Walk it

Indian Trail Comprehensive Pedestrian Plan

Indian Trail Comprehensive Pedestrian Plan

Adopted by:

Town of Indian Trail and Town Council

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In conjunction with:

Submitted by:

HNTB North Carolina, P.C.

Acknowledgements

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Chapter 1: Introduction

1.1 Context

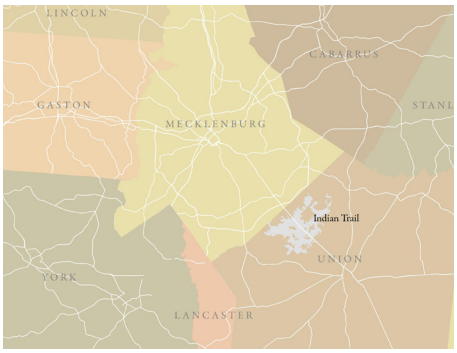


Figure 1.1: Context Map

The Town of Indian Trail is a rapidly growing community approximately 15 miles south of uptown Charlotte, NC. The Town is located in the northwestern portion of Union County, one of the fastest growing counties in the United States (see Figure 1.1). Indian Trail began as an outpost on a 17th Century trading route called the "Indian trail". Today Indian Trail is one of the largest municipalities in Union County. In 1990 the total population of the town was 1,942, but it rapidly grew to 11,905 by the year 2000. With an estimated population today of 26,082 people and the projected population to grow an additional 20,000 by the year 2015, the Town is quickly transitioning from a rural farming community to a vibrant suburban community of one of the fastest growing counties in the Unites States.

Due to this tremendous growth, the Town has been faced with many challenges, such as providing safe pedestrian facilities for its residents. Like most communities, Indian Trail developed as an auto-oriented community, creating an unsafe pedestrian environment. Indian Trail's past pattern of development has created limitations for residents who do not own an automobile and rely on either public transit or walking to get to their destinations, though that pattern is changing. The Town adopted its first Comprehensive Plan in 2005 which centers around making Indian Trail more pedestrian friendly.

The development of this plan comes at a very strategic time for the Town of Indian Trail. Over the past several years the Town has taken steps to ensure that future development incorporates pedestrian facilities. To accomplish this, the Town developed a Comprehensive Land Use Plan, a Downtown Master Plan, and is currently working on a Unified Development Ordinance (UDO).

Chapter 1: Introduction

In 2007, the Town was awarded the North Carolina Department of Transportation (NCDOT) Pedestrian Planning Grant to use for funding this plan. The development of this Pedestrian Plan will send a message to the community that the Town is committed to improving pedestrian mobility, as well as planning to proactively maintain and improve the existing infrastructure.

This Comprehensive Pedestrian Plan is designed for all users and provides an inventory of existing pedestrian facilities, identifies the deficiencies within the pedestrian network, and provides guidance as to how pedestrian mobility may be improved. The Pedestrian System Map reflects the "Village Centers" identified in the Indian Trail Comprehensive Plan, providing on and off-road connectivity improvements, intersection improvement areas and roadway crossings throughout the Town. The Plan provides a prioritized list of project recommendations based on current conditions, public input and the Town's Vision & Goals.

1.2 Benefits

1.2.1 Benefits of Walking

More and more communities have found it necessary to provide its citizens with multi-modal connectivity where they live, work and play. The functional and recreational benefits of walking have been shown to promote individual health and have positive impacts on the environment, traffic, quality of life and economy vitality. Walkable communities are the first step in maintaining a sustainable transportation network and creating a sense of place.

1.2.2 Individual Benefits

The physical and psychological benefits of walking are endless. People of all ages are experiencing first-hand the benefits of a more active lifestyle. According to the Pedestrian and Bicycle Information Center (PBIC), 30 minutes a day of light to moderate exercise, like walking, will produce measurable health benefits. Physical activity has been proven to help prevent heart disease, obesity, high blood pressure, Type 2 diabetes, osteoporosis and mental health problems such as depression – often resulting in lower health care costs and an improved quality of life.[1]

The Center for Disease Control and Prevention (CDC) reports that an average of 2,600 Americans die each day from cardiovascular disease. Based on the 1999-2000 National Health and Nutrition Examination Survey, 64% of US adults are either overweight or obese, and the percentage of overweight and obese children has more than doubled since the 1970s.

Proactive planning to improve the physical environment can have positive impacts on the overall health of the community.[2] This Plan is one of the many steps the Town of Indian Trail is taking to achieve a healthy, active and vibrant community.

1.2.3 Environmental Benefits

Pedestrian facilities, such as sidewalks and greenways provide individuals with a wide array of opportunities to decrease their motor vehicle dependency. For example, strategically planned greenways and trails often allow for more direct, off-road connections to multiple destinations. Greenways help to preserve natural resources, protect local wildlife, and encourage community interaction with nature. They also allow the Town to use public property that is difficult to develop and minimize conflicts that may arise with nearby private property owners. Many of the proposed greenways within this Plan are located along creeks and streams because greenways can provide natural buffer zones that help protect against storm water runoff. Additionally, by preserving the environment, air quality will improve because plants and trees along the greenways will fulfill their natural function of creating oxygen and filtering out air pollutants.

The Environmental Protection Agency (EPA) reports that transportation results in 80% of the carbon monoxide and 55% of the nitrogen oxide emissions in the US. In fact, shorter car trips create more pollutants on a per-mile basis than longer trips because 60% of pollution created by automobile emissions occurs within the first few minutes of operation.[3] Reducing car trips by offering transportation alternatives can improve air quality and help preserve valuable, non-renewable resources.

1.2.4 Transportation Benefits

Walking can be one of the most efficient modes of transportation for many daily trips. Not only is walking the most inexpensive form of transportation, it can help reduce roadway congestion within areas that are facilitating more traffic than they were intended to support. The result of overcrowded roads is gridlock,

pollution, wasted time, energy and driver frustration. Aesthetic and functional enhancements, such as timed pedestrian crossings, landscaped medians, lighting and sidewalks can improve pedestrian mobility and increase driver efficiency. Aesthetic enhancements can improve pedestrian safety, help to create a sense of identity with the Town, and promote social interaction by encouraging citizens to walk more.

Since one in twelve US households do not own a vehicle, safe and efficient pedestrian connectivity is an important component of a comprehensive transportation network. The 1995 National Transportation Survey (NPTS) found that approximately 40% of all vehicular trips are less than 2 miles in length, equivalent to a 30-minute, one-way walk – meeting the PBIC suggestion of 30 minutes of cardiovascular activity per day (see Figure 1.2).[4] By providing adequate pedestrian facilities, people will be able to walk to their destination, becoming less auto-dependent.

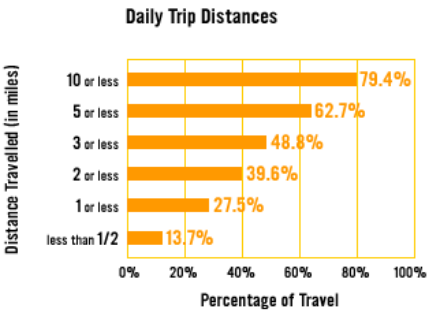


Figure 1.2: NPTS Daily Trip Distances

1.2.5 Quality of Life Benefits

The quality of life benefits provided by a comprehensive pedestrian plan, though intangible, can have many significant impacts on the overall wellness of the community. It has been shown that the perceived level of walkability throughout a town often indicates a community's livability to potential residents and businesses. Greenways and nature trails create an educational opportunity to inform residents and visitors about the town's history, wildlife, and local natural resources.

Indian Trail Family Fun Day

Walking also promotes a type of social interaction that does not exist while driving. Automobiles can limit opportunities to meet friends and neighbors that may share common interests. By providing adequate pedestrian facilities and amenities, citizens can develop stronger bonds with their neighbors and friends. These types of improvements can contribute to a sense of safety and security, making the town an attractive and friendly place to live.

1.2.6 Economic Benefits

Pedestrian connectivity can result in positive economic benefits for both the Town of Indian Trail and its citizens. Sidewalks and greenways are less expensive to install and maintain than roadways. Walking enhances the perception of an active, vibrant community, stimulating economic development among potential businesses and future residents.[5]

Several studies have been conducted that prove property values increase by their proximity to greenways and public amenities. The National Park Service's study, "Economic Impacts of Protecting Rivers, Trails, and Greenway Corridors," sites a Boulder, Colorado case where a greenbelt increased property values for a nearby neighborhood by $5.4 million, resulting in $500,000 of additional annual property tax revenues. This is one of several cases nationwide that proves how the cost of greenway acquisition and construction is offset by tax revenue over time. [6]

For the pedestrian, walking is free. Vehicle ownership and maintenance is a major expense for many households, leaving them little money to save or spend on other things. The PBIC reports the following costs associated with various transportation alternatives (see Table 1.1).[7]

Table 1.1: PBIC Costs Associated with Transportation Alternatives

Mode of Transportation	Cost of Operation (per year)
Sedan	$7,834
Bicycle	$120
Walking	FREE

1.3 Vision & Goals

Planning Outreach Program

The development of the Plan relied heavily on the involvement of the Town's planning staff, the Town Council, the Planning Board, the Steering Committee and the public. Collectively, they formed a vision statement and a series of goals that guided the development of this plan. The following is the vision statement and goals that were developed from the input received from them.

1.3.1 Vision

"Indian Trail will promote economic, environmental and social sustainability by creating a pedestrian friendly community through promoting healthy transportation choices, social interaction, and safe, well designed facilities that allow pedestrians to experience its unique small town heritage."

1.3.2 Goals

To achieve the vision the following goals were identified. These goals not only guided the development of this Plan, they will continue to guide the implementation of the Pedestrian Plan for years to come.

- Improve **connectivity** throughout the Town
- Enhance **safety** by providing lighting, signage and other types of existing pedestrian facilities
- Provide **recreational** opportunities for all users

- Ensure all pedestrian facilities can be used by **multiple users**
- Create a **sense of place** and identity through good planning and design
- Ensure that the pedestrian facilities are **attractive** through proper maintenance
- Create facilities that are **convenient** and easily accessible
- Focus on developing facilities that provide an **experience** for the user
- Develop facilities that are **unique** to Indian Trail
- Develop **efficient** and **cost effective** processes for the development of facilities
- Ensure good **design** of pedestrian facilities is achieved

The goals provided the basis for the development of the ranking criteria that are discussed in Chapter 5 – Implementation. The criteria were used to rank the proposed pedestrian projects into short-term, mid-term, and long-term priorities. Prioritizing the projects gives guidance to the Town Council and the Planning Staff on the implementation of the physical aspect of the Plan.

The goals also guided the formation of policy recommendations, which are discussed in Chapter 4 – Programs and Policies. The policy recommendations are divided into Priority Policy Recommendations (short-term) and Strategic Policy Recommendations (long-term). The goals for these include:

Short-term Goals

- Ordinance Revisions
- Project Implementation
- Explore a Sidewalk Capital Improvement Program (CIP)

Long-term Goals

- Linking Infrastructure
- Economic and Social Growth
- Environmental Protection
- Changing Pedestrian and Driver Behaviors

Additionally, it will be as important for the Town to develop partnerships with key stakeholders, such as NCDOT, MUMPO, Private Developers, and adjacent municipalities. The success of this plan will require the cooperation of these entities. NCDOT will have to work with the Town on sidewalks, intersection treatments, and other pedestrian improvements located within their right-of-way. MUMPO is in charge of TIP projects, therefore the Town will need to

work with them to ensure pedestrian improvement projects get onto that list. Private developers need guidance during the site plan review process to ensure that they are including the appropriate types of pedestrian treatments to their projects. Finally, the Town will need to continue to coordinate with adjacent communities to ensure a seamless pedestrian network is achieved.

1.4 Public Involvement

Community Workshops

Public involvement at all stages of the planning process was critical in creating a plan that reflects the needs of the community. The following tactics were used to elicit feedback from the community.

1.4.1 Stakeholder Interviews

Several local business leaders, elected officials, appointed board members and other key stakeholders participated in an interview process that focused on walking habits, destinations, desired improvements, and overall satisfaction of the quality of pedestrian amenities throughout the Town.

Key Issues and Concerns

- High volumes of pedestrian traffic have been documented along Wesley Chapel Stouts Road near Sun Valley High School. This should be a priority area.
- Many children are often seen traveling to and from Sun Valley High School and the surrounding commercial areas.
- Also many students and parents are crossing at mid-block on Wesley Chapel-Stouts Road in front of the high school after football games and other after school activities.
- Interviewees also identified a future retail development behind Lowe's Home Improvement store at the intersection of Highway 74 and Wesley Chapel Road.
- A potential connection exists along Stinson Hartis Road between an existing destination (Extreme Ice) with a future destination (Carolina Courts).
- Sidewalk improvements are needed along the east side of Waxhaw Indian Trail Road to the Town's municipal boundary, along Faith Church Road from Unionville-Indian Trail Road north to Lake Park Recreation Park and the entire length of Younts Road from Wal-Mart to Indian Trail Fairview Road.

- Many older neighborhoods, especially in the northeastern part of Indian Trail are lacking sidewalks and other important pedestrian facilities.

Walking Audit

1.4.2 Walking Audit

To better understand the existing conditions of the pedestrian network and to experience first hand the deficiencies that exist, the Steering Committee and interested residents were invited to participate in a walking audit along Indian Trail Road. Participants were broken into two groups. Each group walked a portion of the corridor and was given a copy of the PBIC's Walkability Checklist so that they could inventory the existing conditions along the corridor. The exercise provided an opportunity for the participants to ask specific questions and to learn about aspects of the pedestrian plan that they might not have been exposed to otherwise. The two groups reconvened and discussed what they experienced. Both groups agreed that several key pedestrian facilities were missing, making the corridor inadequate for pedestrian travel. Such items include lighting, pedestrian crosswalks, signage, and curb ramps.

Community Workshops

1.4.3 Public Meetings

Public participation was encouraged at the Pedestrian Plan Kick-off meeting where the vision and goals statements were developed. Town staff also hosted two public meetings to showcase the draft Pedestrian Systems Plan. Meetings were held at the Hemby Bridge Volunteer Fire Department and the Stallings Volunteer Fire Department. The Pedestrian Plan Map was divided into quadrants so participants could see more detail. Large maps of each quadrant were placed on tables so participants could focus in on specific areas and provide feedback on the plan. Feedback and recommendations were incorporated and refined to create the Pedestrian Plan Systems Map, located in Chapter 3.

1.4.4 Surveys

A public survey was developed to determine the community's perceived level of pedestrian safety and infrastructure functionality within the Town. Survey results showed that safety, sidewalk maintenance, connectivity, greenways and creating an enjoyable, functional walking environment ranked as overwhelmingly important to participants. The majority of survey responses revealed that it is

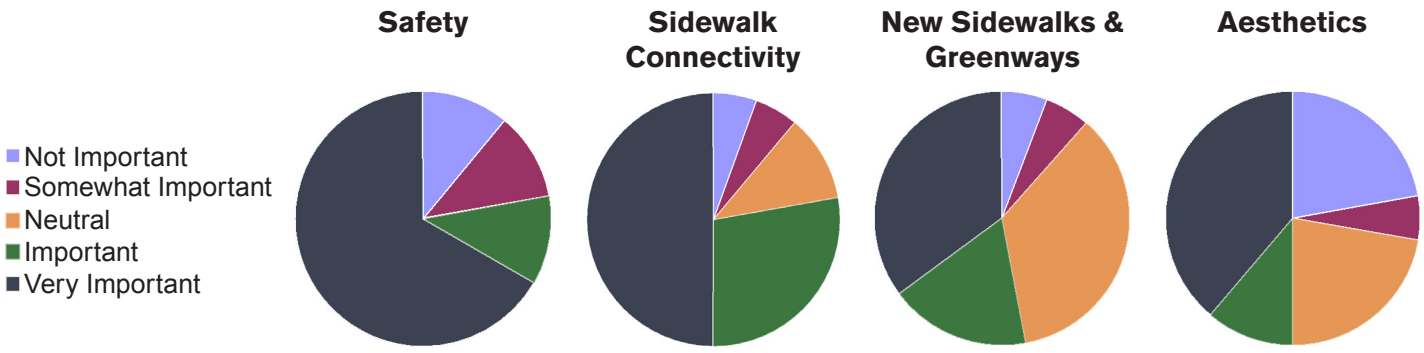


Figure 1.3: Public Survey Results

not easy to walk to desired destinations and participants would like to see more pedestrian connections (see Figure 1.3). A full summary of the public input received from the surveys is available in Appendix B.

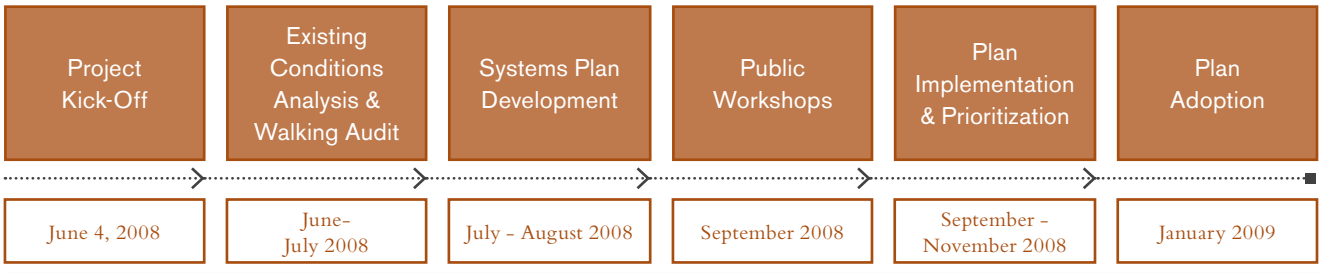


Figure 1.4: Pedestrian Plan Timeline

Scope and Plan Components

1.4.5 Scope

The Plan is the product of a project schedule (Figure 1.4) that includes the following major tasks:

- Kick-off Meeting that included Visioning & Goal setting
- Existing Conditions Analysis
  - » Walking Audit
- System Plan Development
  - » Public Workshops
- Plan Implementation & Prioritization Recommendations
- Plan Adoption

1.4.6 Components

Indian Trail's Comprehensive Pedestrian Plan represents the hard work of many dedicated individuals. The hard work of these individuals is represented in the Chapters that are outlined below.

Chapter 1: Introduction – A contextual review of the Town, the benefits of a Walkable community, past planning efforts, overall vision and goals, public involvement, and scope of services.

Chapter 2: Existing Conditions – An overview of current conditions based on public input, existing systems mapping and visual audits.

Chapter 3: Pedestrian System Plan – Pedestrian Systems map that acts as a framework to guide the development of recommended pedestrian facilities such as future and proposed sidewalks, greenways and intersection improvements.

Chapter 4: Programs & Policies – Recommendations for educational and inspirational programs as well as Policy Review Recommendations.

Chapter 5: Implementation Strategies – Potential funding programs and partners, as well as specific steps for implementing, phasing and prioritization for proposed pedestrian projects.

Chapter 6: Design Guidelines – Provides facility standards for the Town to use in the implementation of the pedestrian projects illustrated in Figure 3.2.

Appendices – Project Ranking and Methodology, Public input summary, Glossary, Comprehensive Plan road cross sections and resources that support Plan document findings.

[1]Health Benefits
Retrieved Oct/07/2008
from www.walkinginfo.org /why/benefits_health.cfm

[2]Physical Activity
Retrieved Oct/07/2008
From http://www.cdc.gov/healthyplaces/healthtopics/physactivity.htm

[3]Envirionmental/Energy Benefits
Retrieved Oct/07/2008
From http://www.walkinginfo.org/why/benefits_environment.cfm

[4]Transportation Benefits
Retrieved Oct/07/2008
From http://www.walkinginfo.org/why/benefits_transportation.cfm

[5]Quality of Life Benefits
Retrieved Oct/16/2008
From http://www.walkinginfo.org/why/benefits_quality-of-life.cfm

[6]Economic Impact of Trails
Retrieved Oct/17/2008
From http://www.americantrails.org/resources/economics/GreenwaySumEcon.html

[7]Economic Benefits
Retrieved Oct/07/2008
From http://www.walkinginfo.org/why/benefits_economic.cfm

Chapter 2: Existing Conditions

2.1 Overview

In order to develop a comprehensive pedestrian network, it is important to have an understanding of the current state of the pedestrian network in Indian Trail. A comprehensive pedestrian network should be comprised of key elements, such as sidewalks, greenways/trails, crosswalks, signage, and lighting to name a few. In addition to documenting the physical aspect of the existing pedestrian network, previous planning efforts were reviewed to ensure that this plan is consistent with the efforts that preceded it.

2.2 Community Profile

Indian Trail's demographic makeup plays an important role in the pedestrian plan. In 2005, single-family residential land uses occupied nearly 50% of the planning area. According to the 2005 US Census Bureau, there were 21 single-family communities under construction within the planning area with approximately 23% of the houses complete and a total of 7,594 units expected at build-out. With the downturn in the economy in 2008 residential growth is expected to slow significantly over the next 1-2 years. However, it is anticipated that this growth will begin to increase and the Town will need to work with developers to incorporate pedestrian facilities during the site plan review process.

Commercial development within Indian Trail is primarily located along US 74 with clusters of office and retail development located throughout the town. Edna Love Park, a private park located in the downtown area, is the only existing park within the Town. Approximately 34% of the land use within the Town's Planning Area, as identified in the Comprehensive Plan, is made up of agricultural, forest and vacant land. These areas will play a vital role in the development of the proposed greenway system.

Chapter 2: Existing Conditions

All but approximately 7 miles of roadway in Indian Trail are owned, operated and maintained by NCDOT. Most subdivision streets are privately owned. Therefore, the Town, NCDOT, private homeowners, homeowner associations and other stakeholders will need to work together during the implementation of the Pedestrian Plan.

2.3 Existing Pedestrian Network

The tremendous growth of the Town over the past 10-15 years has placed significant strain on the existing infrastructure and the effects of this growth can be seen throughout the community. By driving and walking around Indian Trail it is evident that, like most communities, emphasis was placed on the automobile and not the pedestrian. For instance, most of the intersections within the town limits lack the basic treatments that are needed to create a safe walking environment. The following section of this report documents the condition of the existing pedestrian facilities throughout the Town. The Existing System Map (Figure 3.1), located in Chapter 3, illustrates the existing pedestrian facilities located within the Town limits.

2.3.1 Sidewalks

Sidewalks are probably the most commonly used type of pedestrian facility in any community across America, and until recently the Town of Indian Trail lacked a consistent design standard and requirement for them. While recent efforts to require well-designed sidewalks are producing positive results, many areas of the Town need new or improved sidewalks. Today, the Town requires that sidewalks are built as part of any development project. The majority of the existing sidewalks within the town are located in newer residential subdivisions. Many of the town's older neighborhoods were developed before sidewalks were required, therefore most of these neighborhoods don't have any sidewalks. Major roadways, such as Wesley Chapel Stouts Road and Unionville Indian Trail Road that connect older subdivisions with newer subdivisions lack continuous sidewalks, which make walking along these roads very difficult. The lack of sidewalks on these major roadways has created gaps in the overall system.

Pedestrian System Gaps

Many if not all of the schools do not have adequate connections to surrounding residential subdivisions. Without good connectivity to the schools, children are unable to walk and must rely on either buses or their guardians to take them to school.

2.3.2 Intersections and Crossings

Intersection of Old Monroe Road and Indian Trail Road

Most of the intersections within the town do not meet minimum state and federal standards . Signalized intersections do not have striped crosswalks, curb ramps, pedestrian signals or signage. Intersections such as Old Monroe Road and Indian Trail Road contain some elements, but are still unacceptable by today's standards. This intersection in particular contains sidewalks, but only one corner of the intersection has a curb ramp. The installation of this curb ramp was not coordinated with other types of pedestrian improvements. There are no striped crosswalks, signage or signals that facilitate pedestrians safely through the intersection. The ramp actually facilitates pedestrians toward the intersection with no way to safely cross the road (see image), creating a very dangerous situation for pedestrians and motorists. Problems of a similar magnitude exist in many other intersections throughout the town at roads of varying size and traffic volume.

