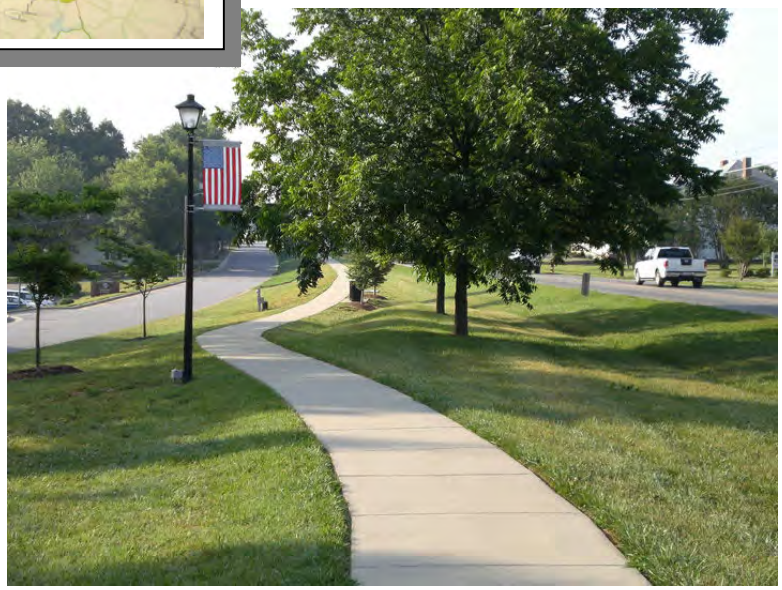
TROUTMAN PEDESTRIAN PLAN

FEBRUARY 2008



TROUTMAN
PEDESTRIAN PLAN

Funded by
North Carolina Department of Transportation
Division of Bicycle and Pedestrian Transportation
104 Fayetteville St. Mall
Raleigh, North Carolina 27601

Planning Consultants
Centralina Council of Governments
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TROUTMAN
PEDESTRIAN PLAN

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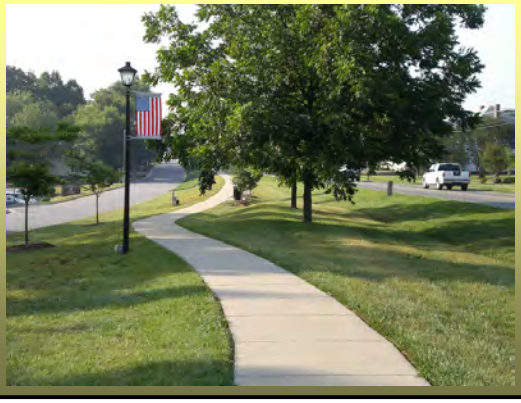
Troutman Pedestrian Plan

EXECUTIVE SUMMARY



January 2008

THE VISION

A safe pedestrian environment.
Start with making the Town's existing facilities safer. Slow down traffic and make crossing the street safe for people on foot.

Desirable destination points connected
Provide practical and convenient walkable linkages.

Outdoor exercise opportunities abounding
Provide safe, attractive and interesting pathways and encourage their use in the daily activities of citizens.

A healthy economic environment
Create viable opportunities for foot traffic businesses.

THE ISSUES

1. **High volume of through traffic commuters**
   Residents must compete with thousands of commuters traveling daily through Town down Main Street to go elsewhere.
2. **Low connectivity**
   Getting around Troutman, whether on foot or in a vehicle, requires frequent trips to and across an already overloaded Main Street.
3. **Explosive growth**
   Troutman's prime location will continue to draw new residents for years to come. Development pressures will make the sale of larger tracts in Troutman increasingly more attractive. Large undeveloped or redevelopable tracts in Town need more focused planning.
4. **Street Crossings**
   Existing crosswalks are in total disrepair and inadequately visible to drivers. Additional crosswalk facilities are needed at select locations.
5. **Inadequate sidewalk and trail facilities**
   Besides its one central path, Troutman has very little to offer in terms of off-road trails. More sidewalks are needed to accommodate pedestrian traffic. A number of existing sidewalks are uneven, broken up, or obstructed by obstacles making passage unmanageable or unsafe.
6. **Lighting**
   Lighting is inadequate for safe and comfortable evening pedestrian use throughout much of the Town.

RECOMMENDED ACTIONS

Form a stakeholder-based Pedestrian Needs Committee (PNC).
The Town appoints PNC members and invests them with the authority and charge to follow-up on the Pedestrian Plan.

Coordinate with NCDOT on the CTP to address Town planning goals.
To begin a process of amending the CTP, submit a request in a resolution form for the Lake Norman RPO to adopt and to recommend to the regional NCDOT Planning Branch.

Develop and Adopt a Comprehensive Land Use Plan.
Distribute the Pedestrian Plan to those involved in that process and charge them to publicly consider its analysis and recommendations, and integrate appropriate measures into the Land Use Plan.

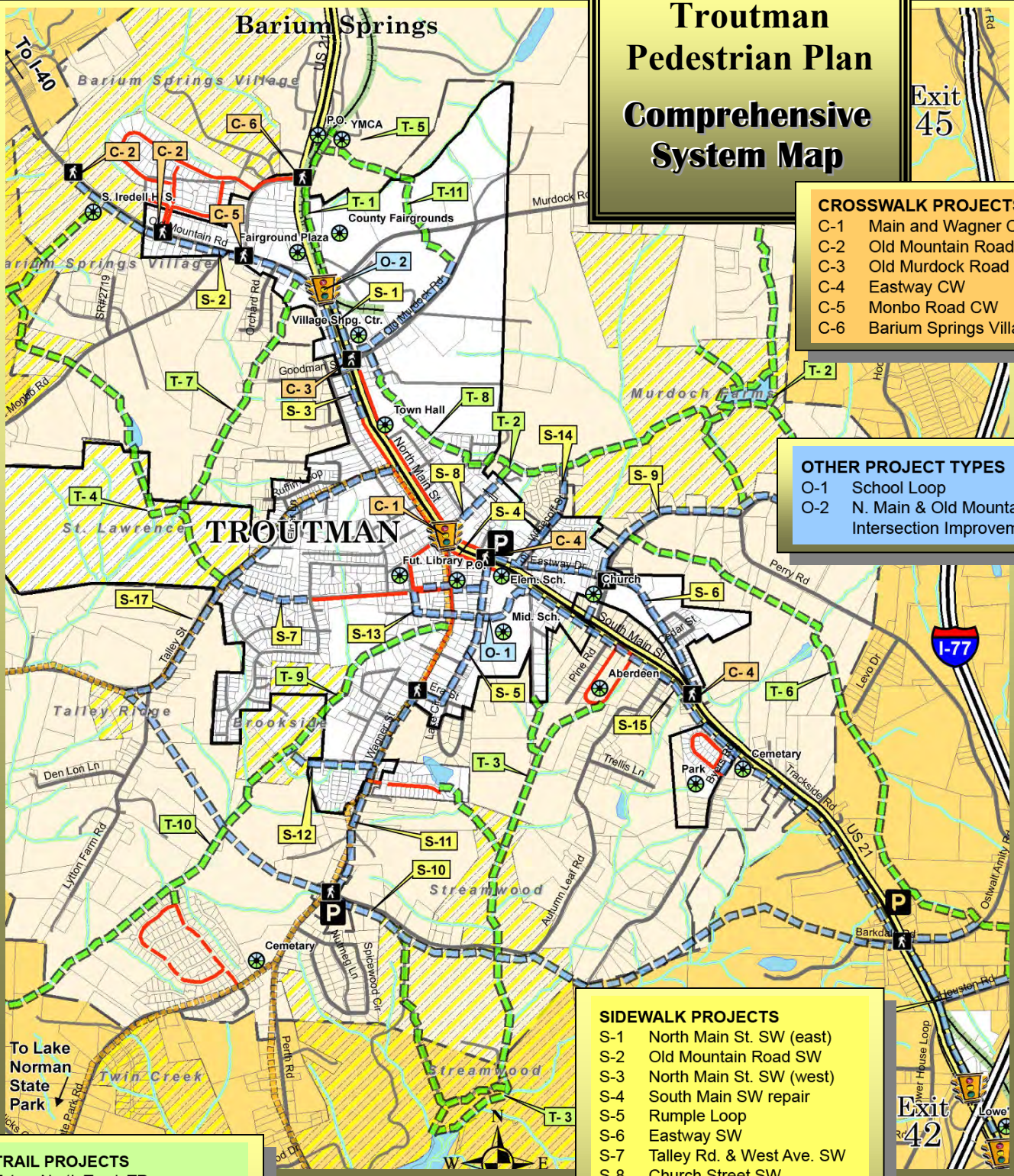
Work with Iredell County on areas outside of Troutman's ETJ.
Monitor land development in the Troutman vicinity with the Iredell County Planning Department.

Adopt the Lake Norman Bike Route.
Review the Route Plan available from Centralina Council of Governments for adoption by the Town Board.

Enact ordinance changes.
Examine the Pedestrian Plan ordinance modifications table. A planning consultant can guide the Planning Board and Town Board through an ordinance revision and adoption process.

Troutman Pedestrian Plan

Comprehensive System Map



CROSSWALK PROJECTS

C-1	Main and Wagner CW
C-2	Old Mountain Road CW
C-3	Old Murdock Road CW
C-4	Eastway CW
C-5	Monbo Road CW
C-6	Barium Springs Village X-ing

OTHER PROJECT TYPES

O-1	School Loop
O-2	N. Main & Old Mountain Rd. Intersection Improvements

TRAIL PROJECTS

T-1	North Track TR
T-2	Murdock Farms TR
T-3	Streamwood TR
T-4	St. Lawrence TR
T-5	YMCA TRs
T-6	Eastside TR
T-7	Fairground Plaza TR
T-8	Town Hall TR
T-9	Brookside TR
T-10	Brookside TR Extension
T-11	Fairgrounds TR

Recommended Projects

SIDEWALK PROJECTS

S-1	North Main St. SW (east)
S-2	Old Mountain Road SW
S-3	North Main St. SW (west)
S-4	South Main SW repair
S-5	Rumple Loop
S-6	Eastway SW
S-7	Talley Rd. & West Ave. SW
S-8	Church Street SW
S-9	Perry Road SW
S-10	Autumn Leaf SW
S-11	Perth Road SW
S-12	Massey Street SW
S-13	Thomas Brown Loop
S-14	Winecoff SW
S-15	South Main SW
S-16	Houston Road SW
S-17	Talley Street SW extension

Centralina Council of Governments

Division of Bicycle & Pedestrian Transportation

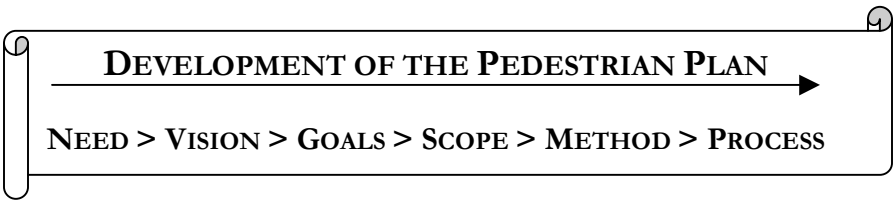
For further information contact: Town of Troutman 704-528-7600 www.townoftroutman.org

PART 1: PLAN OVERVIEW

1.1 Introduction

The Troutman Pedestrian Plan is organized to provide the user with information ranging from the nature of pedestrian planning, to instructions on how to get a sidewalk built. The Plan is divided into four parts and an Appendix. The following will help orient the reader in how to use this document:

PART 1: PLAN OVERVIEW
The Overview starts with an **Executive Summary** outlining the Plan's key findings. **Realizing the Vision** describes the Town's need for the Plan, it's pedestrian vision, how the Plan can help bring about that vision, and the process by which this Plan was developed.



The **Benefits of a Pedestrian Lifestyle** section provides some background information about pedestrian planning and some examples of how pedestrian-oriented improvements will benefit the Town of Troutman.

PART 2: CURRENT CONDITIONS
A description of Troutman's existing layout, pedestrian amenities, and pedestrian barriers and constraints is provided in the **Existing Conditions & Trends** section. It details current conditions that impact pedestrian planning throughout the community, from "big picture" issues, to the condition of individual sidewalks and other facilities. It also describes general trends of the Town that have direct bearing on current and future pedestrian needs. The **Current Policies, Ordinances and Plans** section contains an analysis of existing planning documents and current Town ordinance, and how they may aid or hinder pedestrian-friendly development. **Current Projects, Programs and Events** describes local and regional projects affecting the quality of pedestrian life in Troutman, along with pedestrian-oriented programs and events currently active in the Town. In the **Key Areas and Issues** section, unique opportunities are described of how the Town can better provide for its citizens' pedestrian needs and shape its future in significantly positive ways. This portion of the Plan illustrates the need for the recommendations that follow.

PART 3: PLAN RECOMMENDATIONS
The recommendations provided are designed to improve Troutman's pedestrian future. The first section, **Recommended Policies & Ordinance Modifications**, suggests broad strategies that will help integrate pedestrian planning measures into the Town's overall planning processes. A table of recommended ordinance changes is provided. Real change requires active involvement by citizens who care and have a stake in the matter. A selection of **Recommended Programs** is provided to assist them. **Project Recommendations &**

Implementation Strategies provides a more focused description of actions the Town should take to correct current problems and initiate future projects. It describes both planning efforts and types of facilities required. Specific projects are described in detail in the **Project Identification and Priority List**. Here individual projects are ranked in priority and explanations are provided as to how each of them can be implemented. Most of these projects will require more detailed design, as well as acquisition of right-of-way or easements, and some call for additional public input. All projects, however, as well as existing facilities, will require proper maintenance. The next section provides information about **Recommended Maintenance Programs** appropriate to each type of project. Finally, the **Recommended Evaluation Process** briefly describes how the Pedestrian Plan's goals and implementation strategies can be examined and improved over time.

PART 4: FUNDING

This portion of the Plan discusses how to pay for projects, beginning with **Sample Cost Estimates for Facilities**. It then discusses **Funding Strategies**, offers **Local Budget Recommendations**, and concludes with the local **Plan Adoption and Approval process**.

1.2 Executive Summary

See attachment.

1.3 Realizing the Vision

THE NEED

For years, the Town of Troutman has enjoyed a slow-paced, small-town existence. But conditions are changing rapidly in the area. The region is seeing an explosion in population, much of it along the I-77 corridor in Mecklenburg and southern Iredell Counties. According to the U. S. Census Bureau and the Metrolina Regional Travel Demand Model, between the years 2000 and 2030, the population in southern Iredell County is expected to increase by 166%, and in northern Mecklenburg County by nearly 200%, with an employment projection during that time for southern Iredell of 270%. Troutman must adapt to a population that is expanding at a remarkable rate. In recent years, applications for new subdivision development have inundated the Town. The high growth rate is reflected in communities across the greater Charlotte region. As the population of the metro region grows, more people are willing to live further away and make longer commutes to the City. Troutman's proximity to Interstate 77 makes this commute that much more convenient.

US 21 traffic in Troutman

But aside from all the new homes being planned and built in the Troutman vicinity, drivers commuting to the Charlotte area *through* Troutman continues to increase and this means more traffic on Troutman's Main Street, US 21. North Carolina Department of Transportation (NCDOT) has been considering and planning for this increase in volume along this stretch of road for years. Proposed solutions generally involve a strategy of widening the highway to allow for an increase in commuter volume. However, such a strategy raises concern among locals of the effect such improvements will have upon the character of their town and how locals will cross this imposing physical barrier.

Many of the pedestrian concerns of the Town are affected, one way or another, by this issue.

- **A town divided** – US 21 creates a barrier that divides the Town. Crossing this barrier is becoming an increasing challenge for both pedestrians and drivers.
- **School commute** – Traffic conditions along the highway interfere with the daily activity of school commuting for residents. A lack of available sidewalks that connect these schools to residences compounds the problem.
- **Crossing streets** – As more vehicular through traffic occupies Main Street, drivers are less inclined to respect and give deference to pedestrians who need to cross it.

There are not enough crosswalk facilities to give pedestrians the opportunity and respect they deserve, both on the highway, and across other primary streets in Town.

- **Attitudes about walking** – In a town dominated by vehicular through traffic, the act of walking as a practical way to get around is called into question. Aside from the question of convenience, some local residents choose to drive across Main Street rather than walk in order to feel safer from potential collision with vehicular traffic.
- **Inadequate parking** – Many towns can provide parking opportunities for downtown businesses through on-street parking. But Troutman's ability to offer such is limited by the higher speed and volume of through traffic it presently serves on its Main Street.

In addition to the issues above involving US 21 traffic, Troutman pedestrians face additional challenges within their community.

- **Inadequate sidewalk and trail connections –** More linkages are needed for a growing residential population to reach destinations about Town.
- **Community identity** – the town lacks coherent gateways. Its edges are ill defined. Its center lacks compelling and practical gathering points, where residents and visitors can meet and do business.
- **Economic revitalization** – Despite the growing population of Troutman, the downtown area shows relatively little sign of imminent improvement. While the focus of retail development is near the southern interstate exit to serve commuting traffic.

Each of these conditions requires specific actions that will produce tangible results. Such actions are most effective when they flow from a broad, cohesive strategy that the community supports and can realistically implement. Rather than simply reacting to the problems in a piecemeal manner as they occur, this comprehensive and consensus-driven plan for pedestrian transportation improvements provides a coordinated approach to the Town for taking on these challenges and others that threaten its pedestrian environment.

THE VISION

Through the pedestrian planning process, the Town and its citizens have expressed a clear four-fold vision for their community.

1. **A safe pedestrian environment**.
   Start with making the Town's existing facilities safer. Slow down traffic and make crossing the street safe for people on foot.

2. **Desirable destination points that are connected.**
   Provide practical and convenient walkable linkages.

3. **Outdoor exercise opportunities abound.**

Provide safe, attractive and interesting pathways and encourage their use in the daily activities of citizens.

4. **A healthy economic environment.**
   Create viable opportunities for more foot traffic businesses.

In order to see this fourfold vision through, an ongoing systematic effort must be instituted. The charter for this effort is the Troutman Pedestrian Plan. This Plan should serve the Town in the following ways:

- A compelling tool for **promotion** the Town's pedestrian vision
- An effective source for the **education** decision makers and the general public about the value and methods of making Troutman a pedestrian-friendly community
- A clear blueprint for the revision of Town **ordinances and policies** that address development in order that all will support the same unified goals
- A comprehensive guide to the **implementation** and improvement of pedestrian routes and amenities
- A firm basis for seeking assistance in the form of **grants and other support** from various outside sources in furthering the Plan's implementation.

THE GOALS

As the Plan is embraced and utilized in the ways described above, both immediate concerns and long-term goals for the Town can be realized:

1. **Let walkability and connectivity become guiding principles** for decision-making, so that walking is a practical option as a transportation choice. Develop needed pedestrian facilities including sidewalks, trails, benches, water fountains, and better lighting. Avoid dim lighting, which can provide refuge for criminal activity. Adopt strategies that will deter criminal activity along greenways and other public facilities. Work with Duke Power to update lighting throughout the Town.

2. **Make Pedestrian safety a top priority**, so that pedestrians can feel safe accessing downtown business areas, and other areas in Town. **Safety** is a primary objective, especially with street crossings. Crossing US 21 is a primary issue.

3. **Insure that Pedestrian facilities are made accessible** to all members of the community.

4. **Connect significant destinations with attractive sidewalks and trails**, making them accessible by foot as well as vehicle. Amenities are provided so that walking is not seen as "the last alternative" but the "preferred alternative" to reach points within walking distance. Street trees plantings should be encouraged to provide shade and other benefits. Insure that current ordinances do not discourage their use.

5. **Link the local pedestrian network to larger networks** in the county and region where appropriate.

6. **Provide a clear "road map"** of where, when, and how the Town proceeds to make improvements to its pedestrian facilities, to achieve the aforementioned goals. **Sustainability** must also be a primary goal. The Town must have the continual source of funds dedicated to maintenance of existing and future facilities. There are funds already in place for restoring existing crosswalks.

7. **Use quality of life standards to guide decisions** as the town anticipates and plans for continued growth. As the area becomes home to more citizens, traffic will increase, making pedestrian life even more of a challenge. Roadway changes may obliterate some existing pedestrian features (such as the Main Street center sidewalk known as the "Greenway"), and create new centers of activity, including a new town center (expected to be between Eastway and Hwy 21).

THE SCOPE

In order to meet these goals, this Troutman Pedestrian Plan examines a broad range of pedestrian-related issues and recommends actions that address them in a comprehensive manner, including:

1. Policy and ordinance revision
2. Participation programs and initiatives
3. Comprehensive system planning
4. Facility standards and guidelines
5. Project identification and prioritization
6. Project specific planning and development process
7. Cost estimation
8. Funding and local budget recommendations
9. Project implementation and construction
10. Maintenance
11. Individual project evaluation process

THE METHOD

This Plan was developed using methodology approved by the North Carolina Department of Transportation Bicycle and Pedestrian Transportation Division. The process included the following steps:

Step 1: Gather relevant documents relating to pedestrian concerns in the Town.

Step 2: Determine the project scope, schedule, points of contact with Town Staff; identify stakeholder groups, potential Steering Committee members, target meeting dates and planning budget

Step 3: Conduct an initial physical survey of the Town and gather additional input on pedestrian conditions from the community.

Step 4: Create composite maps of existing conditions to include current facilities and traffic conditions.

Step 5: The Town Commission appoints the project Steering Committee to review the project maps and other information, provide additional stakeholder input, and guide the development of the Plan.

Step 6: Conduct Stakeholder Interviews on pedestrian needs and preferences.

Step 7: Conduct an interactive public meeting to review initial Steering Committee input and interview results with the general public, obtain feedback, and gather additional input from the public on pedestrian and mobility issues and concerns.

Step 8: Review the public meeting results with the Steering Committee in order to gather direction for preparation of a Draft Pedestrian Plan.

Step 9: Prepare the Draft Pedestrian Plan based input from the Steering Committee and citizen comments.

Step 10: Submit the draft plan to the Steering Committee and NCDOT for preliminary review and comment.

Step 11: Facilitate a follow-up public meeting to review preliminary Pedestrian Plan and address how the input received through previous public processes has been incorporated into the draft Plan.

Step 12: Revise the Plan based on input received and meet with the Steering Committee to finalize approval of the Plan.

Step 13: Submit the Plan to the Town Commission and to the Planning Board for review. Additionally, submit the Plan to the Lake Norman RPO for endorsement.

Step 14: Upon adoption of Plan, furnish the Town and NCDOT with the Plan with its associated maps.

THE PROCESS

In 2004, The Town of Troutman, assisted by Centralina Council of Governments, applied for the NCDOT Bicycle and Pedestrian Planning Grant. The Town was awarded the $16,000 matching grant in 2005 to create a comprehensive pedestrian plan. The Town of Troutman then selected Centralina Council of Governments to develop the plan. Working first with former Town Manager Donald Duncan, and then with Town Manager David Saleeby and Troutman Finance Director Steve Shealy, Centralina guided the Town through a thorough, public-input driven planning process, involving a steering committee composed of representatives of stakeholder groups to oversee the elements of the plan. The steering committee members represented a variety of local interests groups including:

- Police department
- YMCA
- Health and medical fields
- Town government
- Barium Springs
- Resident pedestrian citizens

1.4 Benefits of a Pedestrian Lifestyle

Throughout the country and only a few decades ago, streets and sidewalks served as the center of neighborhood life, where people of all ages walked, biked, shopped, ate, played, and met their neighbors. But today, streets with this kind of activity are the exception rather than the rule. Towns and cities are full of barriers that discourage walking and often make a pedestrian feel like an outcast in a world made only for cars. Overcoming these barriers requires more than simply building more sidewalks or trails. Land use and transportation planning, ordinance revision, and developing economic incentives for businesses all play important roles toward creating an environment that makes walking practical, safe and convenient, and brings vitality back to the streets.

Walkable towns present numerous advantages to their citizens and provide many perks that attract visitors. They offer valuable incentives to prospective residents and businesses. Investments in a community through pedestrian-oriented improvements can, in just a few short years, show visible and economic results. Though a town like Troutman may already posses many pedestrian-friendly qualities, those attributes can be improved upon in substantial ways. Such improvements would help make the Troutman community healthier, more vibrant and a more attractive place to live, visit, work and own a business.

Some direct benefits of the pedestrian lifestyle can be summarized in the following statements:

1. **Local Economy**
   Retail and commercial developers have learned that walkable context sells. Pedestrian-oriented streets encourage shoppers to linger and enjoy the setting. Furthermore, works such as Richard Florida's *Rise of the Creative Class* indicate that the population segments most likely to contribute to thriving economic conditions are attracted by amenities such as walkability, street trees, linkages to outdoor activities, etc. In short, pedestrian-

oriented communities are more likely to attract as new residents the type of people most likely to help stimulate the local economy.

2. **Safety**
   Drivers familiar with a community learn which streets are generally more populated with pedestrian traffic. The more pedestrians likely to be encountered, the more cautious most drivers are apt to be. In this way, pedestrian activity is self-protective. The more pedestrians using a street, the safer that street becomes for pedestrians.

3. **Public Health**
   A key concern in all aspects of community planning and design is the health, safety and welfare of citizens. There is growing recognition of how the built environment influences health-related behavior. Decisions about zoning, transportation, land use and community design influence the distances people travel by foot and by car, and the general safety and attractiveness of neighborhoods for walking. Fitness experts agree that regular daily activity is the key to good health. Walking is the most affordable and convenient way for most people to stay active. Whenever walking becomes a reasonable alternative to driving, many people will choose to walk rather than drive. As walking becomes an even more significant part of daily life in Troutman, healthier lifestyles will result and ultimately impact community health care costs in a positive manner.

4. **Elderly and Youth Friendly**
   When communities are pedestrian-friendly, the elderly retain greater independence and freedom, and young people are free to rely less on parents to drive them to school and other activities. As young people become accustomed to walking and biking, they are also less likely to depend on automobiles for short trips as they grow older. With a more complete system of sidewalks, trails, and other pedestrian amenities helping to connect a mix of significant destinations within close proximity of each other, walking becomes a safer and more reasonable option, particularly to those who need it most.

5. **Friendly to Disabled Populations**
   Another group for whom pedestrian friendliness means independence are those with disabilities. For those who cannot drive independently, mobility is severely limited in communities that are designed around the car. Walkable communities maximize the independence and mobility for disabled persons, in ways that auto-dependent communities cannot.

6. **Improved Environment**
   Street trees and other forms of landscaping are an integral part of pedestrian friendly communities. Street trees not only make pedestrians more comfortable and increase the likelihood that people will choose to walk, they also moderate temperatures, reduce storm water runoff, and contribute to cleaner air. A pedestrian-friendly environment will also contribute positively to air quality by reducing unneeded vehicular trips.

7. **Reduced Crime and Better Emergency Access**
   Streets that draw more pedestrians and encourage social interaction tend to have lower crime rates and other social problems than those that are isolated and unpopulated. Furthermore, streets that are connected for pedestrian-friendliness are also much more

accessible to emergency vehicles such as EMS and fire, as they have more than one way to reach an emergency location. Encouraging increased connectivity in future developments in Troutman will help the current system of streets function best for both pedestrians and vehicles.

8. Cultural and Community Life

Towns that feature interesting streets and public spaces with active pedestrian life become vibrant cultural and economic centers that draw visitors from the surrounding region. Troutman has the potential to develop an active downtown center within walkable proximity of many of its currently popular destination points.

9. Transportation

Walkable communities make full use of the most affordable and efficient transportation system available. And as Park & Ride stops are developed as planned, these locations will provide additional centers for development and further transit options in the future. Such transportation hubs will allow Troutman citizens, commuters and non-commuters alike, to access work, shopping and recreational opportunities without need of a car.

While it would be true to say that "pedestrian friendliness" is not a cure-all for every economic, social, or political ill that modern society experiences, it is also true that the creation of more livable public spaces and the de-isolation of people by getting them out of their cars, is an important part of the remedy. A surprising number of people, when asked to recall or identify venues that make them feel comfortable or in which they would like to live, work, and play, will identify tree-lined streets with sidewalks, and pedestrians of all ages using them.

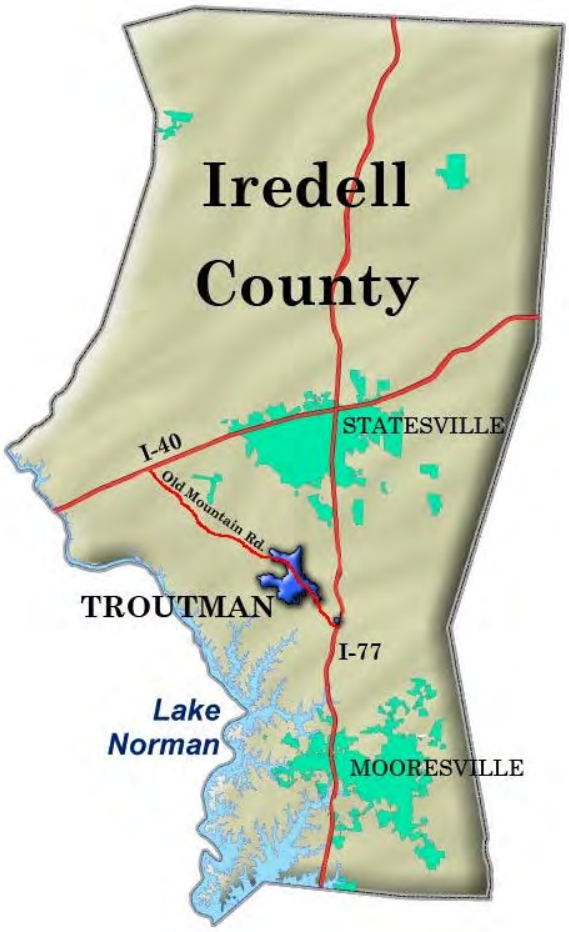
Part 2: CURRENT CONDITIONS

2.1 Existing Conditions and Trends

1. CONDITIONS & TRENDS IN GENERAL

The **Town of Troutman** is a small rural community in North Carolina's Iredell County. The Town is situated along Interstate 77, roughly 5 miles south of Statesville and 15 miles north of Mooresville. It lies to the east side of the Catawba River near Hicks Creek in Lake Norman State Park, and Rocky Creek, both of which feed into nearby Lake Norman. Most of the terrain of Troutman is relatively gentle. The physical conditions and layout of the Town, including all existing pedestrian facilities described in this section, are shown on the **Existing Conditions Map** at the end of Part 2

The 2000 Census set the **population** of Troutman at 1,592. 19.5% of that total was under 16 years of age, and almost 15% was above 65. These numbers placed the community at slightly above the national average in elderly population. Troutman's average age resident was more than two years older than the national average. By 2003 the total population had risen to 1,651.

