Stallings Pedestrian Plan

August 2008

Division of Bicycle & Pedestrian Transportation
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

Funded by
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Cover photos:
Rock Store
Downtown
Callonwood Town Park

STALLINGS Pedestrian Plan

Stallings
Pedestrian Plan

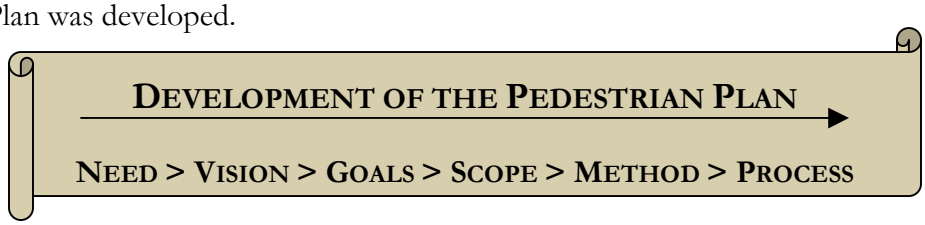
Introduction

The Stallings 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 appendices. The following will help orient the reader in how to use this document:

PART 1: PLAN OVERVIEW

1.1 Realizing the Vision

An explanation of the Town's need for the Pedestrian Plan, the Town's pedestrian vision, how the Plan can help bring about that vision and the process by which this Plan was developed.



1.2 Benefits of a Pedestrian Lifestyle

Background information about pedestrian planning and some examples of how pedestrian-oriented improvements will benefit the Stallings community.

PART 2: CURRENT CONDITIONS

2.1 Existing Conditions & Trends

- Stallings' existing layout, pedestrian amenities, and the current barriers to pedestrian lifestyle
- Current conditions that impact pedestrian planning throughout the community, from "big picture" issues, to the condition of individual sidewalks and other facilities
- Population trends of the Town that have direct bearing on current and future pedestrian needs.

2.2 Current Policies, Ordinances and Plans

A thorough analysis of existing Town policy, including ordinances, adopted plans, and other pertinent planning documents, and how these policies may aid or hinder pedestrian-friendly development.

2.3 Current Projects

Local and regional projects affecting the quality of pedestrian life in Stallings.

2.4 Current Programs and Events

Pedestrian-oriented programs and events currently active in the Town.

2.5 Unique Opportunities

A brief summary of factors, which have the potential to positively affect the pedestrian quality of the Town.

PART 3: RECOMMENDATIONS

3.1 Recommended Policies & Ordinance Modifications

- Broad strategies that will help integrate pedestrian planning measures into the Town's overall planning processes.
- Recommended ordinance changes

3.2 Recommended Programs

Aids to meaningful community improvement through active involvement by citizens who care and have a stake in the matter.

3.3 Project Recommendations & Implementation Strategies

A more focused description of actions the Town should take to correct current problems and initiate future projects, including both planning efforts and types of facilities required.

3.4 Project Identification and Priority List.

A detailed description of specific projects. Projects are categorized and 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.

3.5 Sample Project Cost Estimates

Estimated project costs are provided for typical crosswalk, sidewalk, and trail projects.

3.6 Recommended Maintenance Programs

All projects, as well as existing facilities, will require proper maintenance. This section provides information about programs appropriate to each type of project.

3.7 Recommended Evaluation Process

A brief description of how the Pedestrian Plan's goals and implementation strategies can be examined and improved over time.