2.3.3 Greenways/Trails

Developer built trail

Currently neither the Town of Indian Trail nor Union County maintains and operates any greenways or trails within the town limits. However, some subdivisions have been built that contain trails that interconnect the subdivision. These types of facilities are typically used by the residents who live in the subdivision and are not open to the general public. Even though the Town does not currently maintain or operate any greenways, many opportunities exist to utilize creeks, streams and sewer easements for future development of a greenway system. These opportunities are illustrated on the Pedestrian System Plan Map.

2.3.4 Destinations/Trip Generators

Several types of destinations exist within the Town that people walk to on a daily basis. Input received through the stakeholder interviews and the public workshop, indicates that the destinations that generate the most pedestrian traffic include schools and commercial centers. Table 2.1 features a list of destinations developed through stakeholder and public input within and adjacent to the town.

Table 2.1: Existing Destinations

Institutional	– First Baptist Church – Indian Trail Presbyterian Church – Indian Trail Methodist Church – Sardis Baptist Church – Sardis E.S. – Sun Valley High School – Sun Valley Middle School	– Sun Valley Elementary School – Hemby Bridge Elementary School – Indian Trail Elementary School – Antioch Elementary School – Indian Trail Library – Porter Ridge School Camping – Town Hall
Recreational	– Edna Love Park – Lake Park Recreational Park – Pebble Creek Golf Course	– Stallings Park – Extreme Ice – Boy Scout Camp
Retail/Commercial	– Union Festival Shopping Center – Indian Trail Shopping Center – Bi-Lo Shopping Center – Indian Trail Station Shopping Center – 74 Business Village Shopping Center	– First Charter Bank – CVS – Wal-Mart – Harris Teeter – Lowe's Home Improvement Store – Sun Valley Commons – Old Hickory Business Park

2.4 Existing and Past Planning Efforts

The Town of Indian Trail has made many proactive steps to planning for the growth and overall development of the Town in the future. In addition to the NCDOT Pedestrian Grant the Town received in 2007, the Town has adopted a Comprehensive Land Use Plan, Downtown Master Plan and is currently developing a Unified Development Ordinance. The development of the Pedestrian Plan was coordinated with these plans, as well as with the plans of the surrounding jurisdictions. These documents have been reviewed and summarized as they relate to the development of a comprehensive pedestrian network.

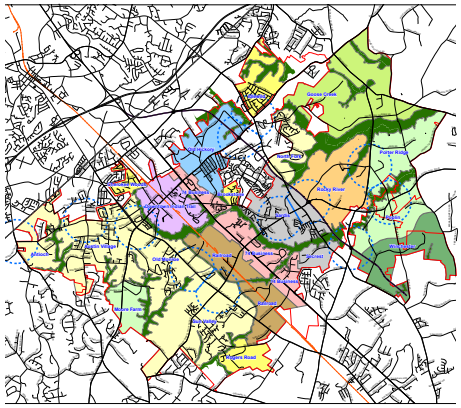


Figure 2.1: Indian Trail Comprehensive Plan

2.4.1 Indian Trail Comprehensive Plan

The Indian Trail Comprehensive Plan is structured around 18 Residential Villages to maintain a sense of livability and identity, even as the Town grows from 26,082 to nearly 90,000 residents (see Figure 2.1). The plan provides for:

- 15 Residential Villages, defined by geographic boundaries, with 3,000-4,000 population each, enough to support an elementary school, a "village center", and in some cases a grocery store;
- 12 Village Centers, focusing higher density development, neighborhood shopping, civic activities and schools within a 1/2 mile radius, or a 10 minute walk;
- Downtown Indian Trail, a pedestrian friendly community gathering place and regional destination with residential, retail, restaurant and office uses;
- 3 Commercial/Retail/Industrial corridors, structured around a predominant use of office, retail or industrial to provide tax base balance
- A "Four C's" transportation network, providing vehicle, bicycle and pedestrian Capacity, Connectivity, Choice and Complete Streets;
- A parks, boulevards and greenways plan, with mini parks, neighborhood parks, community parks, a greenway trails network, and a landscaped boulevard network;
- Street typologies were developed that allow a variety of street designs to fit the varying land use and environmental contexts throughout the Boulevards and Thoroughfares. The typologies provide a range from two travel lanes to six travel lanes. Accommodation of pedestrians and bicyclists has been incorporated into the street typologies.

The plan will accommodate an ultimate growth to nearly 90,000 residents, 35,000 households and 40,000 jobs.

2.4.2 Downtown Master Plan

As an extension of the Town's Comprehensive Plan, the Downtown Master Plan addresses strategic implementation for a pedestrian-oriented urban mixed use village center (see Figure 2.2). The Plan will help Indian Trail's downtown become the primary identity center of the town, in a central location as the Town grows to a community of almost 90,000 people. The Plan's emphasis is on:

- Economic development and urban design to attract new residents and businesses;
- Creation of a community gathering place and regional destination;
- Pedestrian-friendly environment;
- Transit oriented development around a future commuter rail station

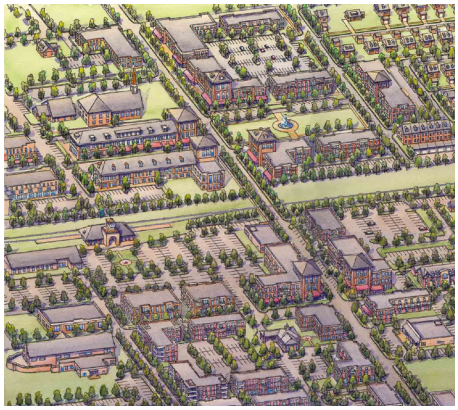


Figure 2.2: Rendering of Downtown Master Plan

2.4.3 Defining the Vision for Downtown Indian Trail (2003)

This report was developed by the Technical Assistance Team North Carolina Downtown Development Association. It focuses on defining the obstacles related to the development of downtown Indian Trail and establishes goals and implementation strategies to overcome them. The "vision" that was established during this plan states that the downtown will be the pedestrian friendly "town center" of the community (see Figure 2.3). The plan provides guidance for improving pedestrian mobility at key intersections, such as Unionville Indian Trail Road and Indian Trail-Fairview Road. Types of improvements include new sidewalks with specialty pavement, decorative signage, street trees in planting strips and crosswalks. The plan also provides guidance for buildings and their scale, façades, and heights. The intent of the guidelines is to ensure that a pedestrian friendly environment is created as the downtown develops in the future.

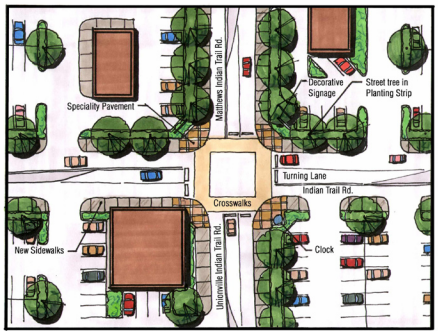


Figure 2.3: Downtown Center with Proposed Improvements

2.4.4 Unified Development Ordinance (UDO)

Currently the Town of Indian Trail is developing a Unified Development Ordinance, which will combine their existing zoning and subdivision regulations and other regulatory documents into one unified ordinance. The UDO is currently in draft form and has not been adopted; however there are several

sections that have a direct correlation with pedestrian facilities. The following is a list of the sections from the draft UDO that most relate to the development of the pedestrian network:

Section 810.200: Coordination of Landscaping and Pedestrian Improvements

Section 1110.060: Applicable Policies

D. Traffic Movement and Pedestrian Circulation

F. Open Space

Section 1110.090: Street and Sidewalk Improvements

Section 1160.010: Dedication of Land (A, C.1 Unity, C.5 Access

Section 1160.060: Greenways

Section 1210.070: General Requirements (C.2.d, C.4, C.6)

2.4.5 Monroe Connector/Bypass

Currently the North Carolina Turnpike Authority is studying several alternatives for the location of the Monroe Connector/Bypass. This new roadway facility would extend from the vicinity of the existing US 74/I-485 interchange in southern Mecklenburg County to the existing US 74 near the Town of Marshville in Union County. The alignments that are being considered transverse portions of northeastern Indian Trail town limits. If constructed, the Monroe Connector/Bypass will sever any pedestrian connectivity that exists today. Therefore, steps should be taken to ensure that those pedestrian connections are maintained and/or enhanced to the greatest extent possible.

Chapter 3: The Pedestrian Network

3.1 Overview

Older residential development in Indian Trail

The development of the Pedestrian Plan will establish pedestrian connectivity within the Town and the surrounding jurisdictions; realizing that pedestrian improvements do not stop at the town limits. The Plan is based on the community's vision and goals and the inventory of the current pedestrian system. This chapter provides an overview of the methodology used to develop the physical aspect of the Pedestrian Plan and descriptions of plan elements, which includes proposed sidewalks, off-road connections, greenways/trails, pedestrian crossing improvements and intersection improvement areas. It also discusses how the proposed pedestrian network will connect the Town to the adjacent municipalities and their pedestrian facilities.

Although the Town's zoning ordinance requires new residential developments to build sidewalks on both sides of the road and commercial developments to build sidewalks along the roadway, previously developed areas of town lack adequate pedestrian facilities. As the Town continues to grow, there will need to be a focus on the interconnectivity of future development.

Newer residential development in Indian Trail

3.2 Methodology

This Plan was developed by reviewing past planning efforts, inventorying the existing pedestrian facilities and gathering public input. The Plan focuses on the Town's future Village Centers that were developed as a part of the Comprehensive Plan. The Village Centers are areas within the Town where there will be a concentration of higher density residential mixed with commercial, retail and office uses. The Village Centers will be pedestrian friendly, with wider sidewalks, landscaping and lighting that will enhance the overall pedestrian environment.

Chapter 3: The Pedestrian Network

The Town provided the consultants with the most up-to-date geographic information systems (GIS) data, which included:

- Aerial photographs
- Parcels
- Street centerlines
- Streams/creeks
- Water bodies
- Railroads
- Village Center Overlays
- Downtown Overlay

This information was used to develop issues and opportunities, as well as to document the existing pedestrian facilities. Additionally, the consultants conducted site visits to confirm the location and condition of the existing pedestrian facilities. The site visits were vital in determining current intersection conditions. Several high traffic intersections lack the basic elements that are necessary to provide safe crossing for pedestrians. Photographs from the visual audit were used to create a work sheet that illustrated the "good" and "bad" examples as a guide for participants during the walking audit.

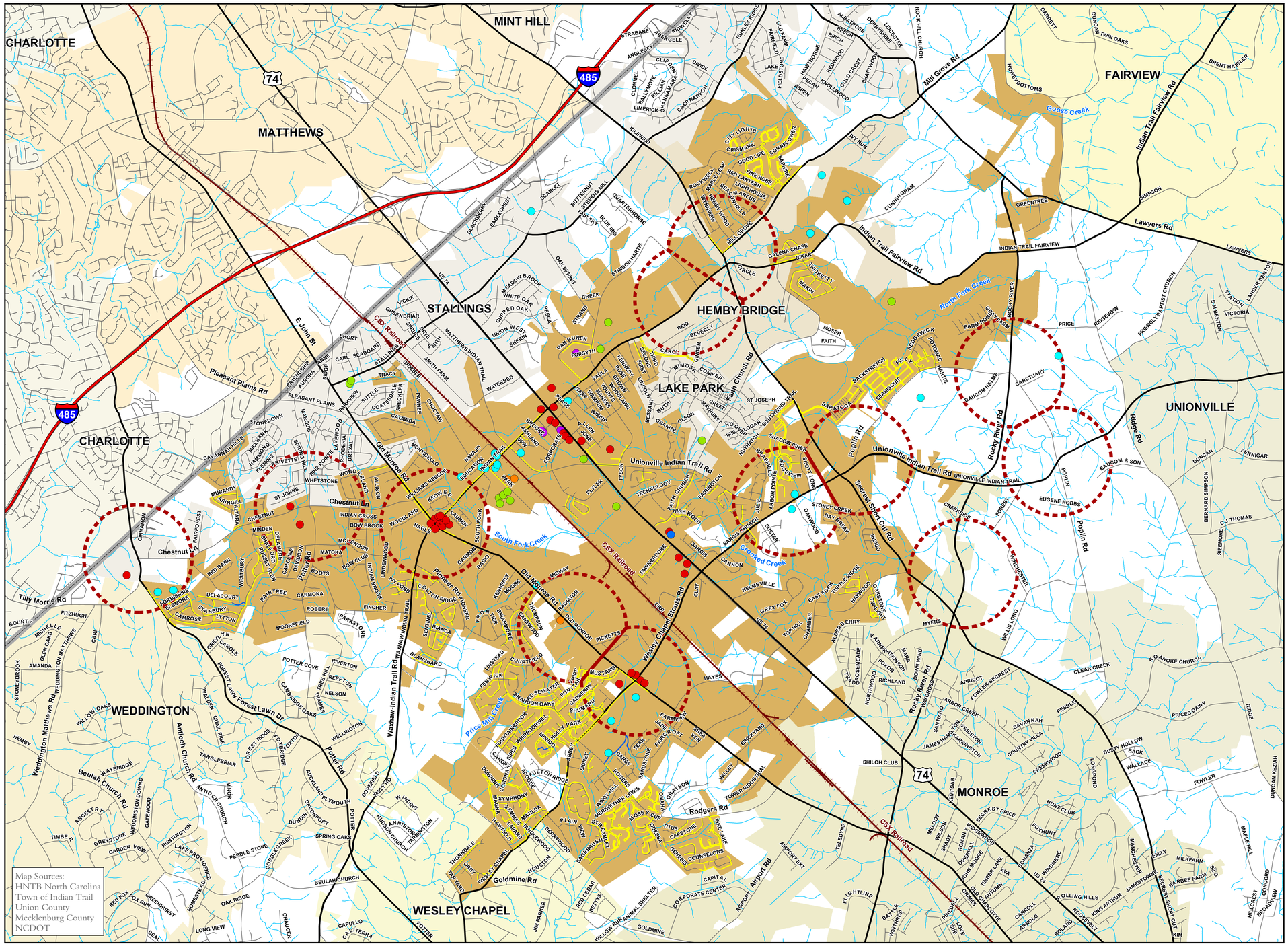
The Existing Systems Map (Figure 3.1) shows the extent of the current pedestrian system within the Town.

Based on the existing data and site visits, the Pedestrian System Map was developed (Figure 3.2). A review of the Pedestrian System Map was conducted with the Town staff and the Steering Committee to ensure that all potential pedestrian routes and priority areas were documented. The Town staff provided input on future sidewalk projects that are either anticipated to be built as part of an approved development or funded by the Town from Congestion Mitigation and Air Quality (CMAQ) funding (see Chapter 5: Implementation Strategies).

Elements of the Pedestrian System Plan Map include:

- Existing sidewalks
- Proposed sidewalks
- Future sidewalks
- Existing off-road connectors
- Proposed off-road connectors
- Proposed greenways

Figure 3.1: Existing System Map



Legend

- Town Boundary
- Village Center Overlay
- County Boundary
- Interstate
- Major Thoroughfares
- Roadways
- Railroads

Existing Pedestrian System

- Existing Off-Road Connector
- Existing Sidewalk

Destinations

- Institutional
- Mixed Use
- Office
- Recreational
- Retail/Commercial
- Transit Stop

Map Sources:
HNTB North Carolina
Town of Indian Trail
Union County
Mecklenburg County
NCDOT

December 17, 2008

Scale: 1" = 2000'

0' 1000' 2000' 4000'

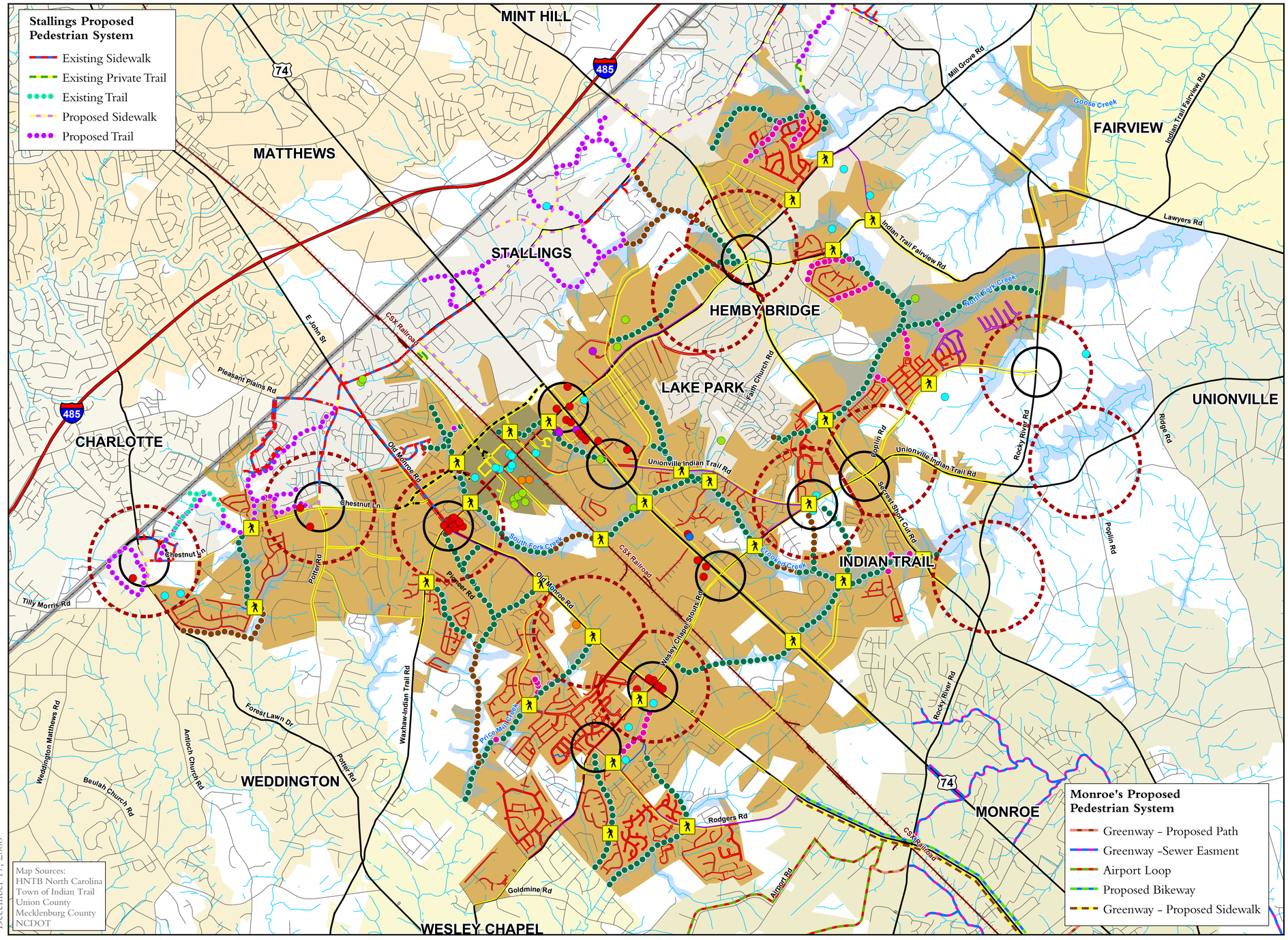
N W E S

HNTB

Indian Trail Pedestrian Plan

Town of Indian Trail, North Carolina

Figure 3.2: Pedestrian System Map



December 17, 2008

Legend

- Town Boundary
- DowntownOverlay
- Village Center Overlay
- County Boundary
- Interstate
- Major Thoroughfares
- Roadways
- Railroads
- Creeks & Streams
- Existing Floodplains

Destinations

- Institutional
- Mixed Use
- Office
- Recreational
- Retail/Commercial
- Transit Stop

Pedestrian System

- Existing Sidewalk
- Existing Off-Road Connector
- Proposed Sidewalk
- Future Sidewalk
- Proposed Greenway
- Proposed Greenway-not in Town
- Proposed Off-Road Connector
- Proposed Pedestrian Crossing
- Intersection Improvement Area

Scale: 1" = 2000'

0' 1000' 2000' 4000'

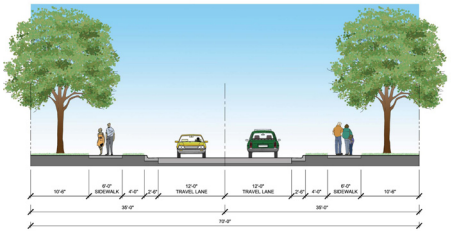
N W E S

HNTB

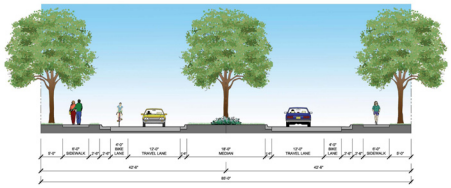
Indian Trail Pedestrian Plan

Town of Indian Trail, North Carolina

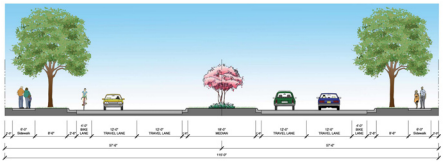
Figure 3.3: Thoroughfare Cross-Sections



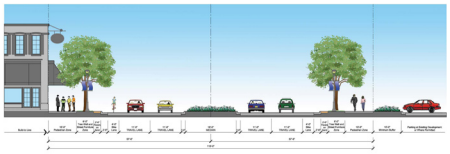
2-Lane Thoroughfare



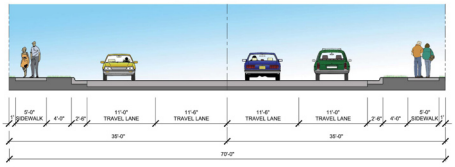
2-Lane Boulevard



4-Lane Boulevard



4-Lane Village Center Boulevard



4-Lane Thoroughfare

6-Lane Boulevard

- Existing and future destinations
- Intersection improvement areas
- Proposed crossings

The System Map also shows roads, municipal boundaries, and planned pedestrian improvements in neighboring towns. The System Map was reviewed several times by the consultant, the Town Staff, and the Steering Committee. The pedestrian network that was developed is based on the desire to see interconnectivity between residential neighborhoods, Village Centers, schools, and adjacent municipalities.

Potential greenways identified in the Town's Comprehensive Plan were analyzed in coordination with GIS based flood-plain data and their proximity to existing pedestrian facilities, as well as future destinations. A set of proposed greenways, within and outside of town boundaries, were developed based on a set of criteria used to determine the feasibility of building the potential greenway. These criteria included proximity to flood-plains and utility easements as well as being in an undeveloped area.

The Comprehensive Plan established a context sensitive set of criteria for future 6-lane boulevards, 4-lane freeways, 4-way suburban boulevards, 4-lane village center boulevards, and 2-lane minor thoroughfares. All future thoroughfares should be built with sidewalks on both sides of the road. These cross sections are illustrated on the left (see Figure 3.3). Full-size images are available in Appendix D. Additionally; the Pedestrian Plan will address specific pedestrian improvements within these areas.

3.3 The Pedestrian Network

The Pedestrian System Plan is a reflection of the needs and wants of the residents of Indian Trail. The following portion of this Chapter provides detailed descriptions for each type of pedestrian facility. The Design Guidelines in Chapter 6 address specific treatments for each of the facilities listed below. Table 3.1: Project Prioritization Matrix, in Appendix A provides a comprehensive listing of all the pedestrian projects.

3.3.1 Proposed Sidewalks

The proposed sidewalk improvement projects identified on the Pedestrian System Plan Map are far ranging (see Figure 3.2). Smaller projects include filling in the gaps of incomplete sidewalks along roadways where the development pattern is scattered. Larger sidewalk improvement projects involve creating adequate pedestrian facilities for existing major roadways lacking safe pedestrian passage. This includes roadways such as US 74, Wesley Chapel Stouts Road, and Old Monroe Road. Other projects were recommended based on the current zoning and plans for future development. Combined, these sidewalk projects will provide town-wide connectivity.