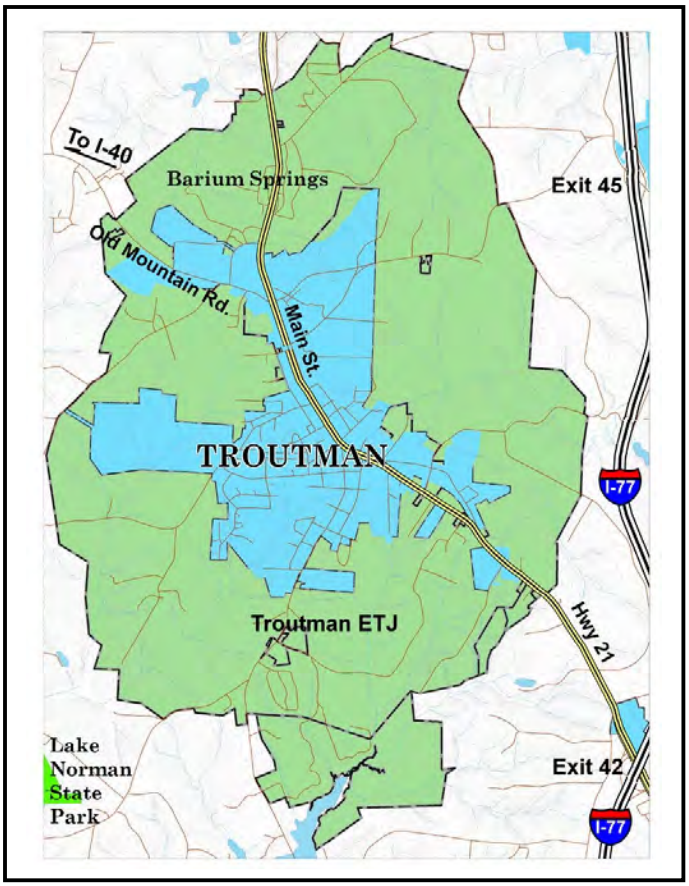


Troutman in Iredell County

The primary **employment centers** within the town of Troutman include:

1. Engineered Sintered Components located on Old Murdock Road
2. American Stainless Tubing Inc. south of Town on Honeycutt Road
3. CR Onsrud Inc. on Murdock Road
4. Food Lion in the Troutman Village Shopping Center on North Main Street
5. The Contractor Yard on Flower House Loop just south of the I-77 interchange
6. ABT Inc. on Murdock Road
7. Blanton & Moore on North Main
8. Ttalf Corporation on South Eastway Drive

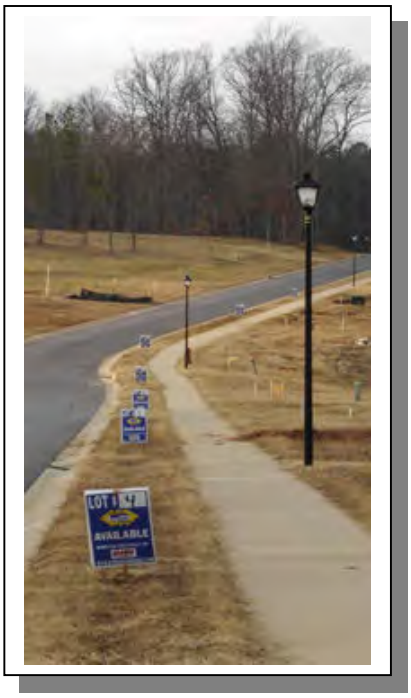
Town residents primarily rely upon personal vehicles to reach these job locations and others. Only about 1% walks to work, and about 3% report working at home. But the large volume of **commuter traffic** Troutman sees every workday is not so much a matter of local driving habits, but more a function of regional location.



The Charlotte region is one of the fastest growing areas in the country. As more and more people relocate to the region to work in or near Charlotte, Mecklenburg and its surrounding counties are seeing substantial increases in commuter traffic. One of the major corridors of commuter travel is I-77. A substantial number of commuters travel I-77 South daily to reach Charlotte, Mooresville, and other employment centers in the area, from as far away as Catawba County. Those commuting from the northwest find the shortest route to I-77 South by using Old Mountain Road to US 21, which then joins I-77 at Exit 42. This route takes these commuters directly down Troutman's Main Street.

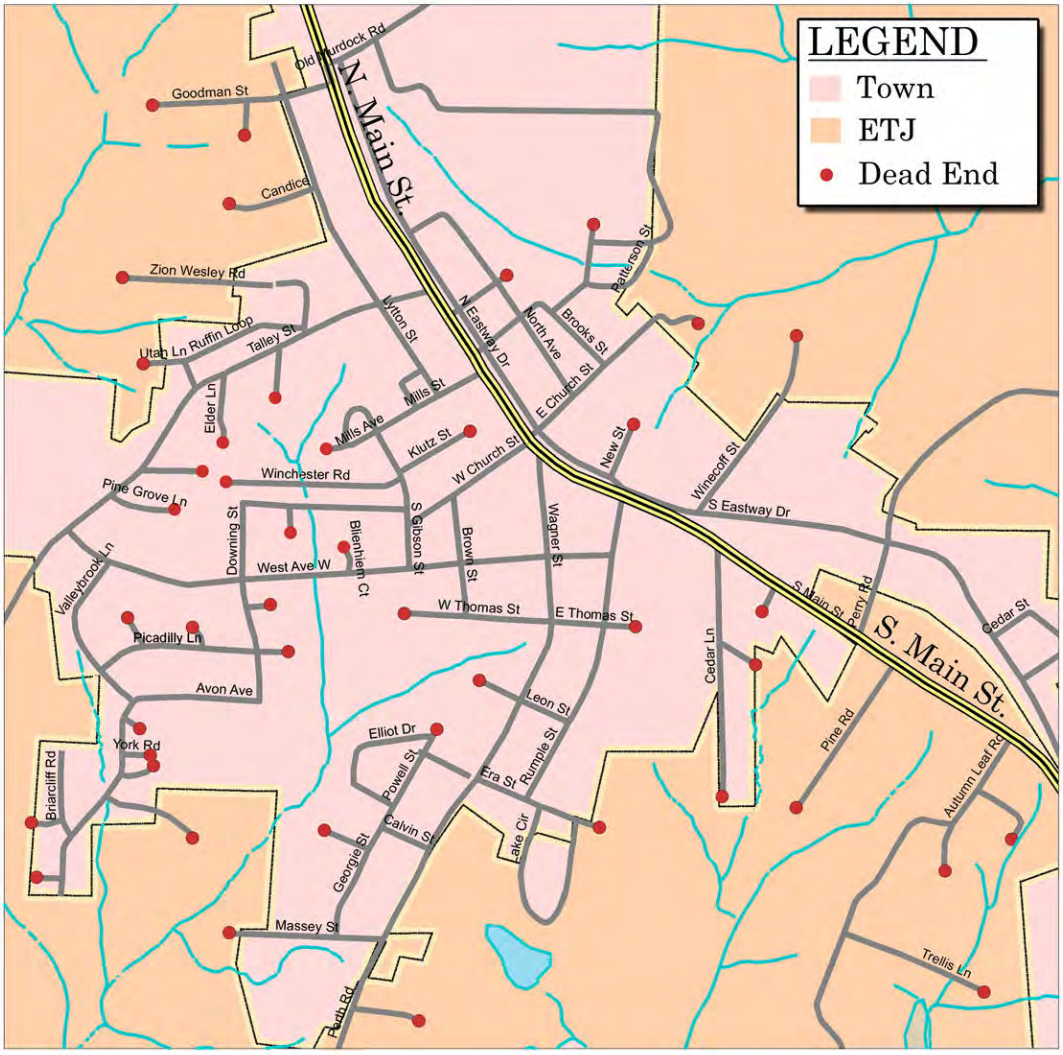
Growth in the region being what it is, a significant portion of it is taking place north of Charlotte along the I-77 corridor and it is reaching Troutman. **Residential development** pressure is on the rise in the Troutman area and many new subdivisions are being developed in and around Town to absorb the influx; Murdoch Farms, Streamwood, Brookside, and Twin Creek to name a few. The following list displays some of the major new subdivisions approved for the Troutman area and the number of dwelling units in each.

Subdivisions	Units
Autumn Leaf Road Development	33
Autumn Pointe	31
Brookside	65
Brookside Subdivision	65
Holly Springs	194
Streamwood at Falls Cove	523
Touche, LLC	43
Westmoreland Road Site	229
Total	**1183**



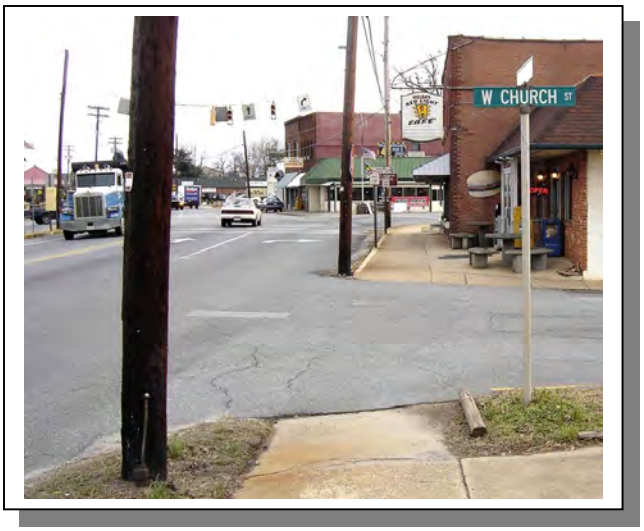
TROUTMAN PEDESTRIAN PLAN

The **street network** of Troutman consists largely of relatively short streets branching off the Town's main spine, US 21 (North and South Main Street). Primary spurs include Old Mountain, Talley, Wagner, and Autumn Leaf to the southwest, and Moose Club and Murdock to the northeast. There are very few roads that run parallel to the main street. Despite the potential for a functioning connective grid, the majority of streets arrive at a dead end. This means that if a traveler wants to get from a point on the north side of Town, to somewhere in the south, they must usually rely on US 21 for some segment of the journey.



Downtown Troutman area and nearby surrounding ETJ

Sidewalks line a number of Troutman's older primary streets and are required in all of its newer developments. Along the west side of Main Street, sidewalk stretches almost a mile from Goodman Street, across from the Village Shopping Center, to the Elementary School at Cedar Street. A relatively long segment of sidewalk branches off Main Street onto Wagner and runs about ½ mile southward to Era Street. The junction of these sidewalk-lined streets marks the Town's central intersection. Another sidewalk intersects at this point, running the short distance of Church Street. This walk connects to West Avenue, along which a sidewalk runs from Wagner to Downing. Aside from a few short and sporadic disconnected segments about town, all other sidewalks are in the new subdivisions, including Barium Seasons Village, Meadow Glen, Quail Haven, and Jacobs Woods. However, none of the newer sidewalks connect into a larger system outside of the subdivisions themselves.



Troutman's town center

The majority of existing sidewalks remain in fairly good condition, though some sections have seriously deteriorated, particularly in school zones. The sidewalks are generally four feet in width but vary throughout Town in levels of compliance with current ADA standards. For sections fronting commercial areas, paved sidewalks conditions are more generous, widening to about eight feet at storefronts. Where businesses have minimal setbacks, the sidewalks directly abut the street and the buildings. Occasional pedestrian enhancements are provided such as awnings, seating and large store windows. Other business centers, such as Fairgrounds Plaza – fronting North Main Street across from the County Fairgrounds property – feature varying sidewalk conditions.

FAIRGROUNDS PLAZA SIDEWALK CONDITIONS

A number of **trails** have been proposed for the Troutman area, but the only one currently in existence is the very prominent central trail that runs up a narrow, grassed strip between North Main Street and North Eastway Drive. It is popularly known as "the Greenway". The path runs from the center of Town to the edge of the Village Shopping Center. This concrete trail is basically a sidewalk lined with occasional small tree plantings, a few benches, other pedestrian conveniences, and the Town's time capsule. Though it makes very few direct connections to destinations or other sidewalks, it is an extremely popular and well-used facility and the Town is very proud of it.

"The Greenway"

Crosswalks have been provided in the Town center area, around the intersection of Main and Wagner Streets. However, these facilities consist of only minimal striping on the road with no accompanying signage or signalization to warn drivers to yield to pedestrians.

North Main Street at Wagner

Aside from the traffic light at Wagner and Main, there is one additional traffic light, also on Main Street, at the intersection of Old Mountain Road.

The physical conditions and layout of Troutman, including all existing pedestrian facilities described in this section, are shown on the **Existing Conditions Map** at the end of Part 2.

2. ORIGIN-DESTINATION POINTS

Many of the most visited destination points within Troutman are located along North and South Main Street. At the north end of Town is the gateway to **Barium Springs Home for Children**, a private, not-for-profit home for orphans, abused and neglected children and teens. Founded in 1891 by the Presbyterian Church, Barium Springs provides residential care, clinical services and educational services, therapeutic foster care, and campus ministry.

The **Barium Springs YMCA** is situated at the south entrance of Barium Springs. The Y offers various exercise facilities including a one-mile trail that leads into the Barium Springs campus. Adjacent to the YMCA is the **Barium Springs Post Office**.

Troutman's incorporated area begins just south of Barium Springs. At its northern edge lies the **Iredell County Fairgrounds**. The Fairgrounds is managed by the local Kiwanis Club and hosts a number of horse and rodeo shows throughout the season, along with other events.

Across from the Fairgrounds is a shopping center known as **Fairgrounds Plaza**. Businesses located here include the Dollar Store, This-N'-That, Rogers Appliance, a BP filling station, a tanning salon, Kat's Patch Restaurant, a Goodwill store, the Pro Maintenance Company, and an ice-cream and snack shop.

Past the traffic light at Old Mountain Road intersection is Troutman's primary commercial area, the **Troutman Village Shopping Center**. Businesses here include Food Lion, a pizza place, a nail salon, a video rental store, a KFC, Carolina Specialty Care, P.A., and Curves.

About half way from the shopping center to the center of Town one passes **Town Hall** and **Police Headquarters**. Here residents can pay their water bills and attend public meetings.

Less than ½ mile further south is the **Town Center**. Here Wagner Street splits off of Main Street at an acute angle. A number of prominent destinations can be found around this intersection, such as Melba's Red Light Café, the Troutman Barber Shop, Troutman Drug, Tiny Bubbles Launderette, T-Town Jewelry & Pawn, a Dollar General store, a bank, the Mystic filling station, Finley Chiropractic, Betty's Florist, The Hot Spot (where one can buy magic scarves), and the Depot.

Wagner Street near Main Street

The Depot

The Troutman Depot is a popular bandstand where the Greenway begins. It is a center of pedestrian activity in Troutman and perhaps the Town's most prominent public space. Older commercial architecture lines the sidewalk along Wagner Street, creating a very well defined and pedestrian scaled street section. The Main Street buildings are more sporadic, with varying setbacks and large breaks between building masses.

Just one block away from the Town Center, on the corner of Wagner and West, is the **Troutman Post Office**. And about two blocks south of the center, along South Main, is **Troutman's Elementary and Middle Schools** complex.

Aberdeen Village is a new community located along South Main Street just south of Pine Road. It is unique to Troutman in that it is age-restricted. Residents must be at least 55 years or older.

Heading southward, past the Town limits, one passes **St. Michael's Cemetery** and **Jacob's Woods neighborhood park** along the west side of South Main. Aside from some new residential development, most of the land here lies dormant and is prime for redevelopment.

Though most of Troutman's prominent destination points are located along Main Street, there is also **New Perth Cemetery** south of Town but still within the ETJ (extra-territorial jurisdiction), along State Park Road near the intersection of Perth Road.

Another major pedestrian destination, just northwest of Town in the ETJ, is **South Iredell High School** on Old Mountain Road.

To view the location of all destination points listed above, refer to the **Existing Conditions Map** at the end of Part 2).

South Iredell High School on Old Mountain Road

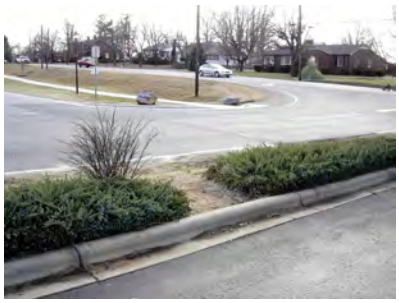
3. Specific Pedestrian Barriers and Constraints

The most imposing barrier felt by many, if not all, pedestrians in Troutman is the flow of **traffic along Main Street**. Particularly at peak commuting times, the volume of cars streaming through Troutman to reach I-77 South poses a threat to pedestrian safety and inhibits citizens from freely walking about their town. According to NCDOT, Annual Average Daily Trips currently exceed 18,000 on North Main Street. Many of the mobility challenged in Town cannot negotiate their way safely across this street and must make other

arrangements to get to their destination. Even those who can walk think it better to take a car in order to shield themselves from a potential collision. Though NCDOT has received only two actual reports of vehicular crashes within the Town involving pedestrians since 1990 (one on SR 1005, the other on Iredell Ave.), citizens of Troutman consistently expressed high levels of concern at public input meetings about the rising potential for injury to pedestrians along Main Street.

A similar traffic condition exists along **Old Mountain Road**, where many US 21 commuters arrive from the west in the morning during school commuting hours, and return in the late afternoon. For South Iredell High School students, not only does the volume of traffic along this stretch of road pose a problem, but also its excessive speed, coupled with the complete lack of sidewalks, crosswalks, and other pedestrian facilities.

Aside from the recreational utility of the **"Greenway"** between Eastway and North Main, its practical usefulness as a transportation option for pedestrians is limited by the fact that it stops short of important destinations to the north of Town, such as the YMCA. In fact, the Greenway stops just tantalizingly short of the Troutman Village Shopping Center, though local residents have stamped out their own "goat trail" to complete the connection. The Greenway is also limited to serving only one side of US 21 as it provides no safe crossing point to the other side.



The Greenway "*Extension*" Continuing the path to the Troutman Village Shopping Center

Much concern has been expressed over the situation that develops during the daily commuting procedures at the **Troutman Elementary and Middle School** complex. During peak commuting hours (7:30-8:30 am and 2:15-3:15 pm), students and parents entering and leaving the school, along with faculty and other school employees, are required to negotiate congested traffic conditions on a routine basis. And as their vehicles line up to pick up and drop off students, traffic on US 21 is blocked. Traffic conditions are complicated by the fact that street connections behind the schools are limited. The main roads that bracket the schools – Rumple and Cedar – do not connect.

Existing sidewalk and crosswalk facilities in the Town Center are unsafe and do not meet accessibility standards. Some sidewalks are blocked by signs and utilities, or suffer from disrepair. Crosswalks feature only road striping, which itself is in need of maintenance.

4. GENERAL CONCERNS ABOUT PEDESTRIAN CONDITIONS:

The particular areas of need described above focus on specific locations, but they are all part of a larger system that requires attention on a number of fronts. The general conditions listed below each exert a negative influence on the community and limit pedestrian activity. Each may contribute in some way to the reality or perception that walking in Troutman is not as safe, practical or enjoyable as it should be. Each may inhibit citizens who find themselves with no other choice of transportation, from making a necessary or desired trip. Each may discourage those on the cusp of a decision between walking and driving, to make the effort on foot.

Sidewalk conditions at Main at Wagner

No viable highway bypass system

Despite the Town's need for a variety of pedestrian facilities and other improvements that would encourage people to walk more, the biggest inhibiting factor for Troutman's pedestrians is the barrier created by the heavy volume of commuting traffic traveling through Town. Most of these commuters are on their way between Old Mountain Road and Exit 42 on I-77. Exit 45, on the northeast side of Troutman, provides another connection to I-77 that can be reached from Old Mountain Road by way of Murdock Road and Amity Hill, but without any improvements to its current alignment the route is inefficient and does not attract many commuters. There is a potential for a southern loop around Troutman from Old Mountain Road to Exit 42 recognized in NCDOT's currently proposed Comprehensive Transportation Plan (CTP). Such a route would avoid crossing Troutman's Main Street entirely and provide an efficient way to I-77 South, but would also require more road improvements than a northern bypass to Exit 45.

Lack of alternative connecting streets

The volume and speed of commuting traffic through Troutman along Main Street has considerable effects upon the character and quality of life in the Town. Compounding this traffic problem is the lack of alternative connecting streets that could provide locals the means to make short, in-town trips without using US 21. Eastway Drive and Lytton Street provide some opportunity for travel parallel to the highway, but these streets connect few prominent destinations. Eventually the traveler must, once again enter heavy commuting traffic. There is little in Troutman's street network that resembles or functions as a grid. A grid of streets would allow alternative paths for drivers, bicyclists and pedestrians. It would help Troutman citizens avoid commuter traffic, allow them to choose the most efficient path between

destinations, and make pedestrian life, in particular, more interesting by allowing variety in path choice. Though the potential to create a connective grid is there, the majority of streets in Troutman arrive at a dead end.

Minimal trail connections

In addition to low street connectivity between popular destinations, off-street connectivity through trails is also low. Aside from the Greenway stretching from Rumple to Old Murdock Road, there are no other trails. In order to reach most destinations of interest, pedestrians must use the streets, and most of those streets are not equipped with sidewalks.

Inadequate crosswalk facilities

Few crosswalks exist in the Town. Those that do exist are barebones in terms of striping, warning signage, and signalization, and are in need of maintenance.

Under-developed sidewalk system

Aside from the disconnected patches of sidewalk systems located in new developments scattered about Troutman, there are few streets in Town that offer sidewalks. Only three of these streets – North Main, Wagner, and West Street -- feature sidewalks for more than a one-block length. Aside from the "Greenway", no sidewalks exist east of Main Street.

Inadequately lit sidewalks

Lighting conditions have been cited as inadequate about Town. Aside from the typical pedestrian safety issues that commonly stem from inadequate streetscape lighting, the relatively low degree of lighting along Main Street does not adequately warn commuting drivers using US 21, that they have entered a Town and should use greater caution and lower their speed. The lighting does not convey the Town's presence as well as it could.

Lack of shade trees along prominent sidewalks

Shade trees help make pedestrian ways more habitable by providing a buffer against speeding traffic, a comfortable sense of pedestrian scale and, of course, shade. Without street trees, existing pedestrian facilities may often be underutilized. Many areas in Troutman significant to pedestrians lack street trees, particularly in the Town Center.

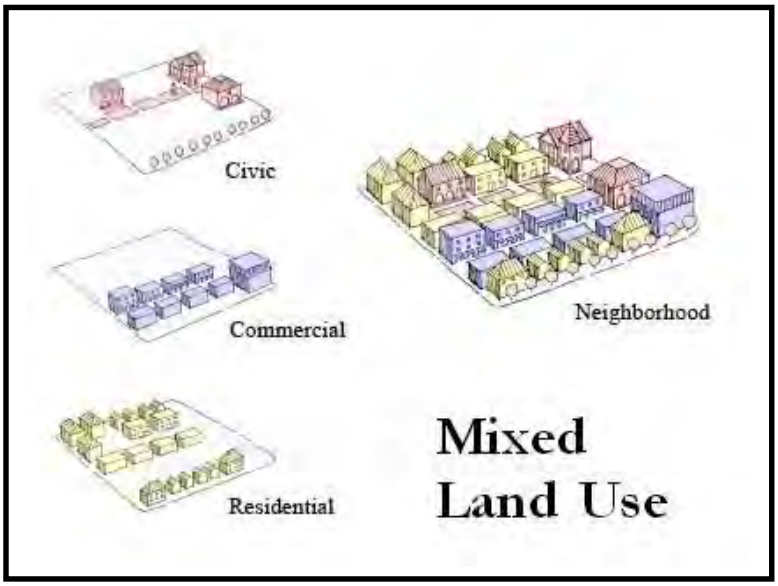
Wagner at Main - Troutman's Town Center

2.2 Current Policies, Ordinances & Plans

TOWN OF TROUTMAN UNIFIED DEVELOPMENT ORDINANCE

Troutman's Official Unified Development Ordinance (UDO), adopted August 2006, is the most binding legal document affecting the contemporary form of the Town and its future development patterns. The degree to which Troutman will develop in a pedestrian-friendly manner – with all the benefits thereof – as it adapts to growth pressures and changing economic conditions, will depend largely upon the continuing development of this document. A wide variety of pedestrian-related issues are directed by the UDO.

Issue 1: Mix of Land Uses



When various land uses are mixed together in close proximity – for instance: residences, commercial establishments and civic buildings – more activities can be accomplished on foot (One can walk from home, to the office, to the corner store, for instance.) Troutman's current size is still small and compact enough to permit a walkable proximity of uses, even when its zoning districts are designed to separate those uses. However, as the Town expands, the physical distances between its single-use zones will likely expand as well. Residences will become increasingly further away from businesses, for example, and more and more daily tasks will require a car. Traffic problems will increase, particularly in business zones where strip development dominates.

Chapter 3 of the UDO defines Troutman's Zoning Districts. Out of the eleven described, three districts permit a mix of residential and commercial uses: the Neighborhood Center (N-C) District, the Planned Unit Development (PUD) district, and the Central Business (C-B) District, which permits residential use within a mixed-use building.

The vast majority of the land area of Troutman and its ETJ is currently zoned Residential. But as development pressures mount, and new subdivisions form, the opportunity to employ a greater degree of mixed-use zoning – with all its pedestrian benefits – becomes available. The UDO's Planned Unit Development (PUD) zoning category requires a specified percentage of various uses in close proximity. Though walkability is not explicitly stated in the UDO as part of the intent of PUD zoning, the benefits to pedestrians are clear.

Issue 2: Street Connectivity

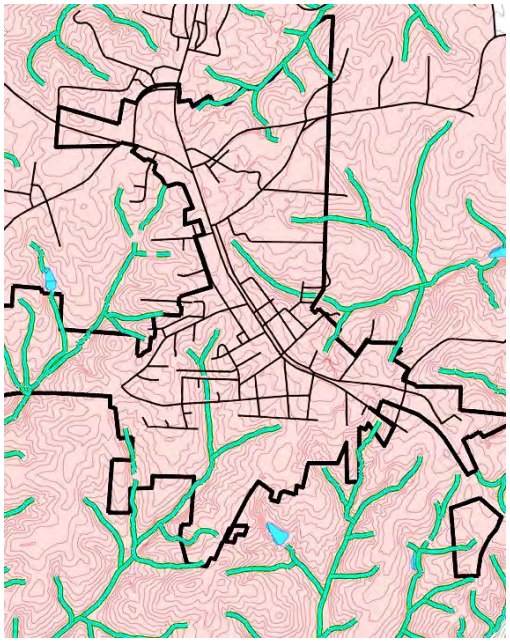
Troutman exhibits a very loosely connected street pattern. While Main Street runs the length of Town along a central ridge, there is little opportunity for other substantial north-south connections across Town without encountering challenging grades from the area's tight network of stream valleys. Consequently, the street network has historically exhibited poor connectivity. However, as development pressures grow, and land values rise, the cost of developing and establishing connections across steeper creek lands becomes less of an inhibiting factor from an investment perspective.

Troutman's UDO generally promotes connectivity. Section 8.8 describes Troutman's Street Design Standards, including guidelines for connectivity, cul-de-sacs, crosswalks, and block characteristics. Concerning connectivity and the use of cul-de-sacs, the following guidelines are provided:

> **8.8.4 A.** The proposed street layout within a subdivision shall be coordinated with the existing street system of the surrounding area and, whenever possible and practical, existing principal streets shall be extended. No street shall be created which does not provide continuous connection to the existing public street system.
>
> **8.8.4 B.** For the purposes of… providing access between adjoining subdivisions… The street network of a new development should stub to adjacent properties with development potential where topographic conditions allow.
>
> **8.8.4 C.** Cul-de-sacs shall not be used to avoid connection with an existing street…(or) property.

The UDO strongly promotes connectivity but recognizes that topographic conditions can make road building impractical in some locations. However, the ordinance language does not specify what topographic conditions constitute an impractical hardship, nor does it specify who decides the issue on a case-by-case basis.

Any one of Troutman's stream valleys may be construed as an impractical encumberence to development. If no site-specific criteria are provided in the UDO on which to base such judgments, developers will likely opt not to build expensive road connections that cross stream valleys, sacrificing the intended connectivity that the Town expressly desires. Or developers may opt to sue if the Town, on an indiscriminate basis, requires them to build the road as a condition for subdivision approval.



Topography, stream valleys, and road network in Troutman and surrounding ETJ

Issue 3: Cul-de-sac Length
Section 8.8 also sets a degree of limitation to cul-de-sacs lengths.

> **8.8.4 C.** … Permanent dead end streets should not exceed one-thousand (1000) feet in length unless necessitated by topography or property accessibility.

The Ordinance does not specify what degree of slope in topography necessitates the continuation of a cul-de-sac past the 1000 foot limit, nor does it specify who decides the issue on a case-by-case basis. As cul-de-sacs lengths increase, properties accessible from only one direction become more isolated and difficult to reach, and vehicular traffic on the cul-de-sac increases.

