.5 million) of children between the ages of 2-19 years old are considered to be obese. The percentage of adults considered obese is even worse. Approximately 1/3 (35.7%) are considered obese.ⁱⁱⁱ According to the CDC, in 2009, 27.8% of adults within the State of North Carolina (ages 18 and over) were considered to be obese, and in Madison County, it was slightly higher with 29% of adults considered to be obese.^{iv}

iii Centers for Disease Control and Prevention Web Site, <http://www.cdc.gov/obesity/data/adult.html>, July 2012.

iv Centers for Disease Control and Prevention Web Site, http://apps.nccd.cdc.gov/DDT_STRS2/CountyPrevalenceData.aspx?mode=OBS



▲ The French Broad River provides recreational opportunities

Transportation Benefits

Walking is by far the least expensive form of transportation and can be used for many daily trips. For many individuals without a personal automobile, walking is their primary form of transportation. According to the 2009 National Household Travel Survey (NHTS), one in 11 U.S. households does not own an automobile. Therefore, providing safe, convenient and properly maintained pedestrian infrastructure is important.

Aesthetic and functional improvements, such as pedestrian lighting, landscaping, wide sidewalks, and timed pedestrian crossings can increase pedestrian safety and improve mobility. These improvements can also help create a sense of identity for the town and promote social interaction.



▲ Greenways are not only used for recreation, but many communities also use them as transportation corridors.

Environmental & Energy Benefits

Walking can have noticeable benefits on the environment and energy usage. Automobiles create a substantial amount of air pollution through the release of carbon monoxide. Pedestrian facilities, such as sidewalks and greenways, provide individuals with alternative

ways to access daily destinations, which can reduce their dependency on motor vehicles, improving the overall air quality. Greenways also help improve water quality by acting as a buffer from development and storm water runoff.

Economic Benefits

Many economic benefits can be realized with a well connected, well maintained and safe pedestrian system. First and foremost, walking is free. In comparison, the annual cost of operating and maintaining an automobile is approximately \$8,000.^v For people who are unable to drive or can't afford an automobile, providing pedestrian amenities and access to other forms of transportation (e.g. transit) is critical. It also allows households to spend income communities, which translates into investment from developers and the stimulation of economic development. Greenways are now considered an amenity in many communities across the country, which can have a positive impact on property values. A 2002 survey that was sponsored by the National Association of Realtors and the National Association of Home Builders indicated that trails ranked as the second most important community amenity out of a list of 18 choices.^{vi}

In 2003, the NCDOT Division of Bicycle and Pedestrian Transportation commissioned a study to examine the value of public investment in bicycle facilities and determine the economic benefits accrued in the northern Outer Banks. This area was selected for the study because of existing high levels of bicycle activity and the presence of an extensive system of special bicycle facilities. The study was conducted by the Institute for Transportation Research

^v North Carolina Department of Transportation, Division of Bicycle and Pedestrian Transportation, Traveling by Foot (<http://www.ncdot.gov/bikeped/travelingfoot/>)

^{vi} Consumer's Survey on Smart Choices for Home Buyers, National Association of Realtors and National Association of Home Builders, April 2002.

and Education (ITRE) at North Carolina State University. Some of the significant economic impact findings of the study include:

- » A conservative estimate indicated that the annual economic impact is \$60 million, with 1,400 jobs created/supported each year.
- » 17% of visitors to the area report bicycling activity while there; this is approximately 680,000 bicyclists annually.
- » Over three-fourths of all survey respondents indicated that additional bicycle paths, paved shoulders and bike lanes should be built.
- » Nine out of ten survey respondents strongly agreed that state and/or federal tax dollars should be used to build more bicycle facilities.

These are just some of the findings from this report. To read the entire technical report, please follow the link below: <http://www.ncdot.gov/bikeped/researchreports/>.

Quality of Life Benefits

In many areas across the country, a community's walkability is an indicator of the quality of life and livability, which many businesses and tourists find attractive. *"In cities and towns where people can be regularly seen out walking, there is a palpable sense that these are safe and friendly places to live and visit."*^{vii}

According to the Federal Highway Administration, pedestrians add

vii Quality of Life Benefits, Pedestrian and Bicycle Information Center, July 2012.

to the ambiance and security of the streets. Also, providing livable communities is a necessary part of attracting and keeping businesses, and ensuring local communities remain competitive.^{viii}

Social Justice Benefits

In cities and towns where pedestrian facilities are limited or nonexistent, individuals are forced to travel by automobile or walk along roadways that are unsafe for pedestrian travel.

For individuals who don't have the option to travel by automobile, including children, the elderly, those with disabilities or those who can't afford an automobile, the lack of pedestrian infrastructure *"creates an inconvenient and socially unjust barrier to mobility."*^{ix}

viii Federal Highway Administration University Course on Bicycle and Pedestrian Transportation. Publication number: FHWA-HRT-05-085. July 2006.

ix Social Justice Benefits, Pedestrian and Bicycle Information Center, July 2012.



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CHAPTER 2

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Chapter 2

EXISTING CONDITIONS

DEMOGRAPHICS ANALYSIS

According to the 2010 Census data from the U.S. Census Bureau, 872 people live in the Town of Marshall. Of these, 52% are male and 48% are female and an overwhelming majority (96%) are White. The median age of residents is 41, with 24% of the total population over the age of 60.

Income can also be a significant factor in transportation choices among residents. Based on U.S. Census Bureau, roughly 30% of the town's population is below the poverty level, compared to the State average of 16% and Madison County average of 17%. In addition, approximately 2% of the available workforce in Marshall walks to work and 10% of all households lack access to an automobile, which is about 4% higher than the state and county average.

LAND USE AND DEVELOPMENT

According to the Town's Future Land Development Concept Map in the Comprehensive Land Use Plan, a majority of the land use within the Town's limits is low density residential. These uses are located on the periphery of the town. Medium density residential is mainly located along the south side of the French Broad River adjacent to Fortner Road, Cotton Mill Road, and E. Davis Road. North of the river it is located along Skyway Drive, Hill Street Hayes Run Road and Coates Road. High density residential is primarily located along Business 25/70 between Walnut Creek Road and the Town's limits.

Industrial and highway commercial uses are focused along Bypass 25/70, just outside the Town's limits. Many of the Town's destinations are located along this corridor.

The historic downtown core is situated along Main Street, where there is a mix of office, retail and institutional uses. The mixed use designation is located along Walnut Creek Road, Tillery Branch Road and NC 213 north of Bypass 25/70. There are two recreational destinations within the Town of Marshall. The first is located on Blannahassett Island and the other is the Nature Sanctuary located in the eastern portion of the town. Other smaller recreational uses are located throughout the town. Many pedestrians access businesses along Main Street and the Bypass by foot. These destinations can be seen in Figure 2.1.

EXISTING PEDESTRIAN SYSTEM

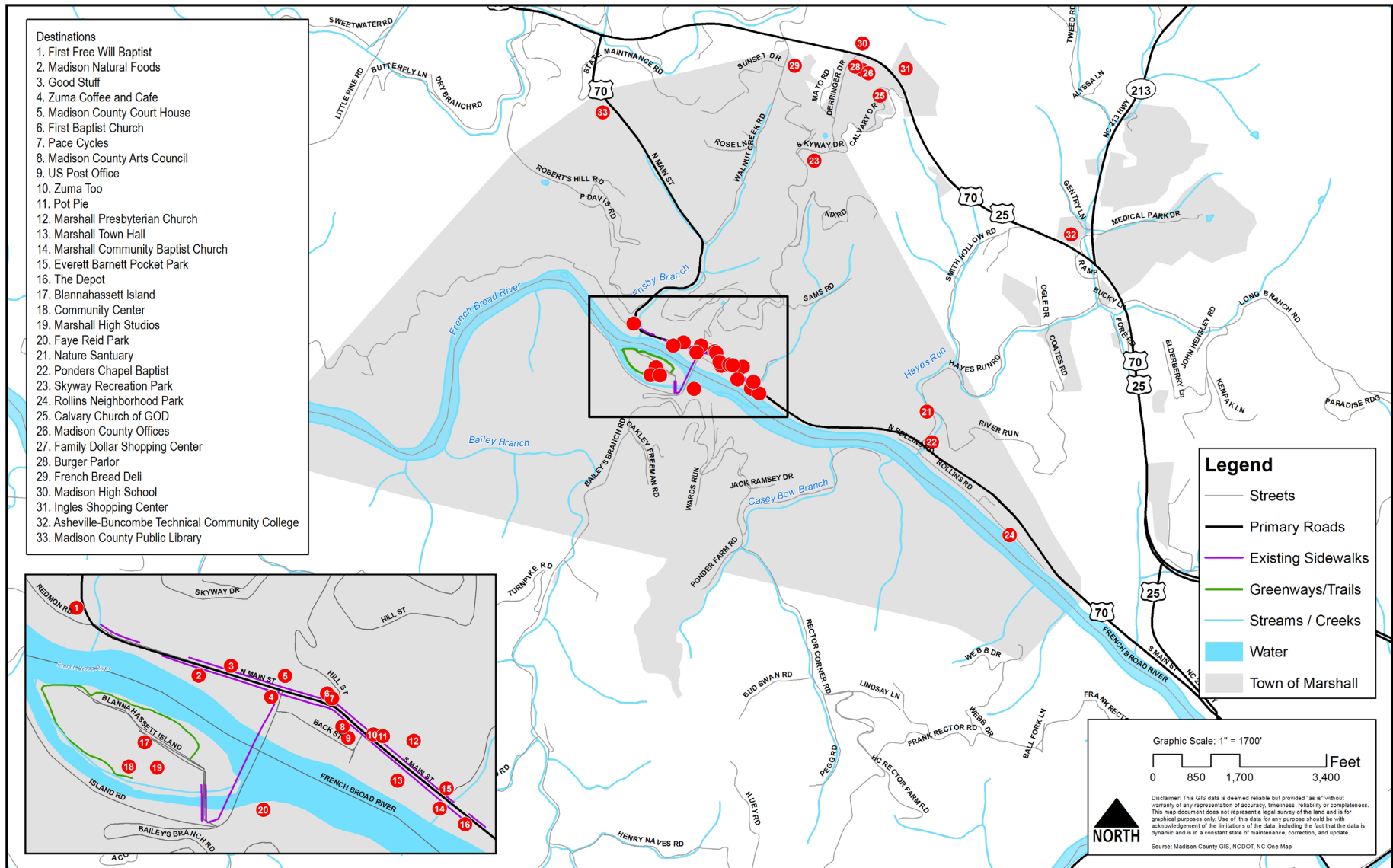
The Town of Marshall is not unlike many communities throughout North Carolina and the country. For decades, cities and towns have focused infrastructure improvements around automobiles and ignored the fact that pedestrians and bicyclists need safe, efficient and convenient way to travel too.

The Town does face unique challenges though. Much of the development outside of the downtown area is situated on significant slope, making it difficult to construct pedestrian facilities such as sidewalks. The lack of pedestrian amenities beyond Main Street makes it difficult to connect destinations throughout the town together.

Sidewalks

As previously mentioned, the fact that most of the town is situated on a slope makes it difficult to provide sidewalks and other pedestrian amenities within the town, for this reason, the existing sidewalk network is confined to the downtown area.

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▲ Figure 2.1: Existing Destinations Map



- ◀ In many locations along Main Street, sidewalk sections like this are in need of repair

Currently, sidewalks only exist along Main Street and on the bridge that connects downtown with Blannahasset Island (see Figure 2.1). Several of the sidewalk sections along Main Street need to be replaced or repaired. In some locations sidewalk only exists on one side of the road (see Figure 2.1). In addition to the disrepair of the sidewalks, multiple utility conflicts create obstacles for pedestrian mobility.

Intersections and Crossings

The lack of sidewalks makes it difficult for pedestrians to travel between destinations, but the lack of crosswalks and pedestrian signals at intersections makes it even more difficult. There are two locations where striped crosswalks have been provided. The first is located at the intersection of Bailey's Branch Road and Main Street. This is a three way intersection that has striped crosswalks, but does



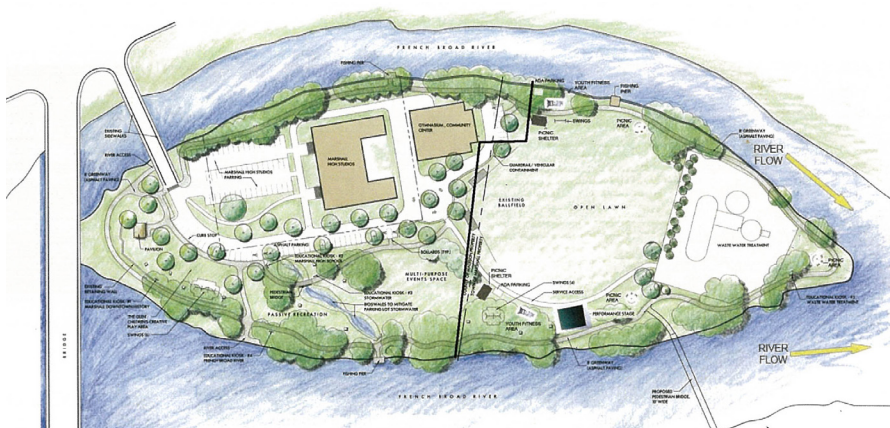
- ▲ The intersection of Bailey's Branch Road and Main Street is one of the few signalized intersections within the town. Crosswalks are provided, but the lack of pedestrian signals creates an unsafe crossing environment.

not have pedestrian push-button signals.

In addition to the crossing at Bailey's Branch Road and Main Street, another striped crosswalk is provided at the end of Bailey's Branch Bridge that facilitates movement from the bridge over to the sidewalk that leads to Blannahasset Island. Key intersections have been identified and can be seen in Figure 3.1 in Chapter 3.

Greenways

The Town currently has a loop trail that is located on Blannahasset Island (see Figure 2.1). This trail is natural and has not been formalized with concrete or asphalt. The Blannahasset Island



▲ Above is the illustration for the Blannahasset Island Master Plan.

Master Plan, which was completed in 2007, illustrates that the trail will eventually loop around the entire island, providing access to multiple fishing piers and direct access to the French Broad River.

In addition to the Blannahasset Island trail, Madison County's Recreation Map indicates that there are several bicycle routes that go through the Town of Marshall, but none of them appear to be greenway trails that can be used by both cyclists and pedestrians. In addition to these facilities, RiverLink, a non-profit organization, is working with the Town of Marshall and other surrounding jurisdictions to construct the French Broad River Greenway. Although a specific greenway alignment has not been chosen for the Town of Marshall, the Town should coordinate with RiverLink and Madison County on future greenway initiatives.

Existing and Past Planning Efforts

Town of Marshall Comprehensive Land Use Plan (adopted 10/2009)

The Comprehensive Land Use Plan identifies three major goals that are important to consider as part of the pedestrian plan. These goals include:

Goal #1: Promote sustainable land development patterns and practices

- » **Historic Downtown Core Development** - Enhance the pedestrian orientation of the downtown area by encouraging streetscape design that is inviting and on a human scale by providing crosswalks, installing pedestrian-scale light fixtures, and installing street trees.
- » **Mixed Use Corridors** - A mix of uses will encourage walking and alternative forms of transportation. It will be important to consider pedestrians and bicyclists as these areas develop. These corridor include US 70/25 north of downtown and Lower Walnut Creek Road.
- » **Parks and Recreation** - A Riverfront Park is proposed along the French Broad River on the west side of downtown. In addition, a pedestrian bridge is proposed that will connect this park to Blannahasset Island. The plan recommends the completion of the Blannahasset Island Master Plan, which would provide a paved loop trail, several fishing piers and access to the French Broad River. The French Broad River Greenway is also identified as a key route for pedestrians and bicyclists along the river.

Goal #2: Establish safe, diverse, and efficient transportation networks

- » **Connectivity** - The plan encourages connecting new development to existing development. This should apply for both vehicular and pedestrian traffic.
- » **Pedestrian Safety** - The plan recommends the installation of signaled crosswalks at all intersections and key crossing points within downtown. It also recommends coordinating with NCDOT to install signaled crosswalks and pedestrian refuges at the gateway locations and crossings along the bypass.
- » **Greenways and Trails** - The plan recommends pursuing the construction of the French Broad River Greenway through further collaboration with RiverLink and surrounding jurisdictions. It also recommends the connection of parks and other amenities with a network of trails and greenways, as well as to enhance river recreational opportunities and river access.

Town of Marshall Unified Development Ordinance (UDO)

The Town's UDO, which was adopted in May 2011, now requires sidewalks to be built on several of the Town's road types. Table 2.1 provides an summary of those requirements. Sidewalks are only required on one side of the street in new subdivisions.

Madison County Comprehensive Transportation Plan (CTP)

The Madison County CTP was a joint effort between Madison County, the municipalities of Mars Hill, Marshall, and Hot Spings, the Land of Sky RPO, and NCDOT. The plan was adopted in December

▼ Table 2.1: Sidewalk requirements by road typology

Road Type	Sidewalk Requirements	Buffer Requirements
Urban Highway	5 feet (min.)	6-15 feet
Rural Highway	Not required	N/A
Major Street	5 feet (min.)	6-8 feet
Collector Street	5 feet (min.)	6-12 feet
Minor Street	5 feet (min.) - One Side Only	6-8 feet
Alleys	Not required	N/A

2010 by Madison County and in January 2011 by the Town of Marshall.

The CTP contains recommendations for transportation improvements that will have future impacts to pedestrian mobility and safety in Marshall and Madison County. The first project that is identified in the report is the improvements of US 25/70 from NC 252 to US 25/70 Business (N. Main Street). Improvements to this stretch of roadway will include widening US 25/70 to a 4-lane divided boulevard with a bicycle lane.

Currently, there are no specific recommendations to improve the existing intersections or side streets; however, as this project moves forward, the Town of Marshall needs to make sure that pedestrian improvements are considered. At a minimum, sidewalks should be provided on both sides with improvements to the signalized

intersections to allow pedestrians to cross safely. Also included in the report is the recommendation of a multi-use path that would follow NC 251 from the county line north to US 25/70. The Town of Marshall should work with Madison County, NCDOT and others to explore ways to extend this multi-use path toward downtown Marshall.