As mentioned earlier in the report, a major goal of this plan is to improve pedestrian mobility within and adjacent to the Village Centers that were developed as part of the Comprehensive Plan. Many of proposed sidewalk projects provide connections on major roadways feeding these centers and connecting to surround residential areas. There are a total of 463,620 ft. / 87.81 miles of proposed sidewalks.

3.3.2 Greenways

Greenways are most commonly known as asphalt trails that are located along creaks and streams to provide an uninterrupted walking path. However, greenways serve a broader function for communities. According to the National Trails Training Partnership, they make our communities more livable; improve the economy through tourism and civic improvement; preserve and restore open space; and provide opportunities for physical activity to improve fitness and mental health.

Potential greenway on Indian Trail Road

Currently there are no greenways within the Town limits; therefore, it was critical to identify potential greenway corridors that connect all parts of Indian Trail. The proposed greenway network within the Pedestrian System Plan Map (see figure 3.2) identifies major greenway corridors that utilize major creaks and streams as well as existing sewer easements. The Plan calls for a network of proposed greenways that are located within the Town limits, as well as in areas outside the Town limits. The greenways that are located outside the town will require coordination with the surrounding jurisdictions. Much like the sidewalk improvement projects, these greenways feed into connections between village centers, residential areas, and schools. There are a total of 90,896 ft. / 17.22 miles of proposed greenways that are located within the Town limits, and 17,276 ft. / 3.27 miles outside of town limits.

Developer built off-road connection

3.3.3 Off-Road Connections

The proposed off-road connectors that are illustrated on the Pedestrian System Plan Map (Figure 3.2) are short trails that connect the major greenway corridors to destinations, such as schools, commercial/retail areas and residential subdivisions. The existing off-road connections are trails or worth paths that allow connectivity within neighborhoods and/or from neighborhoods to schools and commercial areas. The proposed off-road connections in this Plan will expand the pedestrian network to allow connectivity between neighborhoods and proposed greenways and create safer routes to schools. There are a total of 19,296 ft / 3.65 miles of proposed off-road connections, all of which are within the Town limits.

Developer built mid-block crossing

3.3.4 Pedestrian Crossings

There are several ways to create safe pedestrian crossings at intersections and mid-block points such as striped crosswalks that serve as a visual cue to on-coming traffic. Many of the pedestrian crossings within this Plan occur mid-block to allow safe passage between institutional areas and surrounding neighborhoods (see Figure 3.2). Others are located at the intersections of proposed greenways and roadways. These crossings are critical pieces to the overall pedestrian system. They not only create a continuous pathway, they allow users to safely cross major roadways. Crossings can occur at grade, at an overpass or at an underpass. The types of crossings are explained in more detail in Chapter 6.

Intersection improvement area

3.3.5 Intersection Improvement Areas

Ten key intersections within Indian Trail town limits were identified as priority improvement areas, as well as two intersections outside of Town boundaries (see Figure 3.2). These intersections were identified with the help of public participants, town staff and site observations. Though not all of the intersection improvement projects occur within planned village center districts, many occur near surrounding retail and institutional areas, as well as high traffic and heavily traveled intersections. Inadequate crossing facilities can confuse both the driver and the pedestrian, creating unsafe barriers between destinations. The following intersections were identified as key improvement areas:

- Chestnut Lane and Forest Lawn Drive
- Chestnut Lane and Potter Road

- Old Monroe Road and Waxhaw-Indian Trail Road
- Old Monroe Road and Wesley Chapel Stouts Road
- Rodgers Road and Wesley Chapel Stouts Road
- Wesley Chapel Stouts Road and US 74
- Unionville Indian Trail Road and US 74
- Indian Trail Road and US 74
- Wesley Chapel Stouts Road and Unionville Indian Trail Road
- Secrest Shortcut Road and Unionville Indian Trail Road
- Secrest Shortcut Road and Mill Grove Road
- Rocky River Road and Poplin Road

3.3.6 Regional Connections

Pedestrian connections should not stop at the town's jurisdictional limits. The Town has been and will continue to work with its neighbors to ensure a seamless pedestrian network is achieved. The City of Monroe and the Town of Stallings have completed similar pedestrian plans and information from their plans was incorporated into the Pedestrian System Map.

An important regional effort that is currently in the works is the Carolina Thread Trail (CTT). The CTT is a 15 county regional network of greenways and trails centered in Mecklenburg County and located northwest of Indian Trail. The Town along with other municipalities is working with the CTT planning staff to identify opportunities to connect to the proposed regional network (see Figure 3.4).

Figure 3.4: Carolina Thread Trail Concept Map

Chapter 4: Programs & Policies

4.1 Overview

The success of the Pedestrian Plan can not be realized by building physical improvements alone. The long-term success of the Plan must consider how these physical improvements will be implemented through various programs and policies. This chapter summarizes the existing programs and policies of the Town, and provides guidance on how to strengthen them.

One of the most important things to keep in mind when promoting increased pedestrian activity is the danger involved with being unaware of pedestrian and traffic safety laws. The NCDOT Division of Bicycle and Pedestrian Transportation reports a total of 209 city and rural pedestrian related crashes within Union County from 1997 – 2004, 20 of which were in Indian Trail (see Table 4.1).

Table 4.1: All Union County City and Rural Pedestrian Crashes

City Name	1997	1998	1999	2000	2001	2002	2003	2004	Totals
Hemby Bridge	0	0	0	0	0	0	0	0	0
Indian Trail	0	0	0	2	0	3	4	4	13
Marshville	1	0	0	2	1	0	1	0	5
Mineral Springs	0	0	0	0	0	0	1	1	2
Monroe	8	9	12	8	4	3	16	11	71
Non-City (rural)	6	5	7	4	8	6	6	2	44
Stallings	2	0	0	1	1	0	1	1	6
Unionville	0	0	1	0	1	1	0	0	3
Waxhaw	0	1	0	0	1	0	0	0	2
Weddington	0	0	0	0	1	0	3	0	4
Wesley Chapel	0	0	0	0	1	0	0	0	1
Wingate	0	0	0	0	1	0	0	0	1
Totals	**17**	**15**	**20**	**17**	**19**	**13**	**32**	**19**	**152**

Counts are of Crashes where at least one (1) person was a pedestrian.

Chapter 4: Programs & Policies

The following programs were designed to educate public officials and citizens about pedestrian related issues, as well as promote pedestrian activity throughout the Indian Trail.

4.2 Programs

4.2.1 Public Education

There are several types of media 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:

- ***Local Advocacy Group*** – The Steering Committee, which is also the appointed Parks, Tree, and Greenway Committee, that oversaw the development of this plan should continue to advocate for the implementation of the Pedestrian Plan. This Committee could supplement the staff by promoting safe pedestrian travel and coordinating education and outreach opportunities.
- ***Educational Materials*** – The Town should develop an educational pamphlet that provides basic information on safe pedestrian behaviors, rules and responsibilities. This pamphlet could be distributed to residents through HOA's, Union County Chamber of Commerce, and at annual town events. The pamphlet could also be available on the Town's web page and printed in local newsletters, newspapers or routine mailings, such as utility bills, as a way to reach out to the public.
- ***Web-Based Education*** - The Town should utilize its web page to the fullest extent possible, by creating a separate Pedestrian Plan page. The Pedestrian Plan web page would allow citizens to download useful information regarding the Plan, such as pedestrian laws, safety tips, or maintenance request forms.
- ***Local Events*** – Existing events, such the Fourth of July Parade and Family Fun Day, will allow Town staff and/or the local advocacy group to hand out educational materials to the public. These events are also ideal for staff and the local advocacy group to interact with citizens and answer any questions, as well as solicit input from the general public on the implementation of the Pedestrian Plan.

Indian Trail Farmers Market

Planning Outreach at Homeowners Association Meeting

4.2.2 Staff Education

The Town 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 engineering staff should also incorporate pedestrian issues into their daily tasks.

As improvement projects are designed and implemented, the Indian Trail Division of the Union County Sheriff's office should be alerted and educated about the new pedestrian facilities and their desired uses. A successful pedestrian network is built on both motorist and pedestrian compliance. Local law enforcement officials will be used to ensure new and existing facilities are functioning efficiently and safely.

The Union County Public School system's Safety and Security Department will need to be involved with updating pedestrian facilities near schools within Indian Trail. Currently, the Safety and Security department has placed Union County Highway Patrol certified traffic directors at Wesley Chapel Elementary, Weddington Elementary and Middle, Hemby Bridge Elementary, Antioch Elementary, Indian Trail Elementary, Sun Valley Elementary and Middle, Shiloh Elementary and Sardis Elementary. There is also one crossing guard on duty at Shiloh Elementary to facilitate pedestrians through an intersection where drivers making right turns are not yielding to pedestrians. These traffic directors mainly facilitate vehicular traffic but sometimes play a dual role as crossing guards, when needed. As mid-block crossings are designed and intersections near schools are improved, the Safety and Security Department will need to work with the Town of Indian Trail to staff and educate crossing guards for those areas.

Annual Christmas Tree Lighting

4.2.3 Public Events

Annual town events like Family Fun Day and the Christmas Parade provide the Town leaders with an opportunity to educate the community and increase awareness about pedestrian issues within the town. These functions can also enable the Town to plan pedestrian-friendly activities that promote both physical activity and social interaction. The Town should approach "Fit City Challenge", a local health and wellness group, to partner in these events.

Additionally, several different pedestrian oriented programs and initiatives have been developed by affinity groups throughout the nation that can be easily implemented throughout the community.

- ***Local Activities*** – Local events could include a 5K Walk / Fun Run or a "Scavenger Hunt" that utilizes new on- and off-road facilities.
- ***Walk a Child to School Initiative*** – The Walk a Child to School Initiative, supported by advocates nation-wide, emphasizes the importance of providing children with an opportunity to walk or bike to school in a safe environment. In North Carolina, to date, more than 5,000 students in 12 communities have participated in this program. http://www.walktoschool-usa.org/
- ***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. North Carolina cities like Carborro participated this year to promote alternative forms of transportation. http://www.gocarfee.com/
- ***National Trails Day*** – The American Hiking Society developed National Trails Day to inspire communities with to use their trails, celebrate their community, appreciate wildlife, and thank all of the people who built and maintain trails within the town. http://www.americanhiking.org/NTD.aspx

Children's Race at First Annual Indian Trail 5k Run

4.2.4 Other Public Programs

- ***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 web-site or by forming a citizen's watch group with a liaison on the Pedestrian Plan Committee 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" (http://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.
- *Walk-to-School* – Children and their guardians may choose to participate in programs like the Walking School Bus where neighbors walk to school together, similar to a school bus or carpool. One or more adults volunteer to rotate walking to designated points along the route to school. This is a simple and fun way to encourage students to stay active, while adults can worry less about their child's safety. Schools that are close in proximity to neighborhoods, like Sun Valley Elementary, Middle and High School could greatly benefit from a program like this.

4.3 Policy Recommendations

Chapter 3 provided an overview of the physical aspects of the pedestrian plan; however, this portion of Chapter 4 outlines policy recommendations that are aimed at strengthening the Town's current ordinance to ensure that the pedestrian projects are implemented. The Town staff should become familiar with these policies to ensure that new development is incorporating pedestrian facilities in their projects.

Over the past several years the Town has worked diligently to incorporate pedestrian related policies into their development ordinance. Currently the Town of Indian Trail is developing a Unified Development Ordinance, which will combine their existing zoning and subdivision regulations and other regulatory documents into one unified ordinance. The UDO is currently in draft form and has not been adopted; however there are several sections that have a direct correlation with the implementation of pedestrian facilities.

The policy recommendations outlined below have been divided into two categories: Priority Policy Recommendations and Strategic Policy Recommendations. If implemented, these will help the Town in creating a safer and more connected pedestrian system throughout Indian Trail.

4.3.1 Priority Policy Recommendations

The following policy recommendations should be a priority for the Town to implement to ensure that all pedestrian related policies are strengthened. Strengthening the existing policies will enable the Town to not only achieve a comprehensive pedestrian network, but also create a safer and more enjoyable pedestrian environment. These recommended policy changes should be implemented over the next 1-3 years.

Pedestrian Connectivity

Section 1110.060 (F. Open Space) of the UDO currently states that subdivisions should integrate open spaces and that they should be connected with one another and with open spaces in adjacent developments. Subdivisions should include trails that connect to pedestrian routes in the subdivision and to regional trail systems. In addition, it says that open spaces that are anticipated to serve as trail corridors should be continuous with anticipated trail corridors on adjacent properties.

> ***Recommendation:*** All trail and greenway facilities, including pedestrian bridges, should meet the standards and guidelines outlined in this report or as provided by AASHTO and NCDOT. All trails and greenways connecting to major destinations should provide wayfinding signage to direct users in the proper direction.

Section 1110.090 (B. Coordination and Continuation of Streets) currently allows the use of cul-de-sacs where one or more of the following conditions offer no practical alternative for connectivity:

1. Significant topographical changes.
2. Limiting environmental conditions
3. Restrictions or limitations on property accessibility
4. Conflicts due to land use relationships

> ***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.

Section 1160.010 (Dedication of Land) of the UDO states that every residential subdivision shall dedicate a portion of land or pay a fee in lieu thereof for public park, greenway, recreation, and open space sites to serve the recreational needs of the residents of the subdivision or development. For both active and passive recreation the Director of Planning and Development will require that an easement be recorded assuring public access to these facilities in perpetuity.

It also states that public access to the dedicated land will be provided either by adjoining public street frontage or by a dedicated public easement, at least 30 feet wide, which connects the dedicated land to a public street or right-of-way.

Public access or dedicated walkways to greenway dedications must be at least 20 feet wide. After the property is dedicated and improved consistent with the requirements of this Section, the Town of Indian Trail or a homeowners association (HOA) will assume responsibility for maintaining any sidewalks and other improvements adjacent to the street used for access to the open space.

> ***Recommendation:*** It is recommended that standard maintenance guidelines are developed to ensure the proper maintenance of all recreational facilities.

Pedestrian Safety

Section 1110.060 (D. Traffic Movement and Pedestrian Circulation) of the UDO currently states that subdivisions should be designed to provide pedestrian connectivity within the subdivision and to and from adjacent development. It also states that all subdivisions should be designed to provide safe and attractive pedestrian routes to nearby commercial centers, as well as nearby public/civic, employment and recreation uses. Finally, it requires that all pedestrian improvements will comply with ADA requirements.

> ***Recommendation:*** Pedestrian routes to and from commercial centers should be well lit with street and pedestrian-scale lighting. Pedestrian crossings should be identified with signage and crosswalks where feasible. Interior sidewalk widths should be a minimum of 5-feet and 6-feet for exterior sidewalks to improve pedestrian safety and comfort. Sidewalk widths should be greater in areas where higher volumes of pedestrian traffic are expected. All new development projects should reference the recommended sidewalk widths that were developed as part of the Town's Comprehensive Plan. The cross-sections from the Comprehensive Plan are provided in Appendix D.

Section 1110.090 (A. Street and Sidewalk Improvements) of the UDO states that sidewalks shall be required on both sides of all streets and shall be in accordance with Indian Trail Land Development Standards and NCDOT standards.

Recommendation: Sidewalks should be installed on both sides of all streets where feasible. Each sidewalk project should be evaluated on a case-by-case basis due to the possibility of environmental or physical co nstraints. The width of the sidewalk should be a minimum of 5-feet wide and should be greater in areas with higher volumes of pedestrians. The cross-sections from the Comprehensive Plan should provide guidance on the actual widths along major thoroughfares.

Additional Recommendations

- Identify pedestrian facilities that do not meet current ADA or NCDOT requirements, such as raised sidewalks and missing curb ramps, and create a plan for improving them.
- The Town of Indian Trail and NCDOT should coordinate to develop a comprehensive maintenance program for all public road right-of-way that addresses the following: trimming of all vegetation adjacent to the sidewalk, sidewalk repair, debris removal, crosswalk striping, signal operation and signage.
- Street trees and/or buffers should be required along all pedestrian routes to create a safe and aesthetically pleasing walking environment.
- The Town of Indian Trail should update their Land Development Standards to reflect the standards and guidelines that are identified in this report as well as those by NCDOT and AASHTO.
- The Town of Indian Trail should work with the North Carolina Turnpike Authority to ensure that pedestrian connectivity is maintained or reconnected as the Monroe Connector/Bypass is implemented.

4.3.2 Strategic Policy Recommendations

Additional strategic policy recommendations have been identified that will assist in the development of a safe and comprehensive pedestrian network. The Town should work towards implementing the following Strategic Policy Recommendations over the next 3-5 years.

Pedestrian Connectivity

Section 810.200 currently call for development projects containing multiple buildings and activities are required to provide safe and direct pedestrian connections between the various buildings and land uses.

> ***Recommendation:*** To improve pedestrian connectivity and safety within the development, it is recommended that when pedestrian travel is facilitated through a parking area or across a roadway that crosswalks and pedestrian crossing signs are installed at the crossing location.

Additional Recommendations

- Raised mid-block crossings should be provided, where feasible, in locations where the distance between signalized intersections is greater than 600-feet. They should be provided in areas experiencing high volumes of pedestrian traffic or where land uses on both sides of the street encourage mid-block pedestrian traffic.
- Pedestrian facilities should be provided on all new and retrofitted bridges and roadways. A minimum sidewalk width of 5-feet should be provided on all new bridges and roadways, and should be wider where heavy pedestrian traffic is experienced or where the Comprehensive Plan recommends a wider sidewalk.
- Undeveloped land that falls within the proposed greenway corridors, as indicated on Figure 3.2, should be developed as a greenway that is donated to the Town or an agency that will keep the facility maintained and open to the public in perpetuity. In cases where the development of greenways is not possible or feasible at the time of a property's development, public access and/or conservation easements should be pursued for future greenways and conservation.

Pedestrian Safety

Additional Recommendations

- The Town should work with adjacent communities to develop materials for educating the general public about safe pedestrian travel.
- A minimum width of 5-feet is recommended, where feasible, for all buffers between the curb and sidewalk. The buffer space allows for sufficient buffering between the motorist and the pedestrian, creating a safer pedestrian environment. The minimum width also allows for the

planting of street trees, which will enhance pedestrian comfort. Wider buffers (8-10 feet) are recommended for US 74 and other major thoroughfares. Please see the recommended cross-sections from the Comprehensive Plan in Appendix D.

- Identify areas that experience high volumes of "cut-through" traffic and develop traffic calming strategies to create a safer pedestrian environment.
- Provide pedestrian-scale lighting in areas with high volumes of pedestrian traffic to improve pedestrian visibility and to discourage criminal activity.

Chapter 5: Implementation

5.1 Overview

Since this is a comprehensive pedestrian plan, the implementation of this plan should be as comprehensive as the plan itself. The goal of this plan is to implement more than just miles of infrastructure within Town limits. Concurrent steps need to be taken to provide for the maintenance of existing and future facilities, their expansion with the Town's growth, and public outreach so that people are aware of the resources at their disposal and how to safely use them. The Town should make every effort to implement this plan in a way that makes the social, environmental, and economic factors in every instance as mutually beneficial as possible, with an eye toward the future.

Identifying the proper tools is essential to the implementation of the Pedestrian Plan. The Town currently requires private developers to include sidewalks and other pedestrian improvements as part of their plans. Many of the town's existing pedestrian facilities have been accomplished through this tool; however major gaps in the system still exist. In order to fill in these gaps the Town utilizes additional funding mechanisms, such as grants, to ensure connectivity is achieved town wide. Creating a well connected pedestrian system can be challenging though, especially when right-of-way or property acquisition is required. Therefore, the Town will need to work closely with private property owners to either obtain easements and/or acquire property to fill in those gaps and create a well connected pedestrian system. The Town will also need to work closely with NCDOT. Currently NCDOT owns, operates and maintain almost all the roadways within the Town; therefore the Town needs to work with NCDOT to make sure that pedestrian facilities are included in all new and retrofitted roadways and bridges.

The previous chapters addressed the physical and policy goals related to the Pedestrian Plan and this chapter outlines the implementation tools to achieve them. The implementation tools, along with the dedication of the Town, will

guide the development of the Pedestrian Plan over the coming years. A yearly audit or monitoring process should be performed to measure the success of the program and to ensure the strategies are still applicable.

This chapter also details the project prioritization process and describes the criteria that were used to divide the projects into short, mid, and long-term priorities. It outlines local, state and national funding sources that are available to the Town that can be used to build the pedestrian projects as well educating residents about safe pedestrian travel.

5.2 Opportunities

The Town of Indian Trail has several characteristics that will help with the implementation of the Pedestrian Plan. First and foremost, Indian Trail is a rapidly growing community, and this growth can lead to the development of many pedestrian facilities. Currently, the Town requires developers to install sidewalks on all road frontages. As the Town continues to grow, this should provide a substantial increase to the Town's existing infrastructure, which will allow the Town to concentrate on filling gaps.

Another opportunity that will propel the development of a comprehensive pedestrian network is the interest and support of surrounding jurisdictions. Currently, the Town meets on a regular basis with the Town of Stallings, the Town of Matthews, the City of Monroe, and other adjacent municipalities to coordinate planning efforts. This coordination will not only help create a comprehensive pedestrian network, but also a regional system that will extend beyond the Town's limits to connect to additional destinations. A Pedestrian Planning Committee should be formed from this group of municipalities to oversee the development of the regional pedestrian network. This committee could meet bi-monthly to discuss upcoming development projects or opportunities to connect pedestrian facilities. This group could also work together to secure funding for the development of educational programs and for project construction.

5.3 Prioritization of Infrastructure Projects

The Pedestrian System Plan Map (Figure 3.2) that is located in Chapter 3 illustrates all of the proposed pedestrian projects for this plan. There are over 200 projects, including sidewalks, greenways, intersections improvement, and

pedestrian crossings. The Town will be unable to build all of these projects at once due to several factors; mostly economic growth and funding. Therefore it is imperative that each project be assigned a realistic timeframe for implementation. Providing a timeframe for each project gives residents, developers, and adjacent communities an understanding of when the improvements will likely occur. It also provides Town Council and Staff with guidance on budgeting for capital projects, the formulation of work plans, and the pursuit of grants.

To develop this time frame each project was placed into a Project Prioritization Matrix (see Table 4.1 in the Appendix A). The project matrix was then used to apply a series of criteria that divide the projects into short-term, mid-term and long-term priorities. Short-term projects are those that scored the highest (67-100) based on the criteria (see Tables 5.1-5.4). The Town should strive to implement these projects within the next 1-5 years. Mid-term projects had the next highest score (34-66) and should be completed in the next 5-10 years. Finally, long-term project are those that had the lowest scores (0-33) and should be implemented over the next 10-20 years.

The following lists the criteria used to prioritize the projects into short-term, mid-term, and long-term categories.

- Village Center Proximity (within the Center ONLY)
- Downtown District Proximity (Within Downtown District Only)
- Existing School Proximity (1/2-mile radius)
- Existing Greenway Proximity (1/2-mile radius)
- Proposed Greenway Proximity (1/2-mile radius)
- Existing Recreational Proximity (1/2-mile radius)
- Proposed Park Proximity (1/2-mile radius)
- Existing Library Proximity (1/2-mile radius)
- Existing Transit Stop Proximity (1/2-mile radius)
- Existing Major Retail/Commercial Proximity (1/2-mile radius)
- Existing Non-Retail Major Employment Proximity (1/2-mile radius)
- Existing Mixed-Use Proximity (1/2-mile radius)
- Connecting Existing Infrastructure

Each project was given a certain amount of points based on its proximity to the type of destination. Some criteria were given a higher point value based on its importance to the pedestrian network. A comprehensive explanation of the methodology for the project ranking can be found in the Appendix A.