Issue 4: Block Length
Section 8.8 of the UDO also describes block characteristics including block length.

> **8.8.5 C.** Uninterrupted streets (or segments thereof)… shall be no greater than 1,000 feet in length, ecepts as considered necessary to secure efficient use of land.

Thus, blocks are permitted a length equal to more than three football fields without any cross-streets. This does not lend itself to a pedestrian-friendly environment for the following reasons:

1. People tend to judge this distance as "too far to walk" before they can turn a corner to get to a parallel street.
2. Long streets without interruption encourage drivers to travel at excessive unsafe speeds.
3. Long blocks present pedestrians with fewer route alternatives.

In addition, the Ordinance does not specify any criteria by which to objectively determine what is an "efficient use of land" nor who would ultimately make this determination.

Issue 5: Crosswalks
Section 8.8 makes minimal mention of crosswalks, stating:

> **8.8.5 B.** Where deemed necessary by the TRC and/or Town Board, a pedestrian crosswalk may be required to provide convenient public access to a public area such as a park or school, to a water area, or to areas such as shopping centers, religious or transportation facilities.

The language above gives complete discretion to the Town Board and/or TRC (Technical Review Committee) to determine the need for crosswalks on a case-by-case basis. It provides no site-specific criteria on which to base such decisions, nor does it refer to any larger guiding plan or policy of the Town for such.

Mid-block crosswalks are an effective way of safely channeling pedestrian traffic along major traffic arteries. Crosswalks also offer a secondary pedestrian benefit of calming traffic. While there are some crosswalks found in Troutman, their condition and number are inadequate for current or projected pedestrian needs.

Issue 6: Sidewalks
Section 8.9 provides minimal guidelines for sidewalks and their required locations in new development. Locations of sidewalks are required solely upon the basis of the street type right-of-way in which the sidewalk is to be constructed, as defined by the "Thoroughfare Plan" (CTP). The Ordinance makes no reference to any additional plan or policy that takes into account destinations, or current or future land use issues.

Issue 7: Greenways, Trails and Open Space
Section 6 of the Ordinance addresses open space and environmental protection issues. Various types of open space are described in Section 6.2, including Greenways. The description emphasizes that greenways serve as ways of connecting destination points, such as schools, parks, etc.

The UDO's open space requirements, however, apply only to new residential developments with lots of less than one acre, as stated in Section 6.1. And, as with sidewalk requirements, the ordinance language makes no reference to any additional plan or policy that takes into account destinations, current or future land use issues, or transportation or recreation master plans.

Issue 8: Street Trees
Street trees provide an array of environmental and economic benefits to communities. In addition to the broader benefits toward air and water quality, street trees offer the pedestrian shade, a physical buffer to traffic, and bring a human scale to an otherwise car-oriented landscape.

The last section of the UDO, Appendix B, contains standards regarding street trees.

> **B.7 Street Trees**
> Trees shall be planted in new developments as required by the Zoning Ordinance …Trees shall be planted as described in Chapter 7 of the Town's UDO. Spacing shall be adjusted to avoid obstacles and keep roads sight triangles clear.

Street tree plantings in new development on North Main Street

Chapter 7 provides an approved plant list, buffer requirements, and general information about planting, but no specific information about street tree placement.

In addition to these street tree requirements, the UDO also alludes to other circumstances where street trees might be included in the requirements:

> **Section 6.2 – Types of Open Space**

B. Square – Squares are areas for passive recreational use…Squares shall be planted parallel to all streets and shall contain canopy trees along street frontages.

C. Plaza – A plaza is an open area adjacent to, or part of, a non-residential building or facility…Plazas may be left unplanted. If planted, the trees should form a frame around the plaza space.

E. Green – The Green is an open space which is more natural…Greens are usually landscaped with trees at the edges…

Issue 9: Building Setbacks

Chapter 3 of the UDO sets the required minimum setbacks of Troutman's various zoning districts. Section 5.2 states that setbacks shall be compatible with those of adjacent buildings. No maximum setbacks are described. New buildings may, therefore, be located at great distances from the street, particularly when adjacent buildings are as well.

Excessive building setbacks are disadvantageous and even problematic to communities for reasons of safety, economic vitality, and general pedestrian friendliness. With no regulations to establish maximum setbacks (or "build-to" lines), retailers can create very deep front yards to accommodate their off-street parking entirely in the front yard, if otherwise permitted to. Such strip-development arrangement deteriorates street definition, making pedestrian use uncomfortable, unsafe and impractical.

On the other hand, minimal setbacks provide a number of advantages:

1. **Safety.** Buildings set close to the street do not require visitors on foot to navigate significant distances through parked cars (and moving ones!) in parking lots to reach their desired destination point – an often unsafe experience for pedestrians.

2. **Good business.** Buildings in a central business district are ideally built with little or no front yard setback. Businesses located close to the sidewalk offer pedestrians opportunity to "window-shop" or walk into a business immediately from the sidewalk.

3. **Comfort.** Streets with minimum setbacks are usually more inviting to walk along. This phenomenon is largely due to a sense of definition and enclosure that buildings can impart to a street, along with the lack of large, hot expanses of asphalt. Buildings

set close to the street help make the street viable and interesting public space rather than the vast, open no-man's land often associated with strip development.

The minimum setback should be maintained, however, at a sufficient depth to permit a functioning sidewalk corridor. A minimum of 10' is recommended from curb to façade, though a wider pedestrian corridor is recommended in busier pedestrian areas, particularly in commercial settings to provide for outdoor dining areas and other pedestrian interests.

Other regulatory strategies can be employed to encourage minimal commercial building setbacks. The Troutman UDO approaches the issue through its parking regulations.

Issue 10: Off-Street Parking
Chapter 8 also provides general parking provisions including those governing off-street parking.

> **Section 8.1 A. –** Parking areas shall be located to the side or behind buildings. No off-street parking area shall be located within any front yard. Parking areas in the side yards shall not extend beyond the frontage line of the building. This does not apply to the I Industrial zoning district.

By specifically prohibiting the location of off-street parking in front yards or anywhere beyond the frontage line of the building, this rule encourages businesses to build to the minimum front yard setback. The section also states:

> **Section 8.1 J. –** On-street parking may be used to satisfy parking requirements on streets that meet the requirements for on-street parking…

Off-street parking areas (parking lots) can impart a significant negative impact on the pedestrian-friendliness of a community, in addition to the degenerative environmental impacts associated with impervious pavement. Parking lots are a less-than-profitable use of valuable commercial space, and there are maintenance costs associated with them. Parking lots may provide motorists a convenience, but they contribute to a landscape that is barren, uncomfortable, unsafe and inconvenient to pedestrians. The following strictly parking-related issues are especially relevant for pedestrian planning.

1. **Number of off-street spaces required per use**

CODE REQUIREMENT:
Sec. 8.2.1 Parking Ratios by Use
A table of twelve land uses is provided to describe the minimum number of parking spaces required for each use. The minimum number is based solely upon building use classification irrespective of zoning districts. The UDO sets no limit on maximum number of parking spaces allowed.

COMMENTS:
A. Requiring off-street parking for all uses in a downtown area inadvertently conflicts with the pedestrian nature of a "downtown." These areas should be designed to facilitate the movement of persons by foot, as well as by car.

Pedestrian-friendly zoning ordinances either waive or significantly limit the amount of off-street parking required in a downtown setting, or give credit for on-street spaces.

B. Typical allotments of required parking spaces per use is often found to be excessive for most uses. In an effort to reduce the "sea of asphalt" phenomenon, there has been a trend to lower the number of required parking spaces for retail uses and to reduce the required area of each space. Some ordinances set a *maximum* parking requirement rather than a minimum.

2. Efficient Parking Strategies

Various parking management strategies can be employed to meet parking needs and make the most efficient use of existing parking spaces. Troutman's UDO is currently using some of these strategies.

CODE REQUIREMENT:

Sec. 8.3.1 Shared Parking

> The joint use of shared off-street parking between two uses may be made by contract by two or more adjacent property owners. Adjacent lots shall be interconnected where practical. Developments that operate at different times may jointly use or share the same parking spaces with a maximum of one half (½) of the parking spaces credited to both uses…

COMMENTS:

Allowing business owners the opportunity to voluntarily share parking spaces helps decrease the total number of parking spaces in the area while still satisfying the parking needs of the uses. This ordinance encourages common sense cooperation and helps eliminate unnecessary paved surfaces. It also provides an incentive for the development of mixed-use areas, with a clustering of businesses and civic uses.

CODE REQUIREMENT:

Sec. 8.3.2 Parking Connectivity

> Adjacent parking lots shall be interconnected except in the case of existing steep topography between the sites. Each parking area that is interconnected may reduce their minimum parking requirements by 5%.

COMMENTS:

Increased connectivity of parking lots provides some congestion relief for primary roads, like Main Street, from short-trip traffic.

TROUTMAN TOWN AND COUNTRY PLAN

In 2002, the Town contracted with the Lawrence Group Town Planners and Architects to take the Town through a process that would "clarify the community's vision, before the wave of development has consumed them." The guiding vision for the Plan was to "build on the character of the Town by growing incrementally as natural extensions to the Town borders, providing municipal services in an orderly, efficient manner…balanced with a complimentary preservation of the unique and pristine open spaces that encircle Troutman." In order to meet this vision, the Plan proposed certain main tenets that included such goals as:

- Mixed-use development
- Pedestrian scale development with long-term value
- Reinforcing the Downtown as the central focus of civic and commercial activity
- A transportation network that supports both vehicular, pedestrian and bicycle
- Protected open space

A birdseye view of a revitalized and expanded Downtown Troutman. Note the return of the Depot as well as the urban trail.

The Plan makes a number of observations about Troutman's traffic and circulation. It suggests that transportation improvements, both vehicular and pedestrian, are critical toward improving the Town's quality of life. The focus of its suggestions regarding vehicular circulation centered upon Main Street.

> "The extensive stream corridors and the natural ridge line along the old rail bed have established Main Street as the primary thoroughfare through the community. There is a considerable amount of traffic in this corridor… most of (which) is not generated by Troutman residents, rather it is regional traffic from drivers living by Lake Norman, Statesville, and other surrounding communities that are the cause of the average daily traffic volumes in excess of 8,800. A large portion of this traffic appears to be generated by the High School and, as a result, the intersection that directly services it at Old Mountain Road and Main Street needs some improvement.
>
> The radial street pattern of the Town is a function of the topography. This 'hub and spoke' pattern ensures that a majority of the daily trips must collect on Main Street. While this is generally good for commerce, there is a need to relieve the current load using alternative route… A series of small neighborhood-to-neighborhood connections should be considered as development proceeds."

The Town and Country Plan also makes some recommendations for greenways.

> "It is very possible to develop a 'green necklace' surrounding the Town and provide pedestrian and bicycle access at both the periphery as well as in the Downtown area. The

> spine of the network is formed by the abandoned rail corridor that roughly parallels Main Street … extending from Barium Springs Home for Children property to the intersection of Eastway Drive and Main Street in a dedicated non-vehicular environment."

The findings of the Town and Country Plan remain pertinent to the needs of Troutman and are in full accord with the input received during the pedestrian planning process.

COMPREHENSIVE TRANSPORTATION PLAN FOR THE TOWN OF TROUTMAN

NCDOT recently crafted a Comprehensive Transportation Plan (CTP) for the Town and its environs. The Town adopted the Plan in February 2007, but soon after rescinded that adoption and began work on a revised CTP. The original CTP addressed Troutman's dilemma of growing through-commuter traffic demands primarily through a strategy of increasing Main Street's capacity to move more cars.

Responding to projected conditions, the CTP proposed accommodating "existing and projected travel demand, accelerated growth and development along this roadway," by recommending the widening of Troutman's Main Street from "a two-lane roadway to a divided four-lane grass median facility." This option was also intended to "improve safety and pedestrian/bicycle access along US 21/NC 115." These improvements would make the shortcut through Troutman increasingly attractive to interstate commuters.

But the CTP also included some creative bypass alternatives for handling this through-traffic, including the Barium Springs Parkway and a Southwest Bypass. The Barium Springs Parkway would connect US 21/NC 115 to I77 at Exit 45, while the Southwest Bypass, using existing and proposed roadways, would provide an alternative route from Old Mountain Road toward I-77, merging with US 21/NC 115 just north of Exit 42. This southwest bypass was intended to "decrease the demand along the congested portions along these roadways and facilitate travel south of the downtown area." The CTP proposed speed limit for this bypass would be 55 mph.

The impact of the Barium Springs Parkway and/or the Southwest bypass upon expected commuter traffic along Main Street were not stated in the CTP, nor how such reductions might allow for alternative improvements of Main Street that would better accommodate safe pedestrian crossings and help preserve and promote the germinal urban fabric of the Town.

The original CTP was rescinded primarily due to jurisdictional boundary issues concerning the Barium Springs Parkway. Included among other changes made to the new CTP is a recommended boulevard to connect Wagner Street to South Main Street south of their current intersection, allowing traffic (particularly large trucks) to bypass this central junction.

The Highway Map from the 2007 CTP currently under consideration for adoption is included in the **Appendices**.

EXIT 42 FUTURE LAND USE STUDY

This 2001 study actually served as an update to the Iredell County Land Use Plan. Though the land under discussion rests outside of Troutman's municipal and ETJ boundary, once the properties are developed, they are very likely to be annexed into Troutman.

The vision expressed for this "gateway" to Troutman is of an "extension of downtown" where "buildings, rather than parking lots, dominate the streetscape," and where "residents can use a series of interlocking streets to access the businesses along the Corridor and US 21." The hope expressed in the Study is that Downtown Troutman will remain the "core of commercial retail activity in the area" and that the location and scope of retail in the Exit 42 vicinity will "compliment rather than replace" establishments in the downtown.

A number of policy goals are spelled out in the Study to help meet that end. Some notable examples from a pedestrian aspect include:

- Avoid strip commercial development.
- Maintain Troutman's Central Business District as the primary focal point for retail activity in the area.
- Build sidewalks that connect US 21 with adjoining residential neighborhoods.
- Encourage the use of greenways as a means of connecting neighborhoods and to preserve open space.
- Accommodate neighborhood-shopping opportunities in the community to serve nearby (walking distance) residential areas.
- Promote pedestrian-oriented neighborhood shopping facilities designed to blend in with any surrounding residential neighborhoods.

Among the land use categories depicted on the Future Land Use Map for the study, is a category called *Neighborhood Retail*, featuring small-scale commercial developments that are intended to give nearby residents the ability to shop and avoid higher traffic conditions of US 21. The Exit 42 Land Development Plan is included in the **Appendices**.

IREDELL COUNTY LAND USE PLAN

Adopted in 1997, the County's Land Use Plan is due to be updated, particularly with the amount of growth the county has seen in the last ten years coupled with the growth that is expected in the next ten.

The Plan relates a number of principles that are in harmony with the expressed pedestrian vision of Troutman, namely:

- Avoid strip commercial development. Cluster commercial uses to better serve public interests.
- Select high growth/traffic highways for roadway protection overlay districts which control means of egress, limit new curb cuts, require inter-connectivity.

- Improve connectivity with greater access into major developments through changes to subdivision ordinance.
- Provide protection for areas of environmental concern protection through zoning watershed rules, floodplain rules.

BARIUM SPRINGS MASTER PLAN

Barium Springs Home for Children lies along the north edge of Troutman. The majority of this land is still undeveloped and virtually all of it lies within the Troutman ETJ. Barium Springs' August 2004 Master Plan features a number of development types including a "Mixed-Use Village" at the southern border of the property. This mixed-use area serves as a pedestrian–friendly link between the Town of Troutman to the south, the Barium Springs campus, and the YMCA. The "Village" area also includes the old rail bed, which is well positioned to serve as the central spine to a community greenway system.

THE CAROLINA THREAD TRAIL

This 15-County regional network of trails and greenways has been recently unveiled by the Foundation for the Carolina's and the Catawba Lands Conservancy. It's proposed alignment runs through Troutman, linking it to Lake Norman State Park, nearby municipalities, and the greater region.
http://www.carolinathreadtrail.org/

LAKE NORMAN BIKE ROUTE (LNBR)

Troutman is one of many destination points along a 150-mile long planned regional bike route encompassing Lake Norman. As the Route attracts recreational and commuting bicyclists into Troutman, foot traffic in Town will also increase. Troutman can provide LNBR bicyclists a place to stop and take a break, to eat, or to run errands.

The Lake Norman Bike Route map is included in the **Appendices**. Copies of the full plan may be obtained from Centralina Council of Governments.

2.3 Current Projects, Programs & Events

- Currently, a **local government roundtable** is forming, providing various leaders in Town a venue in which to gather and integrate governing and planning efforts.

- The **YMCA** is the area's only fitness facility. It has a number of fitness programs that encourage active, pedestrian-oriented lifestyles. The YMCA is taking on the responsibility of becoming the Parks and Recreation authority for the Town.

- As a member government of the **Lake Norman Rural Planning Organization** (LNRPO), the Town of Troutman participates in transportation planning initiatives for the region, and enjoys the benefits and resources available through the LNRPO. One of those benefits has been assistance in applying for the North Carolina Department of Transportation Pedestrian Planning Grant that funded the development of this Pedestrian Plan.

2.4 Key Areas & Issues

As it exists today, Troutman offers a number of features that make the Town a very inviting place for pedestrians. Sidewalks line many of the Town's primary streets. Awnings shade downtown building entrances. Other pedestrian-friendly elements in the Town may be less overt but have an even more profound impact on Troutman's walkability. These features deserve the spotlight in order that their value can be more clearly understood, and their characteristics preserved, enhanced and drawn upon as the Town continues to develop.

UNIQUE OPPORTUNITIES

A. Compact urban core with a variety of land uses and destination points
Troutman exhibits a fairly compact urban form along its Main Street, with a Town Center at the intersection of Main and Wagner Streets. The majority of the Town's community buildings and services, along with businesses, restaurants and residential neighborhoods are within an easy five-minute walking distance of this point.

B. Explosive growth in the area
Troutman, and its surrounding area, is experiencing a phenomenal rate of growth, which is expected to continue for years to come. This puts the Town in a favorable position to require a high quality product from developers. Many pedestrian improvements the Town would wish to see could be accomplished through private development as it occurs. Through standards set in the UDO, or as a condition in the conditional use zoning approval process, the Town can require of private development the inclusion of pedestrian amenities, such as sidewalks, trails, and parks that will serve the Town as a whole.

C. Existing sidewalk network
Troutman's existing sidewalk system already connects many key destination points to surrounding neighborhoods. This established centralized network provides a

substantial core for a pedestrian system that could branch out to serve even more destinations.

D. Existing Greenway

One of the most notable characteristics of Troutman is the Town's Greenway, which runs parallel to North Main Street from Wagner Street to Old Murdoch Road. The Greenway runs from the Town Center to one of its primary shopping centers, with businesses and civic buildings along the way. It is a popular facility; well used by locals, providing a safe and practical means of exercise and getting around.

E. Abandoned railway corridor

Troutman's Greenway runs only a short segment of the total length of the railway corridor that traverses the Town's central axis. This undeveloped railway bed continues north from the Greenway, past various business establishments, the County Fairgrounds, the Post Office, the YMCA, and into Barium Springs. South of the Greenway, the corridor continues through between Eastway Drive and South Main Street through land that will likely see redevelopment in the coming years.

F. Additional greenway opportunities along numerous creeks

The area has a network of creek beds that have the potential to host greenways. From the central trail corridor parallel to Main Street, this branching network could reach all parts of the community to form a viable system of alternative transportation to destination points throughout Town.

G. Lake Norman Bike Route

As the population of the region grows, towns in close vicinity to Lake Norman will become ever more desirable to Lake visitors. The proposed Lake Norman Bike Route runs directly through Troutman. As the Route is developed, the Town will see more recreational visitors looking for restaurants and other amenities they can enjoy as part of their Lake circuit experience. Ultimately, the Route is expected to host biking events that will draw visitors from around the greater region.

H. The Depot

The Troutman Depot occupies a central location in the Town at the southern end of the Greenway. Its location adjacent to many restaurants, retail businesses, and established residential neighborhoods, make it a pedestrian hub for locals. It also serves as a landmark for Troutman to those traveling through Town on US 21.

PRIMARY PEDESTRIAN ISSUES

The overall pedestrian quality of life for a community is dependent upon factors that are numerous and interwoven. In order to make meaningful and lasting improvements to pedestrian conditions, these individual issues, and how they affect one another, must be identified and understood. Additionally, the major trends that formed these current conditions, and will continue to shape the future, must be recognized and anticipated. The following list summarizes the general anti-pedestrian conditions described previously in **Part**

2. These are the broad issues and needs that the Troutman Pedestrian Plan **Part 3: Plan Recommendations** will focus upon.

1. **High volume of through traffic commuters**
   Residents must compete with thousands of commuters traveling daily through Town down Main Street to go elsewhere.

2. **Low connectivity**
   Getting around Troutman, whether on foot or in a vehicle, requires frequent trips to and across an already overloaded Main Street.

3. **Explosive growth**
   Troutman's prime location will continue to draw new residents for years to come. Development pressures will make the sale of larger tracts in Troutman increasingly more attractive. Large undeveloped or redevelopable tracts in Town need more focused planning.

4. **Street Crossings**
   - Existing crosswalks are in total disrepair and inadequately visible to drivers.
   - Additional crosswalk facilities are needed at select locations.

5. **Inadequate sidewalk and trail facilities**
   - More sidewalks are needed to accommodate pedestrian traffic in many corridors throughout town where there are currently none available.
   - A number of existing sidewalks are uneven, broken up, or are impeded by telephone poles or signs that make passage unmanageable or unsafe.
   - Besides its one central path, Troutman has very little to offer in terms of off-road paths and trails.

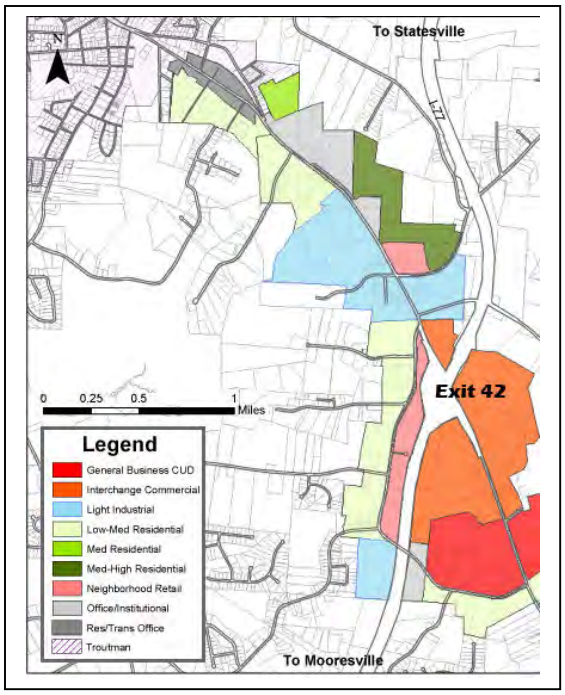
6. **Lighting**
   Lighting is inadequate for safe and comfortable evening pedestrian use throughout much of the Town.

PART 3: PLAN RECOMMENDATIONS

To implement pedestrian improvements, communities can employ a number of different strategies. Depending upon the philosophy of its leadership, a community may choose to:

1. Simply build sidewalks and other amenities on a per request basis that may or may not address overall pedestrian needs
2. Systematically identify and address existing pedestrian barriers and constraints
3. Address both current and expected future pedestrian needs on a case-by-case basis
4. Develop and implement an approach that integrates the need for pedestrian amenities into other aspects of planning, in order to ensure that future development supports pedestrian travel as a practical mode of transportation

Many towns will, by default, take the first approach, or else employ a more coordinated effort required by the second two approaches. But Troutman has indicated a commitment to explore ways of integrating pedestrian needs into their comprehensive planning efforts through this Pedestrian Plan process, so that both current and future pedestrian needs are addressed. This includes putting policy tools into place to ensure that future development decisions strongly consider pedestrian interests. Through this process, the developing pedestrian system will work toward the realization of the overall vision and goals of the community by helping to engender a cohesive and compact town where walking is not only a viable option but often the preferred way of getting to destination points. It will help Troutman develop as a community whose initial historic urban core provides the framework for future growth.



Transportation needs do not exist in a vacuum. They are interwoven with other needs reflected in the way land is used. Transportation systems and land use patterns must be mutually supportive for either to work in a fully functional and efficient manner. This is particularly true in the case of pedestrian planning, where a number of land-use factors often determine whether even the very best of pedestrian facilities are used to their potential.

Citizens may be unfamiliar with how particular development patterns come about, or they may not realize how those forms of development may encourage or discourage pedestrian activity and lifestyle. And they may underestimate the power their community has to shape its own future development. This Pedestrian Plan is intended to convey options in urban design and describe the means of improving pedestrian conditions in Troutman, and with those improvements, to see the increased civic and economic vitality of the Town itself.

3.1 Recommended Policies, Plans and Ordinance Modifications

The Town of Troutman will find serving pedestrian needs easier if its policies, plans, and its UDO are coordinated and consistent regarding pedestrian travel. The following recommendations are designed to help integrate pedestrian mobility into the land use and transportation systems, so as to promote maximum use and benefit:

1. **Form a stakeholder-based Pedestrian Needs Committee (PNC).**
   The PNC should represent a wide variety of pedestrian interests and populations in the Town. Members should include representatives of the historic Troutman, Barium Springs, and residents of recent residential developments. Various areas of expertise represented by the PNC should include:

   - Transportation
   - Commerce
   - Industry
   - Health
   - Safety and crime prevention
   - Recreation
   - Education
   - Aesthetics
   - Environment
   - Engineering and Design
   - Public outreach

   The purpose of the PNC is to ensure that the Pedestrian Plan stays in the forefront of public awareness, and that it is implemented and updated as needed to reflect conditions and pedestrian needs. The PNC can be an important avenue for integrating pedestrian needs with other planning processes. The PNC can serve as advocate, monitor, facilitator, and educator, as well as ensure that emerging public needs are addressed in the planning process. The PNC should see that Troutman Town Staff, Board Members, Planning Board and related outside agencies, like the LNRPO and NCDOT, consider the Troutman Pedestrian Plan appropriately in the planning process. The PNC should also ensure that citizens are alerted of planning efforts, changes in facilities, and upcoming construction.

   Implementation Strategy: Troutman Town Board appoints PNC members and invests them with the authority and charge to follow-up on the Pedestrian Plan.

2. **Coordinate with NCDOT on the Comprehensive Transportation Plan (CTP) to address Town planning goals.**
   Work with NCDOT and the Lake Norman RPO to ensure that the CTP - and all future roadway plans, projects, and priorities for Troutman - are consistent with the adopted Pedestrian Plan, or that the CTP is amended if needed.

   North Carolina planning law now requires communities with planning documents to review those documents and address, in plans reviews and rezonings, issues of consistency of the proposals with the planning documents. For this process to work, the documents must be internally consistent. While such a process may seem burdensome, it also makes the planning process more predictable and should lead to greater adherence and success in carrying out long-term goals for community growth.

Implementation Strategy: To begin a process of amending the CTP, submit a request in a resolution form for the Lake Norman RPO to adopt and to recommend to the regional NCDOT Planning Branch.

3. **Develop and Adopt a Comprehensive Land Use Plan.**
   Through the comprehensive land use planning process, a clear vision for a community is developed and documented. This Plan describes how and where the community should grow and develop in the future, and what steps the community should take to turn this vision into a reality. Pedestrian-related elements that should be included in the plan are:
   - An examination of alternative growth and development scenarios and how they encourage and accommodate viable pedestrian activity.
   - Economic development strategies, particularly for properties located in the central business district, the Eastway Drive area, the Fairgrounds area, and along US 21 and other major corridors.
   - Coordination of all adopted policies and documents (plans, ordinances, etc.) that affect growth and development to ensure that these are consistent with the Pedestrian Plan vision statement and its goals.
   - Developing a prioritized implementation and funding schedule to help ensure that implementation strategies called for in the plan are realized
   - Descriptions of individual neighborhood and corridor development schemes

Implementation Strategy: At the time of this Pedestrian Plan's development, the Town of Troutman has begun the comprehensive land-use planning process. Distribute the Pedestrian Plan to those involved in that process and charge them to publicly consider its analysis and recommendations, and integrate appropriate measures into the Land Use Plan.

4. **Work with Iredell County on areas outside of Troutman's ETJ.**
   Troutman can determine what happens within its corporate limits, but not what happens outside of its borders. The vision described in the Iredell County Land Use Plan meshes well with the vision articulated by the Town of Troutman's, but it will be important to monitor development to see whether these mutually supportive visions are being fulfilled, or whether something further should be done to promote them.

   One issue described in both plans as to be avoided is sprawled patterns of development. Sprawling growth patterns inevitably lead to strip-type development that would, in the long run, prove auto-dependent and not support the pedestrian vision the Town has articulated. Iredell County's Land Use Plan discourages strip commercial development, describing it as:

   "self-defeating and injurious to the public's investment in traffic facilities and to surrounding property. If such commercial uses are properly located and grouped, mutual support will result and the public interest will be better served." (p.30)

   The County's Plan also expresses the desire to see subdivision ordinances within Iredell County provide more local access opportunities for residents to local shopping without reliance upon main collector roads. The Plan also encourages the preservation of natural areas within developments.

Implementation Strategy: PNC shall monitor land development in the Troutman vicinity, and have frequent communication with the Iredell County Planning Department.

5. **Adopt the Lake Norman Bike Route.**
The Lake Norman Bike Route has already been adopted by local transportation planning entities including the Lake Norman RPO, Mecklenburg-Union MPO, and Unifour RPO. As individual counties and municipalities add this regional bike route to their adopted plans, future development and road building will hasten its completion.

Implementation Strategy: Request a copy of the Route Plan from Centralina Council of Governments for adoption by the Town Board.