PART 4: IMPLEMENTATION

4.1 General Cost Estimates for Facilities

4.2 Funding Strategies

4.3 Plan Adoption and Approval Process

Stallings
PEDESTRIAN PLAN

Appendices:

A.1 Maps
1. Future Land Use Map
2. Land Development Map
3. Zoning Map
4. Overlay District Map
5. Monroe Bypass Alternatives
6. Comprehensive Transportation Plan – New Links
7. Matthews Auto Center – Zoning and Site Plans
8. Powell Bill Map

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

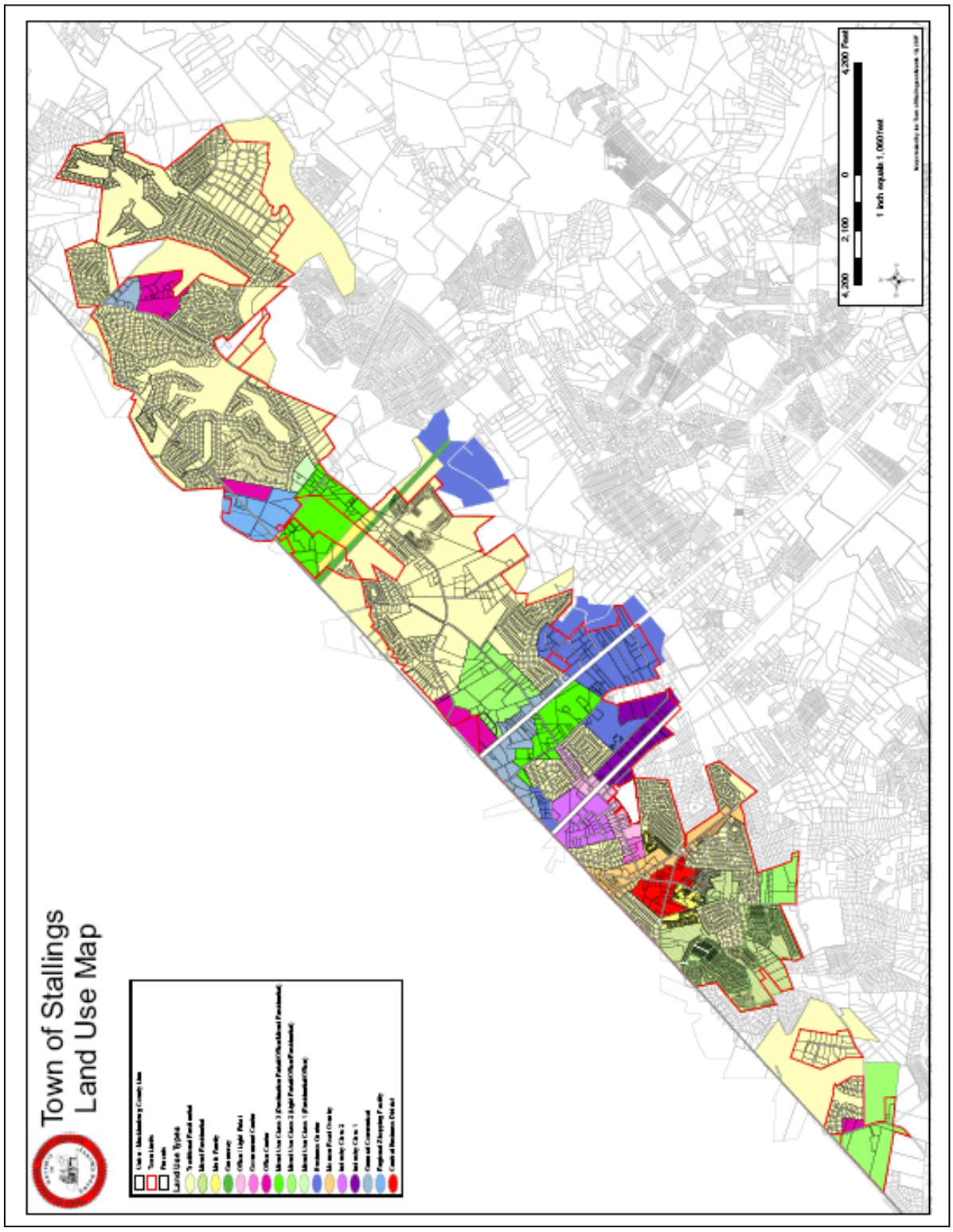