SUMMARY OF EXISTING CONDITIONS

Overall, the Town of Marshall lacks a comprehensive network of sidewalks and other types of pedestrian facilities to allow individuals to walk to destinations within the Town. Primary residential areas north and south of the French Broad River are separated from the Town's historic downtown district. Pedestrians are unable to access many of the destinations within the Town due to the lack of sidewalks or greenways/trails within the Town.

It is the desire of the community to improve conditions in the future so that they can eventually walk to destinations that are within close proximity to them. The recommendations in the following chapters are aimed at improving these conditions and providing the Town of Marshall with clear direction to implement this plan.



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CHAPTER 3

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Chapter 3

THE PEDESTRIAN NETWORK

OVERVIEW

The recommendations outlined in Chapter 3 reflect the community's vision and goals and are based on the inventory of the existing pedestrian facilities. It provides an overview of the plan elements, including sidewalks, greenways, intersection improvements and other non-signalized crossings.

This chapter contains a series of recommended infrastructure improvements to the existing pedestrian network of Marshall. As mentioned in Chapter 2, the Town of Marshall has limited pedestrian facilities today. The recommendations are aimed at improving connectivity throughout the town, especially in the focus areas that will be discussed later.

The intention of these recommendations is to improve pedestrian facilities in key areas where residents need and want to walk. The steep slope throughout portions of the town makes it cost prohibitive to create a comprehensive system of sidewalks and greenways; however, focused improvements in certain key areas will vastly improve the mobility of pedestrians.

This chapter is organized into several key elements of the pedestrian network, including a description of the priority areas and a detailed summary of the recommended pedestrian network. The pedestrian network is comprised of sidewalks, key intersections and greenways throughout the town. Several Priority Projects were identified during the initial Steering Committee meeting. Planning-level cost estimates and conceptual illustrations have been prepared for these projects and can be found at the end of this chapter.

THE PRIORITY AREAS

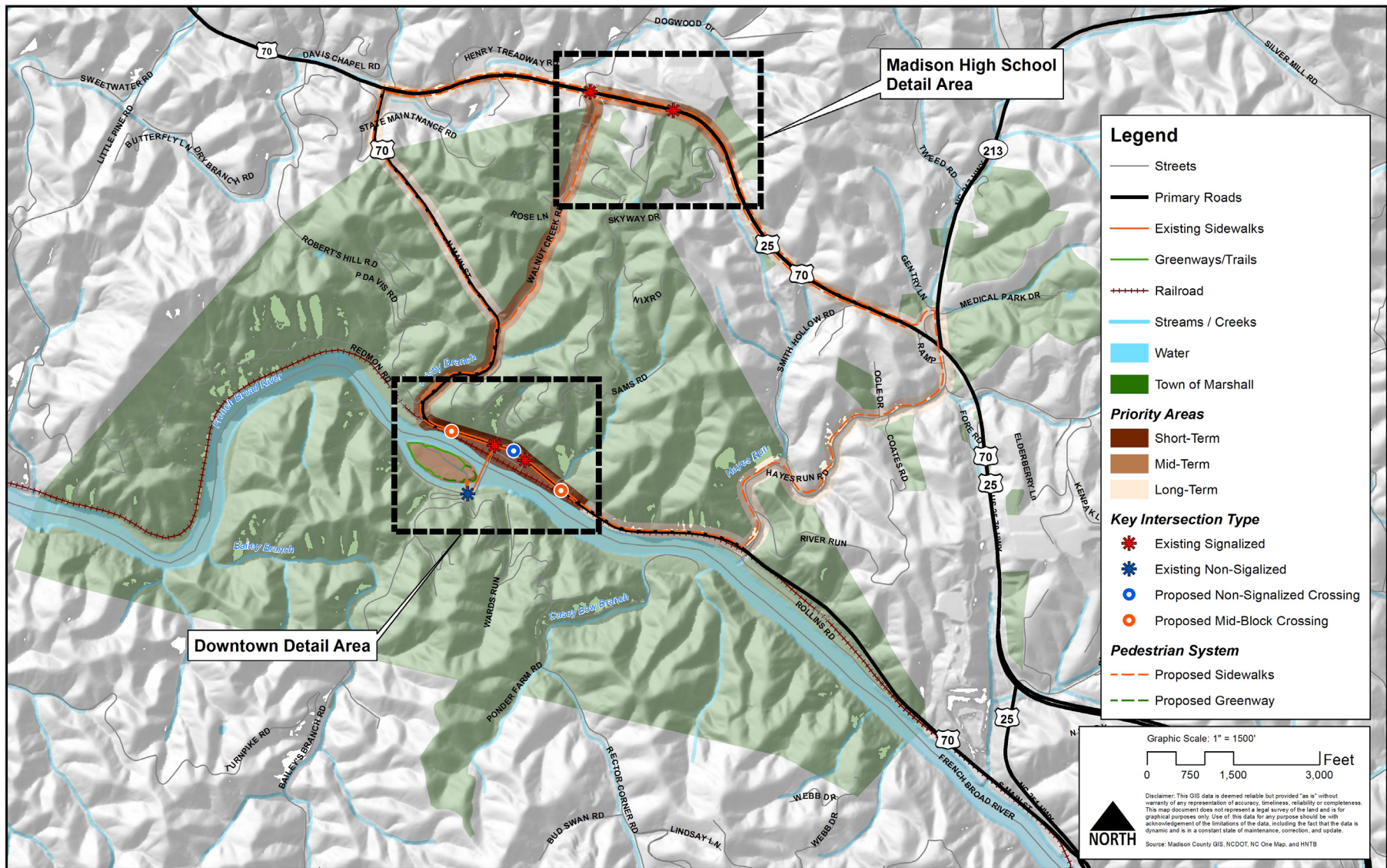
To provide the Town of Marshall with clear direction for future infrastructure improvements, an implementation framework has been created. This framework is comprised of short-term, mid-term, and long-term priority areas. These areas are illustrated in Figure 3.1.

- » **Short-Term (0-5 years)** - The Town of Marshall should strive to complete the projects located within this area over the next 5 years. These projects are essential to improving pedestrian mobility within the downtown area.
- » **Mid-Term (6-10 years)** - The projects located in this area are important, and the town should work to begin securing funding and developing partners to implement these projects within the next 6-10 years. The projects identified here begin to connect other areas of town to downtown.
- » **Long-Term (over 10 years)** - Connectivity to residential areas outside the downtown area are essential, however, these connections will take longer to develop due to funding and physical constraints. Many of the sidewalks within this area can be implemented through sidewalk requirements outlined in the Town's Unified Development Ordinance. These projects should be completed beyond the 10 year time frame.

THE PEDESTRIAN NETWORK

The pedestrian network is comprised of three essential elements - sidewalks, greenways and intersections. As discussed in Chapter 2, sidewalks only exist in downtown and many of them are in poor condition and are in need of repair. Other areas don't have any

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▲ Figure 3.1: Recommended Pedestrian Network and Priority Areas

sidewalks, which hinders the ability of pedestrians to walk to their destinations within the town. The lack of necessary pedestrian facilities at key intersections, such as striped crosswalks, pedestrian push-button signals, lighting, and directional signage make foot travel even more difficult. Finally, greenways provide opportunities for recreational activities and also provide regional connectivity, allowing residents and visitors to walk or bike to destinations outside the Town of Marshall. Each of these elements will be discussed in detail throughout this chapter. As the Town begins implementing these projects, there are several potential constraints that they should keep in mind. These could include, but limited to right-of-way obstacles, easement requirements, space limitations, grade issues, ditch issues, and structural barriers.

Sidewalks

As mentioned earlier, sidewalks are confined to Main Street and the downtown area. Portions of Main Street contain sidewalks on both sides of the street while others only have them on one side. The recommended Pedestrian Network (Figure 3.1) illustrates the expansion of the existing pedestrian network to ensure that sidewalks are being provided on both sides of Main Street as well as other important pedestrian routes.

» Short-Term Priority

It is recommended that within the downtown area sidewalks be installed on both sides of Main Street. Since sidewalks only exist in downtown, the short-term focus should be to assess the conditions of the existing sidewalks and repair/replace those that are crumbling. There are also numerous locations where water/sewer covers and grates are lifted or loose and present safety issues. The Town needs to focus on getting all

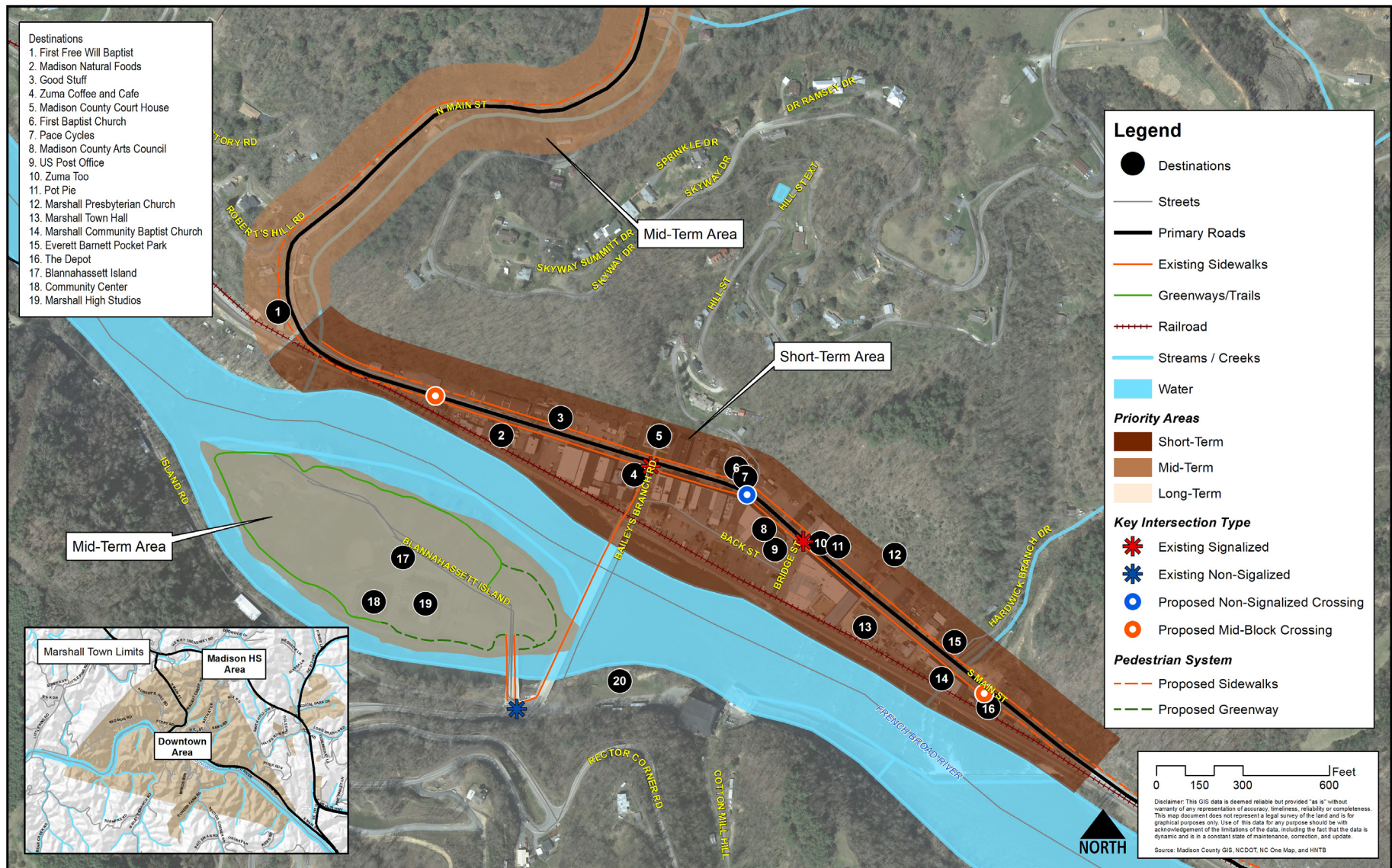
of the existing sidewalks and existing obstacles fixed before constructing new sidewalks. Once the existing sidewalks have been fixed, the Town should begin to add sidewalks where they are currently missing. The Town should focus on completing the sidewalk system along Main Street over the next 1-3 years. The Town should also focus on working with NCDOT to see if they can assist with the long-term maintenance of the sidewalks and roadway.

In addition to adding sidewalks, the Town has expressed the desire to remove the utility poles along Main Street and add pedestrian lighting to improve the attractiveness of the corridor. These improvements could take longer than 3 years and will have to be coordinated with the local utility company.



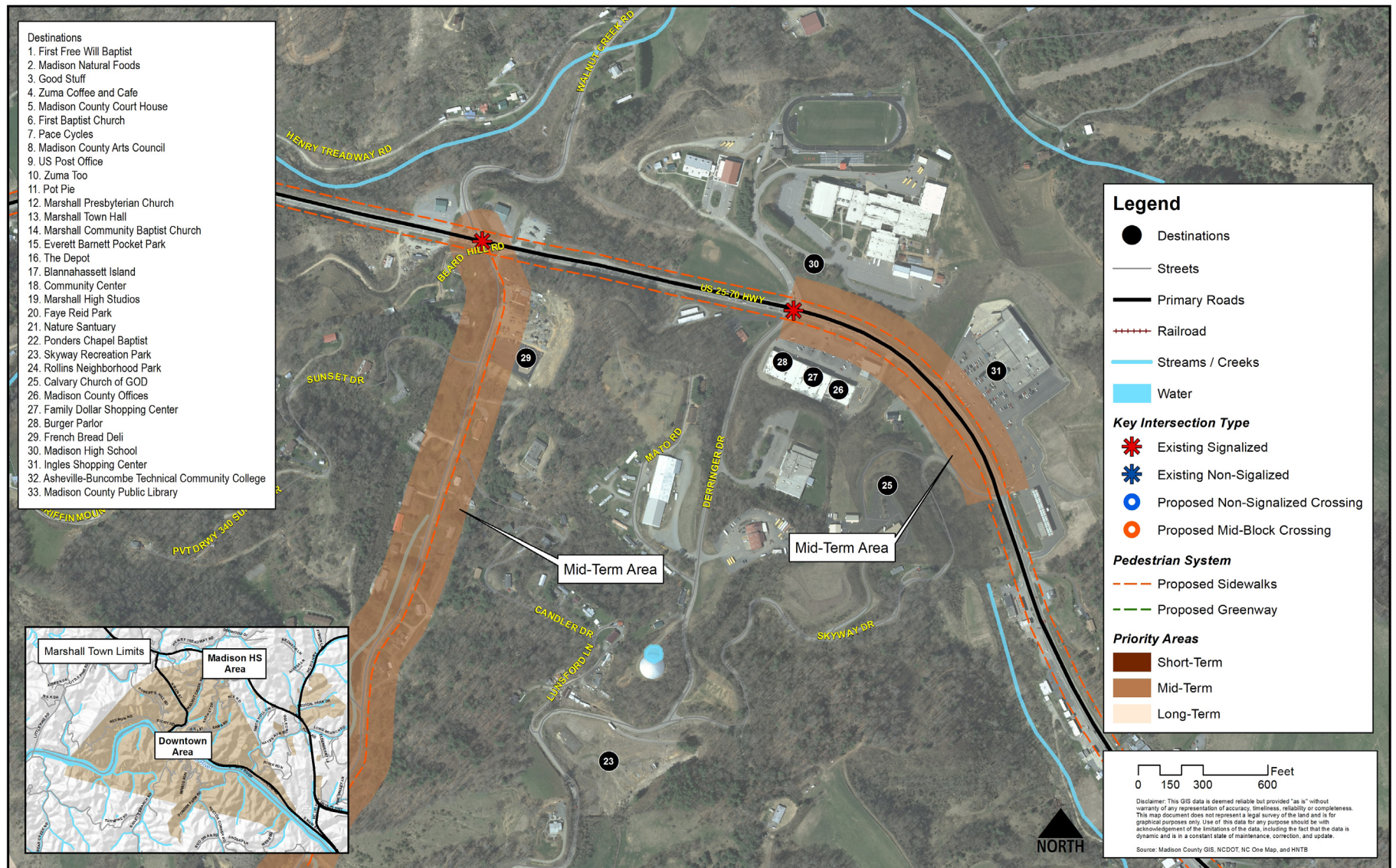
▲ Obstacles such as this sewer grate in the sidewalk present obstacles for pedestrians, especially those with visual impairments

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▲ Figure 3.2: Downtown Detail Area

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▲ Figure 3.3: Madison High School Detail Area

▼ Table 3.1: Short-Term Priority Sidewalk Projects

Location	From	To	Length (ft.)	Sidewalk Width	Side of Street
Main Street	North Carolina Driver's License Office	Extending north/northwest	326	5 feet min	Proposed - North and South Sides
Main Street	North Carolina Driver's License Office	Assisted Living Complex	159	5 feet min	Proposed - North Side
Main Street	The Depot	Extending south/southeast	310	5 feet min	Proposed - North and South Sides
Main Street	In front of The Depot	Extending south/southwest	135	5 feet min	Proposed - South Side
Main Street	The Depot	Extending north/northwest through the parking lot	124	5 feet min	Proposed - North Side
Main Street	Redmon Road	290 ft east	291	5 feet min	Proposed - South Side

Mid-Term Priority

Sidewalks are recommended along US 25/70 near Madison High School. One of the major goals of the kick-off meeting was to improve the walking conditions from the high school to the nearby shopping centers. Adding sidewalks on both sides of the Bypass from Derringer Drive to the shopping centers in concert with improvements to the intersections will greatly improve pedestrian safety and mobility. This is a mid-term priority that should be completed over the next 6-10 years. Please see Figures 3.2 and 3.3 for a detailed illustration of these recommendations. It should be noted that Madison High School is not located within the jurisdictional limits and improvements around the high school will require the

cooperation and coordination of various entities. Additional mid-term projects are recommended along Bypass US 25-70 going west toward Walnut Creek Road and along Walnut Creek Road connecting N. Main Street and the Bypass. Many of the streets within the Town of Marshall have right-of-way and physical constraints that currently make it cost prohibitive to construct sidewalks. Walnut Creek Road is one of the few roads that has slightly fewer physical constraints to allow for



▲ Existing foot path along US 25/70 looking west toward Derringer Drive

the construction of sidewalk along at least one side of the road. The community desires to connect Madison High School and the surrounding area to downtown. With limited ways to accomplish this, the Town should pursue the development of a sidewalk in the mid-term along one side of Walnut Creek Road.