6. **Enact ordinance changes.**
Though the Troutman UDO reflects a heightened sensitivity to pedestrian-oriented development, it does not adequately support the expressed vision of the Town. Many pedestrian-related issues are not addressed at all in the UDO. The table, which follows, summarizes specific ordinance modifications that would positively impact pedestrian facility implementation or utilization.

Implementation Strategy: Examine the table, which follows, to see a summary of specific ordinance modifications that would positively impact pedestrian facility implementation or utilization. A planning consultant can guide the Planning Board and Town Board through an ordinance revision and adoption process.

3.2 Recommended Programs

Pedestrian facilities, old or new, will receive greater use if certain programs are in place to encourage pedestrian activity, especially for people who are not accustomed to walking much. In addition to current events and programs hosted within the Town, the following programs are recommended.

The Troutman Trailers
When the Troutman Trail is complete, it will provide an ideal route for the community to meet, socialize and exercise. As part of initial promotion for the Trail, the "Troutman Trailers" would provide an organized opportunity to gather for a trek along the Trail. As part of the weekly event, refreshments could be provided by sponsoring area restaurants and served by volunteers. Printed T-shirts or ball caps could be made available to initial participants, along with area retail coupons. The Troutman Trailers could also hold events like Special Olympics and charity relay races, walkathons and other running events. Proceeds could be directed toward park or trail improvements. Such events would also draw attention to the healthy benefits of walking.

Walk a Kid to School event
On special days each year, non-profit organizations, teaming up with area restaurants, could provide school children breakfast before leading them on a community group walk to school. Programs like these help children, parents and all participating adults see for themselves the benefits and viability of children walking to and from school. The North Carolina Department of Transportation has more information about this type of initiative and related ones at:
http://www.ncdot.org/transit/bicycle/safety/programs_initiatives/walk2school_intro.html

Walking School Bus
The walking school bus idea encourages students to walk together with supervision of one or more adults, depending on the size of the group. Adults can take turns walking with students by having assigned days of duty. The group follows a planned route, similar to the traditional school bus, on their commute to and from school. Children can be met by the group at their homes or at supervised "bus stops". The bus participants can have fun with the idea by wearing a specific color, use a wagon for the backpacks, or hold a rope linking them all together. Adults can use the opportunity to teach pedestrian safety skills to students while walking to school as well. Special days might be designated, like "Walking Wednesdays", on a weekly or monthly basis to encourage participation. Classes that have the greatest percentage of students participating can be recognized and rewarded.

Crossing Guards
Volunteers from the community can work with the local school system to provide safe crossings for school children at key crossing areas. Crossing guards help guide students safely across busy streets and provide additional supervision for children. They also serve as visual cues to drivers to slow down.

Students can also serve as safety patrol volunteers. The AAA

School Safety Patrol program has helped reduce injuries and deaths among younger students most at risk for pedestrian injury. The AAA program also instills students with a sense of responsibility and leadership, as each day they protect classmates going to and from school. Contact the AAA School Traffic Safety Coordinator for North Carolina, Monique Lyles at (888) 274-4459 x6201, mllyles@mailaaa.com. Or visit AAA at: http://www.aaapublicaffairs.com/Main/Default.asp?CategoryID=7&SubCategoryID=25&ContentID=71

Pedestrian Safety Roadshow

In an effort to reduce pedestrian injuries and fatalities in North Carolina, the Division of Bicycle and Pedestrian Transportation (DBPT) hosts this special program to train facilitators who could help communities identify and solve problems that affect pedestrian safety and walkability. The Federal Highway Administration (FHWA) developed this program in conjunction with the National Highway Traffic Safety Administration (NHTSA).

The objectives of the Pedestrian Safety Roadshow are these:

- Increase awareness of pedestrian safety and walkability concerns
- Provide participants with information about the elements that make a community safe and walkable
- Channel community concerns into a plan of action for addressing pedestrian issues.

Led by a trained facilitator, the Roadshow brings together community officials, concerned citizens, and local business leaders for an educational workshop about pedestrian issues. An accompanying slide show illustrates both problems and solutions to help pedestrians. The Roadshow also addresses health, environmental, and quality of life concerns that impact a community. After the classroom portion of the Roadshow, participants are asked to visit a particular street, neighborhood, or area of their community to identify pedestrian concerns and then to discuss possible solutions. The participants are then challenged to follow up on the Roadshow with a plan of action to develop and implement appropriate solutions.

To request a Pedestrian Safety Roadshow for Troutman, contact the DBPT at 919/733-2804 or bikeped_transportation@dot.state.nc.us.

Iredell County Area Transit Service (ICATS)

The ICATS Community Transportation Program provides for human service consumers as well as the general public. The service operates between the hours of 5:00 a.m. and 7:00 p.m. Monday through Friday. Additional evening and weekend hours are available on a limited basis. Services are provided through deviated fixed routes, subscription routes, and demand response service trips. ICATS is a ridesharing public transportation system that enables routes and schedules to be structured to transport multiple passengers to multiple destinations. Service is provided curb-to-curb unless door-to-door service is requested for special populations. Medical, personal, and employment trips are available. Contact the Director at 704-832-2342. For scheduling, call 873-9393. Or visit their website at: http://www.co.iredell.nc.us/Departments/Transportation/transportation.asp

Adopt a Sidewalk/Trail Program

The Adopt-a-Road program is very successful in gathering volunteer groups to regularly clean a particular stretch of road. Adopting a trail or sidewalk section can be just as effective. Any interested individual or organization can care for their "own" section of trail. They may adopt a favorite site or a Beautification Committee can suggest a trail or sidewalk section most in needing. Volunteers pick up litter four times annually, or more if necessary. They also serve as an extra set of eyes to watch for downed trees and branches or report other maintenance issues. Adopt-a-Trail or Adopt-a-Sidewalk signs are placed on the trails to recognize those volunteers who have taken their valuable time to keep the trails clean and help preserve these valuable assets for the community.

Provide Wireless Internet (Wifi) and trail webcam coverage.

Wifi allows people to enjoy a mobile workplace. Anyone working on a laptop computer can choose to work inside or outside, wirelessly, anywhere within the Wifi range. Wireless broadband access can be set up in areas where people are likely to want to gather outside, such as the Troutman Depot, area restaurants, or open spaces provided within new communities. By offering free Internet service, the Town could attract more tourists such as Lake Norman Bike Route users. Wireless webcams can also work off of the same system and be incorporated into greenway trails. These “trailcams” would enhance public safety and provide promotion for greater trail use. Additionally, 911 call buttons could also be stationed along various parts of each trail.

3.3 Project Recommendations and Implementation Strategy

Before considering individual site-specific projects (or how to implement them), a broad description of recommended pedestrian initiatives for Troutman is provided below. Each of these project types or strategies is intended to improve pedestrian conditions in terms of increased safety and mobility. These general recommendations are listed categorically and in no particular order of priority. Individual projects within those categories are described in detail in the subsequent section: **Individual Project Identification and Priority List**, and are also shown on the **Comprehensive System Map**. All improvements should be constructed and maintained in accordance with the **Facility Standards and Guidelines** section of the Plan Appendix.

GENERAL PROJECT RECOMMENDATIONS

Short-term Project Types

Short-term Projects are elements that can be constructed to help accomplish the overall goals of the Pedestrian Plan. They are considered "short-term" because they generally satisfy the following criteria:

- Address critical safety, mobility, or access needs
- Primarily improve or utilize already existing facilities
- Require minimal purchase of right-of-way or easements
- Are consistent with other previously adopted plans
- Require no changes in existing ordinances
- Require a minimum of funding

- **Immediately address safety concerns over street crossing conditions.** Contact NCDOT Division 12 and formerly request a site visit to existing crosswalks and other crossing points areas needing particular attention. Request that consideration be given to the need for crosswalk signalization, audible pedestrian activation mechanisms, signage and striping in locations described in the **Individual Project Identification and Priority List**. Use currently dedicated funds to construct facilities. In this Plan, crosswalks are proposed at strategic locations where increased pedestrian activity, linked to existing or proposed sidewalks, encounters the greatest potential conflict with vehicular traffic. Properly designed crosswalks not only facilitate safer street crossing opportunities for pedestrians, they also offer a secondary pedestrian benefit of calming traffic.

- **Construct sidewalks and improve sidewalk conditions** along existing streets in accordance with the Plan's priorities. Sidewalk "conditions" refers to a variety of improvements including:

a. Pavement condition and type
b. Path width
c. Lighting
d. Drainage
e. Clearance from obstructions
f. ADA compliance
g. Planter islands

h. Street trees and other landscaping

i. Trash cans, benches, and other "pedestrian furniture"

Long-term Project Types:

Long-term projects may have equal or greater impact than Short-term but may require that one or more of the following actions be taken:

- Private development or private land and thus public-private cooperation
- Require additional right-of-way or easement acquisition
- Fall within NCDOT right-of-way
- Require NCDOT funding, engineering and construction
- Require ordinance modification

- **Construct pedestrian trails and supporting facilities** in acquired easements and right-of-way including proposed public destination points identified in the **Comprehensive System Map** and other desirable destinations.

  It should be noted that the term "trail" refers to a path other than a sidewalk that links destination points (and thus is useful for transportation) as well as a path that may be used for recreation.

  When developing pedestrian trails (or greenways) consider the following steps:

  1.) Identify, plan and develop greenways in cooperation with all affected landowners, local businesses, civic organizations, pertinent citizen advisory groups, jurisdictions, and local law enforcement. A "Greenways Partnership" can facilitate communication between these groups.

  2.) Ensure the preservation, protection and appropriate management of significant and sensitive environmental, ecological and cultural resources within greenways through conformance with the standards and criteria identified in this Plan and other pertinent policies and plans.

  3.) Where acquisition of land needed for the greenway is not feasible or desirable, work with landowners to protect identified resources, and provide public access where appropriate, through voluntary means such as conservation and trail easements and/or cooperative agreements.

  4.) Identify roadside segments of the greenway/trail plan. Ensure that these segments are incorporated into local and state transportation plans and developed and maintained through appropriate agencies.

- **Construct sidewalks** and related facilities as improvements are made to existing roads and as new road construction occurs. Most of the Pedestrian Plan's recommended sidewalk projects are to be constructed as road improvements are made by NCDOT per the Comprehensive Transportation Plan.

IMPLEMENTATION STRATEGIES

Specific strategies are listed below under the classifications of, again, Short-term and Long-term. Each of these strategies has long-term benefits but Short-term strategies meet the most immediate needs, can be most readily addressed, and will be beneficial toward later steps of implementation.

Short-term Implementation Strategies:

- **Apply for recommended funding** and enact revisions to the local budget.
  See **Funding Strategies and Local Budget Recommendations** in this Plan.

- **Revise current development policies** contained in the UDO per the **Recommended Policies and Ordinance Modifications** section of this Plan. New streets, trails and associated pedestrian facilities will become available to the Town through the development process, with minimal public expense. Encouraging mixed-use development in these parcels through the creation of a mixed-use zoning category will foster new neighborhood development where walking can serve as a useful means of transportation and help Troutman develop as a more walkable community as a whole.

- **Initiate right-of-way agreements for trails.**
  Contact parcel owners along the abandoned railway corridor parallel to North Main Street, and the sanitary sewer utility company to share existing utility and stream corridors.

- **Evaluate current Town staffing needs.**
  Implementation of the Pedestrian Plan may require some additional staff responsibilities to coordinate individual improvement projects and work with the Pedestrian Needs Committee.

- **Initiate recommended programs** for community awareness, safety and maintenance procedures. The PNC and Town staff shall work with stakeholders to reach out to pedestrians about safety issues. The Police Department can participate by distributing materials through their Community Policing program, the Schools by distributing materials to their students and parents.

Long-term Implementation Strategies:

- **Acquire right-of-way for sidewalks, trails and destination points.**
  All proposed corridor locations are depicted on the **Comprehensive System Map**. Projects are described in the **Individual Project Identification and Priority List**. In order to construct additional on-street pedestrian improvements (sidewalks, accessibility ramps, etc.), the Town may need to acquire the additional property required for the improvement or reach an agreement with the property owner. See

the **Funding Strategies** section for various options of land acquisition and public-private partnerships. New trail easements may be acquired through a subdivision process, as proposed in the **Recommended Policies and Ordinance Modifications** chart, or through various other means including:

- Donation of right-of-way or easements by public or private landowners
- Public purchase of right-of-way or easements
- Public/private partnerships

Evaluate existing and ongoing pedestrian projects and strategies.
See the **Recommended Evaluation Process** in this Plan.

3.4 Individual Project Identification and Priority List

Prioritizing projects is by nature a fluid process, dependent upon factors subject to change, such as individual parcel sales, development trends, employment opportunities, and traffic demands. Each of these factors is highly contingent upon new residential development pouring into the area. However, despite fluctuations in local conditions, the community has expressed its resolve to turn its pedestrian vision, stated earlier in the Plan, into a reality. That vision requires that each project meet certain **goals**, expressed here as:

1. Greater pedestrian connectivity
2. Thorough accessibility to all potential user groups
3. Increased community identity, social interaction, and beautification
4. Increased pedestrian safety
5. Decreasing vehicular traffic and congestion that present obstacles to pedestrian use

In addition to meeting community goals, the projects listed below are also weighted by the following implementation **criteria**:

1. Physical/geographic constraints
2. Potential for right-of-way acquisition
3. Project costs
4. Support by existing plans and initiatives
5. Community-expressed support based on where people walk or would like to walk, particularly as a means of transportation between destination points.

Each project was evaluated in terms of meeting these goals and satisfying the criteria. The steering committee reviewed the public response and factored it into a finalized prioritization.

All project locations are shown on the attached **Comprehensive System Map**. See the **Project Recommendations and Implementation Strategy** section for background, justification and further explanation of each project type. All improvements shall be in accordance with the descriptions in **Facility Standards and Guidelines**, all pertinent NCDOT specifications and the most current **Manual on Uniform Traffic Control Devices** (MUTCD). All improvements in NCDOT right-of-way are contingent upon NCDOT District 12 approval. For recommended procedures in acquiring right-of-way/easement, refer to **Project Recommendations and Implementation Strategy, Long-term Project Types** and **Funding Strategies.**

Project distance estimates provided are approximate. All sidewalk and trail projects will require sufficient right-of-way to permit the paved area, necessary grade changes, shoulders or planter strips. All sidewalk projects shall include planter strips between new sidewalk and back of curb where feasible and appropriate, along with street trees, adequate street lighting, and appropriate pedestrian facilities such as benches, trashcans, etc. All trail projects shall include sufficient trail lighting, any necessary landscaping, appropriately placed pedestrian facilities, signage and trailheads.

PRIORITY LIST OF TROUTMAN PEDESTRIAN PROJECTS:

The projects listed below are grouped into categories of various project types. Each project is labeled according to project type and listed in order of priority within its category.

PROJECT CATEGORIES:

C- crosswalk projects

S- sidewalk projects

T- trail projects

O- other miscellaneous project types

CROSSWALK PROJECTS

C-1 Crosswalk improvements at Main and Wagner

Improve pedestrian safety and accessibility at the Town's central intersection. Contact NCDOT Division 12 and request installation of crosswalk signalization, audible pedestrian activation mechanisms, warning signage and striping at the intersection. Locate improvements approximately where current crosswalk striping exists across North Main, Wagner and South Main.

C-2 Old Mountain Road Crosswalks

Provide safe pedestrian crossing opportunities to South Iredell High School from new developments along Old Mountain Road.

1.) Contact NCDOT Division 12 and request assessment for improvements. Request crosswalk signalization, signage and striping on Old Mountain Road at the intersection of April Showers Lane and entrance to proposed Barium Seasons Village (north side).
2.) Install crosswalk facilities at intersections with appropriate striping, warning signage, and signalization with audible pedestrian activation mechanisms.

C-3 Old Murdock Road crosswalk

Provide safe pedestrian crossing to connect current greenway with proposed **North Main Street sidewalk**.

1.) Contact NCDOT Division 12 and request traffic light with crosswalk signalization, audible pedestrian activation mechanisms, signage and striping to cross Old Murdock Road and North Main Street at their intersection.
2.) Install facilities concurrent with CTP improvements along Old Murdock Road.

C-4 Eastway crosswalks

Provide additional safe pedestrian crossing opportunities across South Main Street at primary intersections. Contact NCDOT Division 12 and request installation of crosswalk signalization, audible pedestrian activation mechanisms, warning signage and striping at both the north and south intersections of Eastway Drive and South Main Street.

C-5 Monbo Road Crosswalk

Concurrent with CTP proposed realignment of Monbo Road to align with Barium Road, install crosswalk striping, signalization, audible pedestrian activation mechanism and warning signage for two pedestrian crossings.

C-6 Barium Springs Village crossing

Provide pedestrian connection from proposed Barium Springs community (north side) to YMCA/P.O. area. Concurrent with development of the community, construct multi-use trail from proposed park/open space area within Barium Springs community to North Main Street. Provide crosswalk striping, signalization, audible pedestrian activation mechanism and warning signage for pedestrian crossing. Continue trail to intersect proposed **North Track Trail**.

SIDEWALK PROJECTS

S-1 North Main Street sidewalk (east) (0.3 sidewalk miles).

Continue the central pedestrian route of the existing greenway toward the YMCA and Barium Springs. Establish pedestrian linkage from the northern end of the existing greenway at Old Murdock Road to the railroad bed at Murdock Road.

1.) Identify parcel owners along east side of North Main Street from Old Murdock Road to Murdock Road.
2.) Acquire sufficient width of right-of-way.
3.) Construct sidewalk facilities along length.
4.) Provide crosswalk striping and warning signage across Old Murdock Road.

S-2 Old Mountain Road sidewalk (1.0 sidewalk miles)

Establish pedestrian linkage from intersection of North Main Street to South Iredell High School and proposed entrances to Barium Springs Village.

South Iredell High School on Old Mountain Road

1.) Identify parcel owners along south side (school side) of Old Mountain Road from North Main Street to High School parcel.
2.) Acquire sufficient width of right-of-way for sidewalk and planter strip.
3.) Concurrent with adjacent property development or CTP improvements along Old Mountain Road, construct sidewalk facilities along length.

S-3 North Main Street sidewalk (west) (0.5 sidewalk miles)

Continue existing North Main Street sidewalk to Old Mountain Road to provide full pedestrian access along the Town's primary business street and linkage to other proposed pedestrian improvements.

1.) Identify parcel owners along west side of North Main Street from existing sidewalk terminus to Old Mountain Road.
2.) Acquire sufficient width of right-of-way.
3.) Concurrent with adjacent property development, construct sidewalk facilities along length.

South Main Street Sidewalk at Troutman Elementary School

S-4 South Main sidewalk repair

Improve pedestrian facilities that serve the Elementary School. Repair damaged sidewalk sections along South Main Street from Rumple Street to southern terminus.

S-5 Rumple Loop (0.7 sidewalk miles)

Provide a pedestrian connection from Schools to Main Street and neighborhoods south.

1.) Identify parcel owners along east side of Rumple Street from Main Street to Era Street, parcel owners along the south side of West Avenue from Wagner Street to Rumple, along the north side of West Ave. from Wagner Street westward to existing sidewalk, and along both sides of Era Street from Rumple Street to Wagner.
2.) Determine most advantageous side to of Era Street to acquire necessary right-of-way.
3.) Acquire sufficient width of right-of-way to construct sidewalk and planter strip.
4.) Install sidewalk improvements along length.

S-6 Eastway sidewalk (0.9 sidewalk miles)

Provide a pedestrian loop for future development near the Town Center. Concurrent with adjacent property development, construct sidewalk along the southwest side of Eastway Drive. Terminate sidewalk at both ends by connecting to the proposed South Main sidewalk.

S-7 Talley Road and West Avenue sidewalk (1.0 sidewalk miles)

Establish a pedestrian loop from the terminus of the existing sidewalk on West Avenue to North Main Street along Talley Road.

1.) Identify parcel owners along south side of West Avenue from Downing Street to Talley Road

2.) Identify parcel owners along both sides of Talley Road from West Avenue intersection to North Main Street and determine which side of Talley is more feasible for sidewalk improvements.
3.) Acquire sufficient width of right-of-way to construct sidewalk and planter strip.
4.) Concurrent with CTP improvements along Talley Road, construct sidewalk facilities along length.

S-8 Church Street Sidewalk (0.3 sidewalk miles)
Establish pedestrian linkage from Town Center at Main Street to the proposed Murdoch Farms Trail.
1.) Identify parcel owners along both sides of Church Street from Main Street to northeast terminus. Determine which side of Church Street is more feasible for sidewalk improvements.
2.) Acquire sufficient width of right-of-way for improvements.
3.) Install sidewalk facilities along length.

S-9 Perry Road Sidewalk (0.8 sidewalk miles)
Connect the Town Center area to the proposed Murdoch Farms development. Provide sidewalk along both sides of Perry Road from South Main to Eastway, and along the north side of Perry Road to the proposed entrance of the Murdoch Farms community.
1.) Identify parcel owners along both sides of Perry Road from South Main to Eastway, and along north side of Perry to the proposed entrance of the Murdoch Farms.
2.) Acquire sufficient width of right-of-way for improvements.
3.) Concurrent with redevelopment, install sidewalk facilities along length.
4.) Contact NCDOT Division 12 and request installation of crosswalk signalization, audible pedestrian activation mechanisms, warning signage and striping at intersection of Eastway Drive.

S-10 Autumn Leaf sidewalk (3.0 sidewalk miles)
Connect Talley Ridge, Streamwood and other future developments along Autumn Leaf Road to Park & Ride, proposed shopping area at Wagner intersection, proposed **Streamwood Trail**, proposed **Eastside Trail**, and Exit 42 future development. Concurrent with adjacent property development or CTP improvements, construct sidewalk along one side of Autumn Leaf Road, from Talley Road, to South Main Street, and along Oswalt Amity to proposed **Eastside Trail** head.

S-11 Perth Road Sidewalk (0.8 sidewalk miles)
Complete pedestrian loop from **Streamwood Trail** to Town Center.
1.) Identify parcel owners along east (less developed) side of Wagner Street/Perth Road beginning at Era Street across from existing sidewalk terminus, to Autumn Leaf Road.
2.) Acquire sufficient width of right-of-way to construct sidewalk and planter strip.
3.) Concurrent with CTP improvements, install sidewalk facilities along length.
4.) Provide crosswalk striping, signalization, audible pedestrian activation mechanism and warning signage to cross Autumn Leaf and Perth Road at their

intersection, and another crossing of Wagner Street at the Era/ Powell intersection.

S-12 Massey Street Sidewalk (0.2 sidewalk miles)
Concurrent with development of proposed Brookside Community, connect South Trace and Brookside communities to Perth Road.

1.) Identify parcel owners along north (less developed) side of Massey Street beginning at western terminus to Wagner Street/Perth Road.
2.) Acquire sufficient width of right-of-way to construct sidewalk and planter strip.
3.) Install sidewalk improvements along length.

S-13 Thomas Brown Loop (0.3 sidewalk miles)
Provide greater sidewalk connectivity in the Town Center and School zone by connecting proposed sidewalk on Rumple Street to existing sidewalk on Brown Street at West Avenue.

1.) Identify parcel owners along both sides of Thomas Street stretching from Rumple Street to Brown Street, and parcel owners along east side of Brown Street from Thomas to West.
2.) Determine most advantageous side to of Thomas Street to acquire necessary right-of-way.
3.) Acquire sufficient width of right-of-way to construct sidewalk and planter strip.
4.) Install sidewalk improvements along length.

S-14 Winecoff sidewalk (0.4 sidewalk miles)
Provide greater sidewalk connectivity in the Town Center and School zone by connecting proposed **Murdock Farms Trail** at Winecoff trailhead to proposed Eastway Drive across from Elementary School entrance.

1. Identify parcel owners along both sides of Winecoff Street from Eastway Drive to north terminus. Determine which side of Winecoff Street is more feasible for sidewalk improvements.
2. Acquire sufficient width of right-of-way for improvements.
3. Install sidewalk and accompanying improvements along length.

S-15 South Main sidewalk (5.3 sidewalk miles)
Establish pedestrian linkage from Town Center to Exit 42 future development and communities fronting South Main Street. Connect to nearby existing community sidewalks with spur routes where necessary, including Aberdeen, Jacobs Woods (with a one-block spur on Byers Road), and future developments. Concurrent with adjacent property development or CTP improvements, construct sidewalk along southwest side of South Main Street, from terminus of existing walk at Elementary School to Barkdale Road intersection. Provide crosswalk at intersection. Continue sidewalk along northeast side of South Main Street to developments at Exit 42 (2.6 miles, including Byers Road spur), and along north side of South Main from southern terminus of greenway to exit 42 (2.7 miles).

S-16 Houston Road sidewalk (0.2 sidewalk miles)
Provide pedestrian connection from proposed **Eastside Trail** head to South Main Street. Concurrent with Exit 42 developments, construct sidewalk facilities from proposed trailhead on Houston Road to South Main Street.

S-17 Talley Street sidewalk extension (1.2 sidewalk miles)
Connect Town Center to Talley Ridge community and complete a southern pedestrian loop. Concurrent with construction of southern bypass and proposed **Autumn Leaf sidewalk**, continue proposed **Talley Street sidewalk** along east side of Talley Street to Lytton Farm Road, future Autumn Leaf Road extension and Talley Ridge community entrance.

TRAIL PROJECTS

T-1 North Track Trail (0.5 trail miles on converted RR bed)
Convert the existing railroad bed into a useful trail to establish pedestrian linkage from the northern end of the proposed **North Main Street sidewalk** at Murdock Road to the YMCA facility and Barium Springs.

1.) Develop greenway plan for the North Track Trail to run from Murdock Road (at terminus of proposed sidewalk) to the YMCA along the existing railroad bed.
2.) Adopt alignment for the Trail.
3.) Determine width of right-of-required for improvements.
4.) Negotiate right-of-way purchase or permanent trail easement, binding on future land transactions in perpetuity.

5.) Develop construction details for Trail including pavement materials, etc.
6.) Construct Trail facilities along length.

T-2 Murdock Farms Trail (1.2 trail miles, main route)
Establish pedestrian linkage from the Town Center at Main Street through proposed Murdoch Farms development to Perry Road to be constructed with future developments.

1.) Develop plan for trail to run from the terminus of Church Street to the creek, then easterly along creek to Murdock Farms pond, then southeast to Perry Road.
2.) Identify all parcels owners along alignment.
3.) Acquire necessary right-of-way along alignment.
4.) Create an additional multi-use loop trail around existing pond (0.4 miles of trail).
5.) Provide trailhead link to proposed sidewalk along Church and Winecoff Streets.

6.) Provide additional spur routes extending up creeks north of pond into neighboring properties as re-development occurs (potential 0.5 trail miles).

T-3 Streamwood Trail (2.4 trail miles, main route)

Connect the Town Center to Lake Norman and proposed shopping and Park & Ride. Establish the linkage with a multi-purpose trail along the north-south stream corridor connecting Aberdeen Village Loop, on South Main, to the proposed Streamwood community and the proposed **Autumn Leaf Road sidewalk**. Provide pedestrian connection from proposed Streamwood community to Middle and Elementary Schools. Concurrent with redevelopment of parcels south of Middle School, construct a trail spur along creek to south terminus of Cedar Street (0.2 trail miles). Provide an additional spur to Quail Haven community (0.3 trail miles). Across Autumn Leaf Road, continue trail along the creek to the nature preserve area at south end of the subdivision. From there the trail heads back northward along the adjacent creek to the west, east of the Spicewood loop until it again meets the proposed **Autumn Leaf Road sidewalk** again and terminates.

1.) Develop plan for the trail to be constructed with proposed Streamwood development.
2.) Identify all parcels owners along alignment.
3.) Acquire necessary right-of-way along alignment.
4.) Construct trail facilities along length.

T-4 St. Lawrence Trail (1.7 trail miles, primary route)

Connect the Town Center and future residential developments to South Iredell High School. Establish the linkage with a multi-purpose trail running from the proposed sidewalk at the intersection of Talley Road and West Avenue into the proposed St. Lawrence development. Follow creek bed to the existing pond at north end of St. Lawrence. Continue along the creek northwestward to Monbo Road. Cross into Barium Seasons Village property to South Iredell High School, with a spur trail to the park/open space area within proposed Barium Springs Village.

1.) Develop plan for the trail to be constructed with proposed St. Lawrence and Barium Springs Village developments.
2.) Follow procedures for **Streamwood Trail**.

T-5 YMCA Trails (1.0^{+}/- trail miles)

Improve existing trails behind YMCA and provide trail connections to existing Barium Springs campus paths and proposed North Track Trail.

Barium Springs Campus paths

T-6 Eastside Trail (2.0 trail miles)

Provide alternative pedestrian linkage from Town Center to CTP Park & Ride, and future Exit 42 development. Construct a multi-use trail along the creek from Perry Road to CTP Park & Ride. Continue trail along creek across Oswalt Amity Road to Houston Road. Provide trailheads at Perry Road, the Park & Ride on South Main Street, Levo Drive south

terminus, Sherrills Pond Lane, and other appropriate locations within new developments. Construction shall be concurrent with new development along alignment.

T-7 **Fairground Plaza Trail** (0.9 trail miles)
Provide pedestrian connection from proposed St. Lawrence development to business district at North Main Street and Old Mountain Road. Construct a multi-use trail along stream corridor from Old Mountain Road to St. Lawrence Subdivision.

T-8 **Town Hall Trail** (0.6 trail miles)
Provide pedestrian connection from proposed Murdoch Farms community the Town Center. After development of **Murdoch Farms Trail**, construct a multi-use trail along stream corridor from **Murdoch Farms Trail** to Patterson Street. Continue along creek or loop around Patterson Street to reconnect to creek and continue along it to Sherrills Road bend to connect to proposed **Fairgrounds Trail**. Provide a spur connection to Town Hall.