5.4 Project Cost Estimates

To provide the Town with some sense of the cost of these priority projects, a cost was developed by using industry standards for current costs to calculate a "per unit" cost estimate, such as the cost of installing sidewalks per square yard. The total amount for sidewalk improvements included in this plan is approximately $9.7 million and the total cost of the greenways is approximately $33.6 million. While the costs are sure to fluctuate over time, these estimates are meant to provide some perspective on the order of magnitude of these projects' costs. The following tables provide cost estimates for the priority projects and are separated by the facility type: Proposed Sidewalks, Proposed Greenways, Proposed Intersection Improvement Areas, and Proposed Mid-Block Crossings. The projects were separated due to their differences as well as to allow the staff to be able to track the progress of their implementation. The project are listed in order of how they rank based on the criteria that was described in Section 5.3.

Project ID	Project Description	Length (ft.)	Length (mi.)	Approximate Cost
G-17	South Fork Creek Greenway (north of Indian Trail Rd)	5245	0.99	$1,034,000
G-20	South Fork Creek Greenway (Indian Trail Rd to Arrow Dr)	5026	0.95	$990,000
G-16	Crooked Creek Greenway (north of Indian Trail Rd)	2944	0.56	$580,000
G-15	Crooked Creek Greenway (south of Indian Trail Rd)	3658	0.69	$721,000
G-22	Old Monroe Road Connector	1442	0.27	$284,000

Table 5.1: Short-term Greenway Projects

Project ID	Project Description
I-5	Indian Trail Rd / Old Monroe Rd
I-7	Old Monroe Rd / Wesley Chapel Rd
I-6	Weddington-Matthews Rd / Chestnut Ln
I-1	Sardis Church Rd / Unionville-Indian Trail Rd
I-9	Rocky River Rd / Poplin Rd
I-12	Sardis Church Rd / Secrest Short Cut Rd

Table 5.2: Short-term Intersection Improvement Projects

Project ID	Project Description
MBC-4	Indian Trail Rd / South Fork Crk
MBC-6	Matthews-Indian Trail Rd / Crooked Crk

Table 5.3: Short-term Mid-Block Crossing Projects

Project ID	Project Description	Length (ft.)	Length (mi.)	SY	Approximate Cost
Priority Sidewalk Projects					
S-133	Deese Ct (north side)	235	0.04	131	$5,000
S-158	Chestnut Lane Connector (north side)	8,816	1.67	4898	$179,000
S-159	Chestnut Lane Connector (south side)	8,600	1.63	4778	$174,000
S-139	Matthews Indian Trail Rd (west side)	1,891	0.36	1051	$39,000
S-140	Matthews Indian Trail Rd (east side)	1,192	0.23	662	$25,000
S-141	Matthews Indian Trail Rd (east side)	255	0.05	142	$6,000
S-142	Unionville Indian Trail Rd (west side)	2,583	0.49	1435	$53,000
S-143	VFW Ln (west side)	594	0.11	330	$13,000
S-144	VFW Ln (east side)	588	0.11	327	$12,000
S-126	Education St (north side)	518	0.65	288	$11,000
Short-Term Sidewalk Projects					
S-127	Education St (south side)	556	0.68	309	$12,000
S-130	Redskin Trl (south side)	638	0.12	355	$13,000
S-131	South Fork Rd (east side)	1,644	0.71	913	$34,000
S-156	Redskin Trl (north side)	633	0.12	352	$13,000
S-162	Chestnut Lane Connector - Side Road 2 (west side)	1,001	0.19	556	$21,000
S-163	Chestnut Lane Connector - Side Road 2 (east side)	1,009	0.19	561	$21,000
S-120	Navajo Trl (west side)	1,607	0.65	893	$33,000
S-121	Navajo Trl (east side)	1,631	0.68	906	$33,000
S-116	Park Rd (east side)	795	0.15	442	$17,000
S-117	Park Rd (west side)	792	0.15	440	$17,000
S-118	Gribble Rd (east side)	635	0.12	353	$13,000
S-119	Gribble Rd (west side)	641	0.12	356	$13,000
S-124	Navajo Trl (west side)	1,038	0.68	577	$21,000
S-125	Navajo Trl (east side)	954	0.65	530	$20,000
S-128	Park Rd (east side)	2,886	0.63	1603	$59,000
S-129	Park Rd (west side)	1,417	0.37	787	$29,000
S-132	South Fork Rd (west side)	3,774	0.71	2096	$77,000
S-134	Deese Ct (south side)	225	0.04	125	$5,000
S-112	Old Monroe Rd (east side)	4,779	2.12	2655	$97,000
S-122	Navajo Trl (east side)	336	0.65	187	$7,000
S-123	Navajo Trl (west side)	364	0.68	202	$8,000
S-145	Ashland Dr (west side)	695	0.13	386	$15,000
S-146	Ashland Dr (east side)	274	0.05	152	$6,000
S-147	Clear Springs Ct (south side)	339	0.06	188	$7,000
S-148	Clear Springs Ct (north side)	473	0.09	263	$10,000
S-151	Brooke Ln (west side)	424	0.08	236	$9,000
S-152	Brooke Ln (east side)	423	0.08	235	$9,000
S-164	Gribble Road (west side)	1,062	0.20	590	$22,000
S-165	Gribble Road (east side)	1,051	0.20	584	$22,000
S-166	Gribble Road (west side)	426	0.08	237	$9,000
S-167	Gribble Road (east side)	350	0.07	195	$8,000

Table 5.4: Priority and Short-term Sidewalk Projects

These planning level costs are based on 2008 average construction costs throughout the Charlotte region and Mecklenburg County Parks and Recreation Department. An industry-standard construction contingency (30%) was added to the planning level costs. The cost estimates do not include right-of-way acquisition, mobilization, utility relocation, grading or other detailed costs that are associated with the preparation of engineering drawings and/or actual construction bids. A more detailed study should be performed for actual planning, design and construction of these facilities.

5.5 Priority Implementation Actions

In order to begin implementing the recommendations outlined in this report, the Town of Indian will need to take immediate action following the adoption of this plan. This section provides a list of actions that the Town should take to begin implementing policy recommendations and acquiring funding for pedestrian programs and infrastructure improvements.

- *Safe Routes to School (Non-Infrastructure Grants)* - NCDOT annually awards approximately $400,000 toward non-infrastructure improvements, which includes education, encouragement, enforcement, and evaluation programs and activities. Funding requests are due in September, therefore, the Town of Indian Trail should begin to identify opportunities to utilize this funding and be ready to submit their application for non-infrastructure grants in September 2009.
- *Safe Routes to School (Infrastructure Grants)* - NCDOT annually awards approximately $3.5 million toward infrastructure improvements that when implemented, provide an increase in safety, convenience and accessibility for children to walk and/or bicycle to school. Funding requests are due in September, therefore, the Town of Indian Trail should begin to identify potential projects and be ready to submit their application for non-infrastructure grants in September 2009.
- *Update the Land Development Standards* - The Town should begin updating their current Land Development Standards to reflect the recommendations provided in Chapter 6: Standards and Guidelines and those that are located in AASHTO's Guide for the Planning, Design and Operation of Pedestrian Facilities and NCDOT's manual for Planning and Designing Local Pedestrian Facilities.
- *Local Funding* - The Town should begin earmarking local funds specifically for pedestrian infrastructure improvements.

- *Partnerships* – The Town should take an active role in coordination the planning and outreach efforts in the region and explore the possibility of pursuing funding provided by the Carolina Thread Trail for planning and construction of trails.
- *Education/Outreach* – Encourage local groups, events, and programs that promote pedestrian safety, the community's health, a sense of place, and lead to an increased use of pedestrian facilities.

5.6 Operation and Maintenance

Maintenance Issues

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 weeds and grass that were overtaking some of the sidewalks and trip hazards along many of the sidewalks. Over time, this can reduce the amount of usable space on the sidewalk. In order to address this issue and to prevent future maintenance issues, the following recommendations have been developed to guide the Town in the operation and maintenance of existing and future pedestrian facilities.

5.6.1 Responsibilities

The operation and maintenance of the pedestrian system will be a collaborative effort of various departments and organizations including, but not limited to, the Town of Indian Trail, NCDOT, Union County Parks and Recreation, Public Works and Sheriff's Departments. The success of the Pedestrian Plan will rely on the ability of these organizations and departments to cohesively work together on a daily basis. It is imperative that roles and responsibilities for each department and organization are clearly defined.

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 for a timely response to the user. The Pedestrian Plan web page mentioned earlier in the report would be an ideal location for a user feedback form and maintenance request form.

Town of Indian Trail

- *Indian Trail Planning Department* - The Town's Planning Department 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 the proposed project is consistent with the goals of the Pedestrian Plan and the Comprehensive Plan. The Planning Department will also be responsible for updating and maintaining the GIS database for the pedestrian system that has been developed during this plan.
- *Indian Trail Engineering Department* – The Engineering Department will be responsible for ensuring that the pedestrian facilities are being built according to both the Town and NCDOT's facility standards. They should also make sure that proper maintenance is being conducted on all Town and NCDOT roadways. Proper maintenance of these facilities will be critical to the success of the pedestrian program. Currently the Town owns, operates and maintains approximately 7-miles of roadways within the Town limits. As the Town continues to grow and more roadways become their responsibility, it will be important that there are specific roadway maintenance procedures including: repairs, trash removal, mowing and vegetation clearing, edging, and snow and ice removal.
- The Planning and Engineering Departments should work together to update the Town's Land Development Standards to reflect the standards and guidelines contained in this document as well as those provided by AASHTO and NCDOT. They should also collaborate to aggressively pursue the installation and/or acquisition of pedestrian facilities through the site plan review process.

Union County Law Enforcement

- The Town of Indian Trail currently has thirteen full-time police officers or deputies which are contracted through the Union County Sheriff's Office. They also have one part-time police officer for ordinance enforcement and complaints. Every officer should be educated about current North Carolina pedestrian laws and should be given a copy of the "Guide to North Carolina Bicycle and Pedestrian Laws".
- Police officers should be active in educating motorists and pedestrians about pedestrian safety.

- Enforcement of pedestrian and motorist-vehicle laws should be a priority of police officers, especially around schools and areas with high pedestrian traffic.

Union County Public Works Department

- The Union County Public Works Department should be actively involved with the development of any greenway facility that utilizes a sewer easement or other utility easement that is within their jurisdiction.
- During site plan reviews they should strive to provide comments and suggestions that will help promote pedestrian activity to the greatest extent possible
- The Public Works Department should meet with the Town on a regular basis to discuss opportunities for the development of greenways or other types of pedestrian facilities.

Union County Parks and Recreation Department

- The Town of Indian Trail should coordinate with Union County's Parks and Recreation Department on any pedestrian project that connects or potentially connect to a County facility.
- The Parks and Recreation Department should play an active role in the development of a regional greenway system, similar to the Carolina Thread Trail.

NCDOT

- Currently NCDOT owns, operates and maintains all but approximately 7-miles of roadways within Indian Trail. The Town should collaborate with them on a monthly basis to ensure that they are properly maintaining their roadway right-of-way. This should include traffic control devices, signage, crosswalks, sidewalk and ramp repairs, and any other facility that could affect the safety of the pedestrian.
- Similar to Union County Public Works Department, NCDOT should work with the Town during the plan review process to ensure pedestrian facilities are included in all projects.

North Carolina Turnpike Authority

- The North Carolina Turnpike Authority has been working with the Town and others to determine an appropriate alignment for the Monroe Connector/Bypass. As they continue to refine the alignment, they should work with the Town to evaluate and mitigate any negative

impacts that the proposed roadway facility may have on pedestrian connectivity through coordination during the planning, construction, and ongoing maintenance.

Volunteer Efforts

- The Town should be proactive in recruiting volunteers to help fund and/or maintain the pedestrian network. The Town should establish a volunteer funding mechanism that would help implement the pedestrian facilities. The City of Spartanburg has a similar type of program where individuals can make donations to enhance specific spots within the community. More information is available at the following web page: http://www.cityofspartanburg.org/Community_Interest/Spot_of_Pride.htm.
- The Town should also encourage formalize maintenance agreements, such as adopt-a-greenway and adopt-a-road. These types of programs help develop community spirit and pride and can build community support for the program.

5.7 Staffing

As the Pedestrian Plan begins to be implemented, the Town should consider the creation of a Parks and Recreation Department. This department would be responsible for the operation and maintenance of park and greenway facilities for the entire town. Within this department should be an individual who would be in charge of the implementation of the Pedestrian Plan.

The Pedestrian Plan Coordinator's responsibilities would include, but not be limited to the following:

- Apply for funding for education and construction
- Oversee the planning, design and construction of pedestrian facilities
- Lead public outreach
- Ensure planning and engineering staff are up-to-date on pedestrian related issues
- Meet on a quarterly basis with the Pedestrian Plan Implementation Committee to discuss potential projects, educational opportunities, maintenance issues, and other topics related to the successful implementation of the pedestrian plan.


www.pedbikeimages.org / Dan Burden

- Collaborate with surrounding jurisdictions and organizations on the development of a regional pedestrian network, especially with Carolina Thread Trail, who is in the process of developing a regional greenway network.
- Maintain and update the Pedestrian Plan web page

5.8 Funding

Municipalities are constantly looking for ways to pay for pedestrian and bicycle improvements within their communities. Fortunately there are several opportunities that the Town of Indian Trail 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.

5.8.1 Local Funding Opportunities

There are several local funding opportunities that the Town can use to implement the Pedestrian Plan. The following provides a brief description of the types of local funding sources that are available.

General Fund

The Town can use these funds as it chooses; therefore it is recommended that a separate line item be built into this fund for pedestrian related infrastructure and maintenance.

Parks Fund

The Park Fund is a ½ cent property tax that was enacted in 2008. Currently the Town anticipates taking in approximately $142,000 per year. These funds are for the development of park facilities, but should be considered for the implementation of greenways and off-road connectors.

Road Improvement Fund

This is a 2 cent property tax that brought in $460,000 in 2007 and must be tied to a roadway improvement project. These funds are controlled by the Town Council, but can be used for sidewalk, intersection improvements, and mid-block crossings.

Powell Bill Fund

The Powell Bill Funds are provided to the Town by the State based on its miles of maintained roads and population. The Town is able to bring in approximately $500,000-$600,000 per year. These funds can be used for the development of sidewalks, bike lanes and traffic control devices.

5.8.2 State Funding Opportunities

There are several state funding sources that can be used to implement the pedestrian plan. Many of the state funding sources are actually funded by the federal government, but are administered through the state agencies.

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 transportation option for children. It 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 school. The Safe Routes to Schools Program is funded through SAFETEA-LU and currently the State of North Carolina has over $4 million of total funding for this program. The following provides some information about the program and how it can be used to improve pedestrian safety in Indian Trail.

Different types of grants are available through this program; these include Action Plans, Non-Infrastructure Grant Reimbursement, Infrastructure Grant Reimbursement, and Highway Division Funds.

- ***Action Plans*** are awarded in the amount of $15,000-$30,000 to develop plans to improve pedestrian and bicycle safety and usability within a two-mile radius of schools or schools (up to five schools) that are grades K-8. The State has a total of $300,000 in this program to award to communities around the state.
- ***Non-Infrastructure Grants*** are awarded in the amount of $10,000-$50,000 and can able used for pedestrian and bicycle education, encouragement, and enforcement.
- ***Infrastructure Grants*** 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 may range from $100,000 to

$300,000 per project. The total doesn't have to be spent on one project. Any agency that is willing and able to enter into a reimbursement agreement with NCDOT and has the authority to construct and/or install and maintain infrastructure is eligible to apply. Types of projects that are eligible may include sidewalk improvements, crossing improvements, on-street bike and pedestrian improvements, bike parking, traffic calming, and traffic separation devices among others. An adopted Action Plan that identifies needed infrastructure improvements is helpful in obtaining these grants.

- ***Highway Division Funds*** are funds that are allocated to each of NCDOT's 14 Highway Divisions 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 grants range from $10,000-$50,000 and can be used to improve conditions for walking and biking to school. Typically these grants are used for sidewalks, traffic calming, on-road icycling and walking may be included in the Transportation Improvement Program (TIP) as part of the construction of a highway project. The Town coordinates with the Mecklenburg-Union Metropolitan Planning Organization (MUMPO), which is a transportation policy-making organization made up of representatives from local governments and transportation authorities, to identify local and regional transportation needs. Transportation improvement projects can include bicycle and pedestrian projects. These projects are then placed on a list that contains projects from other municipalities in order to compete for potential funding. The timeline for the current STIP is 2009-2015.

Pedestrian projects are eligible for funding from this program as independent projects, such as greenways or off-road connectors which are separate from a roadway construction or widening project. There are two categories for funding of bicycle and pedestrian projects.

- ***Independent Projects*** are those that occur independent of scheduled highway projects. Currently, $1.4 million is annually set aside for pedestrian hazard elimination projects. An additional $200,000 is allocated to the Division of Bicycle and Pedestrian Transportation for projects such as training workshops, pedestrian safety and research projects, and other pedestrian needs statewide.

- ***Incidental Projects*** are projects that occur as part of a scheduled highway improvement project. Pedestrian accomodations are typically included in highway improvement projects.

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 http://www.ncparks.gov/About/grants/partf_main.php.

5.8.3 National Funding Sources

There are a wide range of national funding opportunities that can be used for bicycling and walking facilities. The most common include:

Community Development Block Grants (CDBG)

CDBG are provided through the U.S. Department of Housing and Urban Development (HUD). HUD provides funds for community-based projects, including:

- Commercial district streetscape improvements
- Sidewalk improvements
- Safe routes to school
- Neighborhood-based bicycling and walking facilities that improve local transportation options or help revitalize neighborhoods http://www.hud.gov/offices/cpd/communitydevelopment/programs/

Transportation Enhancement Program

The Transportation Enhancements Program, which is administered through the FHWA, provides funding for the implementation of bicycle and pedestrian facilities; landscaping; and aesthetic improvements. Pedestrian projects that are eligible for funding include sidewalks, greenways, pedestrian safety training and pedestrian related materials. http://www.fhwa.dot.gov/environment/te/

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 has actively pursued and received CMAQ funding to implement sidewalk projects throughout the Town, and should continue to do so in the future. http://www.fhwa.dot.gov/environment/cmaqpgs/

Finally, Funds through federal land agencies such as the National Forest Service, National Park Service or Bureau of Land Management. These funds are primarily for trails and must be used on trails that are located on federal lands.

5.9 Program Monitoring

As the Town begins to implement this Plan it will be critical to monitor its progress. Therefore, it is recommended that the Town develop a system of measuring the performance of the program. These performance measures should be based on safety, usage, education, and level of completion. Data that can be easily accessed and distributed should be used to develop the performance measures. For example, pedestrian safety can be measured by the amount of pedestrian crashes that are recorded by law enforcement. That is why it will be extremely important to ensure that law enforcement is properly recording these incidences, so that the Town can measure the success of certain pedestrian improvements.

The Town should also re-examine and re-prioritize the project listing based on opportunities that may arise, such as donation of land for greenways and parks or proposed development projects.

Chapter 5: Implementation

5.10 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, and the NCDOT TIP process that was mentioned earlier.

5.11 Roadway and Bridge Construction and Reconstruction

The Town should ensure that pedestrian facilities are included as part of any new or reconstructed roadway, bridge, and underpass. All roadway projects should reference the Town's Comprehensive Plan for the appropriate sidewalk width. NCDOT bridge policy states that all new or reconstructed NCDOT bridges shall incorporate pedestrian facilities on both sides of the bridge. The sidewalks should be a minimum of 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.

5.12 Partnerships

There are many local and national organizations that the Town can partner with to assist in the implementation of the Pedestrian Plan. As the Town begins outlining their funding mechanisms to implement the plan, they should begin developing relationships with these organizations. Developing these relationships early on in the process will help gain support for the pedestrian plan. Also as these partnerships are forged, the Town should be developing strategic plans with each of them so that specific roles and responsibilities are clearly understood. The following is a list of some of the various organizations that exist and the role that they could play in the implementation of this plan.

5.12.1 Union County Chamber of Commerce

The Town should work closely with the Union County Chamber of Commerce to promote Indian Trail as a thriving and active community with many pedestrian accommodations. The Town should work with them to develop promotional materials for visitors and residents letting them know that the Town is committed to creating multi-modal opportunities. http://www.unioncountycoc.com/

5.12.2 Indian Trail Athletic Association

The Indian Trail Athletic Association is a local, non-profit, volunteer organization that promotes and sponsors athletic and recreational activities for youth in Indian Trail. This volunteer group could be partnered with to educate youth about the benefits of physical activity. The Town should approach this group to see if volunteers would be willing to start a safe routes to school program. Information about this organization can be found at the following web page: http://www.itaanc.com

5.12.3 Boy Scout Troop 21

Boy scout troops can provide a lot of support and volunteerism to the Town. The Town should coordinate with Troop 21 to encourage their participation in greenway development and trail sign construction and installation. There might be other ways that the boy scouts can assist with the implementation of the pedestrian system. Contact information can be found at the following web page: http://groups.yahoo.com/group/BSATroop/

5.12.4 Mecklenburg County Parks and Recreation Department

The Town should utilize the many resources that Mecklenburg County's Parks and Recreation Department has. Mecklenburg County has developed several miles of greenways and the Town should work with them to develop strategies that the Town can use to develop their own greenways.

http://www.charmeck.org/Departments/Park+and+Rec/Home.htm

5.12.5 Trust for Public Lands

The Trust for Public Land (TPL) is a national, nonprofit, land conservation organization that conserves land for people to enjoy as parks, community gardens, historic sites, rural lands, and other natural places, ensuring livable communities for generations to come. The TPL partners with communities to do the following:

- Help identify lands the community wants to protect
- Develop an acquisition strategy for targeted lands
- Identify sources of public and private funding for conservation
- Independently acquire land from private owners for later purchase by public agencies
- Mobilize public support for land protection

TPL's goal is to enable public agencies to acquire important lands at a fair value. TPL works closely with the agencies' standards and processes for establishing an independent fair market value for targeted properties. TPL acquires land in its own name, assuming all the risks of ownership as well as the costs associated with buying, holding, and selling land. We do not operate as a broker or an agent of governmental agencies, but rather as a principal and risk-taker, supporting the agencies' independent decision-making process. http://www.tpl.org

5.12.6 Utility Companies

Possible partnerships that the Town should consider when developing greenways and other pedestrian facilities are with Piedmont Natural Gas, Duke Power and Union Power Cooperative. Utility companies are continuously partnering with local communities and non-profit trail organizations to allow their right-of-ways to be used for trail development.

5.12.7 Tarheel Trailblazers

The Tarheel Trailblazers are a volunteer based group of 300 men and women who primarily work with local land managers to build and assist in maintaining mountain biking trails all over the Charlotte Metro area. The group typically works on mountain biking trails, however they will get involved in the development of greenways. The Town should consider them as a resource in developing greenways throughout the community. Contact information can be found at http://ww.wtarheeltrailblazers.com/index.cfm

5.12.8 Fit City Challenge

Fit City Challenge is a community level initiative to encourage and empower program participants to increase their level of physical activity and fruit and vegetable consumption. The program goals are to get individuals to walk 5-miles a week and eat 5 fruits and vegetables a day. The Fit City Challenge not only provides promotional and awareness campaigns, it also aims at providing the tools, the motivation and the mentoring for both the individual and the community to succeed in addressing the epidemic of overweight and obesity. For more information contact Dianne Thomas, Director of Fit City Challenge or visit the web page at http://www.fitcitychallenge.org/Default.aspx

5.12.9 National Park Service Community Toolbox

The National Park Service's Rivers, Trails and Conservation Assistance (RTCA) program helps communities work together to improve their special places. They've produced the Community Toolbox, a set of techniques for project development and community participation. All of the techniques are those that the program uses and can recommend. These were originally developed as print pieces and are now in online form.