▼ Table 3.2: Mid-Term Priority Sidewalk Projects

Location	From	To	Length	Width	Side of Street
US 25-70	Derringer Drive	Skyway Drive	2,708	5 feet min with buffer	Proposed - North and South Sides
Walnut Creek Road	N. Main Street	US-25/70	4,545	5 feet min	Proposed - East Side
US 25/70	Walnut Creek Road	Derringer Drive	2,644	5 feet min with buffer	Proposed - North and South Sides
N Main St	Main St	Walnut Creek Rd	2,680	5 feet min	Proposed – West Side

» Long-Term Priority

In the Long-Term Priority Areas, sidewalks are recommended on one side of the following roadways: N. Main Street - downtown to the Bypass, Hayes Run Road from the Bypass to S. Main Street, and S. Main Street west to the edge of downtown near the Depot. Sidewalks are recommended on both sides of the following roadways in the Long-Term Priority Areas: the Bypass from N Main Street to Walnut Creek Road, and the Bypass from Skyway Drive southeast to Hayes Run Road.

▼ Table 3.3: Long-Term Priority Sidewalk Projects

Location	From	To	Length	Width	Status
N Main Street	Walnut Creek Rd	US 25/70	4,652	5 feet min	Proposed - West Side
US 25/70	N. Main Street	Walnut Creek Road	7,648	5 feet min with buffer	Proposed - North and South Sides
US 2\	Skyway Drive	Asheville-Buncombe Technical College	8,954	5 feet min with buffer	Proposed - North and South Sides
Hayes Run Road	S. Main Street	US 25/70	22,612	5 feet min	Proposed - West and East Sides
S Main Street	Downtown	Hayes Run Road	3,125	5 feet min	Proposed - North Side

Key Intersections

During the kick-off meeting and walking audit with the Steering Committee and the Town staff, it was noted that there were eight key intersections that needed improvements to improve pedestrian mobility and safety (see Figure 3.1). The first five key intersections are located in downtown (see Figure 3.2). Currently, only two of the five intersections are signalized: Bailey's Branch Road and Bridge Street.

Bailey's Branch Road is the only road that provides access over the French Broad River to Blannahassett Island and the southern portion of the Town. This intersection is a three-way intersection with striped crosswalks at each approach. Some of the handicap ramps are in disrepair. It is recommended that at a minimum the Town upgraded this intersection with high visibility crosswalks and improved handicap ramps that meet federal and state standards. Even though the Town has expressed concern of introducing pedestrian signal heads into the historic downtown core, it is



▲ Intersection of Bailey's Branch Road and Main Street

recommended that if this intersection remains a signalized intersection that the Town consider adding pedestrian signal heads to each approach of the intersection. It is also recommended that curb extensions be considered at this location to reduce the crossing distance for pedestrians and to act as a traffic calming device because speed of motorists along Main Street was

identified as an issue. The curb extensions could be constructed using mountable curbs to provide truck traffic with the ability to make the tight turn at the intersection. Further engineering studies need to be completed to determine if curb extensions are a viable solution for this intersection. Detailed information and illustrations of Federal and State standards and guidelines can be found in Chapter 6.

Bridge Street is the other signalized intersection within downtown. This is also a three-way intersection, but there are no striped crosswalks or pedestrian signals. Handicap ramps are present, but they don't appear to meet federal or state standards. At a minimum, the Town should focus on installing high visibility crosswalks, rebuilding the handicap ramps and improving the sidewalks to meet ADA requirements. The handicap ramps should be perpendicular to the street, which will require the stop bars to be moved back from the intersection. More information regarding perpendicular ramps can be found in Chapter 6.

There was some discussion during the public input process as to whether Bailey's Branch Road and Bridge Street intersections with Main Street actually warrant a traffic signal. The Town has considered converting these intersections into a three-way stop with stop signs instead of traffic signals. An additional option for both intersections would be to convert the existing traffic signals into flashing red traffic signals. If the intersections are converted into a three-way stop, pedestrian signals would not be required.

The intersections of Hill Street/S. Main Street, Redmon Road/N. Main Street and Bailey's Branch Road/Island Road are non-signalized intersections with limited or no pedestrian crossing facilities. The intersection of Hill Street and S. Main Street only requires vehicles on Hill Street to stop, allowing for free flow traffic on Main Street. Currently, no pedestrian facilities exist at this intersection, however, if a pedestrian crossing is desired it is recommended that painted crosswalks and handicap ramps with truncated domes be installed perpendicular to the street. It is also recommended that curb and gutter be constructed on the northeast corner of the intersection to better define the street and sidewalk zones.



▲ Bridge Street intersection with Main Street needs striped crosswalks, handicap ramps and pedestrian push button signals.

The remaining key intersections are located in the Madison High School detail area on US 70/25 Bypass (Figure 3.3). Two of the three key intersections along the Bypass are currently signalized: Derringer Drive and Walnut Creek Road. The other intersection is the driveway for the Ingles Shopping Center. The lack of pedestrian facilities at each of the key intersections confuses both the motorist and the pedestrian, creating unsafe barriers between destinations. At a minimum the signalized intersections should be improved with sidewalks, high visibility crosswalks, pedestrian signals and handicap assessable ramps that comply with Federal and State guidelines. Detailed information and illustrations of these guidelines can be found in Chapter 6.

During the initial walking audit and subsequent meetings, the Steering Committee and the Town staff mentioned the need for mid-block crossings in two locations within the downtown area on Main Street. The first location is west of Bailey's Branch Road



▲ Above is the current condition of the Derringer Drive intersection. Basic pedestrian facilities are needed to improve pedestrian safety and visibility.

▼ Table 3.4: Key Intersection Projects

Intersecting Streets	Improvement Types				
	Crosswalks	Pedestrian Signals	Pedestrian Lighting	Access Ramps	Pedestrian Crossing warning signs
Mid-block crossings on Main St (Depot and Assisted Living Complex)	<ul style="list-style-type: none"> 10 ft wide high visibility on Main Street 	No	Yes. Match existing lighting at Bailey's Branch Road bridge	Yes	Yes. MUTCD W11-2 and W16-7P
Main St & Hill St	<ul style="list-style-type: none"> 10 ft wide high visibility Main Street 	No	Yes. Match existing lighting at Bailey's Branch Road bridge	Yes	Yes. MUTCD W11-2 and W16-7P
Main St & Bailey's Branch Rd	<ul style="list-style-type: none"> 10 ft wide high visibility Main Street 	Yes*	Yes. Match existing lighting at Bailey's Branch Road bridge	Yes	NA
Main St & Bridge St	<ul style="list-style-type: none"> 10 ft wide high visibility Main Street 	Yes*	Yes. Match existing lighting at Bailey's Branch Road bridge	Yes	NA
US 25/70 & Walnut Creek Rd	<ul style="list-style-type: none"> 10 ft wide high visibility 	Yes	Yes	Yes	NA
US 25/70 & Derringer Dr	<ul style="list-style-type: none"> 10 ft wide high visibility 	Yes	Yes	Yes	NA

*An additional option would be to convert these intersections into three-way stops. If this occurs, pedestrian signals will not be required.

near the State's Driver License Office. The other location is near the Depot, which is east of Bailey's Branch Road on Main Street. The right-of-way is very narrow in both locations, but the Town could install handicap ramps, high visibility crosswalks, pedestrian crossing signage (MUTCD - W11-2) combined with the supplemental arrow plaque (MUTCD-W16-7P) and improve the curb & gutter and sidewalks in these areas. A supplemental measure that could be used in these locations would be the "In-Street Pedestrian Crossing" sign (R1-6 from MUTCD). Please see the Priority Projects at the end of this chapter for more detailed information for these crossings.

Greenways

The Pedestrian Network that is illustrated in Figure 3.1 and in more detail in Figure 3.2 indicates the completion of the greenway on Blannahassett Island over the next 6-10 years. The island is comprised of three different parcels, each with their own property owner (Town of Marshall, Madison County and a private land



- ▲ The existing natural trail on Blannahassett Island should be formalized with an 8-10 foot paved asphalt trail.

owner). The Town is currently working to implement portions of the Master Plan that are located on their parcel and should focus on securing funding and developing partnerships over the next five years to begin implementing the greenway portion of the Master Plan. Portions of the trail already exist and are constructed out of compact screening; however, by paving the trail with asphalt it will be accessible by all users. Detailed standards and guidelines for greenways can be found in Chapter 6.

As mentioned in Chapter 2, RiverLink, a non-profit organization, is working with the Town of Marshall and other surrounding jurisdictions to construct the French Broad River Greenway. Currently an alignment through Marshall has not been identified; however, the Town should coordinate with RiverLink and Madison County on future greenway initiatives.

▼ Table 3.5: Greenway Project

Location	From	To	Length	Width	Side of Street
Blannahassett Island	NA	NA	1,052	8-10 wide asphalt	NA

Aesthetics and Safety

Most of the pedestrian and bicycle routes throughout the town lack sufficient pedestrian lighting and landscaping. Over the next 6-10 years the Town should begin assessing the existing pedestrian and bicycle routes and develop a plan to improve the aesthetics through pedestrian lighting and landscaping.

The plan should identify the specific routes and improvement types for each. In addition, the plan should have a financial strategy that

can be used to begin implementing the improvements. Pedestrian lighting within the historic downtown district should match the lighting on the Bailey's Branch Road bridge.

PRIORITY PROJECTS

At the beginning of this project, several key projects were identified as needing immediate attention. The Town should pursue the implementation of these projects over the next three years. Listed below are the four projects that have been chosen as priority projects. A project cut sheet illustrating the improvements can be found on the following pages. The cut sheets are meant to provide a planning level conceptual illustration of the types of improvements that are recommended.

Each priority project has been given a cost estimate that is meant to provide some perspective on the order of magnitude. The planning level costs are based on 2011 average construction costs throughout the Charlotte region. An industry-standard construction contingency (30%) was added to the planning level costs. The cost estimate does not include right-of-way acquisition, mobilization, utility relocation, grading, traffic control or other detailed costs that are associated with the preparation of engineering drawings and/or actual construction bids. A more detailed engineering study should be performed for actual planning, design and construction of these facilities.

- » Main Street / Bailey Branch Road Intersection Improvements
- » Main Street / Bridge Street Intersection Improvements
- » Derringer Drive / US 25/70 Intersection Improvements

- » Main Street Mid-Block Crossing at Assisted Living Complex
- » Main Street Mid-Block Crossing at The Depot

Main St / Bailey Branch Rd Intersection Improvements

Intersection Issues

- » Handicap ramps do not meet ADA standards
- » No pedestrian signals
- » Sidewalks are in disrepair
- » Utilities are in conflict with pedestrian zones
- » Crosswalks do not lead to handicap ramps

Proposed Solutions

- » High visibility crosswalks
- » Mountable curb extensions that move handicap ramps away from utilities
- » Pedestrian lighting that matches existing lighting on Bailey's Branch Road bridge
- » Reconstruct sidewalks around intersection
- » Install pedestrian signals heads (WALK, DON'T WALK with countdown)*
- » Move utility box up to create a vertical clearance of at least 7-feet



▲ Existing intersection of Main St and Bailey Branch Rd

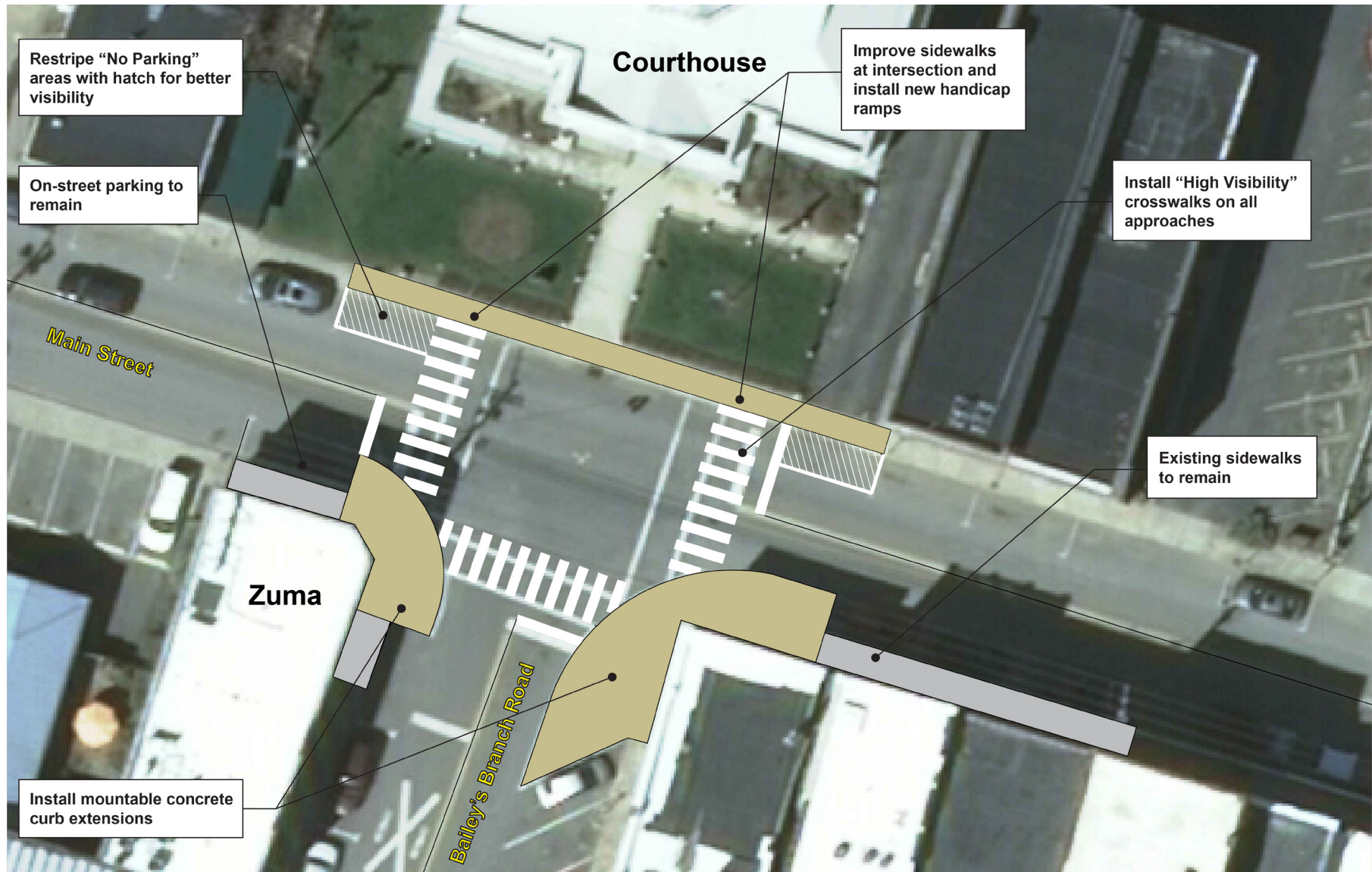


▲ Utility pole and sign post obstructing pedestrian movement

Main Street/Bailey Branch Road						
	Quantity	SF	SY	Unit Cost	Cost	Cost
Mountable curb extensions		1455	162	\$25	\$4,042	\$5,000
4" Concrete Sidewalk		787	87	\$25	\$2,186	\$3,000
High visibility markings (24" Thermoplastic Pavement Marking Line)	257			\$5	\$1,285	\$2,000
ADA Ramps (includes truncated domes)	6			\$1,000	\$6,000	\$6,000
Pedestrian Pushbutton Signals on pedestals	4			\$750	\$3,000	\$3,000

Cost \$19,000
 Contingency (30%) \$5,700
 Total Cost \$24,700
 \$25,000

*There was concern expressed over the pedestrian signals fitting in with the character of the historic downtown. Providing a pedestrian signal head is strongly recommended wherever crosswalks are present. NCDOT requires signal heads where crosswalks are present at signalized intersections. The Town should coordinate with NCDOT on future crosswalk improvements to explore the use of signal heads that fit the historic nature of downtown Marshall. An additional option that the Town should consider is converting this existing signalized intersection into a three-way stop. If converted to a three-way stop, pedestrian signals would not be required.



▲ Proposed intersection improvements for Main Street / Bailey Branch Road intersection

Main St / Bridge St Intersection Improvements

Intersection Issues

- » Handicap ramps on south side do not meet ADA.
- » No handicap ramps on north side of intersection
- » No crosswalks exist
- » No pedestrian signals
- » Utilities are in conflict with pedestrian zones on the southeast corner

Proposed Solutions

- » High visibility crosswalks
- » Pedestrian lighting to improve safety
- » Reconstruct sidewalks around intersection where necessary
- » Install pedestrian signal heads (WALK, DON'T WALK with countdown)*
- » Move utility box up to create a vertical clearance of at least 7 feet.
- » Consider converting signals to flashing red light. This would retain the signal, but convert the intersection to a 3-way stop.