T-9 **Brookside Trail** (1.1 trail miles)
Provide pedestrian connection from proposed Brookside community to the Town Center. Concurrent with development of the Brookside community, construct a multi-use trail along stream corridor from proposed park area within Brookside community to proposed sidewalk on Thomas Street.

T-10 **Brookside Trail Extension** (0.8 trail miles to current ETJ limit)
Provide pedestrian connection from existing Meadow Glen community south of Autumn Leaf Road and areas beyond to Town Center. Concurrent with development of the Brookside community, construct a multi-use trail along stream corridor from proposed park area within Brookside community, across Autumn Leaf, to Meadow Glen Drive. Continue the trail southwestward; following the creek, as future development and annexation occurs.

T-11 **Fairgrounds Trail** (0.5 sidewalk miles, 0.6 trail miles)
Provide pedestrian connection from YMCA to east Troutman trail system. Construct multi-use trail along stream corridor from Old Murdock Road, across Murdock Road to North Troutman Trail and YMCA. Concurrent with CTP improvements, provide sidewalk along north side of Old Murdock Road from North Main Street to stream corridor south of Murdock Road. Provide sidewalk connection from Old Murdock Road along west side of street to north end of **Town Hall Trail**.

OTHER PROJECT TYPES

O-1 School Loop (0.2 street miles, 0.4 sidewalk miles)

Provide pedestrian amenities along new street connection located between the elementary and middle school to serve commuting students.

1.) Meet with design consultant and the elementary and middle school officials to determine design features for through street. Facility elements may include wide sidewalks that directly abut the curb, special warning signage including "No Idling", additional ADA ramps, street trees, benches, trashcans and street lighting along length to provide for waiting commuting pedestrians.
2.) Determine how the town and schools can share the costs of the improvements.
3.) Develop design and construction documents for the improvements.
4.) Construct improvements.

O-2 North Main and Old Mountain Road Intersection improvements

Improve pedestrian safety and accessibility at a primary intersection adjacent to proposed **North Troutman Trail**.

1.) Contact NCDOT Division 12 and request an assessment of the site.
2.) Consult with a transportation planner to determine optimal re-alignment of the intersection for vehicular capacity and pedestrian safety. Refer to the **Troutman Town and Country Plan** as an option to consider. Include crosswalk signalization, signage and striping to be added to intersection.
3.) With re-alignment improvements, install crosswalk signalization, audible pedestrian activation mechanism, striping and warning signage for all four pedestrian crossings.

3.5 Recommended Maintenance Programs

Sidewalks and other pedestrian paths must be properly maintained and kept clear of debris, overgrown landscaping, tripping hazards, or areas where water accumulates. Other pedestrian facilities, such as signage, lighting, striping and landscaping, require other care and occasional replacement.

In general, maintenance costs include:

- Personnel Costs – Wages and benefits for the people who perform the work.
- Materials – Or supplies, including paving materials, and landscape materials such as soil, rocks, and plants.
- Water – For irrigation.
- Utilities – Including electricity and phone for running automatic or centralized irrigation systems and traffic signals.
- Equipment – For on-going maintenance and future purchases of maintenance tools.

Maintenance Considerations for Landscaped Areas

All outdoor public areas require regular maintenance procedures, such as weed control, litter pickup, inspection and general repair. Additionally, individual landscape areas require particular maintenance procedures.

- For tree and shrub areas: structural pruning, sucker removal, pest/disease control, fertilizing, adjustment/checking/repair of irrigation systems, applying post/pre-emergents, staking and bracing of trees, rodent control, and pruning and clearing branches or trimming shrubs when they encroach on the travel path or impair the line of sight for drivers and pedestrians.
- For groundcover areas: pruning, edging, applying post/pre-emergents & plant growth regulators, fertilizing, adjustment/checking/repair of irrigation systems, rodent control and dead-heading (removal of dead blooms).
- For turf areas: mowing, edging, aeration, fertilizing, adjustment/checking/repair of irrigation systems, cleaning hardscape areas (paths, squares, etc.), and rodent control.
- For non-vegetated areas (open space): applying post/pre-emergent (selected areas), fire abatement, cleaning of hardscape areas (concrete pathways, squares, etc.)
- Additional work as needed: decorative light inspection/repair, inspection for acceptance of new sites, vandalism and graffiti cleanup.

Maintenance & Operations of Off-road Trails

Facility inspections are an essential part of maintaining any facility. Planning and design of all off-road trails should include management plans that help gauge operational funds for various maintenance projects. Proper maintenance must address both the performance condition of the trail preserving the environmental integrity and character of any environmental areas that are adjacent to the trail. Maintenance and repair projects can be managed either through annual service contracts put out to bid, or become an integral part

of the Facilities Management maintenance program. Annual budgets for trail maintenance and operations should document maintenance items, facility improvements, and other related costs to ensure the long-term health of trail facilities, the environment, and safety for users.

Three tiers of maintenance programs should be included in the management plan:

1. **Long-term maintenance programs** - includes renovation of facilities and trail resurfacing. Comprehensive inspections should occur twice a year to record user impacts, general wear and tear, and other factors that may affect safety, environmental features, or structural integrity of the facility. If long-term maintenance programs are deferred, the safety of the trail is compromised and costly capital improvement funds to renovate damaged areas may be required. Typical long-term maintenance activities include:
    - Annual vegetation clearance (June and September)
    - Annual inspection by engineer to identify potential repairs needed for bridges and structures, drainage structures, pavement, railings, and fences
    - Revegetation during planting seasons
2. **Routine maintenance** – includes safety and repair issues that occur throughout the life of the facility. Frequency of routine maintenance should take place on a monthly basis, dependent upon the amount of usage and availability of funds. Typical routine maintenance activities include:
    - Removal of litter and general cleaning
    - Sweeping and leaf removal
    - Mowing and weed control
    - Pruning and removal of encroaching/fallen branches
    - Trail edging
    - Route signage maintenance
    - Graffiti control
    - Regular presence of volunteers to report faults
3. **Emergency repairs** - necessitated when storm damage makes the trail unsafe for daily use. Severe weather may occasionally cause damage to the facility either through wind, erosion, or fallen trees. Emergency repair funds for severe weather should be allocated and allowed to rollover from year to year for this inevitability.

Volunteer programs

Volunteer programs for greenway maintenance can be organized through the "Adopt-A-Park" program. Volunteer labor can yield a substantial savings for labor costs on routine maintenance and repair. Materials can be donated by a group, provided through a corporate sponsor, or purchased by the Town.

3.6 Recommended Evaluation Process

As the Troutman Pedestrian Plan is implemented and pedestrian facilities are constructed, it is recommended that the Town perform a periodic evaluation of the goals and the processes described in the Plan, particularly as more growth occurs in the form of residential subdivisions and Exit 42 development. Plans in themselves are static and unchanging documents, but circumstances change constantly. Though the Town remains true to the vision described in this Plan, the means of achieving that vision may change with fluctuating economic conditions, property sales and redevelopment, fluid population trends, changing development practices, and evolving technology. The following recommendations are provided as examples of regular means of evaluation.

1. Pedestrian Needs Committee (PNC) should meet periodically to confirm and re-evaluate the priorities of this Plan and its recommended projects, particularly as tracts of land are developed.

2. The Public Works Director should regularly report facility conditions and needs.

3. Public surveys can be used to solicit the opinions of everyday users to determine if the plan and its rate of execution are adequately meeting the needs of the populace.

PART 4: FUNDING

4.1 Sample Cost Estimates for Facilities

In order to build pedestrian facilities, a number of different costs associated with projects must be considered. There are material costs, labor costs, mobilization costs, right-of-way purchase or easement costs, design costs, and project management expenses. Together these may be considered "project costs." In addition to the project costs, there are also ongoing costs associated with the facility, such as maintenance, security, and particular programs necessary for the initial and continued success of the facility.

The cost estimates provided below are primarily limited to material and labor. They are provided only as a guide and are approximate. Prices are current for the time of this publication. Materials, labor and other project costs will vary with fluctuating interest rates and inflation. Installation costs do not include ROW purchase, grading or utility relocation.

Sidewalks and Trails

Costs Per Mile

Surface Material	Costs Per Mile	Longevity
Concrete	$300 -500,000	20 years +
Asphalt	$200 -300,000	7-20 years
Crusher fines	$ 80 -120,000	7-10 years
Wood chips	$ 65 - 85,000	1-3 years
Soil cement	$ 60 -100,000	5-7 years
Native soil	$ 50 - 70,000	variable
Boardwalk	$1.5-2.0 M	7-15 years
Recycled materials	variable	variable

Costs Per Unit

Conventional Concrete – 10 ft. wide path=$35/LF or $10/square foot.
Pervious Concrete –10 ft. wide path=$42/LF.
Asphalt – 10 ft. wide path = $20/LF.
Crusher fines – Typically costs about 1/3 the price of concrete paths, installed.

Typical Annual Maintenance Costs for a 1-Mile Paved Trail

Drainage and storm channel maintenance	$ 500
Sweeping/blowing debris off trail head	$ 1,200
Pickup/removal of trash	$ 1,200
Weed control and vegetation management	$ 1,000
Mowing of 3-foot grass shoulder along trail	$ 1,200
Minor repairs to trail furniture/safety features	$ 500
Maintenance supplies for work crews	$ 300
Equipment fuel and repairs	$ 600
TOTAL	$ 6,500

Total Cost of Resurfacing Trails

Concrete	$ 25 LF
Asphalt	$ 10 LF (per linear foot) ($ 5 LF to overlay with top coat)
Crushed Stone	$ 5 LF

Street Improvements

Crosswalks

Approximate installation costs per unit:

Regular striped	$ 100
Ladder crosswalk	$ 300
Patterned concrete	$3,000
Raised	$4,000

4-way pedestrian signals: $20,000 per unit

Striping: 12-inch: $1 per linear yard (LY)
4-inch: $10 K per mile, or $2 LF

Costs do not include maintenance, which varies according to materials used.

Curb extensions: $40,000 - 80,000 for four corners
Concrete curbing: $15/LF
Speed humps: $1,700 per unit

General Facilities

Bike Racks: $350-$750 (10-12 bikes)
Trees: $200/tree, installed
Lighting: $ 45/LF frontage

Street Furniture:

Prices vary greatly according type of facility, brand, and level of customization. Benches installed start at approximately $600/unit.

General park facilities $ 25/SF

The construction of new park or open space facilities on land not currently used as park, with some furniture and amenities.

References:

"Trails For The 21st Century," published by Rails-To-Trails Conservancy, 2001:

http://www.trafficcalming.org/measures2.html

http://www.nysphysicalactivity.org/site_beactiveenv/nybc/source_files/3_pedfac_improve/FHA_EmergTechPedXWalk.pdf

http://www.charmeck.org/Departments/Transportation/About+Us/Speed+Humps.htm

4.2 Funding Strategies

Careful planning of pedestrian facilities is half the battle. The other half is building them. Both procedures require funding. However, there are many sources available for funding the planning and construction of pedestrian improvements. Using the right source and getting the best return requires strategy. This Plan itself was funded by the NCDOT Bicycle and Pedestrian Planning Grant. But grants are only part of an overall strategy, which includes both the public and private sector. The most successful strategy for a municipality to develop and improve its pedestrian system will involve an appropriate combination of all possible sources.

Pedestrian improvements like sidewalks and street trees cost money. But many other important infrastructure needs compete for local tax revenue as well. However, specific funding sources are available that are targeted solely at pedestrian and streetscape improvements.

Private Funding Sources

As shown earlier in this Plan, improving the pedestrian quality of Troutman may have more to do with guiding the Town's growth patterns than it has with building individual sidewalks or trails. These patterns of development are guided by the Town's ordinances. If these documents are directing privately funded growth in a coordinated, pedestrian-friendly manner, private development will accomplish many of the Town's pedestrian-friendly goals through private initiative and investment. For examples of how the Town's Subdivision and Zoning Ordinance can accomplish this, refer to the **Recommended Policies and Ordinance Modifications** of this Plan.

Individual ideas by which private investment can help build and maintain public pedestrian improvements are limited only by the imaginations and incentive of those involved. If the Town has a definite vision of what it wants, and promotes that image clearly and positively, it will attract developers that will be more inclined to work with the Town to accomplish mutual goals.

Public-private Partnerships

Due to the linear and connective nature of many pedestrian facilities, oftentimes improvements may involve numerous landowners. Greenway projects, for example, can present complex challenges of working with multiple property owners and jurisdictions. Creating partnerships may be the only way to solve the complex problems that ensue, as well as deal with the inevitable web of utility lines and transportation corridors. Though these partners may have some conflicting interests at times, opportunities for funding, support and publicity may arise and broaden by involving partners with diverse interests.

Multiple uses of utility corridors provide one example of effective partnership. Most utilities use a linear corridor but occupy only a small portion of the ground surface. Rather than being solely dedicated to that one isolated use, these valuable corridors can often include a

complementary public transportation and recreation use along with the utility functions. Utilities benefit from sharing corridors with trails through maintenance savings.

Find more information about partnerships through American Trails, at:
http://www.americantrails.org/resources/greenways/GrnwyUrbanSHM.html

Federal/State Funding Sources

DBPT Pedestrian Projects
The Division of Bicycle and Pedestrian Transportation (DBPT) receives an annual allocation of $200,000 for the advancement of pedestrian safety. To stretch these dollars and gain the greatest benefit, DBPT has focused its efforts on statewide or regional demonstration projects, initiatives, or programs to encourage pedestrian safety and the development of walkable communities.

Certain Federal-aid transportation funding sources may be used for building, or improving accessible pedestrian facilities through the rural planning organization (RPO) process. Troutman is a member of the Lake Norman RPO.

Federal funding sources for bike and pedestrian facilities are available mainly in the form of:

1. State Transportation Enhancement program (since 1991)
2. Safe Routes to Schools program under the new SAFETEA bill.

Transportation Enhancement Program
Congress created the Transportation Enhancements program under the Intermodal Surface Transportation Efficiency Act (ISTEA) in 1991 to address growing concerns about air quality, open space, and traffic congestion. This program is the first Federal initiative to focus on enhancing sidewalks, bike lanes, and the conversion of abandoned railroad corridors into trails. The Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), signed into law in 2005, continued the transportation enhancement activities through a set aside of 10% funding from the surface transportation program (STP). STP funds may be used only if the new bike/ped facilities are built as parts of a new highway construction project. Construction of pedestrian facilities occurs primarily at the local or Highway Division level. To learn more about enhancement projects under SAFETEA-LU, visit: http://www.ncdot.org/financial/fiscal/Enhancement/

Safe Routes to School
The SAFETEA-LU bill established a new Safe Routes to School program. This new program receives $612 million in transportation funds over five years to make it safer for children to walk or bicycle to school. Funding for Safe Routes to School will be distributed to states in proportion to the number of primary and secondary school students in the state, with no state receiving less than $1 million annually. Communities will be able to use the funds to fix hazards and slow traffic on roads, pathways or trails near schools while increasing safety through focused enforcement and education programs. Each state is being directed to create a position of a Safe Routes to School coordinator, and the bill also provides funds for a national Safe Routes to School clearinghouse.

Eligible projects and activities include: planning, design, and construction of infrastructure-related projects that will substantially improve the ability of students to walk and bicycle to school, on any public road or any bicycle or pedestrian pathway or trail within approximately 2 miles of a primary or middle school; and non-infrastructure-related activities to encourage walking and bicycling to school, including public awareness campaigns and outreach to press and community leaders, traffic education and enforcement, student training, and funding for training, volunteers, and managers of SR2S programs. The Program is designed to assist projects that will result in:

- Increased bicycle, pedestrian, and traffic safety
- More children walking and bicycling to and from schools
- Decreased traffic congestion
- Improved childhood health
- Reduced childhood obesity
- Encouragement of healthy and active lifestyles
- Improved air quality
- Improved community safety
- Reduced fuel consumption
- Increased community security
- Enhanced community accessibility
- Increased community involvement
- Improved physical environment for increasing the ability to walk and bicycle to and from schools
- Improved partnerships among schools, local municipalities, parents, and other community groups, including non-profit organizations

Contact:
Theresa (Terry) A. Canales, PE - Safe Routes to School Coordinator
Highway Administrator's Office, NCDOT Transportation Building
1536 Mail Service Center
Raleigh, NC 27699-1536
Phone: 919-733-7384 Fax: 919-733-9428
e-mail: tcanales@dot.state.nc.us

Accessible pedestrian projects can also be funded through other Federal-aid Highway Programs including Federal Lands Highway Program, National Scenic Byways Program, Recreational Trails Program, Transportation and Community Systems Preservation Pilot Program (TCSP), and Job Access and Reverse Commute Grants. (U.S. Department of Transportation, 1998).

For additional information about Federal programs as well as grant writing assistance, visit the American Trails website at:
http://www.americantrails.org/resources/fedfund/index.html

USDA Rural Business Enterprise Grants
http://www.rurdev.usda.gov/rbs/busp/rbeg.htm

Public and private nonprofit groups in communities with populations under 50,000 are eligible to apply for grant assistance to help their local small business environment. $1 million is available for North Carolina on an annual basis may be used for sidewalk and other community facilities. For more information from the local USDA Service Center, see http://offices.sc.egov.usda.gov/locator/app?service=page/ServiceCenterSummary&stateCode=37&cnty=045

Community Development Block Grant Program
http://www.hud.gov/offices/cpd/communitydevelopment/programs/index.cfm
The U.S. Department of Housing and Urban Development (HUD) offers financial grants to communities for neighborhood revitalization, economic development, and improvements to community facilities and services, especially in low and moderate-income areas. Several communities have used HUD funds to develop greenways. Grants from this program range from $50,000 to $200,000 and are either made to municipalities or non-profits. There is no formal application process. Funding targets projects that benefit low- and moderate-income persons, and development projects designed to improve the health or welfare of the community.

Wetlands Reserve Program
http://www.nrcs.usda.gov/programs/wrp/
http://www.ngpc.state.ne.us/wildlife/wrp.html - informational site
The Department of Agriculture also provides direct payments to private landowners who agree to place sensitive wetlands under permanent easements. This program can be used to fund the protection of open space and greenways within riparian corridors and can therefore assist with trail/greenway funding efforts.

Rivers, Trails, and Conservation Assistance Program
http://www.ncrc.nps.gov/programs/rtca/ContactUs/cu_apply.html
The National Parks service operates this program aimed at conserving land and water resources for communities. Eligible projects include conservation plans for protecting these resources, trail development, and greenway development.

State Funding Sources

North Carolina Department of Transportation
Projects under $100,000 involving pedestrian facility improvements and related landscaping can qualify for North Carolina Department of Transportation (NCDOT) funds. Contact the NCDOT Division 12 Division Operations Engineer.

FHWA Recreational Trails Program
The Recreational Trails Program is actually a Federal program administered by the FHWA from the Highway Users Trust Fund dollars derived from Federal fuel tax. But each state receives an annual portion committed to grants for recreational trail projects. For FY 2006 states will share in $60 million, increasing to $85 million by FY 2009. The Recreational Trails Program North Carolina Administration contact is:
Darrell L McBane, State Trails Coordinator, NC Division of Parks & Recreation
12700 Bayleaf Church Road, Raleigh NC 27614-9633

http://www.ils.unc.edu/parkproject/trails/home.html
919-846-9995; Fax 919-870-6843, darrell.mcbane@ncmail.net

The North Carolina Division of Forest Resources
Urban and Community Forestry Grant can provide funding for a variety of projects that will help toward planning and establishing street trees as well as trees for urban open space. See: http://www.dfr.state.nc.us/urban/urban_ideas.htm

Other Grant Sources

Robert Wood Johnson Foundation
The Foundation seeks to help communities become increasingly walkable and thereby promote more active lifestyles that include exercise, like walking or biking, as a part of daily routine, particularly for children. Learn more about available grant opportunities at: http://www.rwjf.org/applications/independent/overview.jhtml

Local Public Revenue Strategies

Facility Maintenance Districts (FMDs) can be created to pay for the costs of on-going maintenance of public facilities and landscaping within the areas of the Town where improvements have been concentrated and where their benefits most directly benefit business and institutional property owners. An FMD is needed in order to assure a sustainable maintenance program. Fees may be based upon the length of lot frontage along streets where improvements have been installed, or upon other factors such as the size of the parcel. The program supported by the FMD should include regular maintenance of streetscape or off road trail improvements. The Town can initiate public outreach efforts to merchants, Chamber of Commerce and property owners. In these meetings Town staff will discuss the proposed apportionment and allocation methodology and will explore implementation strategies.

The Town can manage maintenance responsibilities either through its own staff or through private contractors. The public and, in particular, those within the FMD, should periodically informed about who to contact in the Town about maintenance issues. The Town should provide a link on the Town Website that clearly refers to reporting maintenance issues.

Streetscape Utility Fees
Streetscape Utility Fees could help support streetscape maintenance of the area between the curb and the property line through a flat monthly fee per residential dwelling unit. Discounts would be available for senior and disabled citizens. Non-residential customers would be charged a per foot fee based on the length of frontage on streetscape improvements. This amount could be capped for non-residential customers with extremely large amounts of street frontage. The revenues raised from Streetscape Utility fees would be limited by ordinance to maintenance (or construction and maintenance) activities in support of the streetscape.

Local Budget Recommendations

In order for Troutman to carry out the vision expressed in this Plan, a steady commitment to implementing Plan projects should be maintained. This can be accomplished by coupling the above-mentioned funding opportunities with an annual allotment from the Town's public works budget. The Town may choose to commit a regular percentage of its Capital Improvements Program toward that end, in addition to its Powell Bill allotment for street-related pedestrian projects.

For additional information about funding sources and procedures, see the Plan Appendices **A.4 – How to Build a Sidewalk (and other pedestrian facilities)** and **A.5 - The Bicycle and Pedestrian TIP Process**

Additional information Sources:

Facility Maintenance Districts
http://www.ci.livermore.ca.us/firststreet/streetscape/DowntownLandscapeMaintenanceDistrict.html

Streetscape Utility Fees - City of Salem (Oregon)
http://www.cityofsalem.net/~spubwork/press_releases/pr_s-scape.htm

Federal Funding Sources
http://www.pagreenways.org/funding-federal.htm

4.3 The Plan Adoption and Approval Process

Upon final approval of the Pedestrian Plan by the Steering Committee and NCDOT's Division of Bicycle and Pedestrian Transportation, the Steering Committee will submit the the Plan to the Town Planning Board for review. At this time the Plan Consultant (Centralina Council of Governments) will also submit the Plan to the Lake Norman Rural Planning Organization for endorsement.

The Planning Board will make any recommendations it sees fit and either return the Plan to Steering Committee for revision and resubmittal, or will recommend the Plan to the the Town Board for review.

The Town Board and attorney will review the Plan, and hold a public hearing of the Plan for public comment. The Town Board will then either publicly adopt the Plan, or make other determinations.

TROUTMAN
PEDESTRIAN PLAN

Appendices:

A.1 Maps
- The Troutman 2007 CTP Highway Map (draft)
- Exit 42 Land Use Plan Map
- The Lake Norman Bike Route

A.2 Facility Standards and Guidelines

A.3 Articles
- The 13 points of pedestrian-oriented development
- Some Benefits of Greenways
- Planning on Walking?

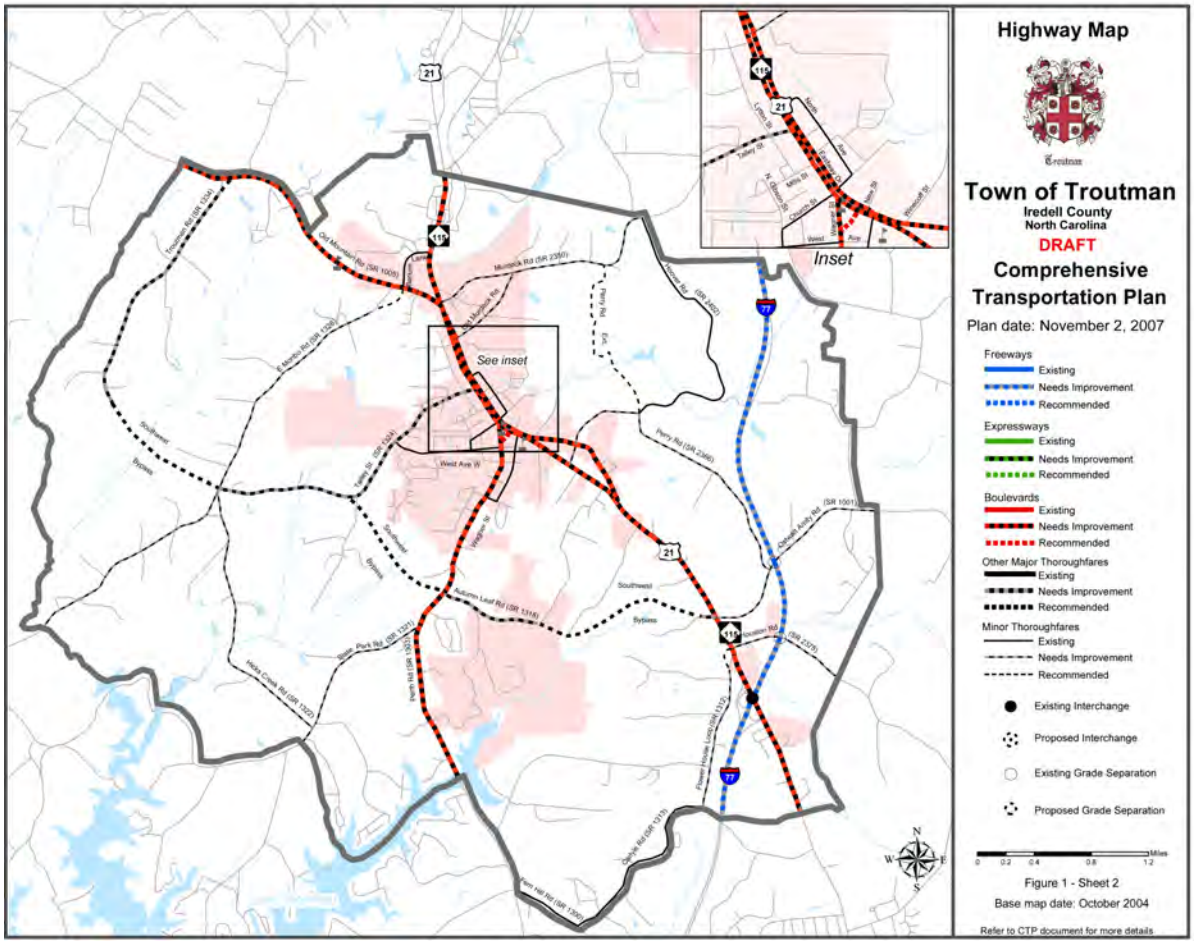
A.4 How to Build a Sidewalk
A STEP-BY-STEP GUIDELINE FOR BUILDING PEDESTRIAN IMPROVEMENTS