The Tool Box site is both a resource for any organization collaborating on local projects as well as a model for creating an online kit of how-to materials. The Town should explore the use of this resource to begin developing educational materials for pedestrian safety. http://www.nps.gov/phso/rtcatoolbox/

5.12.10 National Trails Training Partnership (NTTP)

American Trails is pursuing a national infrastructure of trails and greenways that serves a full range of activities. Through education, partnerships, and timely information resources, they promote the creation, conservation and broad enjoyment of quality trails and greenways that offer places of solace, health, fitness, recreation and transportation for all Americans. The organization hosts annual symposiums, works with the Federal government to revitalize national trails, publishes the American Trails Magazine, and is active in a variety of other advocacy actions. http://www.nttp.net/

5.12.11 Rails to Trails Conservancy

Rails-to-Trails Conservancy promotes policy at the national and state levels to create the conditions that make trail building possible. The organization supports action at the local level by providing the information, technical assistance and training that local trail builders need to succeed. http://www.railtrails.org/index/html

5.12.12 Homeowner Associations (HOA)

Homeowner Associations can play an important role in developing a well connected pedestrian network. When a developer has completed a residential development, they turn over the designated common open space to the homeowners. The common open space then becomes the responsibility of the HOA. In many cases the common open space is located along creeks and streams, which can be ideal for the development of greenways. The Town of Indian Trail should work with existing and future HOAs to assess the possibility of using common open space for the development of greenways.

5.12.13 Carolina Thread Trail

The Town should continue to develop a partnership with the Carolina Thread Trail in order to find ways to connect to the proposed fifteen county regional greenway system that is being proposed. Carolina Thread Trail also offers grants for trail planning and construction, and helps promote pedestrian connectivity on a regional scale that could have positive health, community, and economic impacts for the Town.

Chapter 6: Standards & Guidelines

6.1 Overview

This chapter is a compilation of guidelines that adhere to the national 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.

This chapter provides the Town of Indian Trail with an inventory of pedestrian system elements and provides guidance for their development. These guidelines should be used as a guide for the construction of new pedestrian facilities as well as for retrofitting existing pedestrian facilities. These standards and guidelines should only be used as a reference. A licensed engineer and/or landscape architect should be consulted when designing and constructing these facilities. Finally, this chapter is merely an overview of some of the standards and guidelines that are defined by the aforementioned agencies. More information can be found by visiting their respective web pages.

AASHTO: http://www.transportation.org/

MUTCD: http://mutcd.fhwa.dot.gov/pdfs/2003r1/Pdf-index.htm

NCDOT: http://www.ncdot.org/transit/bicycle/projects/resources/projects_peddesign.html

6.2 The Tiered Approach

The Comprehensive Plan that was adopted in 2005 provided specific recommendations for how the Town should grow in the future. These recommendations included strategies for the development of pedestrian facilities throughout the Town. The standards and guidelines provided throughout this chapter have been developed to supplement the recommendations from the

Comprehensive Plan. In order to accomplish this, each standard and guideline will be described through a tiered approach. The tiered approach will provide the Town with guidance as to where each standard and guideline will be used within the Town. The tiered approach has been defined as the following:

- Town Wide Standard
- Downtown Standard
- Village Center Standard
- 74 Corridor Standard

6.2.1 Town Wide Standard

The Town Wide Standard should be applied to all areas within the Town limits that are not within the Downtown, Village Centers or that are no located along the US 74 Corridor. These are the minimum standards that are required by NCDOT and the FHWA.

6.2.2 Downtown Standard

The Downtown Standard takes the Town Wide Standards one step further to enhance the pedestrian environment of the downtown area. The use of the Downtown Standard will be limited by the area defined by the downtown district boundary.

6.2.3 Village Center Standard

The Village Center Standard will be limited to the Village Centers that have been defined in the Town's Comprehensive Land Use Plan. The purpose of the Village Centers is to jointly locate high density residential uses with retail/ commercial uses so that individuals can walk to or make short vehicular trips to their destinations. The purpose of the Village Center Standards is to enhance the pedestrian environment within these specific Village Centers.

6.2.4 US 74 Corridor Standard

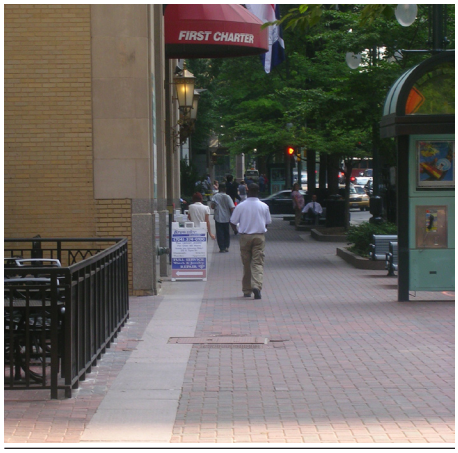
The current walking environment along and across US 74 is unacceptable. Many pedestrians cross this very busy highway each day without any pedestrian facilities, such as crosswalks, pedestrian signals, and curb ramps. The US 74 Corridor Standard will recommend higher visibility standards that will improve pedestrian mobility along and across US 74.

6.3 The Standards and Guidelines

The following section of this chapter provides standards and guidelines for the Town to reference as pedestrian improvements are made. There are many standards and guidelines that are not in this report, but the following are ones that are most commonly used in communities across America.

- Sidewalks
- Crosswalks
- Greenways/Off-Road Connectors
- Curb Ramps
- Curb Extensions/Bulb-outs
- Mid-Block Crossings
- Roundabouts
- Signalization
- Lighting
- Street Furniture
- Signage
- Pedestrian Crossings

6.4 Sidewalks

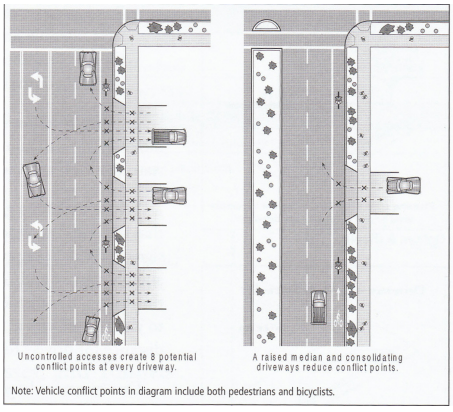


Decorative Sidewalk Treatments

Sidewalks are one of the most important components to the overall pedestrian network. Sidewalks are typically located adjacent to the roadway and often buffered with landscaping. They provide critical connections from residential areas to schools and other types of destinations. According to AASHTO's Guide for the Planning, Design and Operation of Pedestrian Facilities, sidewalks actually benefit both pedestrians and motorists by creating separation between the pedestrian and vehicular travel paths. Sidewalks can vary in size, but should not be installed at a width less than 5-feet. This sidewalk width should be increased in areas where there is a higher volume of pedestrian traffic, especially in the Downtown District and Village Centers. Sidewalks should be installed wherever pedestrian traffic is either anticipated or already occurring. New sidewalks must be accessible to and usable by persons with disabilities (AASHTO: 56).

The Town's UDO requires sidewalks to be built as part of any new development project. New residential and commercial subdivisions are required to install sidewalks on both sides of the street. In addition to the UDO, the Town's Comprehensive Plan defined several street typologies for major roadways within the Town. The street typologies include: 2, 4 and 6-lane thoroughfares, 2, 4 and 6-lane boulevards, 4-lane Village Center Boulevard and a 4-lane freeway. The cross-sections for these street typologies provide guidance on the minimum width of the sidewalk, and can be seen in Appendix D.

6.4.1 Sidewalks and Driveways



Controlled vs. Uncontrolled Access

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 on pages 61-62 of the AASHTO Guide for the Planning, Design, and Operation of Pedestrian Facilities, places the driveway slope in the planting strip. By placing the driveway slope within the planting strip, it allows for a continuous level walkway.

Town Wide Standard

- 5-feet wide (minimum)
- Concrete

Downtown Standard

- 15-20-feet wide (minimum)
- 10-feet for unobstructed pedestrian zone
- 8-10-feet for street trees, furniture, lighting and outdoor seating
- Brick pavers or similar treatment is preferred for enhanced aesthetics

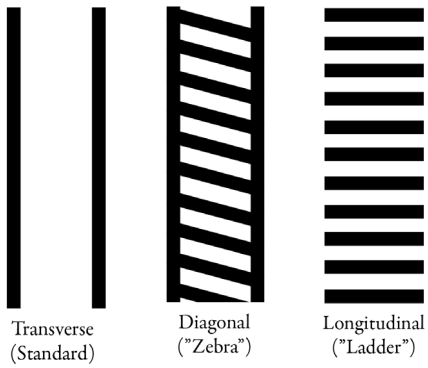
Village Center Standard

- 15-20-feet wide (minimum)
- 10-feet for unobstructed pedestrian zone
- 8-10-feet for street trees, furniture, lighting and outdoor seating
- Brick pavers or similar treatment is preferred for enhanced aesthetics

74 Corridor Standard

- 10-feet wide (minimum)
- Concrete

6.5 Crosswalks



Striped Crosswalks

Transverse Crosswalk

Crosswalks are one of many tools that facilitate pedestrians safely across roadways. Crosswalks serve two purposes: (1) to inform motorists of the location of a pedestrian crossing so that they have time to lawfully yield to a crossing pedestrian; and (2) to assure the pedestrian that a legal crosswalk exists at a particular location (AASHTO: 80). 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 (AASHTO: 81).

6.5.1 Crosswalk Types

There are three basic types of marked crosswalks. Transverse striping is the first. It is the most commonly used and the least expensive of the three crosswalks. These are typically used in areas where there is low traffic volumes and vehicular speeds. The other two include the "Ladder" and the "Zebra", which are used in areas where traffic volumes are higher, vehicle speeds are greater and where there is a greater presence of pedestrian traffic. These treatments are frequently used to increase the visibility of the pedestrian crossing, making pedestrians more visible to the motorist. In some areas, such as downtown or Village

Chapter 6: Standards & Guidelines

Centers, colored or textured crosswalks may be used to enhance the aesthetics, but are should be given to these types of treatments to ensure that materials are used that are smooth, non-slip, and visible (AASHTO: 82). Crosswalks located at stop or signal-controlled intersections should incorporate the use of stop bars. Stop bars should be placed between 4-feet and 10-feet in advance and parallel to the nearest crosswalk.

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 (AASHTO: 82).

The Manual on Uniform Traffic Control Devices or MUTCD is published by the FHWA and defines the standards used by road managers nationwide. It provides guidance for the installation and maintenance of all traffic control devices on all streets and highways. The MUTCD should be referenced for all new and retrofitted crosswalks within the Town. Please visit the MUTCD web page at http://mutcd.fhwa.dot.gov/index.htm for more information.

Ladder Crosswalk

Ladder Crosswalk

Zebra Crosswalk

Town Wide Standard

- Transverse striping
- 6-feet wide (minimum)

Downtown

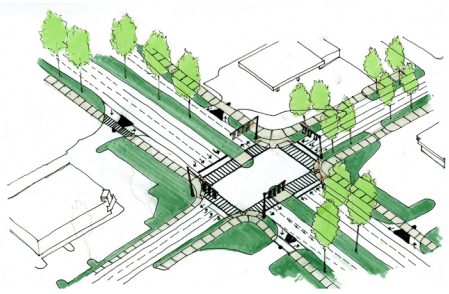
- Stamped asphalt with striping along the edges is the preferred treatment
- 8-10-feet wide

Village Center

- Stamped and colorized asphalt with striping along the edges is preferred
- 8-10-feet wide

74 Corridor

- 10-feet wide (minimum)
- Ladder or Zebra striping
- Utilize the "nose" of the landscaped median for a pedestrian refuge



Indian Trail Road at US 74

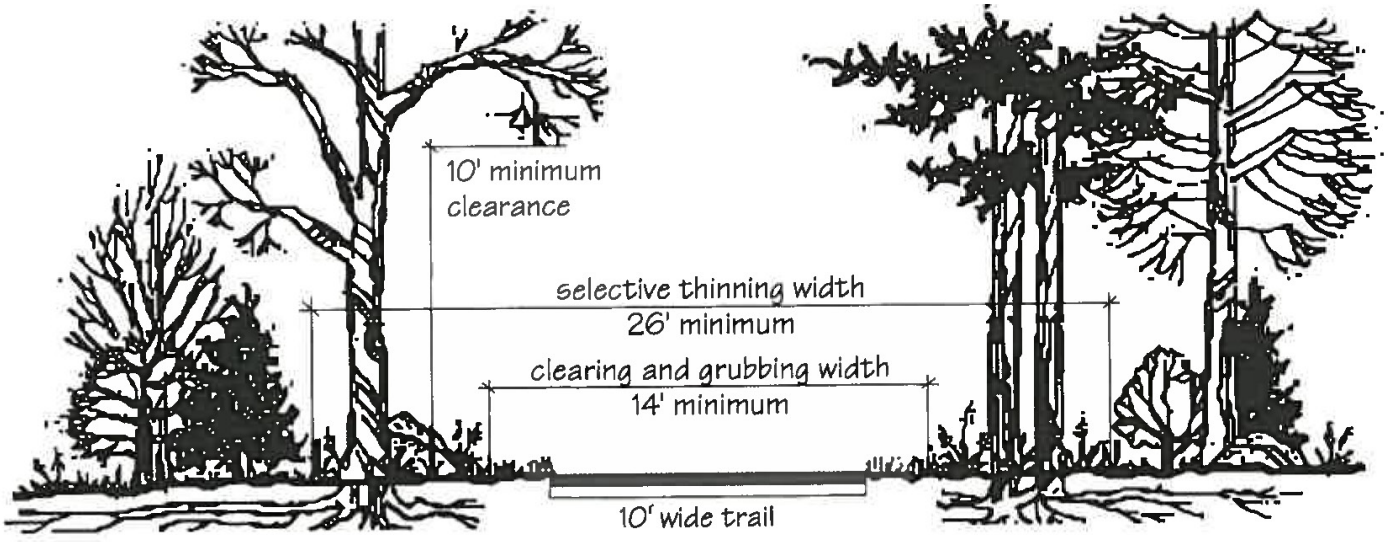
6.6 Greenways/Off-Road Connectors

Greenways (also known as shared-use paths) are vegetated natural buffers that can help improve water quality, reduce the impacts of flooding, and provide wildlife habitat. Greenways 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 bladders 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.

Off-Road Connection

The Pedestrian System Plan Map (Figure 3.2) recommends two types of trails; greenways and off-road connectors. Greenways are the primary trail corridors that make long connections throughout the Town, whereas off-road connectors are secondary trails that make shorter connections from the primary corridors to areas of interest, such as residential subdivisions or commercial areas.

Greenway trails should be a minimum of 10-feet wide and include 2-foot graded shoulders. This applies for both greenways and off-road connectors. In areas with higher user volumes it's recommended that the width be increased to 12-feet (AASHTO: 71). **Town Wide Standard**



Greenway Clearance Zones

- 10-feet wide
- Wayfinding signage at intersections
- Historic interpretive signage
- Pedestrian lighting at intersections
- Benches

Downtown

- 12-feet wide
- Wayfinding and informational signage at intersections
- Pedestrian lighting at intersections
- Landscape enhancements at entrances
- Benches

Village Center

- 12-feet wide
- Wayfinding and informational signage at intersections
- Pedestrian lighting at intersections
- Benches

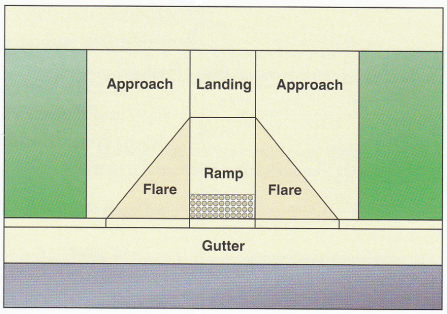
74 Corridor

- 12-feet wide
- Wayfinding and informational signage at intersections
- Pedestrian lighting at intersections
- Benches

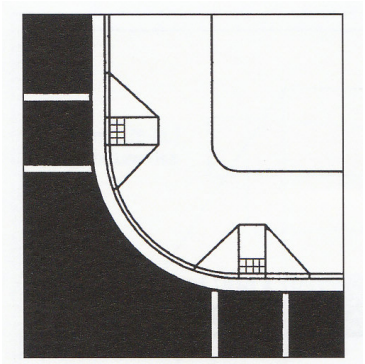
6.7 Curb Ramps

Curb ramps are an essential component of the pedestrian system and are used at intersections and mid-block crossings to facilitate pedestrians 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 crosswalks, landing areas, and other parts of the pedestrian route (AASHTO: 83).

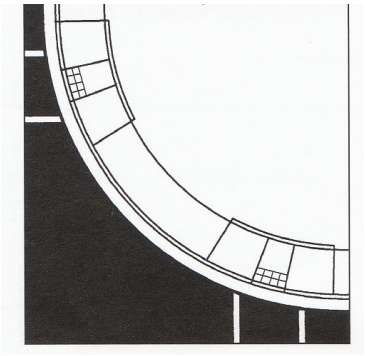
Curb Ramp with Truncated Dome



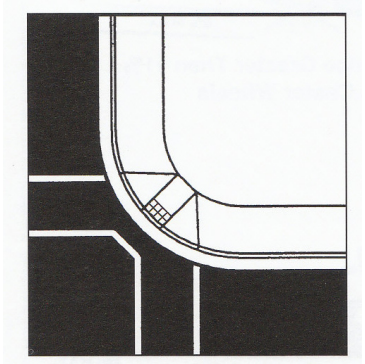
Curb Ramp Components



Perpendicular



Parallel



Diagonal

Standard components that go into the design and construction of a curb ramp include ramps, landings, flares, approaches and 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 (AASHTO: 88). 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 (84-85) and the ADAAG (http://www.access-board.gov/adaag/html/adaag.htm).

There are three basic types of curb ramps: perpendicular, parallel, and diagonal. The use of these types of ramps is typically dictated by the roadway that they are located on.

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).

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.

Town Wide Standard

- Perpendicular ramps are the preferred treatment

- Parallel are acceptable where traffic patterns and right of way alignments prohibit the use of perpendicular
- Diagonal are acceptable only when perpendicular or parallel ramps are not feasible.

Downtown

- Perpendicular ramps are the preferred treatment
- Parallel are acceptable where traffic patterns and right of way alignments prohibit the use of perpendicular
- Diagonal are acceptable only when perpendicular or parallel ramps are not feasible.

Village Center

- Perpendicular ramps are the preferred treatment
- Parallel ramps are an acceptable treatment if perpendicular ramps are not feasible

74 Corridor

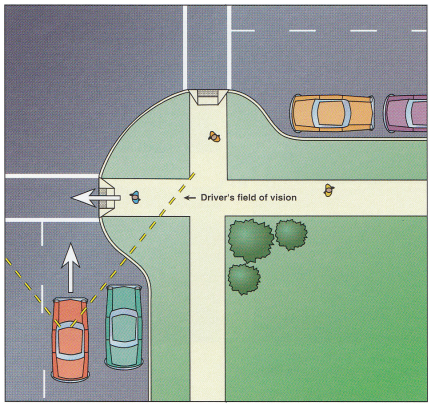
- Parallel ramps

6.8 Curb Extensions/Bulb-outs

Shorter crossing distances for pedestrians allow for less exposure time and reduce the mid-block locations or at intersections to reduce the crossing distance.

They extend the sidewalk or curb line out into the parking lane, which reduces the overall street width. Curb extensions improve pedestrian crossings by reducing the pedestrian crossing distance. By reducing the crossing distance it improves the ability of pedestrians and motorists to make eye contact, which creates a safer environment for everyone.

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 (http://www.walkinginfo.org).



Curb Extension – Plan View

Town Wide Standard

- Curb extensions should only be considered where on-street parking is allowed

Downtown

- Curb extensions should be the preferred treatment if on-street parking is allowed

Village Center

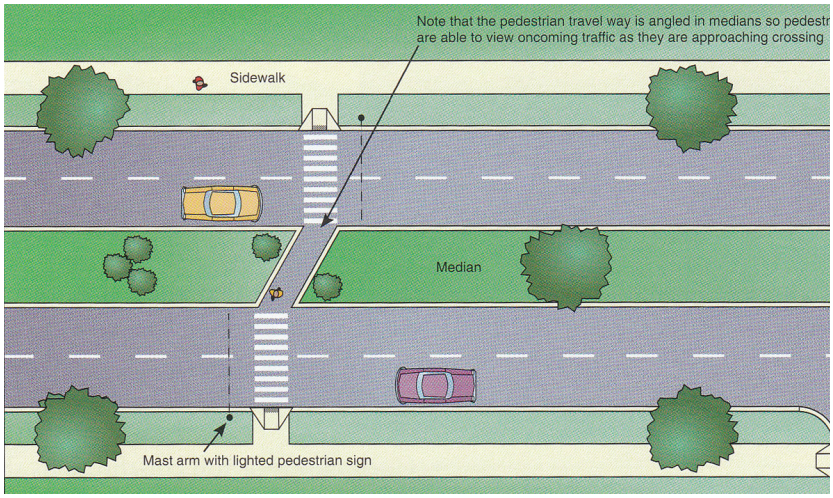
- Curb extensions should be the preferred treatment if on-street parking is allowed

74 Corridor

- Curb extensions are not recommended

6.9 Mid-block Crossings

Mid-block crossings are useful where the distance between intersections is relatively far apart or where pedestrian related land uses are between intersections. They can also be used where greenway trails cross the roadway. One specific location within Indian Trail where a mid-block crossing could be appropriate (only if traffic counts would allow and NCDOT approves) is along Wesley Chapel Stouts Road near Sun Valley High School. Many children and even adults cross Wesley Chapel Stouts to get from the school to the retail located at the corner of Old Monroe Road and Wesley Chapel Stouts. Mid-block crossings allow pedestrians to cross one direction of traffic at a time and provide a refuge island halfway across the street.



Components of a Mid-block Crossing

Chapter 6: Standards & Guidelines

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 (AASHTO: 89). 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. 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

Signalized Mid-block Crossing

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 (AASHTO: 91). The 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" treatment for the crosswalks is recommended for the crosswalks to improve visibility of the crossing. The "cut-through" within the median should be angled. The angle will guide the pedestrian's eyes toward oncoming vehicular traffic and improve visibility for both the pedestrian and motorist. Landscaping could be incorporated into the median, but should not be placed in such a way that reduces visibility.

Non-signalized Mid-block Crossing

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.

<u>Town Wide Standard</u>

- Signalized and non-signalized mid-block crossings are appropriate near schools, major retail destinations and greenway/trail crossings

Downtown

- Distance between intersections within the downtown district will dictate the use of mid-block crossings

Village Center

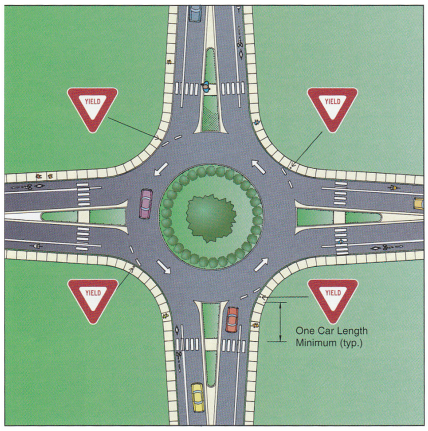
- Signalized and non-signalized mid-block crossings are appropriate near schools, major retail destinations and greenway/trail crossings

74 Corridor

- Due to traffic volumes and speeds, it is not recommended that at-grade mid-block crossings be used along US 74. However, if a mid-block crossing is desired, it is recommended that pedestrian overpasses be utilized to facilitate pedestrians across US 74. For more information about pedestrian overpasses or above-grade crossings, please see the Crossings standards located at the end of this chapter.

6.10 Roundabouts

The use of roundabouts is becoming increasingly popular to maintain free-flowing vehicular traffic at an intersection. Roundabouts also improve pedestrian and vehicular safety and access by reducing vehicle speeds at intersections. Often times they are used to replace traffic signals, which lowers the operating and maintenance costs of the transportation system. However, there are some challenges to facilitating pedestrians through a roundabout, specifically those with visual impairments. Unlike a signalized intersection, roundabouts don't have traffic signals, pedestrian actuated signals that stop traffic. Therefore individuals with visual impairments have a hard time determining when there is a gap between vehicles so that they can cross the road. There are no audible cues that provide guidance as to when to cross the roadway.