▲ Existing intersection of Main St and Bridge St

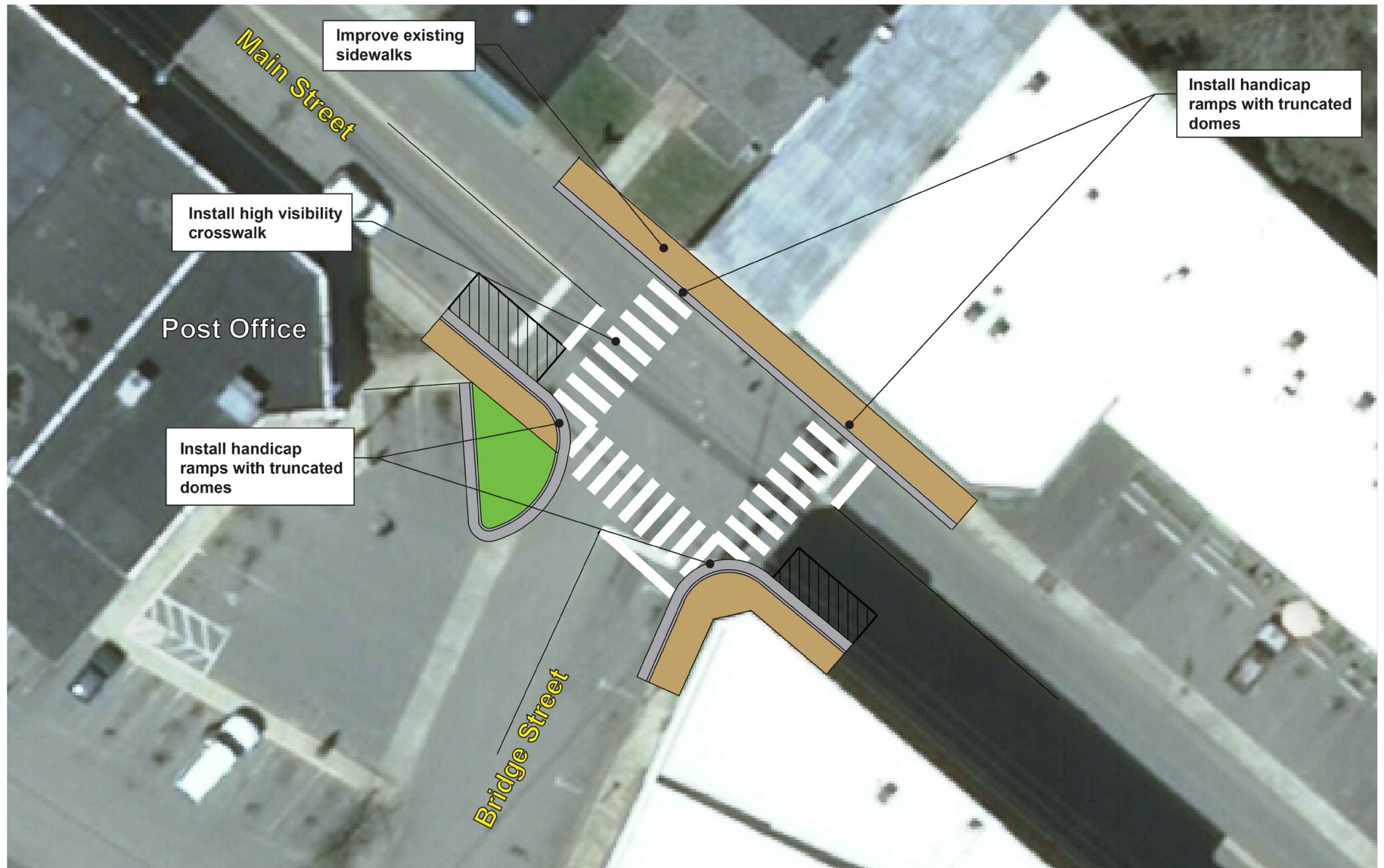


▲ Utility pole and sign post obstructing pedestrian movement

Main Street/Bridge Street Intersection						
	Quantity	SF	SY	Unit Cost	Cost	Cost
4" Concrete Sidewalk		1034	115	\$25	\$2,872	\$3,000
High visibility markings (24" Thermoplastic Pavement Marking Line)	275			\$5	\$1,375	\$2,000
ADA Ramps (includes truncated domes)	4			\$1,000	\$4,000	\$4,000
Pedestrian Pushbutton Signals on pedestals	4			\$750	\$3,000	\$3,000

Cost \$12,000
Contingency (30%) \$3,600
Total Cost \$15,600

*There was concern expressed over the pedestrian signals fitting in with the character of the historic downtown. Providing a pedestrian signal head is strongly recommended wherever crosswalks are present. NCDOT requires signal heads where crosswalks are present at signalized intersections. The Town should coordinate with NCDOT on future crosswalk improvements to explore the use of signal heads that fit the historic nature of downtown Marshall. An additional option that the Town should consider is converting this existing signalized intersection into a three-way stop. If converted to a three-way stop, pedestrian signals would not be required.



▲ Proposed intersection improvements for Main Street and Bridge Street Intersection

Derringer Drive / US 70/25 Intersection Improvements

Issues

- » No handicap ramps
- » No pedestrian signals
- » No sidewalks
- » No crosswalks

Proposed Improvements

- » Install high visibility crosswalks, handicap ramps, and pedestrian signals at the intersection
- » Pedestrian lighting to improve safety along US 25/70
- » Install 5 ft wide sidewalks with 5' landscape buffer along the north side from Derringer Drive to Ingles Shopping Center and on the south side from Derringer Drive to the end of the shopping center.
- » Consolidate driveways for shopping center and create two new entrances



▲ Looking west at footpath located along US 25/70.



▲ Intersection of Derringer Drive and US 25/70

Derringer Drive/US 70-25 Intersection Improvements

	Quantity	SF	SY	Unit Cost	Cost	Cost
4" Concrete Sidewalk (5' wide)		8032	892	\$25	\$22,311	\$23,000
4" Concrete island		455	51	\$25	\$1,264	\$2,000
High visibility markings (24" Thermoplastic Pavement Marking Line)	130			\$5	\$650	\$1,000
ADA Ramps (includes truncated domes)	2			\$1,000	\$2,000	\$2,000
Pedestrian Pushbutton Signals on pedestals	2			\$750	\$1,500	\$2,000

Cost \$30,000
 Contingency (30%) \$9,000
 Total Cost \$39,000

Note: The recommended improvements include consolidating driveways at the shopping center and creating a new driveway along Derringer Drive. The Town will need to coordinate with the property owner in order to implement these recommendations. Consolidating driveways along US 25/70 will reduce conflict points and create a safer pedestrian environment. The cost estimate does not include the landscape buffers, any supplemental landscaping or the pedestrian lighting.



▲ Proposed improvements at Derringer Drive and US 25/70 intersection

Main Street Mid-block Crossing at NC Driver's License Office

Intersection Issues

- » Sidewalks are in disrepair
- » Potential increase in pedestrians crossing on Main Street due to Madison Natural Foods store opening
- » Observed high traffic speeds create unsafe crossing at mid-block

Proposed Solutions

- » High visibility crosswalks
- » Pedestrian Crossing Warning Sign (MUTCD W11-2 and W16-7P)
- » Install handicap ramps with truncated domes
- » Reconstruct existing sidewalks and construct new sidewalk with curb and gutter at the mid-block crossing



▲ Existing sidewalk conditions near proposed mid-block crossing

Main Street Mid-block Crossing Project at Assisted Living Complex

	Quantity	SF	SY	Unit Cost	Cost	Cost
4" Concrete Sidewalk (6' wide)		1920	213	\$25	\$5,333	\$6,000
High visibility markings (24" Thermoplastic Pavement Marking Line)	60			\$5	\$300	\$300
ADA Ramps (includes truncated domes)	2			\$1,000	\$2,000	\$2,000
Pedestrian Crossing Warning Signs with Post (MUTCD W11-2 and W16-7P)	2			\$250	\$500	\$1,000

Cost \$9,300
Contingency (30%) \$2,790
Total Cost \$12,090
\$13,000

Note: Additional sidewalk construction and repair is needed along Main Street prior to this crossing that is not part of this project estimate.



▲ Proposed mid-block improvements on Main Street at the Assisted Living Complex

Main Street Mid-block Crossing at The Depot

Intersection Issues

- » Existing sidewalks are in disrepair
- » Pedestrians are crossing mid-block near The Depot.
- » Lack of sidewalks on both the North and South sides of Main Street

Proposed Solutions

- » High visibility crosswalks
- » Pedestrian Crossing Warning Sign (MUTCD W11-2 and W16-7P)
- » Install handicap ramps with truncated domes
- » Reconstruct existing sidewalks and construct new sidewalk with curb and gutter at the mid-block crossing

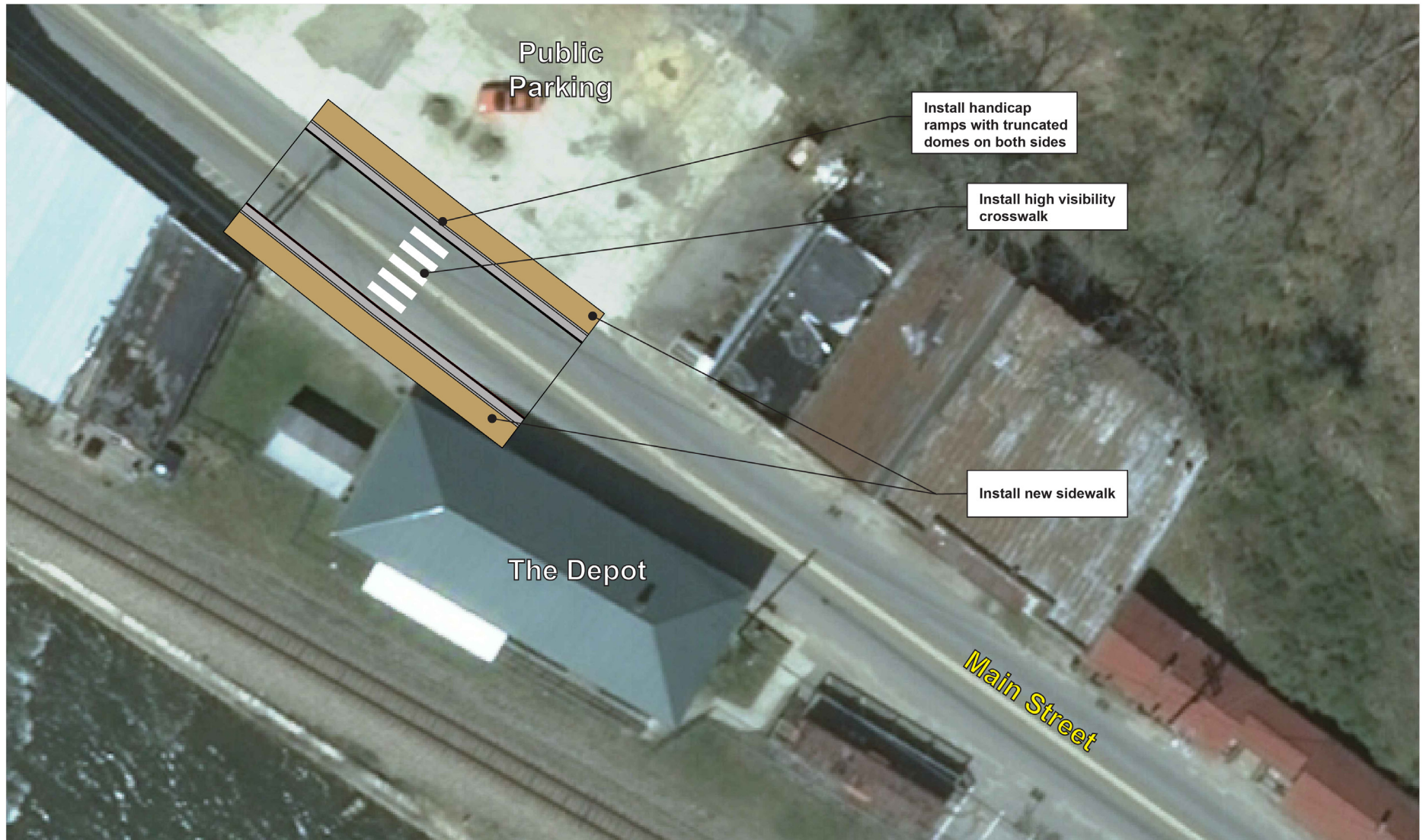


▲ Existing conditions along Main Street by The Depot

Main Street Mid-block Crossing Project at The Depot						
	Quantity	SF	SY	Unit Cost	Cost	Cost
4" Concrete Sidewalk (6' wide)		973	108	\$25	\$2,703	\$3,000
High visibility markings (24" Thermoplastic Pavement Marking Line)	55			\$5	\$275	\$300
ADA Ramps (includes truncated domes)	2			\$1,000	\$2,000	\$2,000
Pedestrian Crossing Warning Signs with Post (MUTCD W11-2 and W16-7P)	2			\$250	\$500	\$1,000

Cost \$6,300
 Contingency (30%) \$1,890
 Total Cost \$8,190
 \$9,000

Note: Additional sidewalk construction and repair is needed along Main Street prior to this crossing that is not part of this project estimate.



▲ Proposed mid-block improvements on Main Street near The Depot and public parking lot.

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Town of Marshall | Pedestrian Master Plan

CHAPTER 4

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Chapter 4

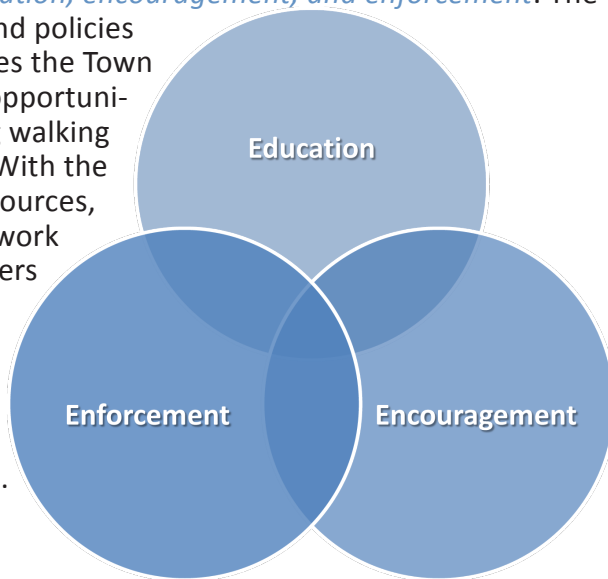
PROGRAMS & POLICIES

OVERVIEW

The successful implementation of the Marshall Pedestrian Plan cannot be realized without a strong foundation of policies and programs. Chapter 3 provided an overview of the physical improvements that are needed to create a well connected, safe and efficient pedestrian network.

The long-term success of this plan must consider how these physical improvements will be implemented through various programs and policies. This chapter summarizes the existing programs and policies and identifies others that the Town can use toward implementing the recommendations in this plan.

There are three basic categories for pedestrian related programs and policies: *education, encouragement, and enforcement*. The list of programs and policies listed here provides the Town with a variety of opportunities for promoting walking and active living. With the Town's limited resources, it is important to work with local volunteers and community organizations to initiate some of these within the first 1-3 years of adopting this plan.



PROGRAMS

Education Programs

There are several types of media and public forums that can be used to inform and advocate for safe pedestrian travel. It is recommended that the Town encourage the development of the following to inform the public on pedestrian related issues and opportunities.

» Educational Materials

There are several types of educational materials that are available to the Town through the NCDOT Bicycle and Pedestrian Division (<http://www.ncdot.gov/bikeped/safetyeducation/>). The Town should obtain some of these to provide to the community at special events throughout the year. In addition to NCDOT, there are several national resources, such as the National Center for Safe Routes to School (<http://www.saferoutesinfo.org/>) and the Pedestrian and Bicycle Information Center (<http://www.walkinginfo.org/>) that the Town should utilize in developing educational materials.

» Web-Based Education

Marshall should continue to utilize its web page to the fullest extent possible to allow citizens to download useful information regarding the Plan, such as pedestrian laws, safety tips, or maintenance request forms. It is also recommended that the Town consider the creation of a Facebook pedestrian user group, which would allow residents to share ideas and information regarding pedestrian related issues and opportunities with the Town.

» Staff Education

The Town's staff must be properly educated on the most up-to-date pedestrian laws and design requirements from NCDOT and AASHTO. Annual internal training sessions will educate Town staff on the latest innovations in pedestrian standards. This training should include the planning, design, development review, construction, and maintenance aspects of the transportation and development process. The planning and public works staff should also incorporate pedestrian issues into their daily tasks.

Web based training, such as webinars, are inexpensive and very accessible resources that the Town should utilize. It is also recommended that the Town join local and/or national organizations, such as the Association for Pedestrian and Bicycle Professionals. These organizations are very useful in answering questions and providing assistance with pedestrian and bicycle related issues. Also, as pedestrian improvement projects are implemented, the Town's Police Department should be informed about the new pedestrian facilities. Local law enforcement officials will be used to ensure new and existing facilities are functioning efficiently and safely.

» Enforcement

Speeding was identified as a major concern and should be addressed through additional enforcement by local law enforcement. The Town should work with the police department to ensure that they are educated on the state pedestrian laws and enforcing them like any other law. Additional NCDOT law resources can be found at <http://www.ncdot.gov/bikeped/lawspolicies/laws/default.html> and the section of the

NCDOT Laws Guidebook that contains pedestrian laws can be found at http://www.ncdot.gov/bikeped/download/bikeped_laws_Guidebook-Part-2.pdf.

» Local Events

Local events such as the Madison County Arts Festival, the Mermaid Parade, Marshall Gras and the Christmas Parade are ideal venues that can allow Town staff and/or the local advocacy groups to hand out educational materials to the public. These events are ideal opportunities for staff and the local advocacy group to interact with citizens and answer any questions, as well as to solicit input from the general public on the implementation of the Pedestrian Plan.

These events also provide Town leaders with an opportunity to educate the community and increase awareness about pedestrian issues. These functions can also enable the Town to plan pedestrian-friendly activities that promote both physical activity and social interaction.

In addition to the Town's own local events, there are several pedestrian oriented programs and



▲ Events such as the Christmas Parade can be used to handout educational and awareness materials

initiatives that have been developed by affinity groups throughout the nation that can be easily implemented throughout Marshall.

Encouragement Programs

Similar to Educational Programs, there are several types of programs that can be developed and used to encourage individuals to walk more. It is recommended that the Town pursue the development of the following to encourage the public to walk more and drive less.

» International Car Free Day

International Car Free Day is an event organized by communities throughout the world with a common goal of taking cars off the streets for most of the day. The event takes place every September 22 and cities like Carborro have participated in the event to promote alternative forms of transportation. www.worldcarfree.net/wcfd/



» National Trails Day

The American Hiking Society developed National Trails Day to inspire communities to use their trails, celebrate their community, appreciate wildlife, and thank all of the people who built and maintain trails within the town. www.americanhiking.org/NTD.aspx



» Citizen Watch Groups

Citizens using on- and off-road facilities are more aware of facility maintenance problems or suspicious activities at certain areas. The community should be encouraged to report any concerns to Town Staff so that issues can be resolved. This can be done by providing a feedback page on the Town's website or by forming a citizen's watch group with a liaison on the Pedestrian Plan Committee or Transportation Committee as discussed earlier in this section.

» Public Art Program

Public art along pedestrian corridors can involve local artisans and create a sense of community pride. Organizations like "Project for Public Spaces" (www.pps.org/) are dedicated to helping communities create a "public place," by providing mobile training workshops and free resources.



» Walking/Running Clubs

To promote ongoing wellness, area businesses and schools can create running and walking clubs. These programs can be used to increase pedestrian activity and social interaction among classmates and co-workers. Participants can meet before, during or after work on designated days of the week. Groups with a common thread, like new mothers or senior citizens, can also create clubs, resulting in a strong personal and community bond.