A.5 The Bicycle and Pedestrian TIP Process

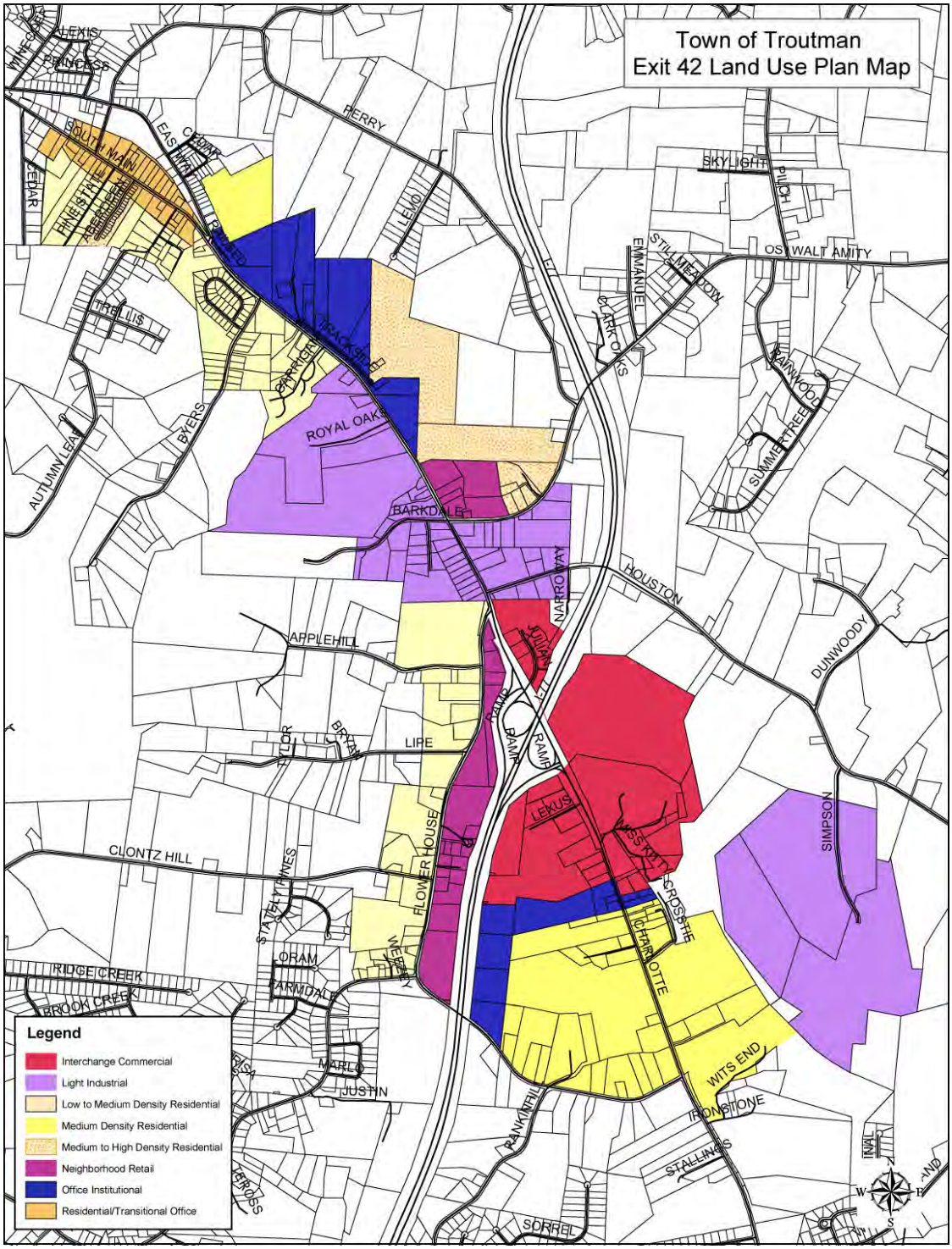
A.6 Additional References

A.1 Maps

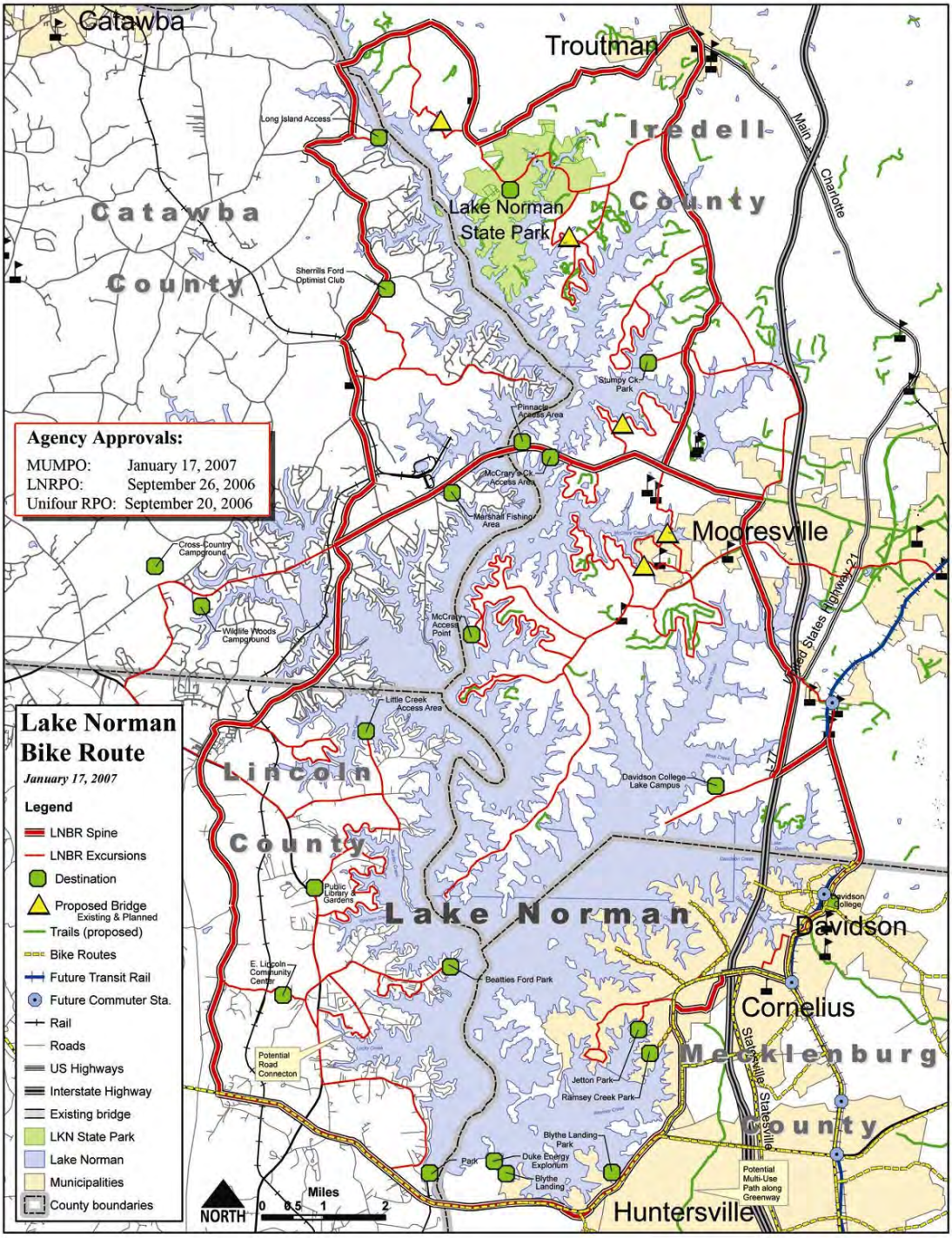
The Troutman November 2007 Comprehensive Transportation Plan (adoption pending) – Highway Map



Exit 42 Land Use Plan Map



The Lake Norman Bike Route



A.2 Facility Standards and Guidelines

Contents:

- **Facilities:**
  1. **Sidewalks –** width, connectivity, paving
  2. **Pedestrian Buffer Zones** – planting strips, paved buffer zones, on-street parking
  3. **Street Trees** – planting and maintenance, visibility, tree characteristics, pits & grates
  4. **Crosswalks**
  5. **Striping, Signage & Signalization**
  6. **Traffic Calming Devices**
  7. **On-street Parking**
  8. **Lighting** – location, type, style
  9. **Street Furniture** – seating, trash receptacles, bike racks, raised planters, water features
  10. **Off-Road Paths/Trails** – trail types, paving, environmental concerns, grade and site lines, accessibility, multi-use, acquisition and ownership, liability, security and safety, front-yard v. backyard paths, access points, maintenance and operations

- **Additional Accessibility Information**
- **Information Sources**

Specific locations for facility installation and site improvements are provided in the **Project Identification and Priority List.** Any recommended improvements proposed to be located in the North Carolina Department of Transportation (NCDOT) right-of-way are under the jurisdiction of NCDOT Division 12. Contact the Division 12 Engineer before considering implementation of any improvements in the NCDOT right-of-way: Mike Holder, Division 12 Engineer, P.O. Box 47, 1710 E. Marion Street, Shelby, NC 28151, email: mholder@dot.state.nc.us.

All facilities shall adhere to the current U.S. Access Board definition of the American's with Disabilities Act (ADA). See: http://www.access-board.gov/

For additional facility information, refer to the NCDOT Office of Bicycle & Pedestrian Transportation's *Planning and Designing Local Pedestrian Facilities*, available by request: Email: bikeped_transportation@dot.state.nc.us

1. Sidewalks

Public sidewalks are intended to provide pedestrians a clear and convenient path of travel within the public right-of-way, separated from roadway vehicles, in a manner that is safe and accessible to all members of the public. They also provide places for children to walk, run, skate, ride bikes, and play. Sidewalks should feature a continuous travel path, clear of poles, signposts, and other obstacles that could block the obstruct pedestrians, obscure a driver's or pedestrian's view, or become a tripping hazard.

Width of travel path
The Plan recommends a minimum travel path width of 5 ft. for a sidewalk or walkway, in accordance with the Federal Highway Administration (FHWA) and the Institute of Transportation Engineers (ITE). This width allows two people to pass comfortably or to walk side-by-side. This minimum width of the travel path must be free of obstructions, such as utility poles, or pedestrian amenities such as street furniture, trashcans, etc. and shall meet all requirements of the ADA standards for "accessible pathway".

Where sidewalks abut public or commercial buildings, or anywhere high concentrations of pedestrians are expected, a minimum travel path of 8 ft. should be allowed for.

Where sidewalks align with the edge of an angled or 90-degree parking lot, a minimum of 30 inches of parked car overhang obstructing the sidewalk shall be taken into account in order to maintain the minimum travel path width.

Connectivity
The alignment of new sidewalks shall be designed and constructed to serve pedestrians in the most direct and convenient manner possible without causing undue physical or aesthetic damage to existing trees or other site features. The design of new sidewalks shall also respect all required or proposed landscaping and other site features.

All new commercial and industrial development shall feature an on-site sidewalk system that connects the main entrance or the most convenient accessible entrance of the primary building to existing public sidewalks or public trails that are adjacent to or abutting the property. Sidewalk/driveway crossings shall be minimized in on-site sidewalk systems.

Paving type
For typical concrete sidewalk paving and construction method, refer to Town Standard Specifications and Construction Details for method of standard sidewalk paving and construction method.

Alternative paving should be considered for the following applications:

- A change in paving type can help distinguish the pedestrian buffer zone from the pedestrian travel path. Sand-set pavers are recommended in the buffer zone for ease of utility maintenance.
- Paving type should vary as a pedestrian path crosses a vehicular path in order to visually cue pedestrians (and drivers) and provide a tactile warning to the visually impaired.
- Textured pavements can be used to add significant aesthetic value and help define a unique place.

2. Pedestrian Buffer Zones

Buffer zones between pedestrian paths and vehicular traffic provide a sense of security to those on foot or in wheelchairs and give the path a comfortable scale and clear definition. Buffers can also provide other benefits to pedestrians depending on the type used.

A. **Planting Strips –** Planting strips provide an area for street trees that give needed shade for a comfortable pedestrian environment. They also allow for other landscaping that can add beauty the pedestrian environment. The recommended planting width to permit healthy tree growth is 6 to 8 ft. measured from the back of curb. Planting strips are the preferred means a providing a buffer, but are not feasible or appropriate in all pedestrian situations. Areas of high foot traffic may preclude landscaping due to maintenance considerations.

B. **Paved buffer zones -** In locations where planting strips are not feasible, a buffer zone of some kind should be provided. This zone is located between the travel path of the sidewalk and the curb. Though a constant width is preferred for the buffer zone, widths may vary as long as the buffer does not interrupt the pedestrian travel path. Items located in the buffer zone can include street furniture, trees planted with tree grates, streetlights, street signs, fire hydrants, etc. Such items are placed in the buffer zones so as not to restrict pedestrian flow in the travel path. An additional buffer zone may also exist along the opposite side of the travel path, adjacent to buildings, open space, or off-street parking.

C. **On street parking** – Another opportunity to provide a buffer zone between pedestrian and vehicular traffic is on-street parking. As with other buffers, pedestrians feel safer with such a physical barrier between them and moving vehicular traffic, but that still allows them to clearly see into the street and drivers to clearly see pedestrians.

3. Street Trees

This Plan strongly recommends adopting a Town Tree Ordinance to give complete guidance for tree installation and maintenance. For guidance in developing a Tree Ordinance and other related policy and programs, see: http://www.seql.org/actionplan.cfm?PlanID=10

Planting and Maintenance requirements

All street trees should be selected according to the standards described in the *American Standard for Nursery Stock* of the American Nursery and Landscape Association.
See: http://www.anla.org/applications/Documents/Docs/ANLAStandard2004.pdf
Install and maintain trees according to the International Society of Arboriculture (ISA) guidelines. See: http://www.treesaregood.com/treecare/treecareinfo.aspx or contact: ISA, P.O. Box 3129, Champaign, IL 61826-3129, USA. E-mail: isa@isa-arbor.com

Visibility

Street trees should never be allowed to obscure the line of sight between pedestrians and drivers. A clear view should be maintained between 30" and 72" above street. This area must be free of limbs and foliage for safe cross visibility. Other plantings should also follow this rule within 50 ft. proximity of street corners and other designated crossing points.

Tree characteristics

Form - In order to maintain visibility, provide shade, and a comfortable pedestrian corridor, street trees should primarily be vase shaped, columnar, or oval in form (habit) with large spreading crowns.
Leaf - Street trees should primarily be deciduous, losing their leaves in the winter season.
Roots - Avoid trees with aggressively invasive roots adjacent to pavement or buildings.
Size - Large trees (growing over 35 ft. in height at maturity) are preferred as street trees except near overhead utility lines. Small tree (growing less than 35 feet in height at maturity) should be used in areas directly adjacent to or under utility lines.
Spacing – typically, large trees should be spaced approximately 40 – 50 feet when planted in a line, and small trees spaced at approximately 30 ft.

Species not recommended – Due to inherent problems with weak branches, aggressive roots, invasive spreading, or vulnerability to vehicular fumes, the following species are not recommended for street tree use:

- Bradford Pear / Pyrus calleryana 'Bradford' Pine
- Eastern White Pine / Pinus strobus
- Silver Maple / Acer saccharinum
- Norway Maple / Acer platanoides
- Sweetgum / Liquidambar styraciflua
- Tree-of-Heaven / Ailanthus altissima

Tree Pits and Tree Grates
Street trees should generally be located in open planting strips, however tree pits with tree grates may be a practical (though expensive) alternative in very high pedestrian traffic areas.

Tree pits should be constructed so that a continuous channel of soil under the pavement connects the individual pits and allows greater volumes of soil for root growth and water storage. Raised tree planting areas should likewise be designed to accommodate multiple rather than single trees.

Tree grates should generally not encroach upon the travel path. However, for optimal pedestrian safety and comfort, all tree grates used should meet the ADA standards for "accessible pathway". Gratings should have openings not greater than 1/2" wide with slots perpendicular to the general direction of travel and have a coefficient of friction at least 0.6 on flat surfaces and 0.8 on ramps.

4. Crosswalks

Marked crosswalks indicate preferred locations for pedestrians to cross streets. They provide paths of increased safety to pedestrians as they warn motorists to yield to pedestrians in this designated right-of-way. Crosswalks should be placed strategically at high pedestrian volume locations, such as signalized intersections and high volume mid-block locations. Their placement should always be supported by other measures that help reduce speeds and warn drivers to be prepared to stop.

The effectiveness of crosswalks can be greatly enhanced by curb extensions. They shorten the crossing distance for pedestrians and improve their visibility of the crosswalk to

oncoming vehicular traffic. They also serve as traffic calming devices whether pedestrians are crossing or not. See: **Traffic Calming Devices**.

For crosswalk markings, dimensions and other standards, refer to the Manual on Uniform Traffic Control Devices (MUTCD).

5. Striping, Signage & Signalization

- All pedestrian and vehicular pavement striping, signage and signals, and the locations thereof shall conform to the MUTCD.

- Though traffic signage can carry legal authority, it should not be relied upon as the primary or sole means of influencing driver or pedestrian behavior. However, it is essential to anticipate the need for traffic signs in every situation to provide clear direction for both pedestrians and drivers. It is also important to avoid unnecessary signs as they may cause physical or visual obstruction, will require maintenance, can confuse and erode the significance of necessary signage and add to visual blight. Signs should only be installed when they fulfill a need based on an engineering study or engineering judgment.

- Traffic signals are intended to assign the right-of-way for vehicular and pedestrian traffic. Most traffic signals are installed based on vehicular traffic considerations, but some high-volume pedestrian circumstances warrant traffic signals themselves. According to the MUTCD, a traffic signal may be warranted when the pedestrian volume crossing a major street or mid-block location during an average day reaches 100 or more for each of any 4 hours; or 190 or more during any 1 hour. However, simply meeting one of the MUTCD warrants for signalization does not necessarily justify installation of a traffic signal. Even where warranted, traffic signals can cause excessive delay for drivers and pedestrians alike, and can increase certain accident types.

- All signalization should feature controlled timing operable by pedestrians and ADA compliant.

6. Traffic Calming Devices

Traffic Calming Devices (TCDs) are physical measures in street design that cue drivers to slow down. The effectiveness of TCDs does not depend upon a driver's compliance with traffic signs and signals, or police enforcement, though they may be used effectively in conjunction with them. In coordinated combinations, TCDs reduce speeds, alert drivers to pedestrians, and reduce the severity of collisions.

Though most of the examples listed below are not specified in the **Project Identification and Priority List**, the following TCDs are generally recommended for consideration by the Town on a project-by-project basis:

- **Speed humps** - raised "bumps" placed across residential streets to control chronic speeding problems where other methods of slowing traffic have not been effective. They are designed to calm traffic in residential areas, particularly near parks and schools. Similar to a speed bump, the speed hump is wider and has a more sloping side taper. The physical impact on passing vehicles is less severe at slower speeds than at higher speeds. Speed humps reduce vehicular speeds between intersections.
- **Speed Tables** - flat-topped speed humps typically long enough for the entire wheelbase of a passenger car to rest on the flat section. They often constructed with brick or other textured materials on the flat section.
- **Raised crosswalks** - Speed Tables outfitted with crosswalk markings and signage. By raising the level of the crossing, pedestrians are more visible to approaching motorists. Raised crosswalks can be appropriate for midblock pedestrian crossings where vehicle speeds are excessive.
- **Raised intersections** - raised flat areas that cover an entire intersection, with ramps on all approaches. By modifying the level of the intersection, the crosswalks are more readily perceived by motorists to be "pedestrian territory". Raised intersections should be used only where there is substantial pedestrian activity where other traffic calming measures have not been effective. Textured paving should be incorporated into the edges in order to provide visual and tactile cues.
- **Textured pavements** - stamped pavement or alternate paving materials to create an uneven surface for vehicles and pedestrians to traverse. Textured street pavement provides a visual and tactile cue for both drivers that they are driving in an area of high pedestrian use. Similarly, they cue pedestrians that they are entering a vehicular zone, and are a particularly effective treatment to warn visually impaired pedestrians. Textured street pavements should be used in areas of substantial pedestrian activity and where noise is not a major concern.
- **Neckdowns** – intersections with curbs that are extended to the edge of the vehicular travel lanes, reducing total roadway width from curb to curb. Curb Extensions slow vehicles by alerting drivers to potential pedestrians, visually tightening the vehicular path, and physically reduces turning radii. Curb Extensions also increase safety for pedestrians by shortening the road crossing distance.
- **Chokers** - curb extensions at midblock locations, usually combined with a crosswalk. Also known as "pinch points".
- **Medians** – an island located along the centerline of a street that may or may not narrow the vehicular travel lanes at that location. Medians can be combined with crosswalks to provide pedestrians a temporary "refuge" as they cross the street. They are often landscaped to provide a visual amenity. Placed at the entrance to a neighborhood, and often combined with textured pavement, and called "gateway islands." Medians may be raised or partially sunken and combined with hydrophilic landscaping and drainage infrastructure to treat and drain storm water.

Other strategies that do not rely on pavement and curb manipulation can also be employed to cue drivers to the presence of pedestrians and induce slower vehicular speeds. Among them is on-street parking.

7. On-street Parking

Through a variety of means, on street parking benefits both pedestrians and drivers, and can contribute to the economic viability of a street.

- On-street parking provides a comforting physical buffer between pedestrians on sidewalks and moving traffic in the streets. Pedestrians feel safer with such a barrier that still allows them to clearly see into the street and drivers to clearly see pedestrians.
- On-street parking compliments pedestrian-friendly setbacks for on street commercial development. Commercial establishments with on street parking require fewer parking spaces in large expanse pedestrian-unfriendly parking lots. When commercial buildings are set back behind parking lots, longer walking trips through vehicular areas are necessitated for pedestrians coming from the street. This arrangement discourages pedestrian usage of the area.
- On-street parking calms traffic. Drivers tend to slow down when they sense potential conflict with opening car doors or vehicles suddenly moving into the traffic lane.
- On-street parking can be easily monitored and controlled in order to maximize short-term visitor usage.
- On-street parking can even provide a source of revenue that helps pay for parking enforcement and other transportation improvements.

Despite the potential for on-street collisions, such collisions more commonly occur in interior parking lots.

On-street parking alignment options include: parallel, diagonal or angle, and perpendicular.

1.) **Parallel parking** is preferred. Parallel parking permits drivers a clear view of oncoming traffic. And it requires the least amount of additional right-of-way depth to accommodate parked cars.

2.) **Diagonal or angle parking.** Though diagonal parking provides the advantage of greater ease in maneuvering into a space with fewer steps than parallel parking, it is the most accident-prone on-street parking arrangement commonly used, providing the most potential conflicts between vehicles and pedestrians. Diagonal parking is the least efficient use of space per car and is exceptionally unsafe of bicyclists.
Diagonal parking can be either "back-out" or back-in".
    a. **Back-out diagonal parking** requires a person leaving a parking space to back out into traffic, often without a good view of approaching cars or pedestrians.
    b. **Back-in diagonal parking** requires additional maneuvering skill but provides some advantages over back-out diagonal parking:
        i. Children are directed to the sidewalk and shielded by the door.
        ii. Easier to unload and load trunk at the sidewalk.
        iii. Sight visibility is improved for drivers and cyclists.

3.) **Perpendicular parking** has many of the disadvantages of angled parking but requires the even more depth in right-of-way.

For further information about parking management, see:
http://www.seql.org/actionplan.cfm?PlanID=13

8. Lighting

Location
Lighting for sidewalks and off-street paths should be provided where considerable pedestrian traffic is expected at night, where there is insufficient available light from the surrounding area, and at all designated road crossings.

Type
Each lighting situation is unique and must be considered on a case-by-case basis. Average maintained horizontal illumination levels of 5 lux (0.5 foot candles) to 22 lux (2 foot candles) should be considered, though higher levels are advisable in special areas where security problems might exist. Light poles should generally be 12 to 15 ft. high. Luminaries and poles should be at a scale appropriate for pedestrian use.

Style
Light fixtures, as well as other on-street facilities, like street furniture, can add a great deal in terms of street aesthetics and reinforce community identity. The Plan recommends the community adopt a particular style of street lighting fixture appropriate for the Town's identity and coordinate this choice with stylistic choices in other street facilities.

9. Street Furniture

Well-designed walking environments are enhanced by street furniture, such as outdoor seating, lighting fixtures, bus shelters, trash receptacles, and water fountains. To select and properly site street furniture, careful attention should be given to the physical and social needs of the community and the various groups within it.

General design principles for selection, design, and siting of street furniture are listed below:

- Street furniture placement should never be placed so as to restrict regular pedestrian flow.
- Street furniture can be positioned to help reinforce a physical or visual buffer between pedestrians and vehicular traffic.
- Consider the role street furniture can take by providing familiar tactile landmarks, which can aid navigation for the visually impaired.
- Coordinate the style of various street elements to complement one another and reinforce a sense of common identity for the community.

Seating

- Seating should be located periodically along well-traveled paths and at destination points. For paths frequented by elderly citizens, adequate seating should be provided for along the path at a minimum of 150 ft.
- Provide seating in locations that are logical destinations or gathering points to allow opportunities for community interaction, particularly for students and the elderly.
- Seating should be oriented toward travel ways and areas of visual interest. Align benches with sidewalks and prominent views.
- Whenever possible in destination areas, provide moveable chairs.
- Seating should generally be located to take advantage of shade or in "suntraps" - areas that take advantage of winter sun and blocked from the wind.
- In addition to benches and other pre-manufactured seating, additional opportunities for seating may include other areas that meet the following parameters: smooth, level areas with a minimum depth of 14 inches, a minimum height of 12 inches, and a maximum height of 36 inches.
- The following procedure for selection and placement of benches is recommended:
  1.) Hold a community meeting to determine optimal locations for benches.
  2.) Select appropriate bench design based on utility, maintenance and aesthetic concerns.
  3.) Determine ongoing maintenance procedures and responsibilities.
  4.) Identify parcel owners if easement acquisition is required and acquire easement.
  5.) Involve community volunteer workers in installing benches where practical.

Trash receptacles

- Well placed, attractive, and properly maintained trash receptacles encourage pedestrian behavior toward keeping a cleaner community.
- Design style of trash receptacles should be carefully coordinated with other street furnishings to optimize aesthetic quality and opportunity for reinforcing community identity.
- Apply the recommended procedure for bench selection and placement.

Bike racks

- Bike racks encourage pedestrian life by providing greater opportunity for people to leave their cars at home.
- Rack design should be attractive to encourage use by cyclist and property owners.
- Racks must allow the bike frame and wheel(s) to be locked securely.
- Racks should be built from heavy duty, weather & tamper resistant materials.
- Racks must support the bicycle frame and not hold the wheel.
- Most racks are misused to some degree. Look for racks that provide the same opportunity for security whether the bike is on the end or middle of the rack.
- Locate racks next to entrance doors and in line of site of a window.

Raised Planters

- Planters can provide opportunities in addition to planting strips for street landscaping.
- Raised planters should be located either to act as buffers between pedestrian and vehicular ways, or to help define or enhance a public gathering space. Planters

should not be located in the travel path or where they will otherwise obstruct normal pedestrian flow.

- Raised planters should be designed to provide additional opportunities for comfortable seating (meeting the dimensions specified in the **Seating** section).

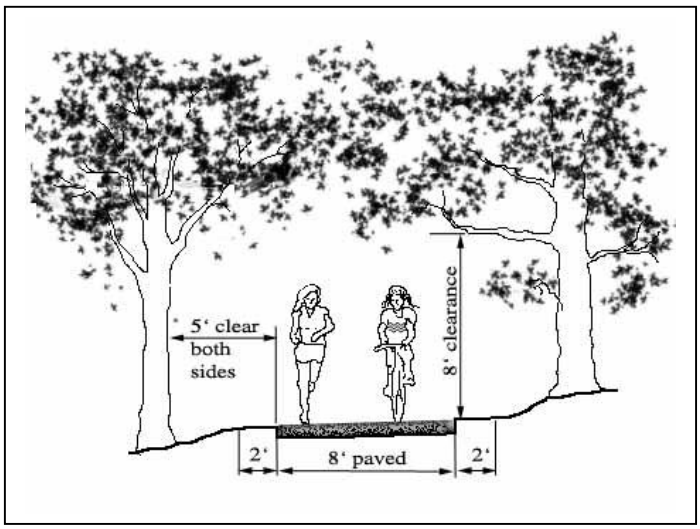
Water features

- Decorative Fountains usually provide an inviting visual and audible focal point for a public space. They are usually the dominant feature in any space.
- Fountains should be designed with audible effects in mind, so as to create an atmosphere conducive to conversation. Splashing water provides an element of privacy in public areas as it masks conversational tones.
- Raised fountains can provide highly favorable additional seating area.
- Fountains should be designed to permit free access to water by pedestrians.
- Great care should be given in planning fountain projects. Insure that there is an ongoing funding source for adequate fountain maintenance, as well as sufficient liability protection.

10. Off-Road Paths/Trails

Trail types

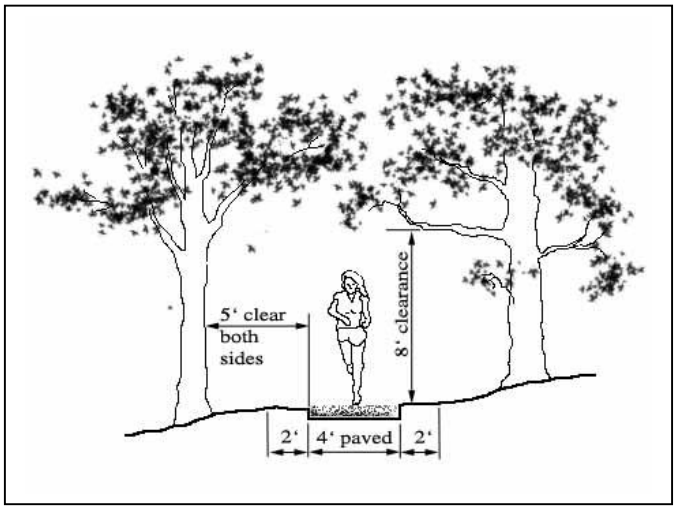
1.) **Proposed Urban Paths** – Pavement types may vary between conventional or pervious concrete, asphalt or crusher fines. Width of pavement should be maintained at 8 ft., with 2 ft. improved shoulders. Deviations for very short distances are acceptable when existing conditions do not physically permit standard trail width. Paved surfaces of all trail segments must be at least 6 ft. in width to allow accessibility for maintenance equipment (ATV type). Maximum slope shall not exceed 8%. Maintain a vertical clearance minimum of 10 ft.



Urban path

2.) **Proposed Footpaths –** In some critical environmentally sensitive areas, such as stream banks and lowlands, a 4 ft. wide soft surface may be preferred (crusher fines recommended), with 2 ft. improved shoulders. Maintain a vertical clearance minimum of 8 ft.

All trails should be maintained with a 5 ft. cleared area from the edge of the trail on each side. Pitch trails to drain with a 2% minimum grade. Paving materials may vary in specific locations.



Foot Path

Paving

Each trail is unique in terms of its location, design, environment, and intended use. For each segment of the trail, care should be given to selecting the most appropriate pavement type, considering cost-effectiveness, environmental benefit, and aesthetics. Pavement options include:

- **Conventional Concrete** – Costly installation and maintenance, but requires less periodic maintenance than asphalt or crusher fines. Install 4-inch thickness on compacted 4-inch aggregate base course.
- **Pervious Concrete** – Allows storm water to percolate when used over permeable soils, superior traction, unfavorable to rollerblading and skateboarding, higher installation cost. Install according to manufacturer's specifications.
- **Asphalt** – smooth, joint free and softer than concrete, preferred by runners, roller-bladers, cyclists, handicap users, and parents pushing baby buggies, construction is quicker and costs significantly less than a concrete. Install a minimum 2-inch I-2 asphalt thickness with 4-inch aggregate base course. Pavement can last up to 20 years with periodic maintenance. Repair is quick and inexpensive.
  For further information, see:
  http://www.americantrails.org/resources/trailbuilding/betterAsphalt.html &
  http://www.americantrails.org/resources/trailbuilding/AsphaltCO.html
- **Crusher fines** – Excellent for running trails, as well as walking, mountain bike and equestrian use. Can be constructed to meet ADA requirements. Constructed of small, irregular and angular particles of rock, crushed into an interlocking tight matrix. Typically costs about 1/3 the price of concrete paths, installed. For detailed information, see:
  http://www.americantrails.org/resources/trailbuilding/BuildCrushFinesOne.html
- **Dirt** – Recommended for mountain bikes and equestrian uses.
- **Boardwalk** – very expensive, for environmentally sensitive areas and wetlands.

For comparative costs of pavement types, see **Sample Cost Estimates for Facilities**.