Typical Roundabout Design

Roundabouts facilitate motorists in a counterclockwise motion through the intersection. Approaching traffic must yield to vehicles already moving through the roundabout. Pedestrians are facilitated through roundabouts at "splitter islands" located prior to the actual intersection. Crosswalks to the splitter islands should be offset a minimum of 20-feet from the yield line for each f the approach intersections (AASHTO: 80). Yield signs must be located a minimum of one car length from the pedestrian crossing. Pedestrian crossing signs should also be placed in conjunction with the crosswalk.

Town Wide Standard

- The standard design of roundabouts is sufficient for the town wide standard

Downtown

- Enhance standard roundabout design with landscaping and lighting

Village Center

- Enhance standard roundabout design with landscaping and lighting

74 Corridor

- Roundabouts are not applicable to US 74.

6.11 Signalization

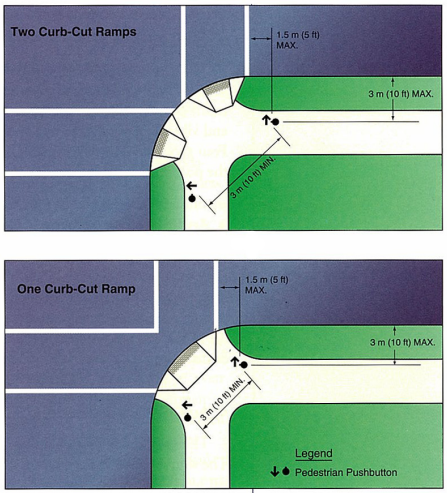
Traffic signals assign the right-of-way to vehicular and pedestrian traffic. Traffic signals benefit pedestrians by providing stopping vehicular traffic and allowing them to cross the street safely. When traffic signals are installed and timed correctly, they can reduce improve the efficiency of the 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 (AASHTO: 103)

6.11.1 Pedestrian Signal Controls

Pedestrian signals controls or pushbuttons 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 pushbuttons 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

Pedestrian Pushbutton Example



Pedestrian Pushbutton Control Locations

Typical Signal Head

WALK

DON'T WALK

The mounting height for pedestrian pushbutton detectors should not be higher than 3.5-feet as defined by AASHTO and the MUTCD. This allows an individual 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 and can found at http://mutcd.fhwa.dot.gov/pdfs/2003r1/Ch4.pdf.

6.11.2 Pedestrian Indicators

Pedestrian signals heads provide signal indications for directing pedestrian traffic. These indicators consist of illuminated symbols of a WALKING PERSON (symbolizing WALK) and an UPRAISED HAND (symbolizing DON'T WALK) (AASHTO: 104). 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 MUTCD states the following regarding pedestrian signal head indicators:

- The steady WALKING PERSON signal indication means that a pedestrian facing the signal indication may start to cross the roadway in the direction of the indication, possibly in conflict with turning vehicles.
- The flashing UPRAISED HAND signal indication means that a person shall not start to cross the roadway in the direction of the signal indication, but that any person who has already started to cross on a steady WALKING PERSON signal indication shall proceed out of the roadway.
- A steady UPRAISED HAND signal indication means that a pedestrian shall not enter the roadway in the direction of the signal indication.

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 the pedestrian regulatory signs R10-2a, R10-4b, and R10-3b to educate pedestrians who may not comprehend the meaning of the pedestrian indicators.

Town Wide Standard

- Pedestrian signals that provide a countdown for crossing time are the preferred treatment

Downtown

- Signal head indicators should be mounted on the same pole as the traffic signal pole
- Signal head indicators should be painted the same color as the traffic signal pole to create a consistent look throughout downtown.

Village Center

- Signal head indicators should be painted yellow for higher visibility

74 Corridor

- Signal head indicators should be painted yellow for higher visibility

6.12 Lighting

The proper lighting of any pedestrian facility will greatly enhance the safety and experience for the pedestrian. Improper lighting can discourage the use of the pedestrian system. Lighting not only improves the overall safety, but is also improves vehicle and pedestrian operations (NCDOT: 92). Lighting should be placed wherever there is significant pedestrian activity, particularly around schools, parks and residential areas. It is also very important to ensure that all pedestrian crossings are well lit and signed so that motorists are aware of the crossing.

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.

Town Wide Standard

- Roadway lighting along all roadways
- Pedestrian-scale lighting should be provided at all pedestrian crossings

Downtown

- Roadway lighting along all roadways
- Decorative pedestrian-scale lighting should be used throughout downtown

Pedestrian Scale Lighting

- Utilize light poles for displaying thematic banners or holiday lighting

Village Center

- Decorative pedestrian-scale lighting should be used throughout downtown

74 Corridor

- Sufficient roadway lighting along the roadway corridor will increase pedestrian visibility.

6.13 Street Furniture

Trash Receptacle

Street Planters

Residents that participated in the planning process often stated that they wanted a unique, attractive, and well lit walking environment. Based on those criteria they were only able to list one or two places within the entire Town were those qualities existed.

Many factors contribute to create an environment that makes walking easy, convenient, and desirable. In general, areas that experience high volumes of pedestrian traffic have the following: a good mix of land uses, continuous sidewalks, safe and convenient crossings, pedestrian-scale lighting, and a pleasant visual environment.

It is recommended that as the Town continues to grow and more pedestrian facilities are constructed, attention should be given to providing various types of street furniture. and light posts. All of these things add to the overall walking environment, which will encourage people to walk more. Street furniture is very site specific and should complement its surrounding environment. Therefore, specific recommendations for the Town Wide, Village Center, and US 74 Corridor Standards, have not been provided. However, street furniture in Downtown should be consistent. It is recommended that the Town develop a comprehensive list of street furniture typologies that it will used throughout downtown. This list should include at a minimum, benches, pedestrian-scale lighting, wayfinding signage, planters, banner arms, traffic signal mast arms and poles, trash receptacles, and newspaper stands.

6.14 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 two types of signs that are used to direct pedestrian and vehicular traffic: regulatory and wayfinding.

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 (NCDOT: 19). The MUTCD provides specific guidance on the use of regulatory signs. Illustrated below 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/2003r1/Ch2B.pdf.

Wayfinding signs should be installed in location where multiple destinations exist. Wayfinding signage should be easy to understand and should orient and communicate in a clear and concise manner. The Town should incorporate the new Town logo and branding into the design of wayfinding signage.

Pedestrian Regulatory Signs

Indian Trail Conceptual Wayfinding Signage

6.15 Pedestrian Crossings

When a pedestrian walkway cannot cross the roadway at-grade, structures are usually needed to allow users to cross under or over the roadway. These types of structures are often referred to as overpasses and underpasses. Each of have their advantages and disadvantages. Below provides a brief description of each and the advantages and disadvantages associated with them

6.15.1 Underpasses

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 vertical clearance of a minimum of 10-feet, which is half the height that is required for overpasses clearances. Other advantages of underpasses are that they 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.

Pedestrian Underpass

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. 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. If equestrian use is anticipated, the underpass should have a minimum vertical clearance of 10-feet (AASHTO: 98).

Pedestrian Overpass

6.15.2 Overpasses/Pedestrian Bridge

Another approach to providing access across major roadways and railroads is to utilize pedestrian overpasses or bridges. Pedestrian overpasses or bridges can be on roadway such as US 74. Pedestrian bridges are often designed to not only provide access across major roadways and railroads, but to create gateways for communities. However, pedestrian overpasses require steps or ramps to get pedestrians up to the overpass. Many times providing ramps or steps can be challenging, especially if acquisition of private property is required. Overpasses

need to either 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). Similar to underpasses, overpasses or bridges must maintain specific vertical and horizontal widths. The minimum inside width of a 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 (AASHTO: 97).

Pedestrian Overpass – Signature Bridge

Town Wide Standard

- The use of pedestrian bridges or overpasses is discouraged. Pedestrian activity should occur at ground to the greatest extent possible.

Downtown

- The use of pedestrian bridges or overpasses is discouraged. Pedestrian activity should occur at ground to the greatest extent possible.

Village Center

- The use of pedestrian bridges or overpasses is discouraged. Pedestrian activity should occur at ground to the greatest extent possible.
- Underpasses/Overpasses should be considered for greenway access or other pedestrian walkways

74 Corridor

- Pedestrian bridges or overpasses over US 74 should be considered if safe crossings at signalized intersections cannot be achieved.

APPENDIX A

Methodology Documentation

- All proposed sidewalk, greenway, intersection improvement, and mid-block crossing projects were assigned specific project IDs.
- In ArcView, the 'Select By Location' feature was executed in order to select all parcels in the Parcel shapefile that contain destination points from the Destinations shapefile.
- All proposed sidewalk, greenway, intersection improvement, and mid-block crossing projects were buffered by ½ mile in order to locate destinations within a ½ mile radius of the proposed project.
- If a project's ½ mile buffer intersected parcels that contain destinations, then the project was given points based on which types of destinations were within the intersected parcels. The destination types used in our prioritization methodology and their corresponding points are:

    - Existing School – 5 points
    - Existing Recreational Destination – 4 points
    - Existing Library – 3 points
    - Existing Transit Stop – 3 points
    - Existing Major Retail/Commercial Destination – 2 points
    - Existing Non-Retail Major Employment – 1 point
    - Existing Mixed-Use Destination – 3 points

- Proposed sidewalk, greenway, intersection improvement, and mid-block crossing projects also received points for being within the center of a Village Center, within the Downtown District, and for connecting existing infrastructure.
- A proposed project was given 5 points if it intersects or is located within the center of a Village Center.
- A proposed project also received 5 points if it intersects or is inside the Downtown District polygon.
- All existing sidewalks were buffered by 100-feet to account for the fact that all sidewalks were drawn in by hand and their endpoints may not be exact. Any proposed sidewalk, greenway, intersection improvement, or mid-block crossing project that intersected this 100-foot buffer was awarded 2 points for connecting existing infrastructure.

Table 3.1: Project Prioritization Matrix

Project ID	Project Name	From	To	Length (feet)	Length (miles)	SY	Approximate Cost	Project Ranking
Short-Term Priority - Sidewalks								
S-132	South Fork Rd (west side)	Indian Trail Rd	Old Monroe Rd	3,774	0.71	2096.46	$77,000	100
S-158	Chestnut Lane Connector (north side)	Chestnut Lane	US 74	8,816	1.67	4897.87	$179,000	90
S-159	Chestnut Lane Connector (south side)	Chestnut Lane	US 74	8,600	1.63	4777.76	$174,000	90
S-139	Matthews Indian Trail Rd (west side)	Proposed new location 4-lane facility	Indian Trail Rd	1,891	0.36	1050.81	$39,000	86
S-140	Matthews Indian Trail Rd (east side)	Proposed new location 4-lane facility	Existing sidewalk	1,192	0.23	662.28	$25,000	86
S-141	Matthews Indian Trail Rd (east side)	Existing sidewalk	Indian Trail Rd	255	0.05	141.64	$6,000	86
S-142	Unionville Indian Trail Rd (west side)	Indian Trail Rd	Plyer Rd	2,583	0.49	1434.84	$53,000	86
S-143	VFW Ln (west side)	Indian Trail Rd	VFW Ln terminus	594	0.11	330.26	$13,000	86
S-144	VFW Ln (east side)	Indian Trail Rd	VFW Ln terminus	588	0.11	326.65	$12,000	86
S-126	Education St (north side)	Navajo Trl	Gribble Rd	3,415	0.65	1897.44	$70,000	83
S-127	Education St (south side)	Navajo Trl	Gribble Rd	3,588	0.68	1993.55	$73,000	83
S-130	Redskin Trl (south side)	Park Rd	Redskin Trl terminus	638	0.12	354.52	$13,000	83
S-131	South Fork Rd (east side)	Indian Trail Rd	South to Indian Trail Town Limits	3,774	0.71	2096.46	$77,000	83
S-156	Redskin Trl (north side)	Park Rd	Redskin Trl terminus	633	0.12	351.57	$13,000	83
S-162	Chestnut Lane Connector - Side Road 2 (west side)	Chestnut Lane Connector		1,001	0.19	556.13	$21,000	83
S-163	Chestnut Lane Connector - Side Road 2 (east side)	Chestnut Lane Connector		1,009	0.19	560.64	$21,000	83
S-120	Navajo Trl (west side)	Indian Trail Rd	Park Rd	3,415	0.65	1897.44	$70,000	79
S-121	Navajo Trl (east side)	Indian Trail Rd	Park Rd	3,588	0.68	1993.55	$73,000	79
S-116	Park Rd (east side)	Navajo Trl	Indian Trail Rd	795	0.15	441.76	$17,000	76
S-117	Park Rd (west side)	Navajo Trl	Indian Trail Rd	792	0.15	440.11	$17,000	76
S-118	Gribble Rd (east side)	North of Navajo Trl	South of Education St	635	0.12	352.76	$13,000	76
S-119	Gribble Rd (west side)	North of Navajo Trl	South of Education St	641	0.12	356.20	$13,000	76
S-124	Navajo Trl (west side)	Gribble Rd	Education St	3,588	0.68	1993.55	$73,000	76
S-125	Navajo Trl (east side)	Gribble Rd	Education St	3,415	0.65	1897.44	$70,000	76
S-128	Park Rd (east side)	Indian Trail Rd	South to Indian Trail Town Limits	3,338	0.63	1854.29	$68,000	76
S-129	Park Rd (west side)	Redskin Trl	South to Indian Trail Town Limits	1,934	0.37	1074.32	$40,000	76
S-133	Deese Ct (north side)	South Fork Rd	Deese Ct terminus	235	0.04	130.73	$5,000	76
S-134	Deese Ct (south side)	South Fork Rd	Deese Ct terminus	225	0.04	125.20	$5,000	76
S-112	Old Monroe Rd (east side)	Midway Dr	West of South Fork Rd	11,194	2.12	6219.04	$227,000	72
S-122	Navajo Trl (east side)	Park Rd	Gribble Rd	3,415	0.65	1897.44	$70,000	69
S-123	Navajo Trl (west side)	Park Rd	Gribble Rd	3,588	0.68	1993.55	$73,000	69

Project ID	Project Name	From	To	Length (feet)	Length (miles)	SY	Approximate Cost	Project Ranking
S-145	Ashland Dr (west side)	Indian Trail Rd	Glenridge Cr	695	0.13	386.30	$15,000	69
S-146	Ashland Dr (east side)	Clear Springs Ct	Glenridge Ct	274	0.05	152.33	$6,000	69
S-147	Clear Springs Ct (south side)	Ashland Dr	Clear Springs Ct terminus	339	0.06	188.09	$7,000	69
S-148	Clear Springs Ct (north side)	Ashland Dr	Clear Springs Ct terminus	473	0.09	262.54	$10,000	69
S-151	Brooke Ln (west side)	Indian Trail Rd	Brooke Ln terminus	424	0.08	235.81	$9,000	69
S-152	Brooke Ln (east side)	Indian Trail Rd	Brooke Ln terminus	423	0.08	234.74	$9,000	69
S-164	Gribble Road (west side)	Chestnut Lane Connector	Navajo Trail / Park Road	1,062	0.20	590.07	$22,000	69
S-165	Gribble Road (east side)	Chestnut Lane Connector	Navajo Trail / Park Road	1,051	0.20	583.86	$22,000	69
S-166	Gribble Road (west side)	Gribble Road Relocation	North of Navajo Trail	426	0.08	236.91	$9,000	69
S-167	Gribble Road (east side)	Gribble Road Relocation	North of Navajo Trail	350	0.07	194.58	$8,000	69

Short-Term Priority - Greenway

G-17		Arrow Dr	Indian Trail Rd	5245.22	0.99		$1,034,000	100
G-20		Indian Trail Rd	SE along South Fork Crk to Indian Trail Town Limit	5026.06	0.95		$990,000	100
G-22		Old Monroe Rd (west of South Fork Rd)	Southwest	1,441.52	0.27		$284,000	100
G-16		Indian Trail Rd	CSX Railroad	2943.50	0.56		$580,000	96
G-15		US 74 (west side)	Indian Trail Rd	3657.67	0.69		$721,000	77

Short-Term Priority - Intersection Improvement

I-5	Indian Trail Rd / Old Monroe Rd							100
I-7	Old Monroe Rd / Wesley Chapel Rd							100
I-6	Weddington-Matthews Rd / Chestnut Ln							86
I-1	Sardis Church Rd / Unionville-Indian Trail Rd							71
I-9	Rocky River Rd / Poplin Rd							71
I-12	Sardis Church Rd / Secrest Short Cut Rd							71

Short-Term Priority - Mid-Block Crossing

MBC-4	Indian Trail Rd / South Fork Crk							100
MBC-6	Matthews-Indian Trail Rd / Crooked Crk							73

Project ID	Project Name	From	To	Length (feet)	Length (miles)	SY	Approximate Cost	Project Ranking
Mid-Term Priority - Sidewalks								
S-135	Indian Trail Rd (south side)	West of Coventry Dr	Existing sidewalk	374.45	0.07	208.03	$8,000	62
S-149	Glenridge Ct (north side)			366.34	0.07	203.52	$8,000	62
S-150	Glenridge Ct (south side)			371.68	0.07	206.49	$8,000	62
S-67	Wesley Chapel-Stouts Rd (west side)	US 74	East of Old Monroe Rd	5981.71	1.13	3323.17	$121,000	59
S-68	Wesley Chapel-Stouts Rd (east side)	US 74	East of Old Charlotte Hwy	5862.21	1.11	3256.78	$119,000	59
S-110	Old Monroe Rd (west side)	Mustang Dr	South of Brandon Oaks Pkwy	5425.94	1.03	3014.41	$110,000	59
S-111	Old Monroe Rd (east side)	North of Wesley Chapel-Stouts Rd	Midway Dr	6415.24	1.22	3564.02	$130,000	59
S-23	Poplin Rd (north side)	Hartis Rd	Rocky River Rd	3647.80	0.69	2026.56	$74,000	55
S-52	Unionville Indian Trail Rd (north side)	Faith Church Rd	Sardis Church Rd	4961.58	0.94	2756.44	$101,000	55
S-153	Post Office Dr (west side)	Indian Trail Rd	Loop back around to Post Office Dr	2991.58	0.57	1661.99	$61,000	52
S-22	Poplin Rd (south side)	Hartis Rd	Rocky River Rd	3658.47	0.69	2032.48	$74,000	48
S-69	Old Charlotte Hwy (east side)	South of Wesley Chapel-Stouts Rd	Indian Trail Town Limits	4669.68	0.88	2594.27	$95,000	48
S-70	Old Charlotte Hwy (west side)	South of Wesley Chapel-Stouts Rd	Indian Trail Town Limits	4060.11	0.77	2255.62	$83,000	48
S-87	Wesley Chapel Rd (west side)	Treeside Ln	Old Monroe Rd	1990.16	0.38	1105.65	$41,000	48
S-98	Waxhaw Indian Trail Rd (east side)	North of Colton Ridge Dr	North of Nagle Dr	2814.99	0.53	1563.88	$57,000	48
S-99	Waxhaw Indian Trail Rd (west side)	South of Pioneer Rd	Old Monroe Rd	2393.90	0.45	1329.94	$49,000	48
S-100	Chestnut Ln (south side)	Old Monroe Rd	Potter Rd	5274.05	1.00	2930.03	$107,000	48
S-101	Chestnut Ln (north side)	Old Monroe Rd	Potter Rd	5224.48	0.99	2902.49	$106,000	48
S-108	Antioch Church Rd (east side)	Existing sidewalk	East of Weddington Matthews Rd	561.02	0.11	311.68	$12,000	48
S-136	Indian Trail Rd (south side)	Old Monroe Rd	Existing sidewalk	298.92	0.06	166.07	$7,000	48
S-137	Old Monroe Rd (east side)	Indian Trail Rd	Existing sidewalk	273.23	0.05	151.79	$6,000	48
S-114	Gribble Rd (west side)	North of South Fork (stream)	Proposed new location 4-lane facility	3804.25	0.72	2113.47	$77,000	45
S-115	Gribble Rd (east side)	Indian Trail Town Limits	Proposed new location 4-lane facility	1600.99	0.30	889.44	$33,000	45
S-2	Indian Trail Fairview Rd (West Side)	US 74	South of Van Buren Ave	1673.61	0.32	929.78	$34,000	41
S-6	Indian Trail Fairview Rd (North Side)	Idlewild Rd	West of Faith Church Rd	2235.56	0.42	1241.98	$46,000	41
S-13	Sardis Church Rd (east side)	Burning Ridge Dr	Unionville Indian Trail Rd	2454.37	0.46	1363.54	$50,000	41
S-47	US 74 / Independence Blvd (east side)	Indian Trail Town Limits	Unionville Indian Trail Rd	5049.39	0.96	2805.21	$103,000	41
S-48	US 74 / Independence Blvd (east side)	Unionville Indian Trail Rd	Faith Church Rd	4003.04	0.76	2223.91	$81,000	41
S-64	US 74 / Independence Blvd (west side)	Northern Indian Trail Town Limits	Unionville Indian Trail Rd	4606.65	0.87	2559.25	$94,000	41
S-65	US 74 / Independence Blvd (west side)	Unionville Indian Trail Rd	Wesley Chapel-Stouts Rd	7493.52	1.42	4163.07	$152,000	41
S-107	Chestnut Ln (south side)	West of Red Barn Trail	East of Fairforest Dr	1062.47	0.20	590.26	$22,000	41
S-160	Chestnut Lane Connector - Side Road 1 (west side)	Chestnut Lane Connector	Williams Rescue Road	527.24	0.10	292.91	$11,000	41
S-161	Chestnut Lane Connector - Side Road 1 (east side)	Chestnut Lane Connector	Williams Rescue Road	516.36	0.10	286.87	$11,000	41
S-4	Indian Trail Fairview Rd (East Side)	Third Ave	Idlewild Rd	5561.95	1.05	3089.97	$113,000	38

Project ID	Project Name	From	To	Length (feet)	Length (miles)	SY	Approximate Cost	Project Ranking
S-8	Indian Trail Fairview Rd (South Side)	Faith Church Rd	Proposed 4-lane suburban boulevard	9231.95	1.75	5128.86	$187,000	38
S-9	Indian Trail Fairview Rd (North Side)	East of Hemby Commons Pkwy	Cunningham Ln	2427.63	0.46	1348.69	$50,000	38
S-20	Poplin Rd (west side)	Unionville Indian Trail Rd	West of Sedgewick Rd	5697.16	1.08	3165.09	$116,000	38
S-49	US 74 / Independence Blvd (east side)	Faith Church Rd	Sardis Church Rd	3212.90	0.61	1784.94	$65,000	38
S-51	Unionville Indian Trail Rd (north side)	Younts Rd	Faith Church Rd	3615.71	0.68	2008.73	$74,000	38
S-1	Indian Trail Fairview Rd (East Side)	US 74	Woodlawn Ln	2936.14	0.56	1631.19	$60,000	35
S-11	Sardis Church Rd (West Side)	US 74	Crooked Creek	2099.62	0.40	1166.45	$43,000	35
S-12	Sardis Church Rd	US 74	Crooked Creek	2091.52	0.40	1161.95	$43,000	35
S-14	Unionville Indian Trail Rd (south side)	Sardis Church Rd	Secrest Short Cut Rd	2899.14	0.55	1610.63	$59,000	35
S-15	Unionville Indian Trail Rd (north side)	Sardis Church Rd	Secrest Short Cut Rd	2847.49	0.54	1581.94	$58,000	35
S-16	Unioville Indian Trail Rd (north side)	Secrest Short Cut Rd	Poplin Rd	687.19	0.13	381.77	$14,000	35
S-32	Secrest Short Cut Rd (west side)	North Fork	Unionville Indian Trail Rd	3395.37	0.64	1886.32	$69,000	35
S-34	Secrest Short Cut Rd (west side)	Unionville Indian Trail Rd	South Fork	6708.94	1.27	3727.19	$136,000	35
S-40	Beacon Hills Rd (west side)	Clearwater Dr	Rockwell Dr	2766.18	0.52	1536.77	$56,000	35
S-42	Clearwater Dr (west side)	Hemby Wood Dr	Red Lantern Dr	2808.09	0.53	1560.05	$57,000	35
S-62	Rocky River Rd (west side)	Town Limits	Gray Farm Rd	4613.14	0.87	2562.86	$94,000	35
S-63	Rocky River Rd (east side)	North Fork	Southern Town Limits	2802.69	0.53	1557.05	$57,000	35
S-90	Brandon Oaks Pkwy (west side)	Summerston Ln	Old Monroe Rd	2508.99	0.48	1393.88	$51,000	35