STATE POLICY

NCDOT Complete Streets Policy Statement

Transportation, quality of life, and economic development are all undeniably connected through well-planned, well-designed, and context sensitive transportation solutions. To NCDOT, the designations “well-planned”, “well-designed” and “context-sensitive” imply that transportation is an integral part of a comprehensive network that safely supports the needs of the communities and the traveling public that are served.

The North Carolina Department of Transportation, in its role as stewards over the transportation infrastructure, is committed to: providing an efficient multi-modal transportation network in North Carolina such that the access, mobility, and safety needs of motorists, transit users, bicyclists, and pedestrians of all ages and abilities are safely accommodated; caring for the built and natural environments by promoting sustainable development practices that minimize impacts on natural resources, historic, businesses, residents, scenic and other community values, while also recognizing that transportation improvements have significant potential to contribute to local, regional, and statewide quality of life and economic development objectives; working in partnership with local government agencies, interest groups, and the public to plan, fund, design, construct, and manage complete street networks that sustain mobility while accommodating walking, biking, and transit opportunities safely.

This policy requires that NCDOT’s planners and designers will consider and incorporate multimodal alternatives in the design

and improvement of all appropriate transportation projects within a growth area of a town or city unless exceptional circumstances exist. Routine maintenance projects may be excluded from this requirement; if an appropriate source of funding is not available. The entire policy can be review at http://www.bytrain.org/fra/general/ncdot_streets_policy.pdf. In addition to the State’s Complete Street Policy, the following links have been provided that provide additional information on other state policies and guidelines (www.nccompletestreets.org):

- » NCDOT Pedestrian Policy Guidelines - http://www.ncdot.gov/_templates/download/external.html?pdf=http%3A//www.ncdot.gov/doh/preconstruct/altern/value/manuals/ppm/ppm28/ppm28-1.pdf
- » NCDOT Greenway Policy - http://www.ncdot.gov/_templates/download/external.html?pdf=http%3A//www.ncdot.gov/bikeped/download/bikeped_laws_Greenway_Admin_Action.pdf
- » NCDOT Board of Transportation Resolution for Bicycling and Walking - http://www.ncdot.org/transit/bicycle/laws/laws_resolution.html
- » TND Guidelines - <http://www.ncdot.org/doh/preconstruct/altern/value/manuals/tnd.pdf>

FEDERAL POLICIES

Purpose

The United States Department of Transportation (DOT) 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 biking 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 Transportationⁱ

Additional information regarding the U.S. Department of Transportation Federal Highway Administration's program and policies on bicycle and pedestrian mobility can be found at:

- » United States Department of Transportation Policy Statement on Bicycle and Pedestrian Accommodation Regulations and Recommendations (March 2010) - http://www.fhwa.dot.gov/environment/bikeped/policy_accom.htm

ⁱ U.S. Department of Transportation. Policy Statement on Bicycle and Pedestrian Accommodation Regulations and Recommendations. March 15, 2010.

- » FHWA Policy for Mainstreaming Nonmotorized Transportation (FHWA Guidance – Bicycling and Pedestrian Provision of Federal Transportation Legislation) - <http://www.fhwa.dot.gov/environment/bikeped/bp-guid.htm>

RECOMMENDATIONS

This portion of Chapter 5 outlines various recommendations that the Town should begin implementing once the pedestrian plan is adopted. Some of these recommendations are aimed at strengthening the Town's UDO, while others will improve pedestrian safety and connectivity.

Unified Development Ordinance (UDO)

- » *Section 9.2: Off-Street Parking Requirements*

Currently, Section 9.2 of the UDO does not require developers to mark pedestrian routes within off-street parking areas. To improve the safety and visibility of pedestrians, the following is recommended.

Recommendation: It is recommended that the Town shall require new off-street parking to delineate pedestrian routes leading to and within the parking areas. The intent of this requirement is to make pedestrian movements more predictable and reduce conflicts between motorists and pedestrians. Markings should be clear and provide direct connection to ingress and egress of the structure.

- » *Section 9.4: Shared Parking and Connectivity Standards*

Shared parking can reduce the number of driveway cuts along

major streets, especially in commercial/retail areas of the town. Reducing driveway cuts reduces conflict points between motorists and pedestrians, which improves pedestrian safety. Section 9.4 of the Town's UDO discusses "Shared Parking and Connectivity". This portion of the UDO does a good job in recommending the shared use of parking and requirement of connectivity between adjacent properties. To improve pedestrian connectivity the following is recommended.

Recommendation: Ensure that pedestrian connectivity is being considered when parking for two adjacent properties is being connected. Improvements could include sidewalks or clearly marked routes between the parking areas.

» Sections 9.7 & 9.8: Driveway Standards

Sections 9.7 and 9.8 discuss the requirements of driveways in residential and non-residential districts. As discussed in detail in Chapter 6, the American Association of State Highway and Transportation Officials (AASHTO) Guide for the Planning, Design, and Operation of Pedestrian Facilities provides four acceptable sidewalk design options at driveway crossings. The following is recommended to ensure sidewalks meet the federal and state minimum standards.

Recommendation: To ensure the proper sidewalk width and slope is being maintained at driveways, it is recommended that the Town incorporate the standards and guidelines from the AASHTO guide (pages 61-62) and incorporate them into site plan review process.

» Section 10.1.3: Street Design

The Street Design section of the UDO provides specific recommendations for six different street typologies. These are summarized in Chapter 2.

Recommendation: Require sidewalks on both sides of all road typologies that require sidewalk when feasible. This recommendation is to improve connectivity for pedestrians in all areas of the town. Since there are many physical constraints that prohibit sidewalks on streets, the town will have to evaluate the feasibility of including sidewalks on both sides on a case-by-case basis.

Pedestrian Connectivity and Safety

The following recommendations will help improve pedestrian connectivity and safety throughout the town.

» *Recommendation:* The Town of Marshall should work with adjacent municipalities to develop educational materials to educate the general public about safe pedestrian travel.

» *Recommendation:* Pedestrian routes to commercial areas should be well lit with street and pedestrian lighting. All pedestrian crossings should be delineated with striped crosswalks and shall have signage to direct pedestrians to destinations.

» *Recommendation:* The Town should consider amending their UDO to include language that would allow utility easement, such as sewer easements, to be utilized for greenway/trail development.

- » *Recommendation:* Where cul-de-sacs are permitted, the developer should be required to provide a 20-foot public easement for connection to existing and/or future greenway corridors.

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Town of Marshall | Pedestrian Master Plan

CHAPTER 5

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Chapter 5

PLAN IMPLEMENTATION

INTRODUCTION

The recommendations of this plan cannot be realized without the full support, commitment and continued involvement of multiple groups and organizations. Each of these groups and organizations will have a specific role in the implementation of the Pedestrian Plan. This Chapter not only provides a summary of the role each group will play in the implementation of this plan, it also provides guidance on the next steps and action items that must be completed.

Finally, several priority projects were identified during the walking audit and meeting with the Steering Committee and Staff. Detailed recommendations have been provided at the end of this chapter for the implementation of these projects. The priority projects are a combination of intersection, mid-block crossing and sidewalk projects. The various groups and organizations that need to work together to implement this plan include, but are not limited to the following:

- » Board of Aldermen
- » Planning Board
- » Town Staff
- » Town Maintenance Department
- » Police Department
- » North Carolina Department of Transportation
- » Land of Sky RPO

- » Developers
- » Residents
- » Advocacy Groups

ROLES AND RESPONSIBILITIES

Board of Aldermen

The Board of Aldermen will be responsible for ensuring that improving pedestrian mobility throughout the town remains a priority moving forward. One of the first steps in this process is the adoption of this plan. Through the adoption of this plan, the Town's leadership is recognizing the value of pedestrian transportation and the improvement of the quality of life for the residents.

The Town must leverage all resources to identify, pursue, and secure funding to implement the projects identified in this plan. Many funding opportunities exist at various levels: Federal, State and Regional (see the list of funding in the Appendix). To be competitive for these funding opportunities it is imperative that the Town dedicate a staff person to oversee and manage applying for and spending the funds. The Board of Aldermen should be prepared to do the following:

- » Approve ordinance updates and changes that will strengthen pedestrian-related policies.
- » Support the creation and expenditure of dedicated local funding for the development and maintenance of pedestrian facilities, such as sidewalks, greenways and intersection improvements.

- » Support and encourage Town staff to obtain grants and other types of funding for the development of pedestrian facilities.

Town Planning Board

The Town's Planning Board serves as an advisory board to the Board of Aldermen and provides recommendations on planning and zoning related matters. Therefore, the Planning Board will review any policy changes related to this plan. It will be critical for the Planning Board to become familiar with the Pedestrian Master Plan and be ready to support the recommendations.

Town Staff

The Town's Staff should be the primary contact for monitoring the implementation of the Pedestrian Plan. They should be involved in the plan review process to ensure that pedestrian facilities are being considered and that proposed projects are consistent with the goals of the Pedestrian Plan. The Town's Staff should be prepared to do the following:

- » Updating and maintaining the GIS database for the pedestrian system and working with Madison County GIS Department to ensure pedestrian related files are up-to-date.
- » Pursue grants and other alternative funding sources to implement the pedestrian projects outlined throughout this report.
- » Establish a Pedestrian Safety and Education Program.
- » Establish a Transportation Advisory Committee (TAC), which

could be formed from the Steering Committee that was involved in this process.

- » Meet with the TAC on a quarterly basis and provide updates on pedestrian related issues and infrastructure projects. Encourage them to attend public events to assist the Town in promoting pedestrian safety and education.
- » Coordinate with Land of Sky RPO and with NCDOT to ensure pedestrian facilities are incorporated into new roadway and reconstruction projects.
- » Continue to coordinate with the Land of Sky RPO on future multi-modal projects to ensure pedestrian facilities are considered.
- » Review development plans to ensure the inclusion of pedestrian facilities, such as sidewalks, handicap ramps and crosswalks.
- » Reach out to health organizations and other advocacy groups to assist in promoting walking and healthy lifestyle habits.
- » Coordinate with the Police Department to develop safety and education programs and information to be shared with citizens.
- » Coordinate with Madison County and surrounding jurisdictions on the development of greenways within the Town of Marshall.
- » Present changes/updates to the Planning Board and Board of Aldermen on the Town's Unified Development Ordinance.

- » Work with the Board of Aldermen to develop a designated local funding mechanism for pedestrian-related infrastructure.

Town Maintenance Department

Currently, maintenance of existing facilities is a challenge for the Town of Marshall. The number of individuals responsible for maintaining the existing facilities is not sufficient. Moving forward the Maintenance Department will play a critical role in the development of new and continued maintenance of the existing pedestrian facilities. They currently coordinate with NCDOT to identify capital improvements that are needed within the Town. It will be important for the Maintenance Department and NCDOT to become familiar with the recommendations within this plan to ensure that they are included in roadway improvement projects.

The Maintenance Department will be responsible for the construction and maintenance of the facilities on town-owned roadways. They will also be responsible for working with Town staff on the construction and maintenance of any town-owned and maintained greenways. Proper maintenance of these facilities will be critical to the success of the pedestrian program. It will be critical that there are specific roadway maintenance procedures including: repairs, trash removal, mowing and vegetation clearing, edging, and snow and ice removal.

The Maintenance Department will need to become familiar with the Standards and Guidelines that are defined in Chapter 6. They should also become familiar with other national standards and guidelines from AASHTO, ITE and NCDOT. Finally, they should coordinate with the Town staff on new construction and reconstruction projects to allow for sufficient review time.

Police Department

The Town's Police Department should work with the Town Staff to educate the community regarding pedestrian laws and safe walking habits. The Police Department is a great resource and the Town should continue to forge a partnership to assist in educating both pedestrians and motorists.

The Police Department should be prepared to:

- » Assist the Town in understanding and enforcing pedestrian-related laws in North Carolina.
- » Enforce all laws (pedestrian and motorist) to increase pedestrian safety. These include, but are not limited to speeding, aggressive driving, running red lights, no turning on red, etc.
- » Initiate educational opportunities for the Town and citizens.
- » Provide an opportunity for users to call in and report issues related violations or accident spots. This can be done through an online tool or a hotline.
- » Patrol the community to ensure safety of communities and of future greenways and trails and to work with the Town on identifying opportunities for connectivity.

Developers

Developers will continue to play an important role in the development of pedestrian facilities. As new development occurs, developers should work closely with the Town and be prepared to

do the following:

- » Developers should become familiar with the benefits of providing pedestrian amenities, such as sidewalks and greenways.
- » Developers should also become familiar with the Standards and Guidelines that are outlined in Chapter 5.
- » Finally, developers will participate in the implementation of the plan through compliance with the Unified Development Ordinance (UDO).

North Carolina Department of Transportation (NCDOT)

NCDOT should continue to work closely with the Town to construct and maintain pedestrian facilities. NCDOT should encourage the Town to adopt the state's policy to create "Complete Streets". In 2009 the NCDOT Board of Transportation approved a Complete Streets policy that will "guide existing decision-making and design processes to ensure that all users are routinely considered during the planning, design, construction, funding and operation of North Carolina's transportation network". The full description of the policy can be found at the following web link: <http://www.nccompletestreets.org/>.

NCDOT should be prepared to do the following:

- » Endorse the Town's Pedestrian Master Plan and commit to assist in the implementation of the plan, especially on all state maintained roads. The pedestrian plan recommendations should also be incorporated in the Madison County Comprehensive Transportation Plan (CTP)

- » Work with the Town on future roadway projects and provide sufficient time for coordination with the Town staff.
- » The Town should continue to partner with NCDOT to identify issue areas and work on solutions to improve pedestrian mobility and safety. Partnering with them on future projects will not only save the Town from having to fund 100% of the projects cost, it will also strengthen the relationship with NCDOT.

Land of Sky RPO

The Land of Sky RPO works with NCDOT to develop transportation plans, travel models, transit plans, and bicycle and pedestrian plans. They also work with the state on funding issues for transportation improvements, project planning issues, and other issues such as environmental and air quality concerns. Lastly, the RPO works with local jurisdictions, such as the Town of Marshall to coordinate land use and transportation planning.

One of the RPO's responsibilities is to create a Transportation Improvement Plan (TIP), which is a detailed list of transportation projects that have federal and state funding. The TIP includes funding information and the anticipated schedule for highway, public transit, rail, bicycle, and pedestrian projects. The TIP is updated at least every two years.

It will be important to the successful implementation of this plan for the Town of Marshall to coordinate closely with NCDOT and the RPO on future transportation improvement projects to ensure pedestrian facilities are included.

Local Residents and Advocacy Groups

The residents of the town and the advocacy groups will play a critical role in the implementation of this plan. The Planning and Zoning Department should work with local advocacy groups and engage them in the education process, especially as it relates to the benefits of an active lifestyle and healthy eating habits.

The residents and the advocacy groups should be prepared to do the following:

- » Attend Board of Aldermen and Planning Board meetings where pedestrian related issues are being discussed. It is important to illustrate to the BOA and the Planning Board that pedestrian safety and improvements are a priority to the community.
- » Volunteer to assist at pedestrian related events and gather support amongst friends, family and neighbors.
- » Continue to look for opportunities for partnerships and improving pedestrian connectivity.

RECOMMENDATIONS

To successfully implement the recommendations outlined in this report, the Town should be prepared to begin implementing the recommendations that were detailed at the end of Chapter 4. Some of these recommendations are aimed at strengthening the language in the Town's UDO. These recommendations will require the cooperation and approval of the Planning Board and the Board of Aldermen. The other recommendations are not specific to the UDO, but are aimed at improving pedestrian connectivity throughout the town. Below is a summary of the recommendations from Chapter 4.

Unified Development Ordinance (UDO)

» Section 9.2: Off-Street Parking Requirements

Recommendation: It is recommended that the Town shall require new off-street parking to delineate pedestrian routes leading to and within the parking areas. The intent of this requirement is to make pedestrian movements more predictable and reduce conflicts between motorists and pedestrians. Markings should be clear and provide direct connection to ingress and egress of the structure.

» Section 9.4: Shared Parking and Connectivity Standards

Recommendation: Ensure that pedestrian connectivity is being considered when parking for two adjacent properties is being connected. Improvements could include sidewalks or clearly marked routes between the parking areas.

» Sections 9.7 & 9.8: Driveway Standards

Recommendation: To ensure the proper sidewalk width and slope is being maintained at driveways, it is recommended that the Town incorporate the standards and guidelines from the AASHTO guide (pages 61-62) and incorporate them into site plan review process.

» Section 10.1.3: Street Design

Recommendation: Require sidewalks on both sides of all road typologies that require sidewalk when feasible. This recommendation is to improve connectivity for

pedestrians in all areas of the town. Since there are many physical constraints that prohibit sidewalks on streets, the town will have to evaluate the feasibility of including sidewalks on both sides on a case-by-case basis.

Pedestrian Connectivity and Safety

The following recommendations will help improve pedestrian connectivity and safety throughout the town.

- » *Recommendation:* The Town of Marshall should work with adjacent municipalities to develop educational materials to educate the general public about safe pedestrian travel.
- » *Recommendation:* Pedestrian routes to commercial areas should be well lit with street and pedestrian lighting. All pedestrian crossings should be delineated with striped crosswalks and shall have signage to direct pedestrians to destinations.
- » *Recommendation:* The Town should consider amending their UDO to include language that would allow utility easement, such as sewer easements, to be utilized for greenway/trail development.
- » *Recommendation:* Where cul-de-sacs are permitted, the developer should be required to provide a 20-foot public easement for connection to existing and/or future greenway corridors.

FACILITY DEVELOPMENT

The Town should be involved in the planning and design of any new or reconstructed roadway or bridge to ensure that pedestrian facilities are incorporated. There are several ways that the Town can implement the proposed projects in the Pedestrian Plan including:

- » Utilizing roadway and bridge construction and reconstruction projects
- » Retrofitting existing roadways with new pedestrian facilities
- » Through the NCDOT TIP process

ROADWAY/BRIDGE CONSTRUCTION & RECONSTRUCTION

The Town should ensure that pedestrian facilities are included as part of any new or reconstructed roadway, bridge, and underpass. NCDOT bridge policy supports pedestrian facilities if certain criteria are met <https://connect.ncdot.gov/projects/Roadway/RoadwayDesignAdministrativeDocuments/Bridge%20Policy.pdf> According to the policy sidewalks should be a minimum of 5.5 feet with 42-inch railings on the outside to protect the pedestrian from falling off the bridge.