Environmental Concerns
Trail corridors serve the community by protecting and enhancing the natural environment. Trails provide more transportation choices for people who wish to walk or bicycle. By doing so, they help to decrease dependence upon automobiles and thus contribute to improved air quality. Trails also improve water quality when they are used in conjunction with buffers along creeks and streams. These buffers provide habitat for a diversity of plant and animal species. They serve as natural filters, trapping pollutants from urban runoff, eroding areas and agricultural lands. Stream buffers also reduce the severity of flooding by releasing storm water more gradually, giving the water time to evaporate, or percolate into the ground and recharge aquifers, or be absorbed and transpired by plants.

All proposed trails and other improvements should be designed, constructed and maintained with their ecological value in mind. Any disturbance of natural features should be kept to a minimum and conform to all jurisdictional environmental policy and ordinances.

Grade and sight lines
Trails should be designed with a minimum slope to insure proper drainage and prevent pooling. The maximum slope should not exceed 8% on primary paths to prevent undue erosion of the trail, accessibility, safety and ease of use.

Horizontal and vertical curves should be gentle in order to permit ADA accessibility, the safe use of bicycles on the path, and to allow maximum sight distances for the safety and security of all trail users. Sight lines along the trail should be maintained at a minimum of 100 ft. wherever feasible.

Accessibility
The trail system should be designed to accommodate all people, regardless of age and ability. Off-road trails should meet ADA accessibility requirements whenever possible in the design. See: http://www.ncaonline.org/monographs/1trail-surfaces.shtml

Multi-use
Off-road trails should accommodate a wide range of activities including exercise, family outings, shopping expeditions, or as a means to get to school or work.

Acquisition & Ownership
Acquisition negotiations of the proposed off-road trail corridors can result in various types of agreements with current landowners. The owner of the property need not be the same entity that operates and maintains the trail corridor if appropriate agreements are drawn. Ownership options to consider for individual trails include:

1. **Local government** – An existing department within the Town government (usually a department of parks and recreation) is assigned to manage and maintain the corridor.
2. **Non-profit association** – A non-profit association or council may assume ownership of the corridor or control of the trail property. Local organizations that are experienced in trail management have distinct advantages in managing the trail

system and responding to public needs. Local land trusts or trail conservancies may also be formed to take ownership of the trails.

3. **Private landowners** – May open their land to trail use by formal or informal agreement, and may sell or donate conservation easements while retaining other rights to the land.

Several legal instruments that may be used to transfer ownership or interests in property, either temporarily or permanently:

1. **Titles** – transfer permanent ownership of the land, usually acquired in "fee-simple" through contribution or outright sale.
2. **Easements** – permanently or temporarily convey ownership and control of a certain interest, right or tangible element of the property to a second property while the other retains other rights to the land. Conservation easements are often particularly appropriate to retain off-road trail ways, as these lands are often valuable for lowland or wildlife corridor protection.
3. **Access and Use Agreements** – specify how a portion of property may be used for a specified time. The agreement should contain a termination clause, obligations of the Town or trail manager, and a list of impermissible activities.
4. **Leases** – convey almost all rights, control and liability of the property to the lessee for a specified number of years (usually 25 or 99) and may provide the landowner with compensation from the lease.

Acquisition of land for trail corridors, on land that is currently underdeveloped, can take place as part of the Town's subdivision process. As large parcels are subdivided, corridors that are specified in the adopted Pedestrian Plan are acquired from the developer and incorporated in to the Town's trail system through whichever legal instruments are specified in the Town's Subdivision Ordinance. The Town may choose to require through the ordinance that the developer contribute a fee for the construction of the trail improvements, as well as continual maintenance fees for its upkeep through a portion of homeowners' association fees.

Liability

The following risk management strategy steps should be taken as the trail is planned and developed:

1. Identify potential hazards in the proposed trail alignment.
2. Develop a list of permitted trail uses along with the risks associated with each.
3. Identify applicable laws.
4. Design and construct the trail in accordance with recognized guidelines.
5. Develop a plan for handling medical emergencies.
6. Conduct regular inspections once the trail is open for use (see **Routine maintenance**).
7. Document inspection findings and actions taken.

For detailed information concerning liability, see:
http://www.americantrails.org/resources/adjacent/RailLiability.pdf

Security & Safety

- Safety concerns, such as minimizing accidents and exposure to risk should be addressed during the design process of any off-road trails.
- Safety design elements to consider include:
  1. Lighting and emergency phones,
  2. Elimination of obstructions
  3. Clear sight lines by selective vegetation removal
  4. Planting prickly shrubs at select locations
- In addition to standard police patrol, Adopt-A-Trail programs should be considered that encourage local residents to police trails much like Neighborhood Watch.
- Trails are typically accessible during daylight hours only, and violations after dark are viewed as trespassing.
- Emergency access points for Police, Fire, and EMS should be signed and have restricted-access bollards that allow emergency vehicles into the site while prohibiting access by unauthorized vehicles. Most maintenance access points also suffice as emergency access points.
- When extreme weather is expected, efforts should be taken to close trail to protect the safety of the public.

"Front yard" v. "backyard" paths

Although off-road trails will typically follow stream banks and utility corridors, they should be designed as "front yard elements" whenever possible, connecting to existing sidewalks, as well as civic, residential and commercial destinations. This arrangement will maximize the transportation value of the trail, and also increase visibility and safety for users.

Access Points & Linkages to private property

Access opportunities to off-road trails should be maximized. The trail system should readily accessible from sidewalks in the public right-of-way. Commercial and institutional establishments, as well as residential developments, are strongly encouraged to provide direct access to the trail from their property at points convenient to potential users.

Maintenance & Operations

Facility inspections are an essential part of maintaining any facility. Planning and design of all off-road trails should include management plans that help gauge operational funds for various maintenance projects. Proper maintenance must address both the performance condition of the trail preserving the environmental integrity and character of any environmental areas that are adjacent to the trail. Maintenance and repair projects can be managed either through annual service contracts put out to bid, or become an integral part of the Facilities Management maintenance program. Annual budgets for trail maintenance and operations should document maintenance items, facility improvements, and other related costs to ensure the long-term health of trail facilities, the environment, and safety for users.

Three tiers of maintenance programs should be included in the management plan:

1. **Long-term maintenance programs** - includes renovation of facilities and trail resurfacing. Comprehensive inspections should occur twice a year to record user

impacts, general wear and tear, and other factors that may affect safety, environmental features, or structural integrity of the facility. If long-term maintenance programs are deferred, the safety of the trail is compromised and costly capital improvement funds to renovate damaged areas will be required. Typical long-term maintenance activities include:

- Annual vegetation clearance (June and September)
- Annual inspection by engineer to identify potential repairs needed for bridges and structures, drainage structures, pavement, railings, and fences
- Revegetation during planting seasons

2. **Routine maintenance** – includes safety and repair issues that occur throughout the life of the facility. Frequency of routine maintenance should take place on a monthly basis, dependent upon the amount of usage and availability of funds. Typical routine maintenance activities include:
   - Removal of litter and general cleaning
   - Sweeping and leaf removal
   - Mowing and weed control
   - Pruning and removal of encroaching/fallen branches
   - Trail edging
   - Route signage maintenance
   - Graffiti control
   - Regular presence of volunteers to report faults
3. **Emergency repairs** - necessitated when storm damage makes the trail unsafe for daily use. Severe weather may occasionally cause damage to the facility either through wind, erosion, or fallen trees. Emergency repair funds for severe weather should be allocated and allowed to rollover from year to year for this inevitability.

Volunteer programs for greenway maintenance can be organized through the "Adopt-A-Park" program or could be coordinated with the existing greenway volunteer programs. Volunteer labor can yield a substantial savings for labor costs on routine maintenance and repair. Materials can be donated by a group, provided through a corporate sponsor, or purchased by the Town.

Additional Accessibility Information

The following accessibility standards and guidelines are provided by the **Pedestrian and Bicycle Information Center** (www.walkinginfo.org)

A Checklist for Accessible Sidewalks and Street Crossings

The Americans with Disabilities Act (ADA) requires that new and altered facilities be accessible. Title II of the ADA covers sidewalk and street construction and transit accessibility, referencing the ADA Accessibility Guidelines (ADAAG) or the Uniform Federal Accessibility Standards (UFAS) for new construction and alterations undertaken by or on behalf of a state or local government. The Department of Justice (DOJ) title II regulation specifically requires that curb ramps be provided when sidewalks or streets are newly constructed or altered.

(Requirements for existing pedestrian networks not otherwise being altered are also included in the DOJ regulation, available on line at www.ada.gov/reg2.html). The ADA Accessibility Guidelines (www.access-board.gov/adaag/html/adaag.htm) include standards for site development applicable to new construction and alterations in the public right-of-way.

CURB RAMPS

A curb ramp or other sloped area is required wherever a new or altered pedestrian walkway crosses a curb or other barrier to a street, road, or highway. Similarly, a curb ramp is required wherever a new or altered street intersects a pedestrian walkway. A curb ramp maybe perpendicular to the curb it cuts or parallel with the sidewalk. Other designs may also comply, including sidewalks that ramp down to a lesser curb height, with a short perpendicular curb ramp to the street; blended or at-grade connections, or raised crossings that connect at sidewalk level.

The running slope of a new curb ramp should not exceed 1 in 12 (8.33%). Steeper ramps are not usable by many pedestrians in wheelchairs and scooters. Cross slope should be limited to 2%.

A level landing should be provided at the top of a perpendicular curb ramp. A curb ramp must connect at the top to a level landing that is at least 48 inches deep with a cross slope of no more than 2%. The side flares of a curb ramp are not intended for accessible travel (the slope of a side flare is limited so that it will not present a tripping hazard to pedestrians).

The foot of a curb ramp should be contained within the crosswalk markings. Pedestrians who use wheelchairs should not be directed outside the crosswalk or into an active travel lane in order to cross stopped traffic. If a diagonal ramp is used, a 48-inch long bottom landing must be provided in the space between the curb radius and curb line extensions.

The transition from curb ramp to gutter should be flush. Lips are not permitted. Gutter counter slope in the line of travel should not exceed 1 in 20 (5%) and should connect smoothly with other elements of the pedestrian network.

The boundary between the sidewalk and street should be detectable underfoot. A 24-inch strip of truncated dome or other approved detectable warning material should be provided the full width of the ramp or other uncurbed connection to the crosswalk so that pedestrians do not inadvertently travel into the street.

SIDEWALKS

A new sidewalk should be wider than the minimum accessible travel width of 36 inches. Additional maneuvering space is necessary for a pedestrian using a wheelchair to turn, to pass by other pedestrians, to operate and pass through an entrance door, to use sidewalk telephone or to activate a pedestrian crossing button. A 60-inch minimum width can accommodate turns and passing space and is recommended for sidewalks adjacent to curbs in order to provide travel width away from the drop-off at street edge; a 48-inch width can accommodate side-by-side travel with a service animal.

The cross slope of a sidewalk should not exceed 2%. Excessive cross slope requires additional energy to counteract and tends to direct wheelchair users into the street, particularly when it is wet, icy, or snowy underfoot. At driveways there should

be a minimum 36-inch (915 mm) wide passage with a cross slope of no more than 1:48 (2%). Corners at intersections should comply in both directions, since the running slope of one walkway will be the cross slope of another.

Street furniture, plantings, and other fixed items should not protrude into travel routes. Pedestrians with vision impairments can detect objects mounted on walls or posts if they are installed so that the leading edge is less than 27 inches above the sidewalk. Items mounted above this height should not project more than 4 inches into any circulation route. Particular care should be taken to locate temporary signage so that it does not impede pedestrian travel.

STREET CROSSINGS

Consider the information needs of blind and low-vision pedestrians at intersections.

When pedestrian signals are provided, their crossing and timing information should be available to all users. The audible and tactile information delivered at the pedestrian button of an accessible pedestrian signal (APS) can identify pedestrian signal phases and provide other non-visual information about the nature of a crossing.

Insufficient crossing time may be a barrier for some pedestrians. Every pedestrian cohort should be expected to contain some walkers whose rate of travel is less than 3.5 feet per second. Some jurisdictions add additional time using video technology; others employ a pedestrian button to call for a longer crossing cycle.

TEMPORARY WORK

Temporary work should be accessible. Where construction blocks a public sidewalk for more than a short time, an alternate accessible route should be provided that is cane-detectable. Sidewalk barriers should be continuous and cane-detectable as well. Temporary events and facilities should also meet accessibility criteria.

OTHER PEDESTRIAN FEATURES

Pedestrian facilities on and along sidewalks must be accessible. Signal actuating buttons, drinking fountains, telephones, kiosks, and other pedestrian elements should meet accessibility criteria for approach and maneuvering space, reach range, and operation.

Additional rights-of-way guidelines may be found at the U.S. Access Board's website at www.access-board.gov. The Board also maintains a toll-free technical assistance line at 800/872-2253 (V); 800/993-2822 (TTY).

Information Sources:

Planning and Designing Local Pedestrian Facilities – NCDOT, Office of Bicycle and Pedestrian Transportation, February 1997

North Carolina Bicycles Facilities Planning and Design Guidelines – NCDOT, Office of Bicycle and Pedestrian Transportation, January 1994

James City County Greenway Master Plan June 25, 2002
Greenway Maintenance and Management, www.jccegov.com

American Trails – Resources & Library
http://www.americantrails.org/resources/index.html

Creating Connections
The Pennsylvania Greenways and Trails How-to Manual – Russ Johnson, Pennsylvania Environmental Council, Pennsylvania Greenways Partnership, 1998
http://www.pagreenways.org/toolbox/creatingconnections.pdf

Rail-Trails and Liability
A Primer on Trail-Related Liability Issues & Risk Management Techniques – Hugh Morris, Rails-to-Trails Conservancy in cooperation with the National Parks Service Rivers, Trails and Conservation Assistance Program, September 2000
http://www.americantrails.org/resources/adjacent/RailLiability.pdf

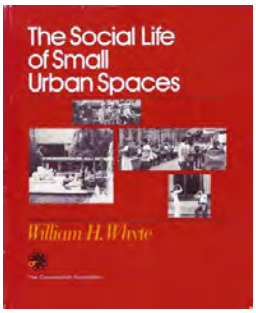
Cary Parks, Recreation and Cultural Resources Facilities Master Plan
http://www.townofcary.org/depts/prdept/greenwayreco.pdf

Walkinginfo.org

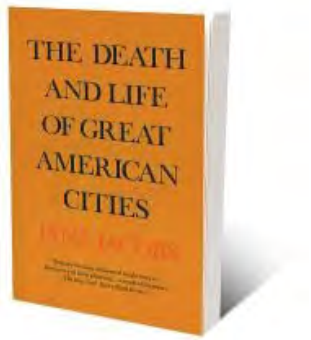
Trafficcalming.org

Sustainable Environment for Quality of Life - SEQL.org

The Social Life of Small Urban Spaces – Whyte, William H., 1980



The Death and Life of Great American Cities – Jacobs, Jane, 1961



A.3 Articles

The 13 points of pedestrian-oriented development
Duany Plater-Zyberk & Company

1. The neighborhood has a discernible center. This is often a square or a green and sometimes a busy or memorable street corner. A transit stop would be located at this center.

2. Most of the dwellings are within a five-minute walk of the center, an average of roughly 2,000 feet.

3. There are a variety of dwelling types - usually houses, rowhouses and apartments - so that younger and older people, singles and families, the poor and the wealthy may find places to live.

4. At the edge of the neighborhood, there are shops and offices of sufficiently varied types to supply the weekly needs of a household. (Collective neighborhood edges form a town center.)

5. An elementary school is close enough so that most children can walk from their home.

6. There are small playgrounds accessible to every dwelling - not more than a tenth of a mile away.

7. Streets within the neighborhood form a "connected network, which disperses traffic by providing a variety of pedestrian and vehicular routes to any destination.

8. The streets are relatively narrow and shaded by rows of trees. This slows traffic, creating an environment suitable for pedestrians and bicycles.

9. Buildings in the neighborhood center are placed close to the street, creating a well-defined outdoor room.

10. Parking lots and garage doors rarely front the street. Parking is relegated to the rear of buildings, usually accessed by alleys.

11. Certain prominent sites at the termination of street vistas or in the neighborhood center are reserved for civic buildings. These provide sites for community meetings, education, and religious or cultural activities.

12. The neighborhood is organized to be self-governing. A formal association debates and decides matters of maintenance, security, and physical change. Taxation is the responsibility of the larger community.

13. For single-family homes: A small ancillary building is permitted within the backyard of each house. It may be used as a rental unit or place to work (e.g., office or craft workshop).

Some Benefits of Greenways

From the Great Rivers Greenway District in St. Louis

Greenways improve everyday living.
An interconnected system encourages neighborhood and community lifestyles that emphasize outdoor recreation and promote walking and bicycling to school, work and shopping. By linking the system to streets, sidewalks and other public spaces, it helps communities and neighborhoods to function in a more connected, healthy and enjoyable way.

Greenways Link a Community's Resources.
By providing physical connections and green "buffers," a system of greenways, parks and trails helps unite spaces within a community. Residential and commercial districts, educational campuses, civic and cultural amenities, and light industry all can be interwoven with a well-designed open space plan that incorporates and respects the natural environment.

Greenways Create a Stronger Tax Base.
Neighborhoods and communities thrive when public investment is made in greenways, parks and trails, encouraging additional public and private investment in the area. The enhancement of "green infrastructure" is an important aspect of redevelopment and contributes to increased property values and, thus, tax revenue. Neighborhoods and communities prosper, job opportunities increase and the region stabilizes financially. In established and growing communities, the additional open space provided by the interconnected system also increases.

Research from the National Park Service:

By conserving a greenway corridor rather than permitting intensive development, local agencies may reduce costs for public services such as sewers, roads, and school facilities. Establishing a greenway in an area prone to hazards, such as flooding, may decrease costs for potential damages. Greenways and associated vegetation can also help control water, air and noise pollution by natural means, resulting in potential decreased pollution control costs. Greenways and trails may promote physical fitness, leading to decreased public health care costs.

Greenway corridors provide a variety of amenities, such as attractive views, open space preservation, and convenient recreation opportunities. People value these amenities. This can be reflected in increased real property values and increased marketability for property located near open space. Developers also recognize these values and incorporate open space into planning, design, and marketing new and redeveloped properties.
Cases and examples: http://www.nps.gov/pwro/rtca/propval.htm)

More information available at: **http://www.nps.gov/pwro/rtca/index.htm**

- **From San Marco Greenbelt Alliance:**
  Several examples of development and tax revenue

  http://www.smgreenbelt.org/benefits.htm
  Trail users generate tax revenue and income for local businesses. A study conducted by the Maryland Department of Natural Resources found that although the Northern Central Rail-Trail cost $191,893 to construct, it generated $303,750 of State tax revenue during one year. (see http://ntl.bts.gov/DOCS/430.html) And the 1992 "Impacts of Rail-Trails" study by Roger L. Moore, et al. found that for the three trails studied, trail users of each trail were responsible for generating over $1.2 million for local businesses. "Users spent an average of $9.21, $11.02, and $3.97 per person per day as a result of their trail visits to the Heritage, St. Marks, and Lafayette/Moraga Trails respectively." For more data on outdoor recreation spending, "Economic Impacts of Protecting Rivers, Trails, and Greenway Corridors" at the National Forest Service site:
  http://www.nps.gov/pwro/rtca/econindx.htm

- **From Florida Greenways, " What is a greenway? Economic Prosperity"**
  Property near but not on the Burke-Gilman Trail in Seattle sold at an average of 6.5 percent more than similar property elsewhere. Property values directly adjacent to the trail were not affected, either in average price or ease of sale. Approximately 60 percent of the owners of homes and condominiums adjacent to the trail believed either their homes sell for more because of the trail or would not be effected. It was also found that homes and condominiums near the trail are easier to sell because of their proximity to the trail (Source: Evaluation of the Burke-Gilman Trail's Effect on Property Values and Crime, by the Seattle Engineering and Department Office of Planning, 1987).
  http://www.geoplan.ufl.edu/projects/greenways/whatisagreenway.html#economicprosperity

Planning on Walking?

http://www.planetizen.com/node/22955<http://www.planetizen.com/node/22955>

20 February 2007 - 9:00am
Author: Wayne Senville
With positive effects on public health, safety, and environmental quality -- walkability has become the new buzzword in planning.

Atlanta Journal-Constitution, "Demand for Walkable Communities Unmet," Jan. 19, 2007: "A report scheduled to be released in conjunction with a panel discussion of Georgia planners and health experts has expanded findings on the benefits of pedestrian-friendly neighborhoods...[the study says] there is a significant, unmet demand for developments that make it easier to walk from place to place."

As editor of the Planning Commissioners Journal <http://www.plannersweb.com/> ("PCJ"), I try to keep up with news on what's happening around the country, and what topics planners are dealing with. The Atlanta Journal-Constitution article cited above is typical of what we're seeing nationwide: a rapidly growing interest in "walkable communities."

A confluence of trends seems to be behind this. For one, there's been growing interest in the health implications of sprawl. From a relatively limited concern, this has exploded into coverage in major national publications and has led to a growing body of research.

The focus of the Winter 2006 issue of the Journal of the American Planning Association ("JAPA"), for example, is on connections between health and planning. Inside that issue, you'll find a detailed analysis of the correlation between health and walkable communities. The researchers found that "individuals who live in counties that are more walkable and have lower rates of crime tend to walk more and to have lower body mass indices." (See "Active Community Environment and Health: The Relationship of Walkable and Safe Communities to Individual Health.")

In the same issue of the JAPA, there's also an article Many Pathways from Land Use to Health <http://www.planning.org/japa/pdf/JAPAFrank06.pdf>, examining the link between walkability and air quality. The researchers asked if more walkable environments led to reduced auto use and, in turn, better air quality. Using a "walkability index" that factored in things like net residential density and street connectivity, they found that more walkable neighborhoods yield at least some improvements in air quality (also pointing out that "greater improvements in walkability should lead to larger effects").

Consider also the rapidly growing "safe routes to school" movement, which seeks to get more kids walking to school -- in large part for the health benefits, but also as a way of promoting neighborhood schools in places where walking to school is still possible (we've reported on "school sprawl" <http://www.plannersweb.com/wfiles/w165.html> in the PCJ, and know that in many places walking to school is simply an impossibility).

Advocating for the opposite end of the age spectrum, AARP has started a major "livable communities" initiative. In Burlington, Vermont, one of the pilot communities in this

project, seniors have taken neighborhood walks, where they've evaluated the condition of sidewalks, crosswalks, and signal timing -- with the aim of enabling more seniors to be able to walk from where they live to nearby stores and community services.

Cities where you wouldn't expect it are also focusing on pedestrians. In Kansas City, Missouri, one of the nation's most auto-oriented places, the City has adopted a Walkability Plan <http://www.kcmo.org/planning.nsf/plnpres/walkability?opendocument>, with innovative strategies for promoting more walkable neighborhoods. Kansas City now requires neighborhood walkability audits as a prerequisite to receipt of certain capital improvement funds. The city's development review process also takes into account not just traffic, but pedestrian impacts. PCJ offers a summary of what Kansas City is up to. <http://www.plannersweb.com/Kansas_City_walkable.pdf>

Here's one more force behind the interest in walkable communities: the New Urbanism movement. Those of you familiar with New Urbanism -- which has taken off as an approach to urban design and planning in recent years -- know that it has as a core value a commitment to developing walkable communities. Consider just two of the guiding principles in the Charter <http://209.31.179.62/charter> of the Congress of the New Urbanism (new urbanism's guiding body).

- Many activities of daily living should occur within walking distance, allowing independence to those who do not drive, especially the elderly and the young. Interconnected networks of streets should be designed to encourage walking, reduce the number and length of automobile trips, and conserve energy.

- Concentrations of civic, institutional, and commercial activity should be embedded in neighborhoods and districts, not isolated in remote, single-use complexes. Schools should be sized and located to enable children to walk or bicycle to them. Also connected to the heightened interest in walkable communities is the voice of hundreds of Main Street organizations and downtown business groups. They are seeing how their efforts tie in nicely to promoting walkability. And, of course, there are few places more conducive to walking than downtown main streets.

But even in newer suburbs, town center developments are proliferating -- and are being promoted in terms of their walkability, not just their auto accessibility.

In the current issue of our publication, the PCJ, transportation planner Hannah Twaddell points to many of the developments I've just noted (see excerpts from Let's Plan on Walking <http://www.plannersweb.com/wfiles/w258.html>). But she also highlights another important ingredient in the brewing interest in walkable communities -- economic value:

"One of the keys to regional and local prosperity is the ability to attract and retain high-skilled people. ... Many people can, and do, choose where they want to live based on factors beyond their ability to make a living. "Quality of life" has become the coin of the realm. The economic value of a community's attractiveness as a place to live, work, and play is becoming widely recognized by business leaders, local officials, and planners. This has led many cities to focus on ... a built environment that encourages a vibrant street life --

elements that require a welcoming, walkable environment for people of all ages."

Twaddell goes on to note, "Walkability isn't just for cities and suburbs. The economic health and livability of small towns and villages depends upon it, too. Participants in surveys and focus groups conducted for a recent national study on integrating land use and transportation in rural communities repeatedly emphasized the need to invest in sidewalks, crossings, and street amenities in order to take advantage of the compact, connected design they already enjoy."

And before I close, it's interesting to note that even the National Highway Traffic Safety Administration is promoting walkability, witness its Partnership for a Walkable America <http://www.nhtsa.dot.gov/people/outreach/safesobr/12qp/walkable.html>. As the NHTSA puts it, "Our nation has simply become 'unwalkable' despite the fact that everyone is a pedestrian!" The NHTSA's objectives: "to make walking in America safer by reducing motor vehicle-related deaths and injuries; to provide information about how to achieve walkable communities; and to encourage walking as one of the easiest ways for Americans to improve their health and lower health care costs."

So what's the bottom line? It seems that walkability is in. It's hard to argue with benefits that range from health, to air quality, to quality of life, to economic value, to safety (and I probably left something out!). What we seem to be witnessing, dare I say, is a walkability movement.

But I'm curious to hear your take on this. Is walkability of growing importance in your city or town? And, if so, what do you think is behind the interest?

Wayne Senville is publisher and editor of the Planning Commissioners Journal (since founding the PCJ in 1991). He served as a member of the Burlington, Vermont, Planning Commission from 1990-1999, including three years' service as Chair. Senville was also honored by the Northern New England Chapter of the American Planning Association, and the Vermont Planners Association, as Citizen Planner of the Year in 1999. Between 1988 and 1991, Senville was Director of Local & Regional Planning Assistance for the Vermont Dept. of Housing & Community Affairs.

Resource: A great resource for anyone interested in this topic is the Walkable Communities web site <http://www.walkable.org/>, put together by Dan Burden.

A.4 How to Build a Sidewalk

A STEP-BY-STEP GUIDELINE FOR BUILDING PEDESTRIAN IMPROVEMENTS

I. PROJECT REQUEST

All requests for new sidewalks (or other pedestrian facilities) should be directed to the Pedestrian Needs Committee (PNC). A request may come from sources such as:

1. A Pedestrian Plan evaluation exercise (see the **Plan Evaluation** section)
2. An unsolicited request from an individual or group
3. Observations of PNC members themselves, elected officials, Town Administrator, Public Works Director or other Town staff members.
4. Other

II. PROJECT EVALUATION PHASE

The PNC should evaluate the project with respect to the following criteria:

1. **Appropriateness of the project with respect to the Pedestrian Plan**
   a. Does the project meet the goals of the Pedestrian Plan?
   b. Where does the project fall into the priorities of the Plan?
   c. Does the project meet current and anticipated needs and conditions?
   d. Can the requested project be altered in some way to meet the above criteria?

2. **Ownership of the land**
   Does the Town already own the right-of-way? If not, the PNC should determine and recommend the most appropriate course of action:
   a. Purchase the property required by fee simple.
   b. Acquire an easement on the property.
   c. Condemn the portion of the property needed.
   d. Find an alternate project to meet the goal.

3. **Source and availability of proper funding**
   The PNC should determine and recommend a funding strategy that would be most appropriate to the project. The PNC may consider:
   a. Powell Bill funds
   b. Applicable grants
   c. Other sources (see **Funding Opportunities**).

III. PROJECT DESIGN/CONSTRUCTION PHASE

If the project meets the intent of the Pedestrian Plan, and it has been determined that the property required for the project can be obtained, the PNC should then examine the project in terms of the four specific parameters listed below. Each of these parameters will determine some aspect of how the project construction process will play out.

1. **Project Area**
   Larger projects require additional state permitting. If the project involves one acre or more of disturbed earth, a plan must be submitted to the North Carolina

Department of Natural Resources (NCDENR) for a 30-day review of the project. The process for submitting projects to NCDENR, as well as the application forms required, can be found at their Division of Land Resources webpage: http://www.dlr.enr.state.nc.us/pages/sedimentforms.html
Additional permits may be required for particular projects depending upon the site involved. For more information, contact the local NCDENR office at 704-663-1699.

2. **Project Cost**
A rough estimate of the overall project cost should be performed at the outset to determine if the project must be bid publicly.

Project cost <$300,000
Project does not require public bidding, however obtaining multiple bids, informally, is recommended to find the most competitive price for project construction.

Project cost >$300,000
- Public bid for the project is required according to General Statute.
- Requires Town Planning Board Approval
- Bid projects using a professional list serve. Advertising in newspapers may serve this purpose, but are usually not as cost-effective.

3. **Project Property Owners**
Owners of properties directly affected by the project must always be contacted, but depending upon the project size as well as its civic importance, this can occur privately or may require a public workshop.

4. **Project Design**
Some projects are small enough and/or do not require exact measurements for construction, such as some sections of trails. These may be field determined and built according to a standard specification (see **Facility Standards & Guidelines**). But projects that tie into existing streets or other facilities more often require careful coordination and measured plans. An attempt to save money at the front end by not requiring construction plans can likely produce a project that is unsatisfactory, problematic, and reap unexpected expense.