Mid-Term Priority - Greenway/Off-Road Connector

G-12		Faith Church Rd	Sardis Church Rd	3845.52	0.73		$758,000	62
G-14		US 74 (west side)	CSX Railroad	2777.18	0.53		$548,000	46
G-21		South of Waxhaw Indian Trail Rd/Old Monroe	South	2714.41	0.51		$535,000	46
C-13		Rogers Rd	Northeast	3076.63	0.58		$607,000	46
G-27		Brandon Oaks Pkwy	Old Monroe Rd	4534.37	0.86		$894,000	46
G-31	Crooked Creek Greenway	Wesley Chapel Stouts Rd	US 74	6233.93	1.18		$1,228,000	46
G-42	North Fork Greenway	Stinson Hartis Road	Indian Trail Fairview Road	7613.97	1.44		$1,500,000	46
G-2		Indian Trail Fairview Rd	South	5488.05	1.04		$1,081,000	42
G-13		Faith Church Rd	US 74 (east side)	3410.17	0.65		$672,000	42
C-4		Faith Church Rd	Thicketty Pkwy	1763.06	0.33		$348,000	42
C-5		Thicketty Pkwy	Proposed Greenway (G-2)	1057.14	0.20		$209,000	42
G-10				915.02	0.17		$181,000	39
G-27		Brandon Oaks Pkwy	NE to Indian Trail Town Limits	2325.19	0.44		$458,000	39
G-33	Crooked Creek Greenway	Crooked Creek	Unionville Indian Trail Rd	4237.96	0.80		$835,000	39
C-6		Faith Church Rd	Proposed Greenway (G-2)	2451.00	0.46		$483,000	35
G-29	West Fork-Twelvemile Creek Greenway	Delamere Dr	Chestnut Ln	4167.52	0.79		$821,000	35
G-39	Crooked Creek Greenway	G-13	Unionville Indian Trail Rd	1130.09	0.21		$223,000	35
G-40	Crooked Creek Greenway	Unionville Indian Trail Rd	Younts Rd	2059.60	0.39		$406,000	35

Project ID	Project Name	From	To	Length (feet)	Length (miles)	SY	Approximate Cost	Project Ranking
Mid-Term Priority - Intersection Improvement								
I-3	US74 / Unionville-Indian Trail Rd							50
I-10	Chestnut Ln / Potter Rd							50
I-11	Wesley Chapel Rd / Rogers Rd							50
I-4	US 74 / Indian Trail Rd							43
I-2	US 74 / Wesley Chapel Stouts Rd							36
I-8	Indian Trail-Fairview Rd / Idlewild Rd							36
Mid-Term Priority - Mid-Block Crossing								
MBC-2	Indian Trail Rd / Crooked Crk							62
MBC-3	Chesnut Connector / South Ford Crk							58
MBC-16	Wesley Chapel Rd / Sun Valley H.S.							54
MBC-29	Indian Trail Fairview Rd / G-2							42
MBC-15	Sardis Church Rd / Unionville-Indian Trail Rd							39
MBC-7	Faith Church Rd / Crooked Crk							35
MBC-23	US 74 / South Fork Crk							35
MBC-28	Unionville Indian Trail Rd / Crooked Crk							35

Table 3.1: Project Prioritization Matrix

Project ID	Project Name	From	To	Length (feet)	Length (miles)	SY	Approximate Cost	Project Ranking
Long-Term Priority - Sidewalks								
S-3	Indian Trail Fairview Rd (East Side)	Woodlawn Ave	Third Ave	2701.83	0.51	1501.02	$55,000	31
S-5	Indian Trail Fairview Rd (West Side)		Idlewild Rd	2961.52	0.56	1645.29	$60,000	31
S-10	Indian Trail Fairview Rd (South Side)	Cunningham Ln		5022.34	0.95	2790.19	$102,000	31
S-21	Poplin Rd (east side)	Unionville Indian Trail Rd	Hartis Rd	6386.13	1.21	3547.85	$130,000	31
S-45	Stinson Hartis Rd (west side)	Indian Trail Fairview Rd	Indian Trail Town Limits	5443.79	1.03	3024.33	$111,000	31
S-46	Stinson Hartis Rd (east side)	Indian Trail Fairview Rd	Indian Trail Town Limits	5515.70	1.04	3064.28	$112,000	31
S-53	Faith Church Rd (east side)	Pin Oak Dr	South Indian Trail Town Limits	2476.15	0.47	1375.64	$51,000	31
S-96	Potter Rd (west side)	Chestnut Ln	South of Moorefield Dr	6261.56	1.19	3478.64	$127,000	31
S-97	Potter Rd (east side)	Chestnut Ln	South of Robert Ln	5602.10	1.06	3112.28	$114,000	31
S-102	Chestnut Ln (south side)	Potter Rd	Stonehill Ln	2180.61	0.41	1211.45	$45,000	31
S-103	Chestnut Ln (north side)	Potter Rd	Stonehill Ln	2189.61	0.41	1216.45	$45,000	31
S-104	Chestnut Ln (south side)	Stonehill Ln	West of West Fork - Twelvemile Creek	2444.55	0.46	1358.08	$50,000	31
S-105	Chestnut Ln (north side)	Stonehill Ln	West of Revelwood Dr	1759.12	0.33	977.29	$36,000	31
S-138	Old Monroe Rd (west side)	North of Poplar Glen Dr	South of K-Line Dr	1140.35	0.22	633.53	$24,000	31
S-169	Younts Road (north side)	Indian Trail Fairview Rd	Unionville Indian Trail Rd	4035.87	0.76	2242.15	$82,000	31
S-168	Younts Road (south side)	Indian Trail Fairview Rd	Existing sidewalk	5227.67	0.99	2904.26	$106,000	31
S-26	Idlewild Rd (east side)	North of Crismark Dr	Mill Grove Rd	4484.50	0.85	2491.39	$91,000	24
S-27	Idlewild Rd (west side)	North of Crismark Dr	Millgrove Rd	4748.97	0.90	2638.32	$97,000	24
S-41	Hemby Wood Dr (west side)	Mill Grove Rd	Rockwell Dr	3119.96	0.59	1733.31	$64,000	24
S-43	Woodlawn Ln (east side)	Brown Ln	Indian Trail Fairview Rd	2192.17	0.42	1217.87	$45,000	24
S-44	Woodlawn Ln (west side)	Brown Ln	Indian Trail Fairview Rd	2210.31	0.42	1227.95	$45,000	24
S-81	Rogers Rd (west side)	South of Meriwether Lewis Trl	Paperbark Dr	1222.70	0.23	679.28	$25,000	24
S-82	Rogers Rd (west side)	Wesley Chapel-Stouts Rd	Meriwether Lewis Trl	3764.36	0.71	2091.31	$77,000	24
S-83	Wesley Chapel Rd (east side)	Dresden Ct	South of Hilton Way	517.30	0.10	287.39	$11,000	24
S-84	Wesley Chapel Rd (west side)	South of Dresden Ct	Hilton Way	410.75	0.08	228.19	$9,000	24
S-85	Wesley Chapel Rd (west side)			115.51	0.02	64.17	$3,000	24
S-86	Wesley Chapel Rd (west side)	North of Holly Villa Circle	Indian Trail Town Limits	95.67	0.02	53.15	$2,000	24
S-94	McLendon Rd (south side)	Potter Rd	Lindewood Dr	3689.70	0.70	2049.83	$75,000	24

Table 3.1: Project Prioritization Matrix

Project ID	Project Name	From	To	Length (feet)	Length (miles)	SY	Approximate Cost	Project Ranking
S-95	McLendon Rd (north side)	Potter Rd	Lindewood Dr	3689.70	0.70	2049.83	$75,000	24
S-106	Potter Rd (west side)	Chestnut Ln	North to Indian Trail Town Limits	638.17	0.12	354.54	$13,000	24
S-7	Indian Trail Fairview Rd (South Side)	Idlewild Rd	Faith Church Rd	2544.67	0.48	1413.71	$52,000	17
S-17	Unionville Indian Trail Rd (south side)	Secrest Short Cut Rd	Poplin Rd	680.38	0.13	377.99	$14,000	17
S-18	Unionville Indian Trail Rd (south side)	Poplin Rd	Rocky River Rd	6352.31	1.20	3529.06	$129,000	17
S-19	Unionville Indian Trail Rd (north side)	Poplin Rd	Rocky River Rd	6439.64	1.22	3577.58	$131,000	17
S-28	Secrest Short Cut Rd (west side)	Mill Grove Rd	Faith Church Rd	5287.71	1.00	2937.61	$107,000	17
S-29	Secrest Short Cut Rd (east side)	Mill Grove Rd	Faith Church Rd	5245.91	0.99	2914.40	$107,000	17
S-33	Secrest Short Cut Rd (east side)	South of North Fork	Unionville Indian Trail Rd	3051.91	0.58	1695.51	$62,000	17
S-35	Secrest Short Rd (east side)	Unionville Indian Trail Rd	South Fork	6635.39	1.26	3686.33	$135,000	17
S-36	Stinson Hartis Rd (west side)	Indian Trail Fairview Rd	Crooked Creek	1993.65	0.38	1107.58	$41,000	17
S-37	Stinson Hartis Rd (east side)	Indian Trail Fairview Rd		2343.47	0.44	1301.93	$48,000	17
S-39	Red Lantern Rd (west side)	Mill Grove Rd	Red Lantern Rd terminus	3579.71	0.68	1988.73	$73,000	17
S-50	US 74 / Independence Blvd (east side)	Sardis Church Rd	Indian Trail Town Limits	6960.82	1.32	3867.12	$141,000	17
S-66	US 74 / Independence Blvd (west side)	Wesley Chapel-Stouts Rd	Brickyard Rd	7450.04	1.41	4138.91	$151,000	17
S-88	Brandon Oaks Pkwy (west side)	Farmingham Ln	Summerston Ln	3195.06	0.61	1775.03	$65,000	17
S-89	Brandon Oaks Pkwy (east side)			257.25	0.05	142.91	$6,000	17
S-113	Gribble Rd (west side)			294.45	0.06	163.58	$6,000	14
S-31	Secrest Short Cut Rd	Faith Church Rd (west side)	Southwind Trail Dr	2724.48	0.52	1513.60	$56,000	7
S-79	Rogers Rd (south side)	Damascus Dr	East of Capstone Dr	792.24	0.15	440.13	$17,000	7
S-80	Rogers Rd (south side)	Paperbark Dr	Damascus Dr	1544.35	0.29	857.97	$32,000	7
S-91	Waxhaw Indian Trail Rd (west side)	South of Chandler Forest Ct	South to Indian Trail Town Limits	2359.81	0.45	1311.01	$48,000	7
S-92	Fincher Rd (west side)	Potter Rd	East of Short Fincher Rd	2486.09	0.47	1381.16	$51,000	7
S-93	Fincher Rd (south side)	East of Davis Mine Creek	Waxhaw Indian Trail Rd	2205.81	0.42	1225.45	$45,000	7
S-109	Wesley Chapel Rd (west side)	Hawfield Rd	Tan Yard Rd	3556.30	0.67	1975.72	$72,000	7

Project ID	Project Name	From	To	Length (feet)	Length (miles)	SY	Approximate Cost	Project Ranking
S-155	Waxhaw Indian Trail Rd (east side)	Colton Ridge Dr	South to Indian Trail Town Limits	2290.23	0.43	1272.35	$47,000	7
S-24	Chamber Dr (west side)	US 74	North of East Fork Ln	3175.41	0.60	1764.12	$65,000	0
S-25	Chamber Dr (east side)	US 74	North of East Fork Ln	3175.41	0.60	1764.12	$65,000	0
S-30	Secrest Short Cut Rd (east side)	Faith Church Rd	Southwind Trail Dr	2908.96	0.55	1616.09	$59,000	0
S-38	Rockwell Dr (south side)	Idlewild Rd	Red Lantern Rd	1844.85	0.35	1024.92	$38,000	0
S-54	Howey Bottoms Rd (west side)	Northern Indian Trail Town Limits	Lawyers Rd	8914.57	1.69	4952.54	$181,000	0
S-55	Lawyers Rd (west side)	Nortnern Indian Trail Town Limits	South Indian Trail Town Limits	1186.92	0.22	659.40	$25,000	0
S-56	Lawyers Rd (east side)	Northern Indian Trail Town Limits	South Indian Trail Town Limits	646.33	0.12	359.07	$14,000	0
S-57	Rocky River Rd (east side)	Northern Indian Trail Town Limits	Southern Indian Trail Town Limits	2031.24	0.38	1128.47	$42,000	0
S-58	Rocky River Rd (west side)	Northern Indian Trail Town Limits	Southern Indian Trail Town Limits	716.79	0.14	398.22	$15,000	0
S-59	Lawyers Rd (east side)	Town Limits	Town Limits	376.70	0.07	209.28	$8,000	0
S-60	Lawyers Rd (south side)	Town Limits	Town Limits	1778.11	0.34	987.84	$36,000	0
S-61	Lawyers Rd (northeast side)	Town Limits	Howey Bottoms Rd	989.34	0.19	549.63	$21,000	0
S-71	Old Charlotte Hwy (east side)	West of Brickyard Rd	Indian Trail Town Limits	682.51	0.13	379.17	$14,000	0
S-72	Old Charlotte Hwy (west side)	North of Brickyard Rd	Indian Trail Town Limits	692.72	0.13	384.84	$15,000	0
S-73	Old Charlotte Hwy (east side)	Tower Industrial Dr	Rogers Rd	1000.44	0.19	555.80	$21,000	0
S-74	Old Charlotte Hwy (west side)	Indian Trail Town Limits	East of Tower Industrial Dr	1010.64	0.19	561.47	$21,000	0
S-75	Hayes Rd (south side)	Old Charlotte Hwy	Railroad tracks	2559.92	0.48	1422.18	$52,000	0
S-76	Hayes Rd (north side)	Old Charlotte Hwy	Railroad tracks	2559.92	0.48	1422.18	$52,000	0
S-77	Hayes Rd (east side)	Railroad tracks	Location of proposed 2-lane minor thoroughfare	942.83	0.18	523.79	$20,000	0
S-78	Hayes Rd	Railroad tracks	Location of proposed 2-lane minor thoroughfare	931.25	0.18	517.36	$19,000	0
S-154	US 74 / Independence Blvd (east side)	South of Brickyard Rd	South to Indian Trail Town Limits	743.43	0.14	413.02	$16,000	0
S-157	US 74 / Independence Blvd (west side)	South of Brickyard Rd	South to Indian Trail Town Limits	1267.41	0.24	704.12	$26,000	0

Project ID	Project Name	From	To	Length (feet)	Length (miles)	SY	Approximate Cost	Project Ranking
Long-Term Priority - Greenway/Off-Road Connector								
G-18		East of Daylilly Rd	East	1180.53	0.22		$233,000	31
G-11		Sardis Church Rd	East to Indian Trail Town Limits	1471.57	0.28		$290,000	27
G-30	East Fork-Twelvemile Creek Greenway	South of Streamlet Way	Rodgers Rd	5817.58	1.10		$1,146,000	27
G-5		Secrest Short Cut Rd	East of Secrest Short Cut Rd	5806.18	1.10		$1,144,000	23
G-6		Secrest Short Cut Rd	West of Secrest Short Cut Rd	2599.87	0.49		$513,000	23
G-7				447.12	0.08		$89,000	23
C-8		North of Backstretch Blvd	Proposed Greenway (G-4/G-5)	1335.55	0.25		$264,000	23
C-9		Backstretch Blvd	Proposed Greenway (G-5)	827.09	0.16		$163,000	23
C-10		Belmont Stakes Ave	Proposed Greenway (G-5)	303.94	0.06		$60,000	23
G-41	Crooked Creek Greenway	G-40	Brown Ln	2802.30	0.53		$552,000	23
G-8		North of Little Rock Ct	East to Indian Trail Town Limits	2680.94	0.51		$529,000	19
G-9	Crooked Creek Greenway	North of Little Rock Ct	West to Indian Trail Town Limits	4593.67	0.87		$905,000	19
G-19		Gribble Rd	West	1189.32	0.23		$235,000	19
G-34	Crooked Creek Greenway	Stevens Mill	Town boundary - just west of Hillcrest Circle	4754.09	0.90		$937,000	19
G-35	Crooked Creek Greenway	Town boundary - just west of Hillcrest Circle	Indian Trail Fairview Rd	2212.98	0.42		$436,000	19
G-38	East Fork-Twelvemile Creek Greenway	Rogers Rd	North of Devon Dr	4017.58	0.76		$792,000	19
G-3				569.40	0.11		$113,000	15
G-4		Rocky River Rd	West of Rocky River Rd	7193.71	1.36		$1,417,000	15
C-7		Sedgewick Dr	Proposed Greenway (G-4)	852.57	0.16		$168,000	15
G-36	Crooked Creek Greenway	Stallings proposed trail	G-34	2610.34	0.49		$515,000	15
G-24		Old Monroe Rd at Moore Pl	Southwest	2752.72	0.52		$543,000	12
C-16		South of Beaver Creek Ct	Price Mill Creek	158.92	0.03		$32,000	12
C-17		South of Honey Tree Ln	Proposed Greenway (G-27)	180.25	0.03		$36,000	12
G-23				3684.10	0.70		$726,000	8
G-25		Price Mill Creek	Colton Ridge Dr	1696.10	0.32		$335,000	8
G-26		Colton Ridge Dr	SE to Indian Trail Town Limits	1648.18	0.31		$325,000	8
G-28		Indian Trail Town Limits	NE to Brandon Oaks Pkwy	5724.75	1.08		$1,128,000	8
C-3		Cornflower Dr	Proposed Greenway (G-1)	1929.54	0.37		$381,000	8
G-37	East Fork-Twelvemile Creek Greenway	Town limits	Rogers Rd	4771.46	0.90		$940,000	8
G-1	Goose Creek Greenway			7868.42	1.49		$1,550,000	0
C-1		Crismark Dr	NE to Proposed Greenway (G-1)	1699.57	0.32		$335,000	0
C-2		South of Crismark Dr	North of Red Lantern Rd	871.99	0.17		$172,000	0
C-11		Suburban Ln	Proposed Greenway (G-8)	529.36	0.10		$105,000	0
C-12		Little Rock Ave	Proposed Greenway (G-8)	397.31	0.08		$79,000	0
C-14		East of Old Surrey Ct	Proposed Off-Road Connector (C-15)	519.11	0.10		$103,000	0
C-15		West of Wispering Wind Ln	Proposed Greenway (G-27)	656.61	0.12		$130,000	0
C-18		Blackvine Dr	Proposed Greenway (G-8)	407.81	0.08		$81,000	0
G-32	Crooked Creek Greenway	US 74	Crooked Creek	3757.15	0.71		$741,000	0

Table 3.1: Project Prioritization Matrix

Project ID	Project Name	From	To	Length (feet)	Length (miles)	SY	Approximate Cost	Project Ranking
Long-Term Priority - Mid-Block Crossing								
MBC-24	Old Monroe Rd / Price Mill Crk							31
MBC-5	South Fork Crk / Future Rd							27
MBC-8	Sardis Church Rd / Crooked Crk							27
MBC-1	Polplin Rd / Bonterra Dr							23
MBC-12	Mill Grove Rd / Red Lantern Rd							19
MBC-14	Indian Trail-Fairview Rd / Cunningham Ln							19
MBC-16	Wesley Chapel Rd / Sun Valley E.S.							19
MBC-11	North Fork Crk / Future Road							15
MBC-20	Chestnut Ln / West Fork - Twelvemile Creek							15
MBC-25	Old Monroe Rd / Moore Pl							12
MBC-10	Brandon Oaks Pkwy / Price Mill Crk							8
MBC-13	Mill Grove Rd / Future School							8
MBC-21	Delamere Dr / West Fork - Twelvemile Creek							8
MBC-22	Waxhaw Indian Trail Rd / Chandler Forest Ct							8
MBC-27	Streamlet Way / East Fork - Twelvemile Crk							8
MBC-9	South Fork Crk / Future Rd							0
MBC-17	US 74 / Crooked Creek							0
MBC-18	Secrest Short Cut Rd / South Fork Crk							0
MBC-19	Secrest Short Cut Rd / North Fork Crk							0
MBC-26	Rogers Rd / East Fork - Twelvemile Crk							0

APPENDIX B

Appendix B

Stakeholder Interview Questionnaire 1

1. How often do you walk?

- ☐ Daily
- ☐ Weekly
- ☐ Monthly
- ☐ Not at all

2. If you walk what is it for?

- ☐ Exercise
- ☐ Transportation
- ☐ Errands
- ☐ Recreational/Leisure

3. If it were easy to walk around Indian Trail, where would you walk to?

- ☐ Coffee shop
- ☐ Grocery store
- ☐ Bookstore
- ☐ Park or Greenway
- ☐ Others?

4. Which of the following improvements would most encourage you to increase your walking:

- ☐ Better crosswalks (raised, stamped asphalt, signals, striped)
- ☐ More sidewalks
- ☐ Wider sidewalks (wider than 5-feet)
- ☐ Longer 'Walk' signals at intersections
- ☐ Pedestrian Refuges at major road crossings
- ☐ Off-road trails and/or greenways)
- ☐ Better lighting along pedestrian routes
- ☐ More pedestrian connections between businesses and neighborhoods
- ☐ Mid-block crossings
- ☐ Better handicap facilities (ramps)
- ☐ Landscaping along the roadway or trail (trees, flowers, etc)
- ☐ Street furniture (benches, water fountains, etc.)
- ☐ Others?

Stakeholder Interview Questionnaire 2

5. **Name some of the best places you can get to now on foot in Indian Trail.**

6. **Do you know of any areas where people have worn paths or formed pedestrian connections that the Town could improve?**

7. **Is there any particular improvement of any sort that you would like to see made?**

8. **How satisfied are you with our current pedestrian infrastructure?**

9. **What do you see as the Town's greatest strength in terms of walkability?**

10. **What do you see as the Town's greatest weakness in terms of walkability?**

11. **Do you feel that the Town's pedestrian infrastructure promotes safety?**

Appendix B

Stakeholder Interview Questionnaire

General Notes

- The intersection of Old Charlotte and Wesley Chapel is very dangerous. There is a lot of foot traffi c, especially from Sun Valley High School, that walks to Harris Teeter and other retail/ commercial areas.
- There are a lot of people who cross Wesley Chapel at mid-block just south of the intersection of Wesley Chapel and Old Charlotte, especially after football games.
- The intersection of Wesley Chapel and Old Charlotte should be a priority.
- There is a proposed development that will be located just behind the Lowe's Home Improvement store, located at the intersection of Highway 74 and Wesley Chapel.
- There needs to be a sidewalk along the east side of Waxhaw Indian Trail Road south of Old Monroe Road to the Town's municipal Boundary.
- There needs to be sidewalks along Faith Church Road from Unionville Indian Trail north to Lake Park Recreation Park.
- A great connection could be made if there were sidewalk along the entire length of Younts Road from Walmart to Indian Trail Fairview Road.
- Sidewalks along Stinson Hartis would connect an existing destination (Extreme Ice) with a future destination (Carolina Courts).
- The Town of Stallings and the Town of Indian Trail need to work together to provide connections to destinations such as Colonel Francis Beatty Park.