Roadway projects that require the installation or modification of culverts for streams and creeks should provide sufficient room for pedestrian access through the culvert, especially if greenways or pedestrian paths are planned for the area.

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pedestrian access through the culvert, especially if greenways or pedestrian paths are planned for the area.

OPERATION AND MAINTENANCE

Currently maintenance of the existing pedestrian system is a noticeable issue for the Town. Proper maintenance of the pedestrian facilities is essential to the sustainability of the pedestrian system. If the facilities are not maintained properly they will fall into disrepair and pedestrians won't be able to use the facilities. During site visits and the walking audit, participants found signs of disrepair and lack of maintenance, such as overgrown shrubs, weeds and grass that were either overtaking some of the sidewalks or obstructing the passage of pedestrians. In addition sections of sidewalk especially around the signalized intersection along Main Street, contain utility boxes that overhang into the sidewalk, making it difficult for pedestrians to navigate. Over time, this can reduce the amount of usable space on the sidewalk.

The operation and maintenance of the pedestrian system will be a collaborative effort of various departments and organizations. The success of the Pedestrian Plan will rely on the ability of these organizations and departments to work together on a daily basis.

Additionally, there should be a system in place that allows users to provide suggestions and feedback regarding maintenance issues. Part of that system should include provisions for a timely response to the user. The Town's web page would be an ideal location for a user feedback form and maintenance request form.

FUNDING OPPORTUNITIES

Various funding is available that the Town can utilize to assist in the implementation of the Pedestrian Plan. The funding can be used for planning, design and construction of pedestrian improvement projects as well as educational programs. There are several different types of funding at the federal, state and local levels. These funding opportunities are summarized in the Appendix at the end of this report.

ACTION ITEM MATRIX

In order to begin implementation of the Pedestrian Master Plan, the Town will need to complete several action items. The Action Item Matrix (Table 5.1) provides a series of action steps or tasks associated with the implementation of this plan.

These action steps have been organized by the following categories:

- » Planning
- » Funding
- » Development/Construction
- » Maintenance
- » Education
- » Coordination

▼ Table 5.1: Priority Action Items

Under each category are tasks that are critical to the implementation of the recommendations in this plan. These tasks have been broken down into scheduled priorities based on the following:

- » Immediate (1-3 years)
- » Short-Term (3-5 years)
- » Mid-Term (5-10 years)
- » Long-Term (over 10 years), and
- » On-Going

The Town of Marshall should use this matrix to monitor the implementation of the recommendations within this plan. Town staff should review the matrix and update it as projects or action items are completed and as new one are identified. The successful implementation of this plan will require the involvement of various agencies and departments.

For each action item, these agencies and departments have been identified. The names have been abbreviated for the purpose of the table and include the following: Board of Alderman (BOA), Planning Board (PB), Town Staff (TS), Police Department (PD), Maintenance Department (MD), North Carolina Department of Transportation (NCDOT), and Land of Sky RPO (RPO).

▼ Table 5.1: Priority Action Items (continued)

Action Items			Priority	Status	Agency/ Department
Planning					
P.1	Adopt the Pedestrian Master Plan		Immediate		BOA
P.2	Incorporate Standards and Guidelines (Chapter 6) into the Town's Development Standards		Immediate		BOA/TS
P.3	Establish a tool (online or hot line) to allow pedestrians to report issues and/or concerns		Short-Term		TS/PD
P.4	Amend existing local ordinances to incorporate the recommendations in this plan and continue to assess and evaluate the effectiveness of them.		Short-Term		TS/BOA/PB
P.5	Continue to review land development plans for the inclusion of pedestrian facilities (i.e. sidewalks and greenways/trails)		Short-Term	On-Going	TS/BOA/PB
P.6	Continually assess and evaluate the progress of the Pedestrian Master Plan		Long-Term	On-Going	TS/BOA/PB
Funding					
F.1	Develop a long-term funding strategy for the development of pedestrian facilities		Immediate		TS/BOA/PB
F.2	Pursue additional grants to implement pedestrian programs and projects		On-Going		TS/BOA/PB
F.3	Continue to pursue funding for the acquisition of land and construction of the proposed greenways		On-Going		TS/BOA/PB
Development/Construction					
D.1	Complete sidewalk network within the Downtown Area		Short-Term		BOA/MD
D.2	Finish building the greenway on Blannahassett Island		Mid-Term		BOA/MD
D.3	Provide crosswalks on Main Street at Hill Street and the Depot		Short-Term		BOA/MD
D.4	Include pedestrian facilities in the construction of new and reconstructed roadways		On-Going	On-Going	TS/BOA/PB
D.5	Continue to work with surrounding municipalities and Madison County to develop a regional greenway network		Long-term	On-Going	BOA/TS/PB/RPO
D.6	Develop a comprehensive wayfinding signage system for the town		Mid-Term		BOA/TS
D.7	Complete sidewalks in the downtown area (short-term area)		Short-Term		BOA/MD

Action Items			Priority	Status	Agency
Development / Construction					
D.8	Complete sidewalks in the mid-term area		Mid-Term		BOA/MD
D.9	Complete sidewalks in the long-term area		Long-Term		BOA/MD
Maintenance					
M.1	Coordinate with NCDOT Division 14 on the maintenance of existing and future pedestrian infrastructure along state owned and maintained roadways		Immediate		BOA/TS/MD
M.2	Develop a system for users to be able to report maintenance concerns		Mid-Term		BOA/TS/MD
Education					
E.1	Develop communication program to educate the community about the Pedestrian Master Plan		Immediate		TS/BOA/PB
E.2	Work with local media to raise pedestrian safety awareness and obtain informational handouts from NCDOT that contain pedestrian safety information and laws		Short-Term		TS/BOA
E.3	Work with the local police department to improve enforcement of the laws (pedestrian and motorist)		Mid-Term		TS/PD
E.4	Incorporate pedestrian awareness activities into the Town's annual events		Mid-Term		TS
Coordination					
C.1	Initiate communication with surrounding municipalities to discuss pedestrian related issues and to coordinate on adjacent pedestrian projects		Immediate		TS/BOA/PB/RPO/NCDOT
C.2	Continue discussions with local and regional health organizations to educate community about benefits of walking		On-Going		TS/BOA/PB
C.3	Coordinate with NCDOT Division 14 to ensure pedestrian facilities are incorporated into all roadway projects		On-Going		TS/BOA/RPO/NCDOT
C.4	Coordinate with the county transit system to ensure the inclusion of benches, shelters, lighting and trash receptacles in any future transit improvement projects		On-Going		BOA/TS



Town of Marshall | Pedestrian Master Plan

CHAPTER 6

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Chapter 6

STANDARDS & GUIDELINES

OVERVIEW

This chapter provides the Town of Marshall with a compilation of standards and guidelines that should be used in developing future pedestrian facilities. The standards and guidelines adhere to national and state standards that have been defined by the American Association of State Highway Transportation Officials (AASHTO), the Manual on Uniform Traffic Control Devices (MUTCD) and the North Carolina Department of Transportation (NCDOT).

This chapter should be a guide for the development of new pedestrian facilities as well as retrofitting existing pedestrian facilities. The standards and guidelines should only be used as a reference and a licensed engineer should always be consulted when designing and constructing future pedestrian facilities.

Crosswalks
Curb Extensions
Greenways
Curb Ramps
Lighting
Mid-Block Crossings
Sidewalks
Signage
Signalization
Overpasses
Underpasses

CROSSWALKS

Crosswalks are just one of many components needed to facilitate pedestrians safely across roadways. Crosswalks serve two basic functions:

- » Inform motorists of the location of a pedestrian crossing so that they have time to yield to a crossing pedestrian
- » Assure the pedestrian that a legal crosswalk exists at a particular location.

They are often used in conjunction with other pedestrian components, such as pedestrian signals, stamped asphalt, etc. In most cases, marked crosswalks alone should not be installed within an uncontrolled environment when speeds are greater than 40 mph. NCDOT typically requires that sidewalks are installed on both sides of the roadway where crosswalks are being considered.

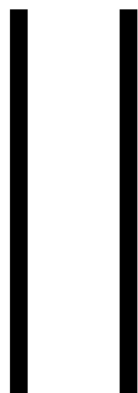
Type of Crosswalks

According to AASHTO, there are three basic types of marked crosswalks: *Transverse, Longitudinal, and Diagonal*. Transverse is the most commonly used and the least expensive of the three crosswalks. These are typically used in areas where there are low traffic volumes and vehicular speeds.

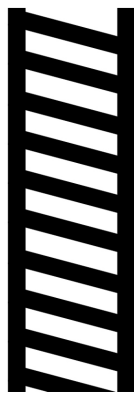
The Transverse treatment can be used in conjunction with other types of treatment, such as stamped asphalt or brick pavers to increase the visibility of the crosswalk.

Longitudinal and Diagonal are often referred to as the “Ladder” or “High Visibility” and “Zebra.” These types of treatments increase

the visibility of the crosswalk and can increase the safety of the pedestrian. They can be very useful for mid-block crossings, areas where traffic volumes are high, vehicle speeds are greater and around schools.



Transverse
(Standard)



Diagonal
("Zebra")



Longitudinal
("Ladder")

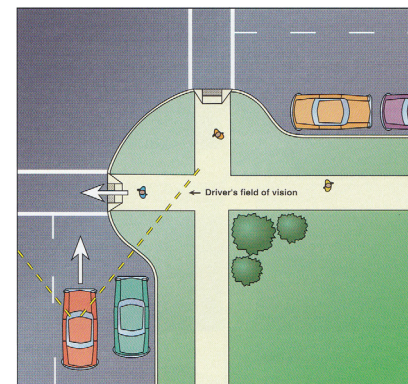
▲ Three major crosswalk types

In some locations, such as schools, raised crosswalks are needed in conjunction with striped crosswalks to slow down or "calm" vehicular speeds. Raised crosswalks are typically located at mid-block locations and are used on 2-lane roadways with posted speeds less than 35 mph. Where raised crosswalks are used, detectable truncated dome warnings are needed at the curb lines and visible pavement markings are required on the roadway approach slopes. The width of a crosswalk can vary, however, AASHTO recommends a minimum of 6-feet and up to 10-feet in a central business district.

CURB EXTENSIONS

Curb extensions significantly improve pedestrian crossings by reducing the pedestrian crossing distance, visually and physically narrowing the roadway, improving the ability of pedestrians and motorists to see each other, and reducing the time that pedestrians are in the street.

On streets that allow on-street parking, curb extensions extend the sidewalk or curb line out into the parking lane, which reduces the overall street width. They improve pedestrian crossings by reducing the pedestrian crossing distance and increase the visibility of the pedestrian for the motorist. Curb extensions narrow the road, forcing the motorist to slow down as they enter the intersection, therefore acting as a traffic calming device.



▲ AASHTO's curb extension example

In general, curb extensions should only be implemented where on-street parking is allowed. They should extend the width of the parking lane, approximately 6 feet from the curb, and never encroach into travel lanes, bicycle lane or shoulders. When considering curb extensions, truck traffic should be considered and accounted for. Curb extensions and tighter radii hinder the ability of larger trucks to make the turning movement at intersections.



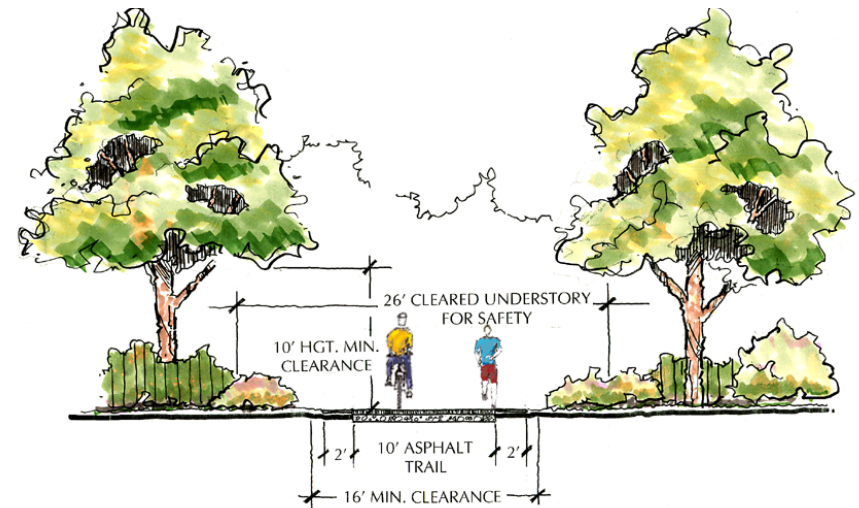
In addition to curb extensions, curb radii should be evaluated for both pedestrians and motorists. Curb radii should balance the needs of the pedestrian as well as larger trucks and buses. According to the AASHTO Guide, curb radii should be appropriate for the largest design vehicle which makes a specific turning maneuver with sufficient frequency to serve as an appropriate. Large turning radii make it easier for large vehicles to make the turn, however, large radii increase the crossing distance for pedestrians and the speeds of motorists.

Tighter or smaller turning radii decrease the crossing distance for pedestrians and speeds of motorists, making the pedestrian environment safer. Smaller radii that limit the speeds of turning vehicles may reduce the operational efficiency of an arterial intersection. A curb radii that protrudes into the turning radius of the design vehicle could cause vehicles to drive over and damage the curb, as well as increase the potential of hitting a pedestrian

standing at the curb. Additional information regarding curb extensions and curb radii on pages can be found on pages 73-74 of the AASHTO Guide for the Planning, Design, and Operation of Pedestrian Facilities.

GREENWAYS

Greenways are most commonly known as a vegetated natural buffer that can help improve water quality, reduce the impacts of flooding, and provide wildlife habitat. Greenways also provide recreation and fitness opportunities for individuals, serve as alternative transportation corridors, and can have positive economic impacts for communities. They are intended for all types of users, including walkers, joggers, bicyclists, roller bladers and other non-motorized modes of travel. Greenways are typically located adjacent to creeks and streams and should not be confused with sidewalks. Locating greenways adjacent to natural water features is not always feasible



due to environmental or physical constraints, therefore more and more communities are working with utility companies to locate greenways within utility rights-of-way, such as sewer easements and overhead power lines.

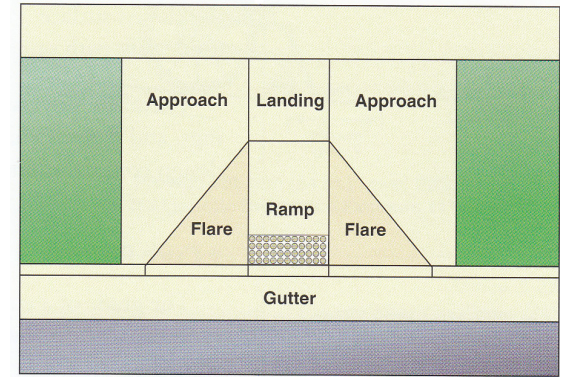
Greenways can be designed to accommodate a variety of users and can be paved or unpaved trails. Trail widths should be evaluated on a site specific basis, however, national standards recommend that they be a minimum of 10-feet wide and include 2-foot graded shoulders. Greater widths of 12-14 feet are encouraged where significant traffic is anticipated.

CURB RAMPS

Curb ramps are an essential component of the pedestrian system and are used at intersections and mid-block crossings to facilitate pedestrian movement from sidewalks into roadways so that they can cross the street. Curb ramps are needed for individuals using wheelchairs and scooters, people pushing strollers and pulling luggage. The design of these ramps is critical to the safety of the pedestrian as well as the motorists. Items such as utility poles, traffic signs, signals, signal control boxes and street name signs should be located so that do not obstruct the pedestrian route. According to AASHTO there are four basic components of a standard curb ramp design:

- » Ramps
- » Landings
- » Flares
- » Gutters

The construction of new curb ramps should be a minimum of 4 feet wide, not including the flared sides. Federal regulations require that the maximum grade of the curb ramp be no more than 8.33% or a ratio of 1:12. If the landing is less than the recommended 4-feet deep, the slope of the flares may not exceed 8.33%. If the landing width is greater than 4-feet, then it is recommended that the slope of the flares be 10% so that tripping can be avoided.



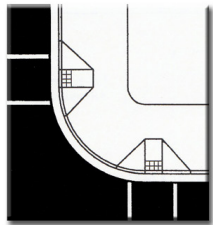
Finally, all ramps are required to have detectable warnings located at the curb line for the full width of the ramp or walkway. The American with Disabilities Act Accessibility Guidelines (ADAAG) specifies that detectable warnings shall consist of raised *truncated domes* and specifies the dimensions and patterns of truncated domes to be used. For more information regarding the specific design criteria of curb ramps, please see the AASHTO Guide for the Planning, Design and Operation of Pedestrian Facilities and the ADAAG (<http://www.access-board.gov/adaag/html/adaag.htm>).

The type of curb ramp to be used is based on the function of the sidewalk and border width, curb height, curb radius, and topography of the street corner. AASHTO identifies three basic types of curb ramps: *perpendicular, parallel, and diagonal*.

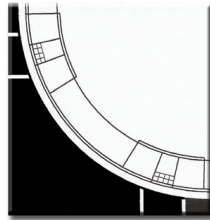
Perpendicular ramps are generally used where the curb radius is smaller and the vehicular speeds are relatively low. They are

perpendicular to the face of the curb and available for each approach.

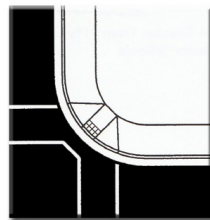
Parallel ramps require users continuing along the sidewalk to negotiate two ramp grades. It also requires careful attention to the construction of the landing at the bottom of the ramp in order to limit the accumulation of water and/or debris. A minimum of 4 feet is required between the two ramps (AASHTO: 86).



Perpendicular Ramps



Parallel Ramps



Diagonal Ramps

The Diagonal ramp is a single perpendicular ramp that is located at the apex of the corner. Diagonal curb ramps typically force pedestrians to enter the intersection before they are able to enter the crosswalk. This is especially dangerous for individuals with visual impairments because it directs them away from the crosswalk. In order to facilitate pedestrians into the appropriate crosswalk, a clear space should be provided that is a minimum of 4 feet from the edge of the ramp. This clear space should not extend into a travel lane.