NCARPO
North Carolina Association of Rural Planning Organizations

The **North Carolina Association of Rural Planning Organizations** has a website that answers a plethora of transportation questions, including how to fund projects. The following is an excerpt from their page on constructing sidewalks.

Constructing a sidewalk sometimes involves a variety of players, from the NCDOT and municipalities, to private property owners and utility departments. A range of federal and state and local funding sources are available to assist in the development and construction of these non-motorized improvements; however local financial participation is often required, in the form of matching funds, right-of-way acquisition or in-kind services.

Below are some of the resources available to assist in the construction of sidewalks. Please contact the NCDOT early in the process if the sidewalk you would like built is along a state-owned road.

On-Road Pedestrian Facilities

Federal

- Enhancement Funds
- Congestion Mitigation and Air Quality Funds (in qualifying areas)
- Earmarks (contact local legislator)
- Safe Routes to Schools (within 2 miles of an elementary or middle school)

State

- Independent Projects through the Surface Transportation Program Evaluation Criteria
- Incidental Projects (in conjunction with road maintenance or widening projects)
- Governor's Highway Safety Program
- Board Member Discretionary Funds (via Division Office)

Local

- Community Foundations
- Tourism Authority
- Health Foundations/Hospitals
- Powell Bill

To view more, see http://www.nctransportationanswers.org/Construct%20Sidewalks.htm

For further information about funding projects, see Part 4 of the Pedestrian Plan.

A.5 The Bicycle and Pedestrian TIP Process

North Carolina Department of Transportation
Division of Bicycle and Pedestrian Transportation

http://www.ncdot.org/transit/bicycle/funding/funding_TIP.html

Transportation projects in North Carolina progress through a standard process of planning, design and construction. Improvements for bicycling and walking may be included in the Transportation Improvement Program (TIP) as part of the construction of a highway project or, where no highway project is programmed, as an independent project. Bicycle and pedestrian projects follow essentially the same TIP process as do highway projects.

The Division of Bicycle and Pedestrian Transportation (DBPT) works with localities to create a four-year schedule of projects using the locality's priority listing of needs along with the adopted project selection criteria. The DBPT compiles candidate bicycle projects to be considered for inclusion in the TIP from the following sources:

- The prioritized Local Transportation Improvement Program (LTIP) lists produced by the 17 Metropolitan Planning Organizations (MPOs), which have been derived from separate lists produced by communities comprising the MPO.

- Project requests that are made at the biennial TIP meetings or through written requests within 30 days of the meetings from the state's small urban areas, counties, public and private entities, and citizens.

- Internal DBPT assessment of statewide bicycle and pedestrian project needs.

All project requests are documented and distinguished as independent or incidental (part of a highway project). Independent project requests are evaluated by DBPT using project selection criteria. A prioritized list of these projects is presented to the North Carolina Bicycle Committee. The Committee reviews the list, makes revisions and recommendations, and adopts a four-year schedule of projects. The adopted schedule is sent to the North Carolina Board of Transportation for approval and inclusion in the state's TIP.

Inclusion of a bicycle or pedestrian project in the TIP does **not** guarantee that it will be implemented; rather, it means that it will receive further study and will be implemented if feasible. Incidental projects are considered in conjunction with the planning study for the given highway or bridge project and implemented, if feasible.

For independent construction projects, DBPT conducts a detailed feasibility study, including cost estimates. If the project is determined to be feasible, DBPT prepares a more detailed planning study, which is reviewed and approved by the Bicycle and Pedestrian Task Force before being submitted to the Board of Transportation for funding authorization. Once the funding is authorized, project design and development begins.

List of Bicycle and Pedestrian TIP Projects

Visit the web addresses listed below to access the lists of independent and incidental projects currently in the TIP, which are listed by division, county and locality. To search these Acrobat PDF files, click on the binocular icon in the navigation toolbar at the top of the Acrobat window and type in a key word.

http://www.ncdot.org/transit/bicycle/funding/BPindependentTIP.pdf
http://www.ncdot.org/transit/bicycle/funding/BPincidentalTIP.pdf

The Transportation Improvement Program Process:
From Need to Bicycle Improvement
The Transportation Improvement Program (TIP) is the process through which local areas and citizens are asked to present their transportation needs to state government. Bicycle facility and safety needs are an important part of this process. Every other year, a series of TIP meetings is scheduled around the state. Following the conclusion of these meetings, all requests are evaluated. Bicycle improvement requests, which meet project selection criteria, are then scheduled into a four-year program as part of the state's long-term transportation program.

Incidental projects — those where the bicycle request is an incidental feature of a planned highway improvement — are built with a mixture of state and federal funds as part of overall highway improvement. Independent bicycle projects — those which are separate from any other scheduled highway improvement — are paid for from funds allocated for that purpose by the North Carolina Board of Transportation.

Examples of bicycle projects already underway include signed bike routes, greenway/multi-use paths, roadways with widened outside lanes, widened paved shoulders, bicycle parking, replacement of hazardous drainage grates, mapping and signing projects, and producing bicycle route maps.

Steps in the Process

1. **Recognizing a need for a bicycle improvement project.** Somewhere in a local area there may be unsafe or difficult riding conditions for bicyclists that highlight a need for bicycle transportation improvements. Such improvements may be an on-road improvement such as wide paved shoulders, an off-road bike path, bicycle parking, or printed materials such as maps or safety brochures.

2. **The need is presented to the North Carolina Department of Transportation.** If it is a citizen or private group such as a local bicycle club, there are several ways to present the need to transportation officials. First, a citizen or local club may present their request to appropriate local government officials—aldermen, town council members, county commissioners, local planning boards, Transportation Advisory Committees, or other group appropriate to that local area. These agencies may or may not choose to include the request in their transportation improvement plan to be presented to NC Department of Transportation at the biennial

Transportation Improvement Program (TIP) meeting.

If an official of an agency desires to make a request at a division TIP meeting but is unable to attend on the date of the meeting, a written request may be submitted within 30 days of the scheduled TIP meeting. The request should be addressed to the Secretary of the North Carolina Department of Transportation. All requests will receive the same degree of consideration.

3. **All bicycle requests are documented.** Following the public TIP meetings, requests for bicycle transportation improvement projects will be organized and documented by the NCDOT Division of Bicycle and Pedestrian Transportation.

4. **Some bicycle improvement projects are selected for construction.** The Division of Bicycle and Pedestrian Transportation first evaluates and prioritizes all requests; then a summary of the project requests is presented to the NCDOT Bicycle Committee for its review. The Committee then forwards recommendations on the scheduling of some of the requested projects to the North Carolina Board of Transportation, which makes the final decision on projects to be included in the Transportation Improvement Program. Inclusion in the TIP Plan **does not in any way** guarantee that a requested project will be implemented. Rather, it means that the project will receive further study and will be implemented if feasible.

5. **Projects listed in the TIP fall into two categories.** Bicycle and pedestrian projects that can be incorporated into a planned and scheduled highway improvement are categorized as ***incidental*** projects. The bicycle or pedestrian element will be considered during the planning and design phases of the total project. Incidental projects are built with a combination of state and federal funds in the same manner as the larger highway project is constructed. Projects not incorporated into a planned and scheduled highway improvement are categorized as ***independent*** projects. These projects are constructed using 80% federal and 20% state money.

6. **Finally, some TIP projects are implemented.** In the case of a scheduled incidental bicycle improvement, inclusion in the TIP means that the project will be considered in conjunction with the planning and environmental studies for the given highway project. If the bicycle component is judged to be feasible, it will be scheduled for construction.

   Following inclusion in the TIP, each independent project will undergo a detailed planning study that includes the evaluation of the feasibility of the project as well as the actual project cost. Upon completion and acceptance by the NCDOT, the planning study will be submitted to the North Carolina Board of Transportation for final approval and funding. A project must successfully pass through each of these levels in order to be implemented. ***During any of the above phases of project development, it may be necessary to alter or eliminate a proposed improvement due to regulatory or design constraints or because of unanticipated costs.***

7. **TIP bicycle projects may take many forms.** A number of bicycle improvement projects involve construction of on-road or off-road facilities: wide paved shoulders (4-ft. minimum width); specially striped lanes for bicycles (minimum 4-foot width); wide outside lanes (14-ft. minimum width) which permit a safer mix of bicycles and motor vehicles); greenway-type bicycle paths; railroad crossing improvements for bicycle safety; and the addition of bicycle-safe bridge railings. The Projects section of this website provides more information.

   However, not all eligible bicycle improvements require a construction project. The following are examples of other acceptable projects: signing bicycle routes; producing maps and safety brochures for cyclists in local areas; replacing unsafe drainage grates; making spot improvements such as paving potholes or hazard marking of dangerous roadway features; and providing bicycle safety education materials for local areas.

TIP Project Selection Criteria

The following list of selection criteria is intended to provide guidance to individuals and localities that wish to request projects. It is important to note that:

a. Many worthwhile projects will fulfill only a few of the following conditions. Nevertheless, localities are encouraged to submit all needed projects, since cost constraints and regulations may change, allowing the scheduling of previously unfeasible projects.

b. Detailed project justification based on the factors listed below is not required at the time the request is submitted. DBPT staff will contact you during a follow-up period to obtain any additional information needed.

The Criteria:

1. **Right-of-way.** Complete information regarding the right-of-way situation should be provided. Due to the limited size of our annual budget, projects requiring that NCDOT acquire right-of-way are unlikely to be scheduled.

2. **Design standards.** Projects must substantially conform to state and federally adopted bicycle design guidelines, as described in the North Carolina Bicycle Facilities Planning and Design Guidelines (1994) and the AASHTO Guide for Development of New Bicycle Facilities (1999). The "sidewalk bikepath" that is constructed adjacent to the roadway for two-way bicycle traffic runs counter to these guidelines and is discouraged.

3. **Project purpose.** Each project must serve a primarily bicycle transportation purpose, as opposed to a recreation purpose.

4. **Preliminary project approval.** All necessary permits and approval must be obtained for any project involving a public jurisdiction (including approval of Metropolitan Planning

Organizations (MPOs) and inclusion in the local TIP, lease agreements, construction and encroaching permits, etc.)

5. **Local area involvement.** Project requests are viewed within the overall picture of bicycling in an area. Evidence of local concern and involvement via other bicycle projects or activities lends support to each specific bicycle request. Local participation (via a dollar share or design services) is viewed as one measure of a local area's commitment to an improved bicycle environment.

6. **Inclusion in transportation or bicycle planning process.** Evidence that a specific bicycle request is an element of a comprehensive transportation or bicycle planning process provides critical support for a project.

7. **Project need.** Priority will be given to those projects where the greatest need can be demonstrated. Crash data, potential safety problems, and information regarding current or potential users of the facility can all provide project justification.

8. **Boardwalks.** Multi-use pathways that are intended to accommodate bicycles should not be designed with significant sections of boardwalk, or other such surfaces, which may be unsuitable for bicycle transportation purposes.

A.6 Additional References

Listed below are some additional specific references to existing documents that may aid implementation of the Plan.

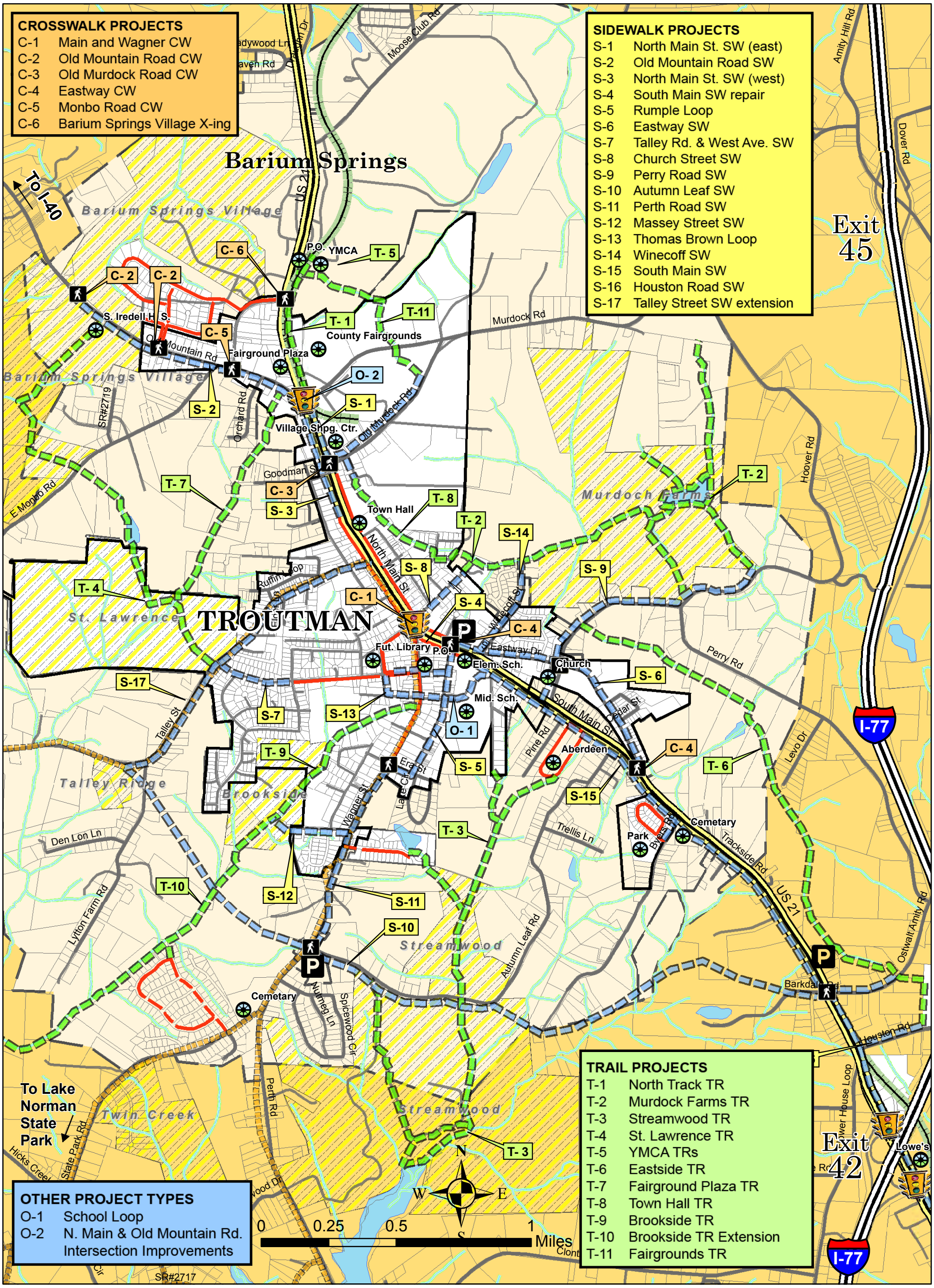
Sustainable Environments for Quality of Life (SEQL) is a regional initiative in the rapidly growing 15-county Charlotte, NC /Rock Hill, SC area. SEQL supports the region's efforts to develop integrated and sustainable long-range plans to ensure robust economic development, a clean and healthy environment, and a positive quality of life for its future. SEQL is funded in part by a grant from the EPA to Centralina Council of Governments in cooperation with Catawba Regional Council of Governments. Initiatives include the development of an action notebook for local jurisdiction elected officials and planners to use as a guide to development of policies and actions on the local level. Outreach extends to chambers, environmental groups and citizens. See more at www.seql.org
Pedestrian-related Action Items include:

- Pedestrian Friendly Streetscapes
  http://www.seql.org/actionplan.cfm?PlanID=16

- Connectivity for Multi-Modal Transit
  http://www.seql.org/actionplan.cfm?PlanID=4

- Greenways and Open Space
  http://www.seql.org/actionplan.cfm?PlanID=3

Active Living by Design is a national program of The Robert Wood Johnson Foundation and is a part of the UNC School of Public Health in Chapel Hill, North Carolina. The program will establish and evaluate innovative approaches to increase physical activity through community design, public policies and communications strategies. For more information, visit www.activelivingbydesign.org or call: 919-843-2523.
For trail-related information, see: http://www.activelivingbydesign.org/index.php?id=29



Comprehensive System Plan

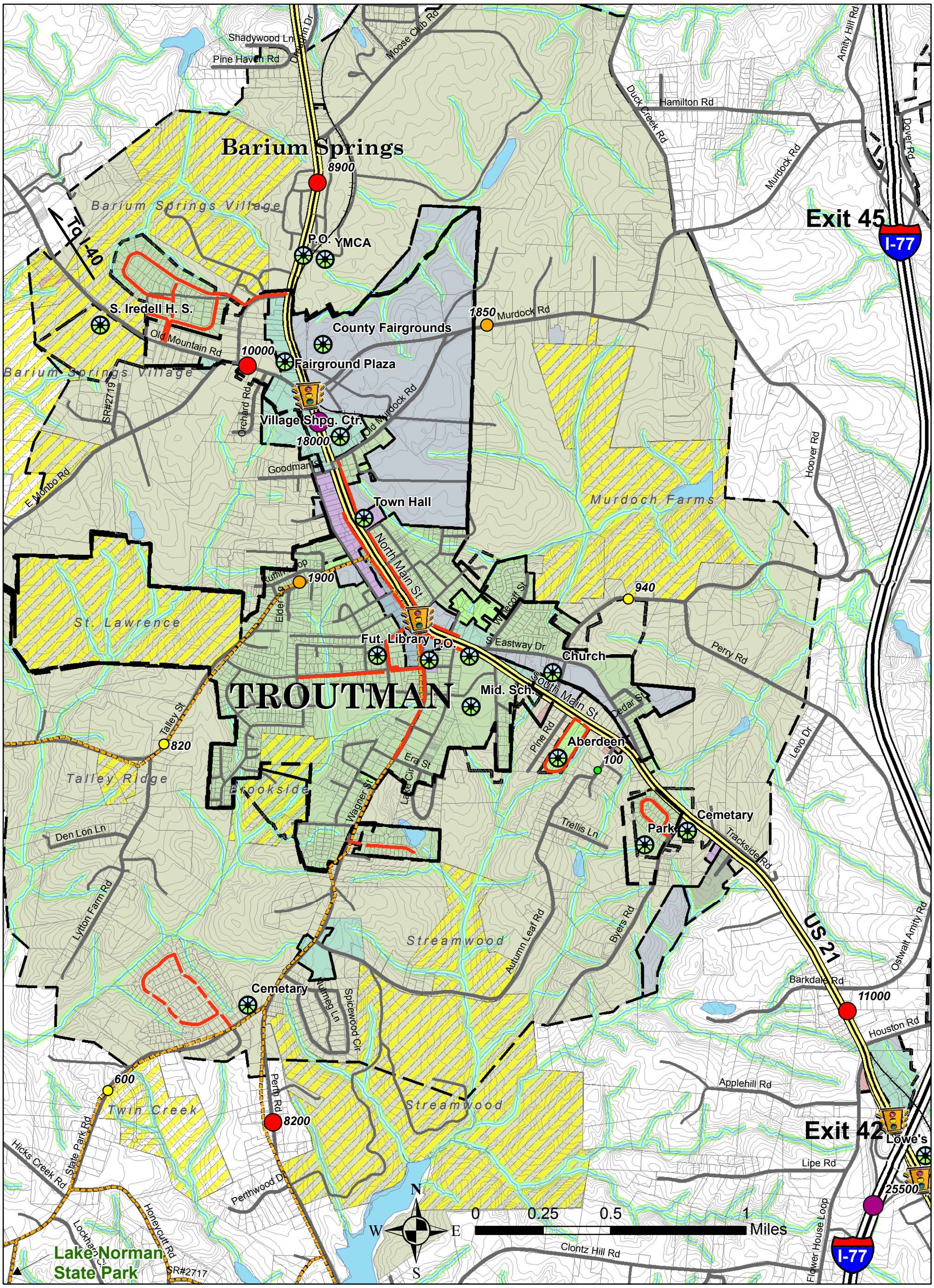
Troutman Pedestrian Plan

12.03.07

Centralina Council of Governments

S-1	Projects*		Destinations		Existing Sidewalk		Water body
	Crosswalk (CW)	P	Park & Ride		Street		New Subdivision
	Sidewalk (SW)		Traffic Light		US 21		Town Limits
	Trail (TR)		I-77		Creek		Troutman ETJ
	Street		Railroad Bed		LNBR (Lake Norman Bike Route)		County Jurisdiction

* See insets for project names.



Existing Conditions Map

Troutman Pedestrian Plan

12.03.07

Centralina Council of Governments

Destinations
Traffic Lights
LKN State Park
LNBR (Lake Norman Bike Route)
Sidewalks
Streets
US 21
I-77
Railroads
Creeks
Parcels
New Subdivisions
Town Limits
ETJ
Water bodies

Traffic (AADT)
- 0 - 100
- 101 - 1000
- 1001 - 7500
- 7501 - 15000
- 15001 - 25500

ZONING
- C-B
- H-B
- I
- N-C
- O-I
- R-M
- R-MH
- R-S
- R-T

TROUTMAN PEDESTRIAN PLAN

~ Recommended Ordinance Modifications ~

Issues affecting walkability	Current UDO Regulations	Concern With Current Regulations	Revision Recommended
1. Mixed Land Uses	**Sections 3.2 - 3.12** defines Troutman's Zoning Districts. Out of the eleven described, three districts permit a mix of residential and commercial uses: the Neighborhood Center (N-C) District, the Planned Unit Development (PUD) district, and the Central Business (C-B) District, which permits residential use within a mixed-use building.	The segregation of land uses does not encourage a pedestrian-friendly environment. The physical distance between uses presents fewer opportunities for pedestrians to walk from one use to another (i.e. "being able to walk to the corner store.") Such an arrangement more often encourages or necessitates the use of a car. All too often, such scenarios lend themselves to "strip commercial" development along major highways, which are geared for the motorist as opposed to the pedestrian.	Re-examine the table of permitted uses contained in Section 3. Simple changes that could be made include: **1.)** Permit more residential uses by special requirement in more of the non-residential zones. **2.)** Permit more non-residential uses by special requirement in more of the residential zones. **3.)** Replace zone-by-use with a form-based zoning code.
2. Street connec-tivity	**Section 8.8.4** strongly promotes connectivity but recognizes that topographic conditions can make road building impractical in some locations. However, the UDO does not specify what topographic conditions constitute an impractical hardship, nor does it specify who decides the issue on a case-by-case basis.	The Town and its ETJ is laced with a tight network of stream valleys, any one of which may be considered an impracitcal encumberence to development. With no site-specific criteria provided in the Ordinance, the Town has no basis on which to require developers will likely opt not to build expensive road connections that cross stream valleys, sacrificing the connectivity that the Town desires, or they may sue the Town if the Town, on an indiscriminate basis, requires them to build the road as a condition for subdivision approval.	**1.) Mandate that new subdivisions have at least one stub to adjoining properties.** This would require either a connection to an existing street or providing a stub for an adjoining (future) development to hook into the subdivision. **2.) Limit the use of cul-de-sacs to promote internal connectivity within the subdivision**. This could be accomplished by a). Limiting the percentage of streets within a subdivision that can be cul-de-sacs; b). Institute a connectivity ratio for all subdivisions which uses an established mathematical standard for street connections both within the subdivision and connections to other streets and properties at the subdivision periphery. **3.) Require pedestrian trails where street connections are considered impractical.**
3. Cul-de-sac street length	**Section 8.8.4 C.** states that permanent dead end streets should not exceed one-thousand (1000) feet in length unless necessitated by topography or property accessibility.	As cul-de-sacs lengths increase, properties accessible from only one direction become more isolated and difficult to reach, and vehicular traffic on the cul-de-sac increases. The UDO does not specify what degree of slope in topography necessitates the continuation of a cul-de-sac past the 1000 foot limit, nor does it specify who decides the issue on a case-by-case basis.	**1.) Develop topography and accessibility criteria** (such as maximum slopes, width of floodplain to cross, etc.) by which to set objective standards that necessitate exceeding normal cul-de-sac length limits. **2.) Amend Section 8.8.4 C.** to limit cul-de-sac lengths to 300 feet. This length allows at least 10 Single-Family R-S lots to front on a cul-de-sac.
4. Block length	**Section 8.8.5 C.** States that uninterrupted streets (or segments thereof) shall be no greater than 1,000 feet in length, except as considered necessary to secure efficient use of land.	1. Long block lengths allow for cars to travel at fast speeds and hinder pedestrian accessibility. 2. Long blocks present pedestrians with fewer route alternatives.	**Amend Section 8.8.5 C.** to allow blocks in new development to be no greater than 800 feet in length.

Issues affecting walkability	Current UDO Regulations	Concern With Current Regulations	Revision Recommended
5. **Cross-walks**	**Section 8.8.5 B.** states that where deemed necessary by the TRC and/or Town Board, a pedestrian crosswalk may be required to provide convenient public access to a public area such as a park or school, to a water area, or to areas such as shopping centers, religious or transportation facilities.	The UDO does not recognize an overall plan for crosswalk locations that takes into account street crossing locations that may not be adjacent to primary destinations, but are critical to primary pedestrian travel routes, such as greenways. The UDO also does not put forth design standards for crosswalks, such as guidelines for warning signage, signalization or adequate striping.	**1.) Amend Section 8.8.5 B.** to require crosswalks along principal streets within subdivisions (unless the block length is short enough (less than 500 feet) that a crosswalk would not be required. **2.)** In order to meet the intent of the Conditional Use process **Section 9.10.3 A.**, namely "that the use will not materially endanger the public health and safety if located where proposed and developed according to plan -- require that all conditional uses that generate substantial amount of pedestrian traffic (i.e., schools, library, etc.) be required to install crosswalks on major streets that abut such facilities. **3.)** Include a reference in **Section 8.8.5 B.** to the Troutman Pedestrian Plan for the location of additional strategic crosswalks required. **4.)** Provide design standards for crosswalks in **Section B.4.4**
6. **Sidewalk locations, condition, connec-tions**	**Section 8.9** provides minimal guidelines for sidewalks and their required locations in new development. Locations of sidewalks are required solely upon the basis of the street type right-of-way in which the sidewalk is to be constructed, as defined by the "Thoroughfare Plan" (CTP).	The UDO makes no reference to any additional plan or policy that takes into account destinations, or current or future land use issues. No comprehensive plan is referenced to guide sidewalk-related decisions. Furthermore, all sidewalks should meet all applicable ADA standards.	**1.) Include a reference in Section 8.9.** to the Troutman Pedestrian Plan for the location of additional strategic sidewalks required in non-subdivision developments. **2.)** Provide design standards for sidewalks in **Section B.4.4.**
7. **Green-ways, Trails & Open Space**	**Section 6.2** describes various categories of open space including greenways. The description emphasizes that greenways serve as ways of connecting destination points, such as schools, parks, etc. Section 6.1 limits the applicability of open space requirements to new developments with greater than 10 residential dwelling units with lots of less than one acre.	The UDO makes no reference to any additional plan or policy that takes into account destinations, current or future land use issues, or transportation or recreation master plans. The Town has no mechanism in place to secure right-of-way for off-road pedestrian corridors or destination points within municipal or ETJ limits, or to connect to destinations just outside of those. The UDO also does not put forth design standards for greenways.	**1.) Include a reference in Section 6.2. F.** to the Troutman Pedestrian Plan for the location of additional strategic sidewalks required in non-subdivision developments. **2.) Amend Section 6.2** to require the dedication of open space to secure land for greenway (and other open space) development or usage. NCGS 160A-372 gives NC municipalities the authority to require this as part of a subdivision development. These areas should be open to the general public and fall under municipal responsibility for construction, maintenance, security and liability. **3.)** Provide design standards for greenways in **Section B.4.4.**
8. **Street Trees**	**Section B.7** provides tree planting guidelines and requires that trees shall be planted in new developments as required in Chapter 7 of the UDO and includes that tree spacing shall be adjusted to avoid obstacles and keep roads sight triangles clear. Chapter 7 provides an approved plant list, buffer requirements, and general information about planting, but no specific information about street tree placement.	With no specific guidelines for tree spacing, the Town has no consistent standard for requiring street trees per length of street.	**Amend Section 7.2** to add a "**TYPE E Landscaping (Street Trees)**" classification. Require that large maturing trees be spaced at no more than 50' apart, and small maturing trees at no more than 35' apart. Consider further development of the Tree Ordinance during the revision process.

Issues affecting walkability	Current UDO Regulations	Concern With Current Regulations	Revision Recommended
9. **Building Setbacks**	**Chapter 3** sets the required minimum setbacks of the Town's various zoning districts. **Section 5.2** states that setbacks shall be compatible with those of adjacent buildings. The UDO describes no maximum setbacks. New buildings may, therefore, be located at great distances from the street, particularly when adjacent ones are as well.	With no regulations to establish maximum setbacks (or "build-to" lines), retailers can create very deep front yards. Such strip-development arrangement deteriorates street definition, making pedestrian use uncomfortable. It may also require pedestrians to navigate long distances through parked cars (and moving ones!) in parking lots, where front-yard parking is permitted.	**Amend Section 3.9** to establish "build-to" lines or maximum front yard setbacks in the C-B zone.
10. **Off-street Parking Require-ments**	**Section 8.2.1** provides a table of 12 land uses with the minimum number of parking spaces required for each use. The minimum number is based solely upon building use classification irrespective of zoning districts. The Ordinance sets no limit on maximum number of parking spaces allowed.	Requiring off-street parking strictly by use, irrespective of urban vs. suburban location, inadvertently conflicts with the pedestrian nature of a "downtown." Urban areas should be designed to facilitate the movement of persons by foot, as well as by car. Pedestrian-friendly zoning ordinances either waive or significantly limit the amount of off-street parking required in a downtown setting, or give credit for on-street spaces.	**1.) Amend Section 3.9** to reduce the requirements for off-street parking for all uses in the C-B district. **2.) Reclassify additional zones** as exempt from providing additional parking spaces for enlargement, alteration or expansion: Zone M-1, M-2, G-B. **3.) Grant Zoning Administrator greater power** to grant exemptions from additional parking requirements.