Public Workshop Questionnaire

General Notes

- Destinations are too far away to walk
- Roads are dangerous for pedestrians
- More roads need to be widened
- No continuous sidewalks
- Poor lighting
- A good destination is the intersection of Wesley Chapel and Old Monroe
- There is some good lighting that makes it safe to walk
- Shopping centers, gyms, and schools would be nice to walk to
- More sidewalks, street lights, and crosswalks are needed

Public Workshop Questionnaire - Results

1) Please rank the importance of the following types of projects [(1) not important — (5) very important]

	Particpant																						
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	TOTAL
Safety (lighting, crosswalks, pedestrian signals, etc.) along existing facilities	5	1	5	5	5	4	5	1	5	5	5	5	5	2	2	4	5	5	5	5	4	1	**89**
Providing continuous sidewalks (connecting patches of sidewalks	4	4	5	5	5	5	5	1	4	5	5	3	2	4	4	3	5	5	3	4	3	3	**87**
Adding new sidewalks and greenways	3	3	4	4	5	5	5	1	4	5	5	3	3	3	3	2	0	5	3	4	4	2	**76**
Making the walking environment enjoyable and functional (improving / adding lighting, street furniture, parks, enhancing landscaping)	5	2	3	3	3	4	5	1	5	5	5	3	4	1	1	1	5	5	4	4	5	4	**78**

For each question please check the answer that best describes your experience with walking in Indian Trail

2) I find it easy to walk to my destination(s)

Agree	Disagree	Neutral	TOTAL
1	20	1	22

3) I find it difficult to walk to my destination(s)

Agree	Disagree	Neutral	TOTAL
19	0	1	20

4) I feel that it is unsafe to walk to my destination(s)

Agree	Disagree	Neutral	TOTAL
16	4	1	21

5) I feel that it is safe to walk to my destination(s)

Agree	Disagree	Neutral	TOTAL
4	16	0	20

6) I want to see more pedestrian connections to places that I want to go

Agree	Disagree	Neutral	TOTAL
19	1	2	22

7) I want to see more pedestrian connections to places that I want to go

Agree	Disagree	Neutral	TOTAL
18	0	2	20

APPENDIX C

Terminology

Americans with Disabilities Act of 1990 (ADA): Federal law prohibiting discrimination against people with disabilities. It requires public entities and public accommodations to provide accessible accommodations for people with disabilities.

Americans with Disabilities Act Accessibility Guidelines (ADAAAG): Provides scoping and technical specifications for new construction and alternations undertaken by entities covered by the ADA.

Crosswalk: Is the part of a roadway at an intersection that is included within the extensions of the lateral lines of the sidewalks on opposite sides of the roadway, measured from the curbline, or in the absence of curbs from the edges of the roadway, or in the absence of a sidewalk on one side of the roadway, the part of the roadway included within the extension of the lateral lines of the sidewalk at right angles to the centerline. Also, a crosswalk is any portion of a roadway at an intersection or elsewhere that is distinctly indicated for pedestrian crossing by lines or other markings on the surface.

Curb Extension (Bulb-Out): A section of sidewalk extending into the roadway at an intersection or midblock crossing that reduces the crossing distance for pedestrians and can help reduce traffic speeds.

Curb Ramp: A combined ramp and landing to accomplish a change in level at a curb. This element provides street and sidewalk access to pedestrians using wheelchairs.\

Detectable Warning: Standardized surface feature built in, or applied to, walking surfaces or other elements to warn pedestrians with vision impairments of hazards on sidewalk and or loading platform, such as the curb line or drop-off.

Diagonal Curb Ramp: Curb ramp positioning at the apex of the curb radius at an intersection, bisecting the corner angle.

Driveway Crossing: Extension of sidewalk across a driveway that means the requirements of ADAAG.

Flare: Sloped surface that flanks a curb ramp and provides a graded transition between the ramp and the sidewalk. Flares bridge differences in elevation and are intended to prevent ambulatory pedestrians from tripping. Flares are not considered part of the accessible route.

Grade-Separated Crossing: A facility such as an overpass or underpass that allows pedestrians and motor vehicles to cross each other at different levels.

Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA): Federal legislation authorizing highway, highway safety, transit, and other surface transportation programs from 1991through 1997. It provided new funding opportunities for sidewalks,

shared use paths, and recreational trails. ISTEA was superseded by the Transportation Equity Act for the 21st Century in 1998.

Median Island: An island in the center of a road that physically separates the directional flow of traffic and can provide pedestrians with a place of refuge and reduce the crossing distance between safety points.

Midblock Crossing: A crossing point positioned within a block rather than at an intersection

Minimum Clearance Width: The narrowest point on a sidewalk or trail. A minimum clearance width is created when obstacles, such as utility poles or tree roots, protrude into the sidewalk and reduce the design width.

Parallel Curb Ramp: Curb ramp design where the sidewalk slopes down on either side of the landing. Parallel curb ramps require users to turn before enter the street.

Pedestrian: Is a person afoot or in a wheelchair

Pedestrian-Actuated Traffic Control: A pushbutton or other control operated by pedestrians designed to interrupt the prevailing signal cycle to permit pedestrians to cross a signalized intersection or midblock crossing.

Perpendicular Curb Ramp: Curb ramp design where the ramp path is perpendicular to the edge of the curb.

Ramp: Is a sloped transition between two elevation levels.

Right-of-Way: Real property rights (whether by fee-simple ownership, by easement, or by other agreement) acquired across land for a public purpose, including pedestrian use.

Sidewalk: A paved pathway paralleling a highway, road, or street intended for pedestrians.

Sight Distance: The length of roadway visible to a driver or pedestrian; the distance a person can see along an unobstructed line of sight.

Tactile Warning: Is a change in surface condition providing a tactile cue to alert pedestrians with vision impairments of a potentially hazardous situation.

Transportation Equity Act of the 21st Century (TEA-21): Federal legislation authorizing highway, highway safety, transit, and other surface transportation programs from 1998 through 2003. It provides funding opportunities for pedestrian, bicycle, and public transit facilities, and emphasizes intermodalism, multimodalism, and community participation in transportation planning initiated by ISTEA.

Truncated Domes: Are small domes with flattened tops used as tactile warning at transit platforms and at other location where a tactile warning is needed, such as curb ramps.

Vertical Clearance: Is the minimum unobstructed vertical passage space required along a sidewalk or trail. Vertical clearance is often limited by obstacles such as building overhangs, tree branches, signs, and awnings.

Vertical Curb: A steep-faced curb, designed with the intention of discouraging vehicles from leaving the roadway.

Visual Warning: Use of contrast in surface to indicate a change in environment, as at a curb ramp where the sidewalk changes to the street.

Walk Interval: Traffic signal phase in which the WALKING PERSON (symbolizing WALK) signal indicated is displayed.

Wayfinding: A system of information comprising visual, audible, and tactile elements that helps users experience an environment and facilitates getting from point A to point B.

APPENDIX D

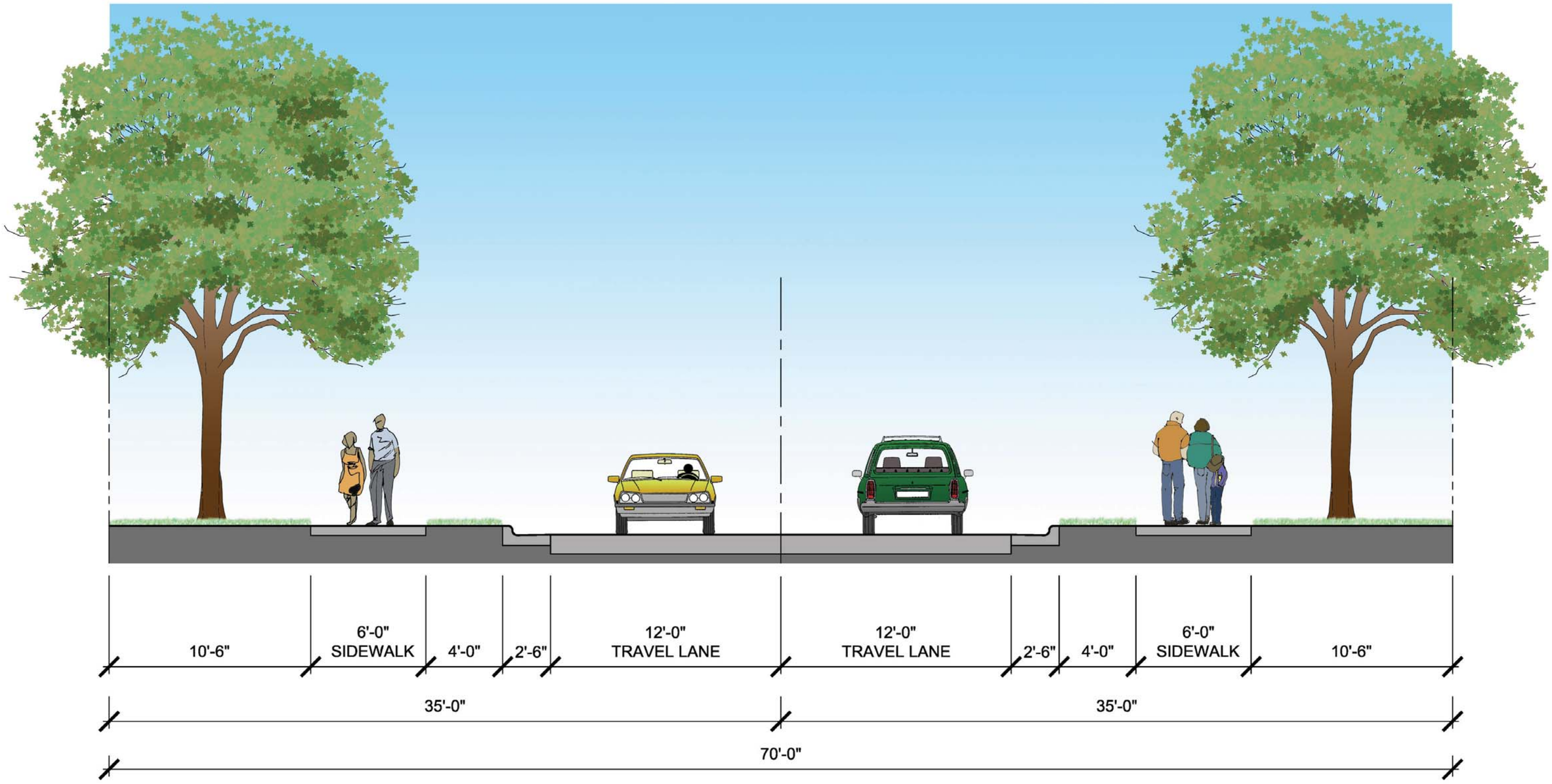


Plate 23: Two Lane Thoroughfare Cross-Section

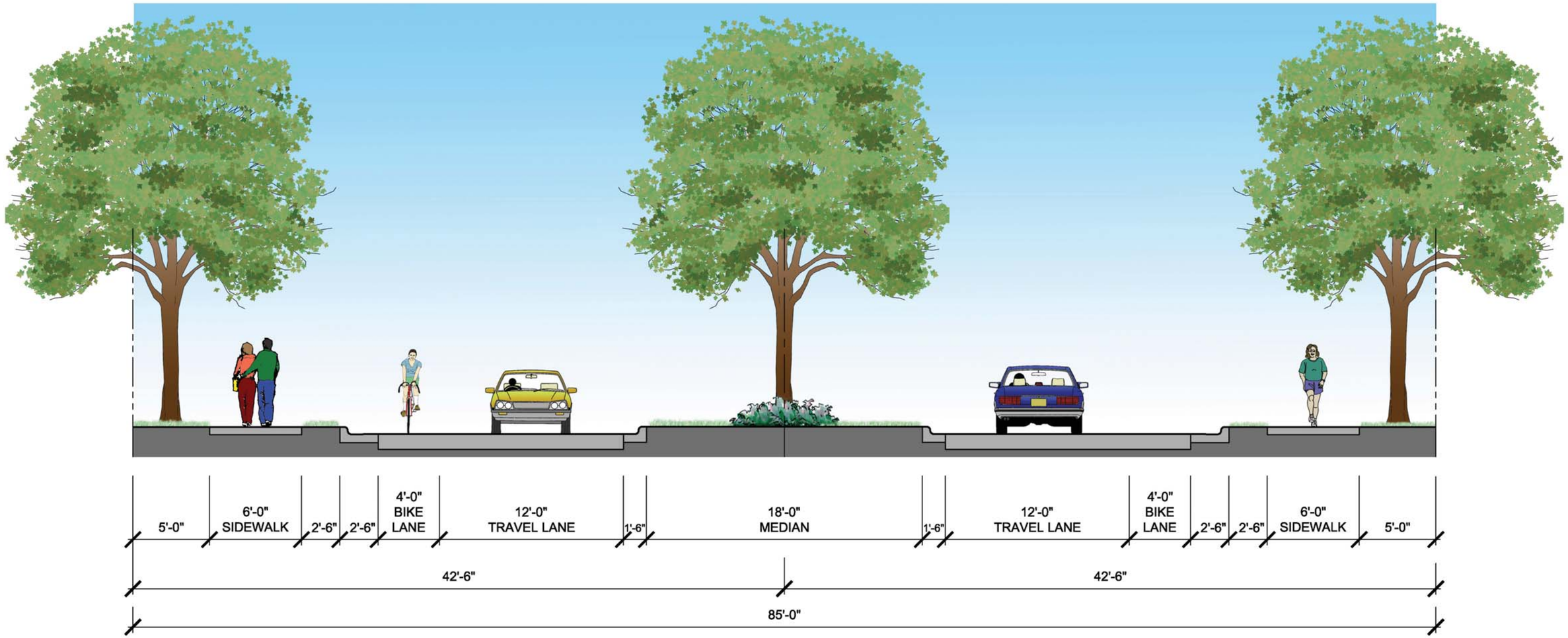


Plate 24: Two Lane Boulevard Cross-Section

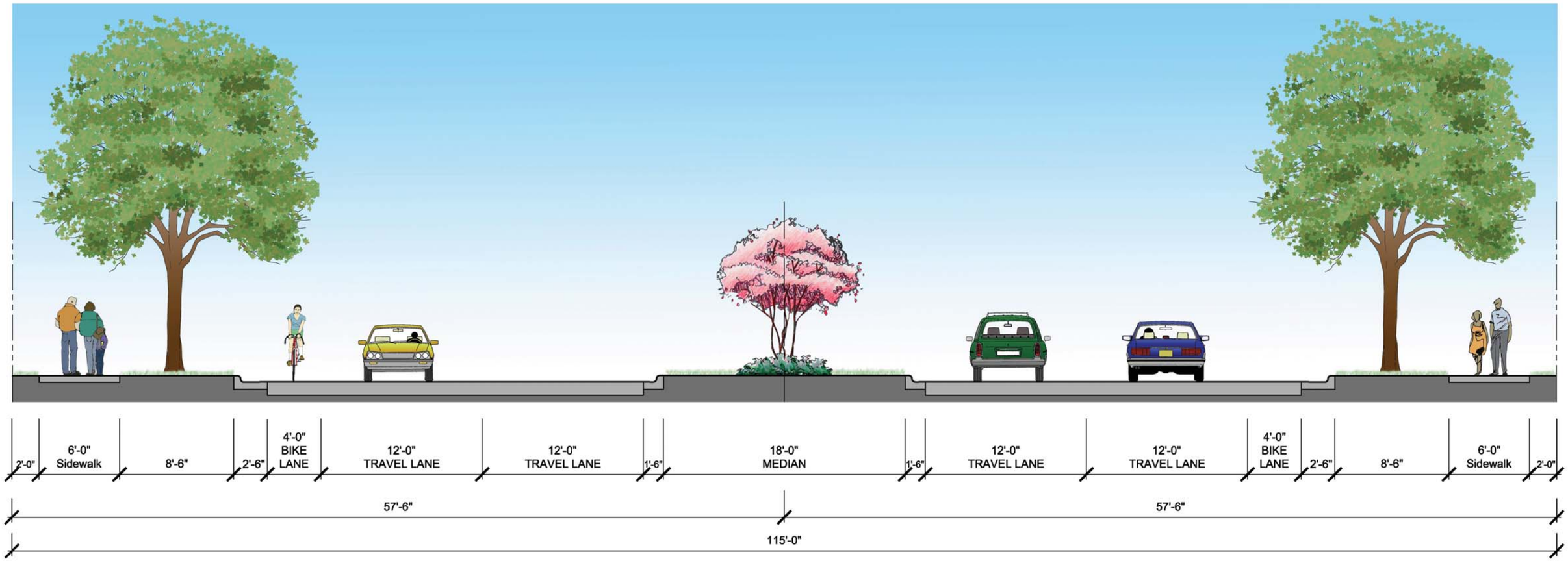


Plate 25: Four Lane Boulevard Cross-Section

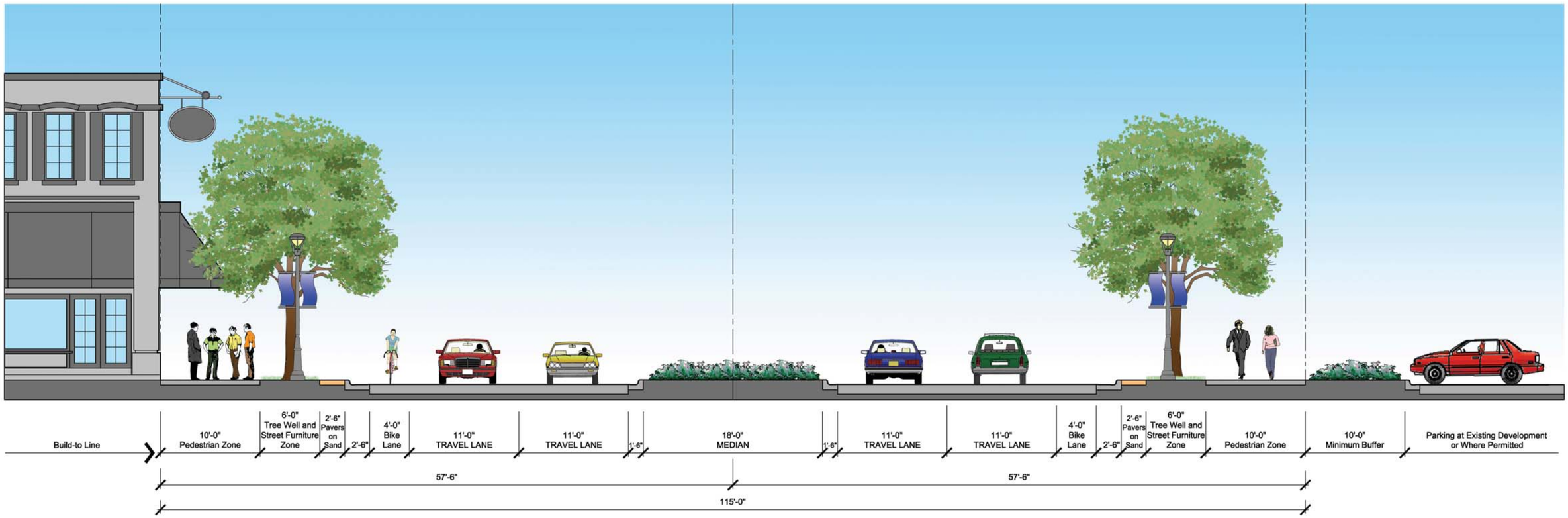
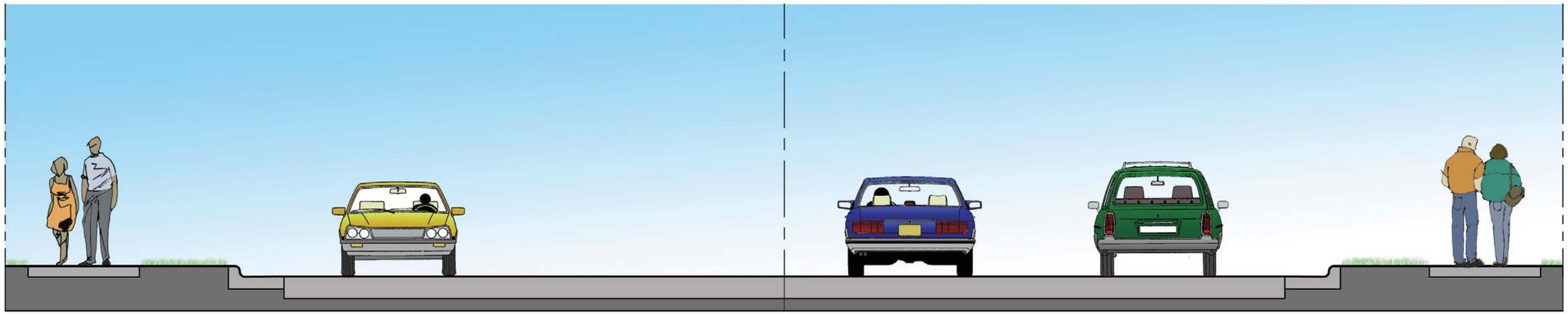


Plate 26: Four Lane Village Center Boulevard Cross-Section



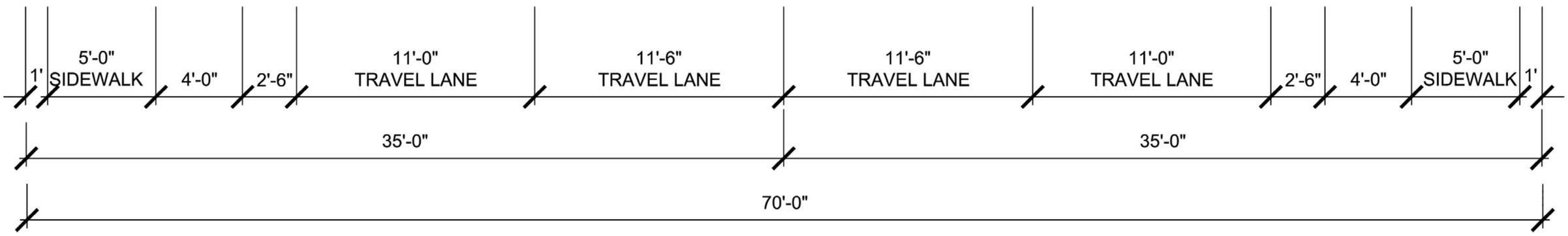


Plate 27: Four Lane Thoroughfare Cross-Section

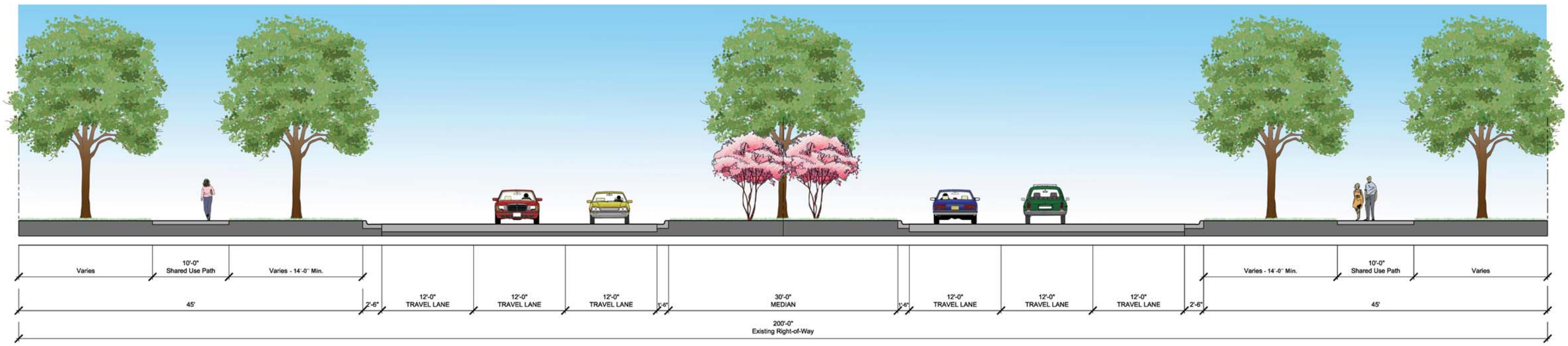


Plate 28: Six Lane Boulevard Cross-Section