LIGHTING

The proper lighting will greatly enhance the safety and experience for the pedestrian. It not only improves the overall safety, but it also improves vehicle and pedestrian operations. Insufficient lighting will deter pedestrians from using the facility, decreasing the value of the improvement. Lighting should be placed wherever there is significant pedestrian activity, particularly around schools, parks, residential areas and downtown. It is also very important to ensure that all pedestrian crossings are well lit and signed so that motorists are aware of the crossing. The town wishes to improve the aesthetics and safety along Main Street through the addition of pedestrian lighting and the removal of utility poles.

The North Carolina Department of Transportation (NCDOT) recommends that on major arterials in urban or suburban areas, continuous street lighting should be provided. On wide arterials, they recommend the installation of double-sided lighting (both sides of the road).

For new construction, street light poles should be located at least 6 feet from the curb face and out of the sidewalk. Whenever possible it is recommended that street lights, traffic signals and power distribution lines be located on a single pole. The Town of Marshall will need to coordinate with NCDOT on future roadway



▲ Pedestrian lighting improves safety and visibility for the pedestrian.

improvements to ensure that the proper lighting is provided for the pedestrian.

MID-BLOCK CROSSINGS

Mid-block crossings are useful where the distance between existing intersections is relatively far apart or where pedestrian related land uses are between intersections. They can also be useful in facilitating greenway users across the roadway. When designed and constructed correctly, mid-block crossings allow pedestrians to cross one direction of traffic at a time and provide a refuge island halfway across the street.

The placement and type of mid-block crossings is dictated by several factors including pedestrian volume, traffic volume, roadway width, traffic speed and type, desired paths for pedestrians, and adjacent land use. Since mid-block crossings are not generally expected by motorists, they should be used only where truly needed and should be well signed and marked. Crosswalks at mid-block should not be installed within 300 feet of another signalized crossing point. When installing a mid-block crossing, advance warning signs should be utilized to inform motorists of the crossing.

The following are attributes where mid-block crossings can be most effective as defined by AASHTO:

- » The location is already a source of a substantial number of mid-block crossings.
- » Where a new development is anticipated to generate mid-block crossings.
- » The land use is such that pedestrians are highly unlikely to

cross the street at the next intersection.

- » The safety and capacity of adjacent intersections or large turning volumes create a situation where it is difficult to cross the street.
- » Spacing between adjacent intersections exceeds 660 feet.
- » The vehicular capacity of the roadway may not be substantially reduced by the mid-block crossing.
- » Adequate sight distance is available for both pedestrians and motorists.



- ▲ Above is an example of a two-lane road with a mid-block crossing utilizing a median refuge. Notice the angle in the median. This forces eye contact between the motorist and pedestrian. *Photo provided by Dan Burden*

In general, there are two types of mid-block crossings: signalized and non-signalized. Signalized mid-block crossing should be used where the crossing distance exceeds 60-feet. Some basic components necessary to complete a signalized mid-block crossing include curb ramps, striped crosswalks, “cut-through” in the median, pedestrian actuated signals next to the curb ramps and within the median. The “ladder” or “high visibility” crosswalk treatment is recommended for the crosswalks to improve visibility of the crossing. The median crossing should be at least 6-feet in width with a level landing that is a minimum of 4-feet square, providing a balanced resting space.

The “cut-through” within the median should be angled if possible to force the pedestrian to make eye contact with oncoming vehicular traffic and to improve visibility for both the pedestrian and motorist. Landscaping can be incorporated into the median, but should be placed so as not to reduce visibility. To increase visibility and to warn motorists of a mid-block crossing, flashing pedestrian signals can be installed prior to the crossing. This additional measure could be very useful along Carolina Boulevard where traffic volumes and speeds are greater. Further



▲ In this mid-block crossing example, an “In-Street Pedestrian Crossing (R1-6) is used to remind road users of the unsignalized pedestrian crossing. Photo provided by James Warden

study and analysis will need to be completed to determine the appropriate treatments for these crossings.

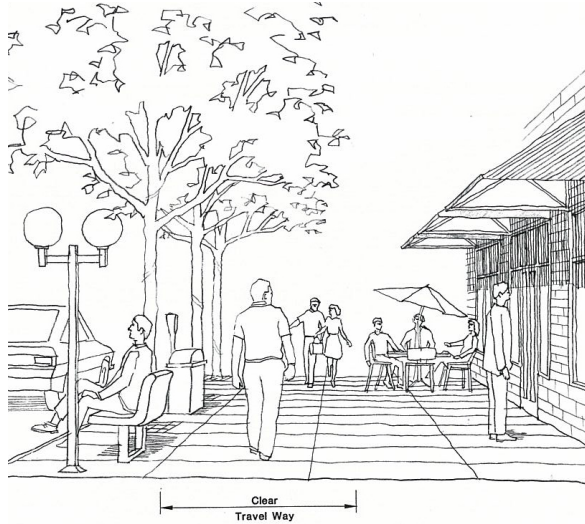
Non-signalized mid-block crossings can be located on roadways that have speeds less than 40 mph. These are generally used on 2-4 lane roadways that have low traffic volumes and/or low vehicular speeds. Again, it is recommended that the cut-through be angled to force eye contact and to increase the visibility of the pedestrian. To review NCDOT’s policy on Mid-Block Crossings, please follow this link: http://www.ncdot.org/doh/PRECONSTRUCT/traffic/teppl/Topics/C-36/C-36_pr.pdf. In some instances a median cannot be provided due to the lack of right-of-way. Marshall faces this challenge along Main Street where two separate mid-block crossings are desired. In this case, the crossing should be marked with a high visibility crosswalk, pedestrian crossing signs (W11-2 from MUTCD) combined with the supplemental arrow plaque (W16-7P from MUTCD). A supplemental measure that could be used in Marshall would be the “In-Street Pedestrian Crossing” sign (R1-6 from MUTCD).

SIDEWALKS

Sidewalks are one of the most important components to the overall pedestrian system. They are typically adjacent to the roadway and are often buffered by a landscape buffer. Sidewalks usually get built under four conditions according to the AASHTO Guide for planning, Design, and Operation of Pedestrian Facilities: (1) new construction in areas with existing or anticipated pedestrian use, (2) new construction with no initial pedestrian presence, (3) reconstruction of existing sidewalks that do not presently accommodate the needs of all users, and (4) addition of sidewalks in reconstruction projects in areas of pedestrian activity and where pedestrian needs are not being met.

Sidewalk widths can vary, however, the Town's draft sidewalk ordinance recommends the minimum width of 5-6 feet depending on the zone that it is located in (refer to Chapter 2 for summary). To improve pedestrian safety and enhance the overall walking experience,

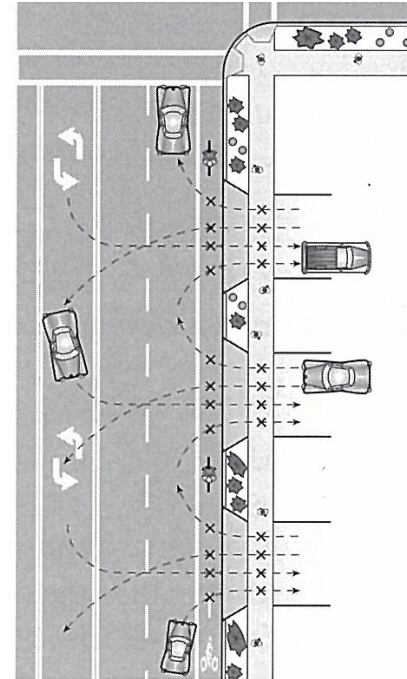
AASHTO recommends that sidewalks be buffered from the roadway. Along local or collector roadways the buffer width should be 2-4 feet and along arterials or major streets the buffer width should be at least 5-6 feet.



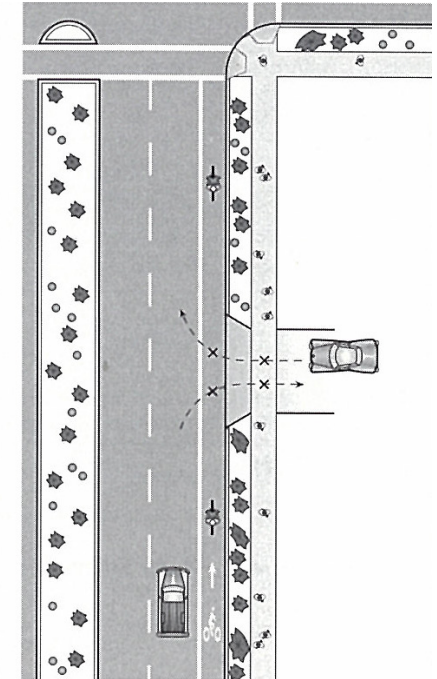
▲ Pedestrian Travel Way should be clear of obstructions.

Sidewalks and Driveways

Conflicts between driveways and sidewalks are often unavoidable. Typically sidewalks located within residential areas experience fewer conflicts with driveways than sidewalks located in commercial areas. Commercial areas experience higher traffic volumes, therefore have the greatest potential for vehicle-pedestrian conflicts. The preferred treatment for driveway design, which is explained in detail in the Driveway Design section of the AASHTO Guide for the Planning, Design, and Operation of Pedestrian Facilities, places the driveway slope in the planting strip.



Uncontrolled accesses create 8 potential conflict points at every driveway.



A raised median and consolidating driveways reduce conflict points.

Note: Vehicle conflict points in diagram include both pedestrians and bicyclists.

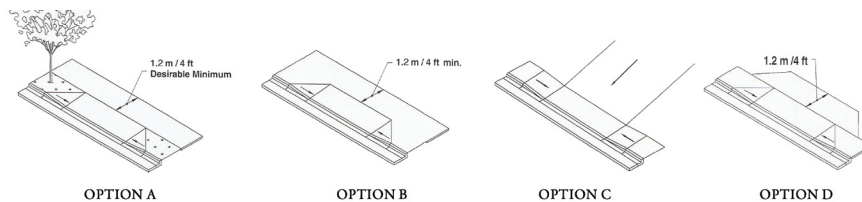
- ▲ Reducing the number of conflict points along roadways improves safety for all users and creates more predictable behaviors.

By placing the driveway slope within the planting strip, it allows for a recommended 4 foot continuous level walkway.

There are a total of four basic and acceptable driveway designs that the Town should become familiar with for future development.

These are summarized below, but can be found on page 62 of the AASHTO Guide for Planning, Design, and Operation of Pedestrian Facilities.

- » Option A (Best) - The planting strip allows the sidewalk to remain level and in a continuous direction.
- » Option B (Acceptable) - The wide sidewalks allow a 4-foot wide path of travel behind the driveway cut.
- » Option C (Where necessary) - The driveway with dipped sidewalks should only be used when necessary.
- » Option D (Where necessary) - The driveway with sidewalk behind should only be used when necessary.



SIGNAGE

Signage plays a significant role in the safety of the pedestrian and motorist. For instance, signage should be provided for motorists in advance of a pedestrian crossing so that they have sufficient time to yield to the pedestrian.

In general there are three basic types of signs that are used to direct pedestrian and vehicular traffic:

- » Regulatory
- » Warning
- » Wayfinding

Regulatory

Regulatory signs are used to inform motorists or pedestrians of legal requirements and should only be used when the legal requirement is not otherwise apparent. With the exception of STOP and YIELD signs, regulatory signs are rectangular in shape, usually contain a black legend on a white background, and are reflectorized or illuminated.

Chapter 2 of the MUTCD provides specific guidance on the use of regulatory signs. Illustrated here are just some examples of the regulatory signs used for pedestrian facilities. A complete list and description of each can be found at <http://mutcd.fhwa.dot.gov/pdfs/2009/part2b.pdf>.



▲ Examples of Regulatory signs from Chapter 2B of the MUTCD.

Warning Signs

Warning signs are typically used to inform motorists and/or pedestrians of unusual or unexpected conditions, such as mid-block crossings. Warning signs should be placed far enough in advance to warn users and to provide sufficient response time. Warning signs, like Regulatory signs, are very distinctive and generally diamond-shaped with black letters or symbols on a yellow background. They too are reflectorized or illuminated to increase visibility.

As a rule, the placement of warning signs in advance of the subject condition should be based on the posted speed limit within the subject area. According to AASHTO, the pedestrian crossing sign (MUTCD W11-2) serves two functions. First it provides advanced warning to motorists of possible pedestrian conflicts, and secondly, at a crosswalk it advises the motorists of the potential that a pedestrian may be attempting to cross. Chapter 2 of the MUTCD provides guidance on the use of warning signs (<http://mutcd.fhwa.dot.gov/pdfs/2009/part2c.pdf>.)



▲ Examples of Warning signs from Chapter 2C of the MUTCD.

Wayfinding Signs

Wayfinding signs can be used for both motorists and pedestrians. They are especially useful for visitors that may not know where certain destinations are within the Town. They help orient and inform users where destinations are and how far to the actual location.

Wayfinding signs should be installed in locations where multiple destinations exist. For example, there are many destinations within close proximity downtown where wayfinding signs would be useful.

Wayfinding signage should be easy to understand and should orient and communicate in a clear and concise manner. This type of sign is developed for both motorists and pedestrians and can be custom-made to match existing wayfinding that might exist.



▲ Wayfinding Signage should be installed to orient pedestrians to destinations with Marshall, especially in downtown.

SIGNALIZATION

Traffic signals assign the right-of-way to vehicular and pedestrian traffic. Traffic signals benefit pedestrians by stopping vehicular traffic and allowing the pedestrian to cross the street safely. When traffic signals are installed and timed correctly, they can improve

the efficiency of the overall transportation network. The MUTCD recommends that traffic signal timing for pedestrians be based on a pedestrian crossing speed of 4 feet per second. However, this does not reflect the walking speeds of every user, especially children, persons with disabilities or elderly people. In order to accommodate all types of users, it is recommended that a pedestrian speed of 3-feet per second be used. See page 103 of AASHTO's Guide for the Planning, Design and Operation of Pedestrian Facilities for further guidance on traffic signal timing.

Pedestrian Signal Controls

Pedestrian signals controls or push buttons should be installed at all signalized intersections where pedestrian traffic is being facilitated across the roadway. The signal controls should be located within a reasonable distance from the curb ramp. The MUTCD provides the following guidance for locating push buttons at intersections where two control devices are located.

- » Adjacent to a level all-weather surface to provide access from a wheelchair, and where there is an all-weather surface, wheelchair accessible route to a ramp
- » Within 5 feet of the crosswalk extended
- » Within 10 feet of the edge of the curb, shoulder, or pavement
- » Parallel to the crosswalk to be used

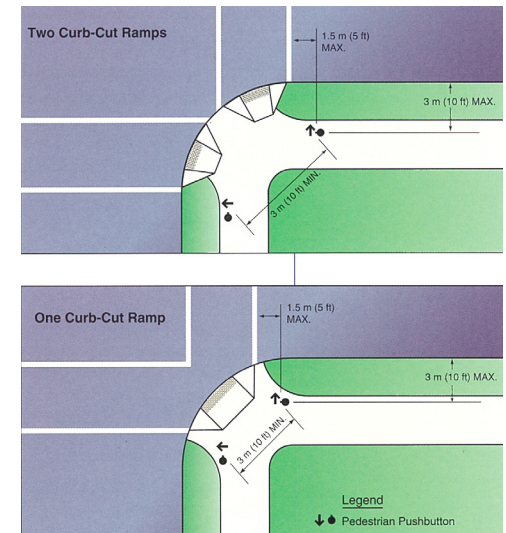
The mounting height for pedestrian push button detectors should be approximately 3.5 feet, but no higher than 4 feet as defined by the MUTCD. This allows easy access for those in a wheelchair to be able to reach and activate the signal. Individuals with visual

impairments need audible or tactile cues to assist them when crossing a roadway. This type of signal is known as “accessible pedestrian signal” and should be used wherever a pedestrian-actuated signal exists. The MUTCD provides very specific guidance on pedestrian signals. This information can be found at: <http://mutcd.fhwa.dot.gov/pdfs/2009/part4.pdf>.

Pedestrian Signal Heads

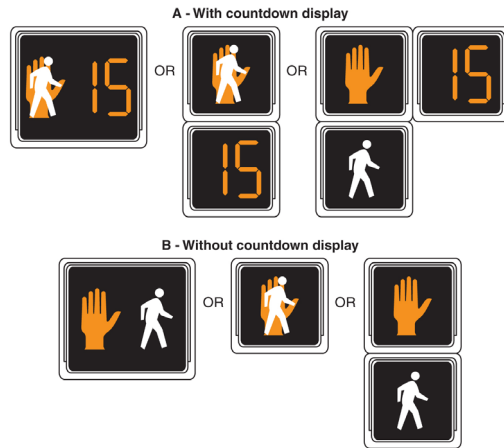
Pedestrian signal heads provide special types of traffic signal indicators exclusively intended for controlling pedestrian traffic. These indicators consist of illuminated symbols of a WALKING PERSON (symbolizing WALK) and an UPRaised HAND (symbolizing DON'T WALK). The signal heads should be mounted no lower than 7-feet, but no higher than 10-feet above sidewalk level. The signal head should also be mounted so that it is clearly visible for pedestrian crossing from the opposite side of the roadway. The countdown indicator signal head is the standard for NCDOT. The MUTCD states the following regarding pedestrian signal head indicators:

- » A steady WALKING PERSON (symbolizing WALK) signal indication means that a pedestrian facing the signal indication is permitted to start to cross the roadway in the direction



▲ AASHTO recommendations for the location of push button signals

of the signal indication, possibly in conflict with turning vehicles. The pedestrian shall yield the right-of-way to vehicles lawfully within the intersection at the time that the WALKING PERSON (symbolizing WALK) signal indication is first shown.



▲ Typical Pedestrian Signal Indicators from the MUTCD.

- » A flashing UPRAISED HAND (symbolizing DONT WALK) signal indication means that a pedestrian shall not start to cross the roadway in the direction of the signal indication, but that any pedestrian who has already started to cross on a steady WALKING PERSON (symbolizing WALK) signal indication shall proceed to the far side of the traveled way of the street or highway, unless otherwise directed by a traffic control device to proceed only to the median of a divided highway or only to some other island or pedestrian refuge area.
- » A steady UPRAISED HAND (symbolizing DONT WALK) signal indication means that a pedestrian shall not enter the roadway in the direction of the signal indication.
- » A flashing WALKING PERSON (symbolizing WALK) signal indication has no meaning and shall not be used

According to AASHTO and the MUTCD, research indicates that many pedestrians don't understand the meaning of these indicators; therefore educational signage can be placed near the pushbutton. The MUTCD recommends the use of R10-2 through R10-32P to educate pedestrians who may not comprehend the meaning of the pedestrian indicators. These can be found in Chapter 2B of the MUTCD.

The countdown signal heads are appropriate for locations along the 70/25 Bypass where pedestrians are being facilitated across the road. Currently, the Town does not desire to have pedestrian signal heads in the historic downtown district. It is strongly recommended that as pedestrian activity increases in the historic downtown district, the Town revisit the use of these control devices to increase the safety for pedestrians.

OVERPASSES

There are situations where pedestrian crossings cannot be accommodated "at-grade" and other ways have to be explored to safely facilitate pedestrians across the roadway. These are most commonly known as "overpasses" or "underpasses" and can be very expensive to build. Typically, overpasses are created by utilizing pedestrian bridges and are used to cross major obstacles such as railroads, highways and even rivers and streams.

Many times providing ramps or steps can be challenging, especially if acquisition of private property is required. Overpasses need to provide elevator access or meet Americans with Disabilities Act (ADA) ramp criteria for maximum slope (8.33%), level landings for every 30-inch rise in elevation, and handrails on both sides (AASHTO: 97). Overpasses or bridges must also maintain specific vertical and horizontal widths. The minimum inside width of a



- ▲ Crossing major thoroughfares and highways can be difficult for pedestrians. Pedestrian bridges like this can provide safe alternatives for pedestrians.

pedestrian bridge should be 8 feet, however if the bridge is enclosed to prevent dropping of debris onto the roadway below, the visual tunnel effect may require widening the bridge to 14 feet to provide a feeling of security for all bridge users.

UNDERPASSES

Similar to overpasses, underpasses are often utilized to provide continuous and uninterrupted access across a busy thoroughfare or other major obstacles, such as railroads. When designing an underpass it necessary to maintain a minimum vertical clearance of 8-feet for short distances and 10 feet for long distances. Underpasses typically require shorter ramps and less right-of-way

than overpasses. A disadvantage of underpasses is that they can become expensive to construct, especially if the roadway has to be elevated in order to relocate utilities. Also, if the underpass is not well lit, it can create an unsafe environment, discouraging use.

When considering the use of underpasses, drainage must be considered, especially if located near a creek or stream. Underpasses should be wide enough to for use by multiple users, and the longer the tunnel, the wider it should be. This provides a sense of security as people are passing by one another. Sufficient lighting should be provided within the underpass to create a safer environment for the user as well.

AASHTO recommends that the minimum width of an underpass be 12 feet. If the underpass structure is longer than 60 feet, a wider width of the underpass is recommended. For short underpasses a vertical clearance of 8-feet is sufficient, however, similar to the width of the underpass, the longer the structure the more vertical clearance that should be provided.

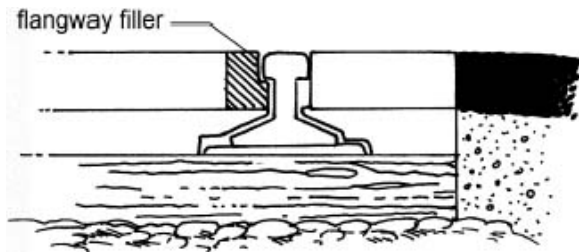


- ▲ Underpasses can provide a continuous and uninterrupted option for greenways and other types of pedestrian facilities.

RAILROAD CROSSINGS

According to the AASHTO Guide for the Planning, Design, and Operation of Pedestrian Facilities, pedestrian crossings at railroads must be designed in accordance with the Americans with Disabilities Act Accessibility Guidelines (ADAAG) to avoid situations in which wheelchair casters rotate when they hit the top of a rail and drop into the flangeway. The crossing must be level and flush with the top of rail at the outer edge and between the rails. The crossing should be as close as possible to perpendicular with tracks, and flangeway gaps that do not exceed 2.5 inches (3 inches for tracks that carry freight) must be provided.

In addition to flangeways, detectable warnings to alert pedestrians with vision impairments should be placed where railways cross any accessible pedestrian route. Additional information regarding railroad crossings can be located on page 66 of the AASHTO Guide



- ▲ The “flangeway filler” eliminates the gap in the path of travel for pedestrians crossing railroad tracks. The filler, consisting of rubber insert, will deflect downward with the weight of a train and does not affect railway function.

for the Planning, Design, and Operation of Pedestrian Facilities and online at the Federal Highway Administration Office of Planning, Environment, and Realty web page: http://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/sidewalk2/sidewalks208.cfm.



Town of Marshall | Pedestrian Master Plan

APPENDIX

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TERMINOLOGY

AASHTO: Is the American Association of State Highway and Transportation Officials, which is a nonprofit, nonpartisan association representing highway and transportation departments of all transportation modes.

ADA: Refers to the American Disabilities Act of 1991 which gives civil rights protections to individuals with disabilities including equal opportunities in public accommodations, employment, transportation, state and local government services, and telecommunications.

Connectivity: The logical and physical interconnection of functionally related points so that people can move among them.

Crosswalk: A designated point on a road at which some means are employed to assist pedestrians who wish to cross a roadway or intersection. They are designed to keep pedestrians together where they can be seen by motorists, and where they can cross most safely with the flow of vehicular traffic.

Curb Extension: A section of sidewalk at an intersection or mid-block crossing that reduces the crossing width for pedestrians and is intended to slow the speed of traffic and increase driver awareness

FHWA: Stands for the Federal Highway Administration who carries out the Federal highway programs in partnership with the State and local agencies to meet the Nation's transportation needs.

Greenway/Trail: Is a linear path or open space, often composed of natural vegetation. Greenways can be used to create connected networks of open space that include traditional parks and

natural areas specifically designed for pedestrian and bicycle use. Greenways provide an off-street component to the bicycle network.

Intersection: Is where two or more pathways or roadways join together

LRTP: Stands for the Long Range Transportation Plan that is managed by the MPO and is a federally mandated, long-term planning document detailing the transportation improvements and policies to be implemented in the MPO's planning area.

Median: Is considered to be a physical barrier that is constructed of concrete, asphalt, or landscaping, that separates two directions of traffic

Multi Use Path: Is a paved path (concrete or asphalt), typically 10-foot wide, physically separated from motorized vehicular traffic by an open space or landscaped barrier and located within the highway right-of-way.

MUTCD: Is the Manual of Uniform Traffic Control Devices, which is the national standards guidebook on signage and pavement marking for roadways

NCDOT: North Carolina Department of Transportation

Pedestrian: Is a person that is traveling by foot or a person on roller skates, roller blades, child's tricycle, non-motorized wheelchair, skateboard, or other non-powered vehicles (excluding bicycles)

Quality of Life: Is a measure of the standard of living which considers non-financial factors such as health, functional status and social opportunities that are influenced by disease, injury, treatment

or social and political policy

ROW (right of way): Is an easement held by the local jurisdiction over land owned by the adjacent property owners that allows the jurisdiction to exercise control over the surface and above and below the ground of the right-of-way; usually designated for passage

RPO: Regional Planning Organization. The Land-of-Sky RPO is a organization of local governments that plans rural transportation systems and advises the NCDOT on transportation policy and funding priorities. Member governments of the RPO include: Buncombe, Haywood, Madison, and Transylvania Counties; and the municipalities of Brevard, Hot Springs, Marshall, Mars Hill, and Rosman.

Safe Routes to School: Is a federal program that provides funding to encourage and facilitate the planning and implementation of bicycle and pedestrian projects near schools.

Sidewalk: Is typically a concrete facility that is located in the public right-of-way adjacent to a roadway. The facility can also be asphalt, brick or other materials.

Thoroughfare: Is a road that leads at either end to another street and

Transportation Committee: Is a group of volunteers who works with the Town staff to provide direction and guidance for the implementation of the Pedestrian Plan.

FUNDING OVERVIEW

There are several opportunities that the Town of Marshall can capitalize on to help pay for the pedestrian improvements outlined in this report. The following provides a summary of the various local, state and federal funding sources that are available for the Town to use. The list below represents many of the core funding strategies that are available, but is by no means an exhaustive list of funding sources. There are many other sources available that should be researched and pursued as well.

Local Funding

There are several local funding opportunities that the Town can use to implement the recommendations in this Pedestrian Master Plan. The following list of funding sources provides a brief explanation of these funds and what they can be used for.

Local General Funds

The Town currently dedicates approximately \$1,000 for sidewalk repairs. As sidewalks are added to the existing network, the Town will need to dedicate additional funds to sidewalk repair and construction from the General Fund.

Powell Bill Fund

Currently, the Town does not dedicate any Powell Bill funds for sidewalk repair or construction. The Town should consider reassessing these funds and find ways to dedicate some money to the Pedestrian Program for the repair of existing sidewalks and the construction of new sidewalks.

State Funding

There are several state funding sources that can be used to

implement the Pedestrian Master Plan. Many of the state funding sources are actually funded by the federal government, but are administered through the state agencies. The North Carolina Department of Transportation Division of Bicycle and Pedestrian Transportation has been funding pedestrian related infrastructure and non-infrastructure projects.

NCDOT annually sets aside \$6 million for the construction of bicycle and pedestrian improvements that are independent of scheduled highway projects in communities throughout the state. Types of projects include shared-use paths, wide-paved shoulders, bike lanes, and sidewalks. These independent projects are funded through the Strategic Prioritization/State Transportation Improvement Program (STIP) process.

The strategic prioritization process serves as the primary input source for the STIP. Metropolitan Planning Organizations (MPOs), Rural Planning Organizations (RPOs), NCDOT Divisions, and the Division of Bicycle and Pedestrian Transportation (DBPT) as well as other units at NCDOT may submit projects through the prioritization process. For bike and pedestrian projects, the DBPT utilizes a project prioritization methodology with defined criteria to rank all bike/pedestrian projects. This process occurs every two years. Priority projects are included in the developmental STIP (years 6 to 10) and the 10-year Program & Resource Plan.

Bicycle and pedestrian accommodations such as bike lanes, widened paved shoulders, sidewalks and bicycle-safe bridge design are frequently funded as incidental features of highway projects. Most pedestrian safety accommodations built by NCDOT are included as part of scheduled highway improvement projects funded with a combination of federal and state roadway construction funds or with a local fund match.

NCDOT's Sidewalk Program – Each year, a total of \$1.4 million in STP-Enhancement funding is set aside for sidewalk construction, maintenance and repair. Each of the 14 highway divisions across the state receives \$100,000 annually for this purpose. Funding decisions are made by the district engineer. Prospective applicants are encouraged to contact their district engineer for information on how to apply for funding.

Safe Routes to Schools Program

Safe Routes to School (SRTS) is a program that enables and encourages children to walk and bike to school. The program helps make walking and bicycling to school a safe and more appealing method of transportation for children. SRTS facilitates 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. The North Carolina Safe Routes to School Program is supported by federal funds through SAFETEA-LU and MAP-21 legislation.

Different types of reimbursable funding opportunities are available through this program which include; Action Plans or School Travel Plans, Non-Infrastructure Program funding, Infrastructure Program funding, and Highway Division Funds. Please note that all SRTS projects "shall be treated as projects on a Federal-aid system under chapter 1 of title 23, United States Code." Although no local match is required and all SRTS projects are 100% federally funded, agencies are encouraged to leverage other funding sources that may be available to them, including grant awards, local, state, or other federal funding. SRTS funds can be used for any school public or private, K-8, in a municipality or in the county jurisdiction.

The following provides information about the program.

- » Action Plans or School Travel Plans: These are plans to improve pedestrian and bicycle safety within a two-mile radius of schools that are grades K-8. The Action Plans provide a framework for identifying projects, programs and activities that will make walking and bicycling to school safer and more appealing.
- » Non-Infrastructure Funds: are used for pedestrian and bicycle education, encouragement, evaluation and enforcement. These grants are good for developing programs that inspire children to walk and bike to school.
- » Infrastructure Funds: are funds that are awarded for the planning, design, and construction of pedestrian and bicycling facilities within a 2-mile radius of a school. Funding requests typically range from \$100,000 to \$300,000 per project. Types of projects may include sidewalk improvements, crossing improvements, on-street bike and pedestrian improvements, bike parking, traffic calming, and traffic separation devices among others. An adopted Comprehensive Transportation Plan or other type of pedestrian and bicycle plan that identifies needed infrastructure improvements is helpful in obtaining these grants.
- » Highway Division Funds: are funds that are allocated by each of NCDOT's 14 Highway Divisions and the SRTS office to fund infrastructure projects on state-maintained roadways. The projects must be within 2-miles of a school serving grades K-8 to be eligible. The funding amounts can be used to improve conditions for walking and biking to school.

For additional information please contact Ed Johnson, Safe Routes to School Coordinator, at NCDOT.

Contact Information:

Ed Johnson, ASLA, RLA

SRTS Coordinator

NCDOT, Division of Transportation Mobility and Safety Traffic Management Unit

1561 Mail Service Center

Raleigh, NC 27699-1561

Email: erjohnson2@ncdot.gov

Direct 919.329.8497 Branch 919.773.2800

Governor's Highway Safety Program (GHSP)

The GHSP provides funds for pedestrian and bicycle related initiatives upon approval. This is an annual program and the amounts of the funds vary from year to year, according to the specific amounts requested.

North Carolina Parks and Recreation Trust Fund (PARTF)

In 1994 the North Carolina General Assembly established the Parks and Recreation Trust Fund (PARTF). PARTF was established to fund improvements in the state's park system, to fund grants for local governments and to increase the public's access to the state's beaches. PARTF funds are used to acquire, build, and renovate parks. They provide a dollar-for-dollar match up to \$500,000. The Town should apply for this grant money to build greenways and other recreational facilities that serve the general public. To find out more information about the PARTF program, please visit the following web page www.ncparks.gov/About/grants/partf_main.php.

The North Carolina Conservation Tax Credit Program

North Carolina recognizes the importance of land conservation to its economy, and offers a tax credit program to promote conservation of ecosystem functions (fish and wildlife conservation and conservation of natural areas), ecosystem services (farmland conservation) and other public benefits (public access to public trails, waters, and beaches). This program is managed by the North Carolina Department of Environment and Natural Resources, provides an incentive (in the form of an income tax credit) for landowners that donate interests in real property for conservation purposes. Property donations can be fee simple or in the form of conservation easements or bargain sale. More information on this program can be obtained at the following web page: www.onencnaturally.org/pages/ConservationTaxCredit.html

North Carolina Trails Program

This program is administered through the North Carolina Division of Parks and Recreation. The program originated in 1973 and is dedicated to helping citizens, organizations and agencies plan, develop and manage all types of trails. The North Carolina Division of Parks and Recreation offers two types of grants. The first is the Adopt-A-Trail Grant and the other is the Recreational Trails Program Grant. To find out more information about this program, please visit their web page at www.ncparks.gov/About/trails_main.php.

National Funding Sources

There are a wide range of national funding opportunities that can be used for the development of bicycle facilities. The following list represents the most widely referenced and used.

Congestion Mitigation & Air Quality Improvement Program

The Congestion Mitigation and Air Quality Improvement Program (CMAQ) provides \$6 billion in funding for surface transportation and other related projects that contribute to air quality improvements and reduce congestion. The Town should actively pursue CMAQ funding. To find more information regarding CMAQ funding, please use the following link: www.fhwa.dot.gov/environment/air_quality/cmaq/index.cfm

MAP-21 (Moving Ahead for Progress in the 21st Century Act):

On July 6, 2012, President Obama signed into law P.L. 112-141, the Moving Ahead for Progress in the 21st Century Act (MAP-21). Funding surface transportation programs at over \$105 billion for fiscal years (FY) 2013 and 2014, MAP-21 is the first long-term highway authorization enacted since 2005. MAP-21 represents a milestone for the U.S. economy – it provides needed funds and, more importantly, it transforms the policy and programmatic framework for investments to guide the growth and development of the country's vital transportation infrastructure.

MAP-21 creates a streamlined, performance-based, and multi-modal program to address the many challenges facing the U.S. transportation system. These challenges include improving safety, maintaining infrastructure condition, reducing traffic congestion, improving efficiency of the system and freight movement, protecting the environment, and reducing delays in project delivery.

MAP-21 builds on and refines many of the highway, transit, bike, and pedestrian programs and policies established in 1991. This summary reviews the policies and programs administered by the Federal Highway Administration. The Department will continue to make progress on transportation options, which it has focused on in the past three years, working closely with stakeholders to ensure

that local communities are able to build multi-modal, sustainable projects ranging from passenger rail and transit to bicycle and pedestrian paths.

To read more about MAP-21 please visit <http://www.fhwa.dot.gov/map21/summaryinfo.cfm>.

Other Funding Sources

BlueCross BlueShield of North Carolina Foundation

The Foundations primary objective is to invest in clearly-defined and results-oriented project that further their mission of improving the health and well-being of North Carolinians. Since they were founded in 2000, they have invested more than \$78 million into communities across the state by supporting more than 570 grants and special initiatives. Their grantmaking is guided by three focus areas:

- » Health of Vulnerable Populations
- » Health Active Communities
- » Community Impact through Nonprofit Excellence

To learn more about the foundation and how to apply for grants, please go to: <http://www.bcbsncfoundation.org/grants/>

The Robert Wood Foundation

The Robert Wood Johnson Foundation was established 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 concentrat-

ed 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 additional information on the foundation and how to apply, please visit their web page at: <http://www.rwjf.org/en/grants.html>

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. 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. More information about their grants can be found at: <http://www.nccommunityfoundation.org/section/grants>

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 four focus areas: Environment, Economic Development, Education, 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>.

National Trails Fund

American Hiking Society’s National Trails Fund is the only privately funded, national grants program dedicated solely to building and protecting hiking trails. Created in response to the growing backlog of trail maintenance projects, the National Trails Fund has helped hundreds of grassroots organizations acquire the resources needed to protect America’s cherished hiking trails. To date, American Hiking Society has funded 174 trail projects by awarding over \$500,000 in National Trails Fund grants. More information on the National Trails Fund, including applying for grants, can be found at: <http://www.americanhiking.org/NTF/>

The Trust for Public Lands

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/>.