A.5 Steps to the Carolina Thread Trail

A.6 Additional References

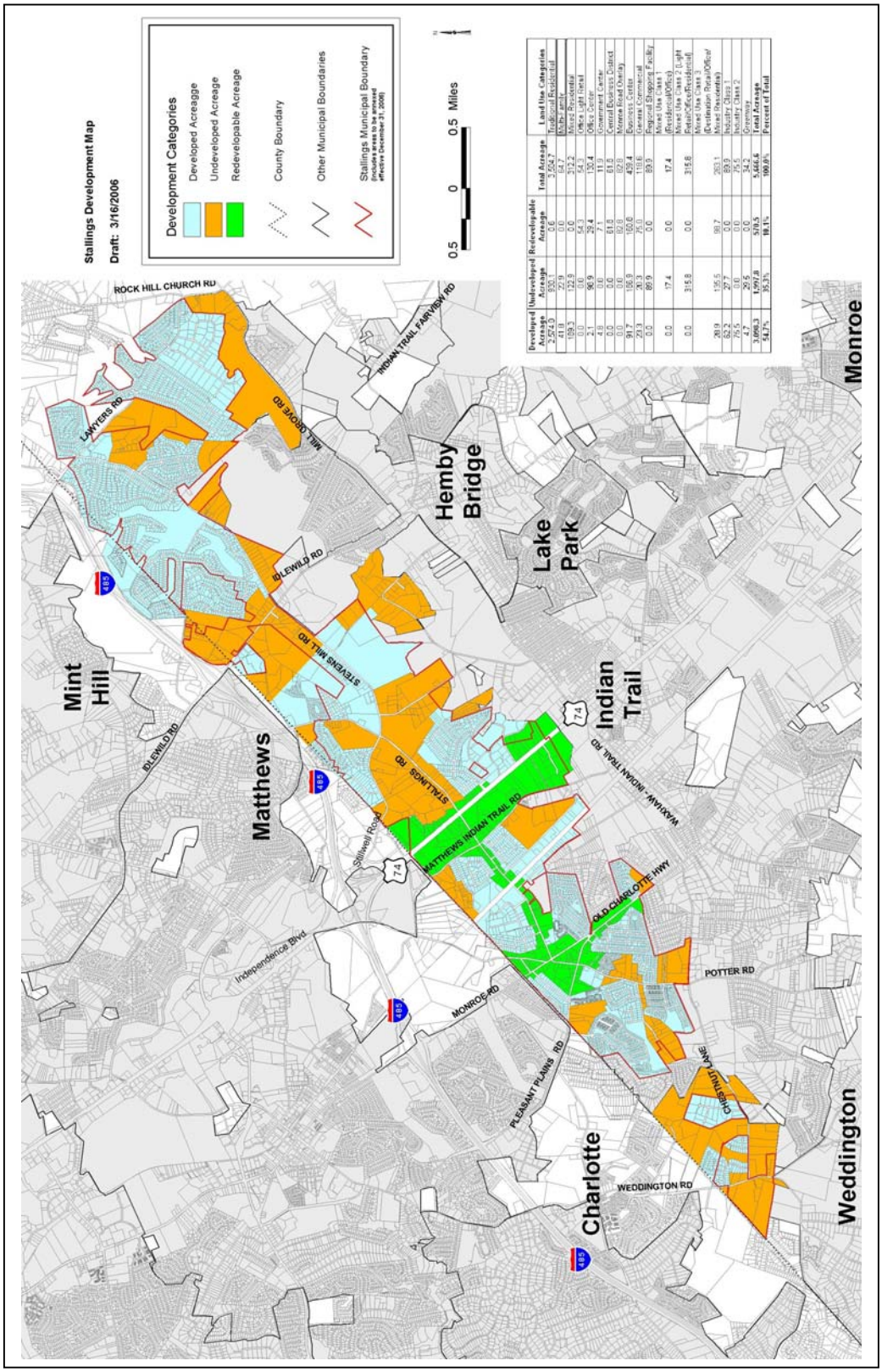
A.1 Maps

1. Future Land Use Map

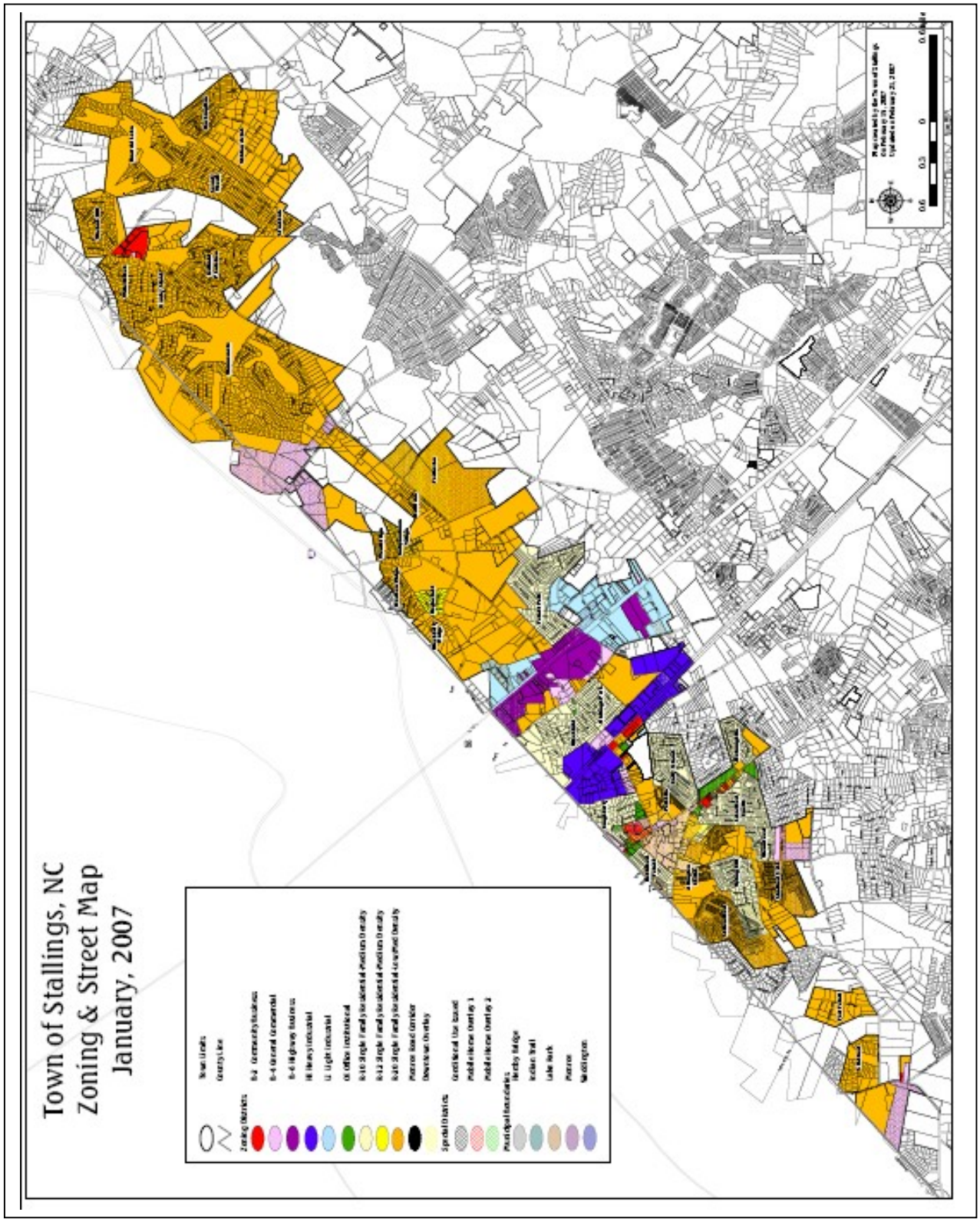
Town of Stallings Future Land Use Plan, adopted July 24, 2006



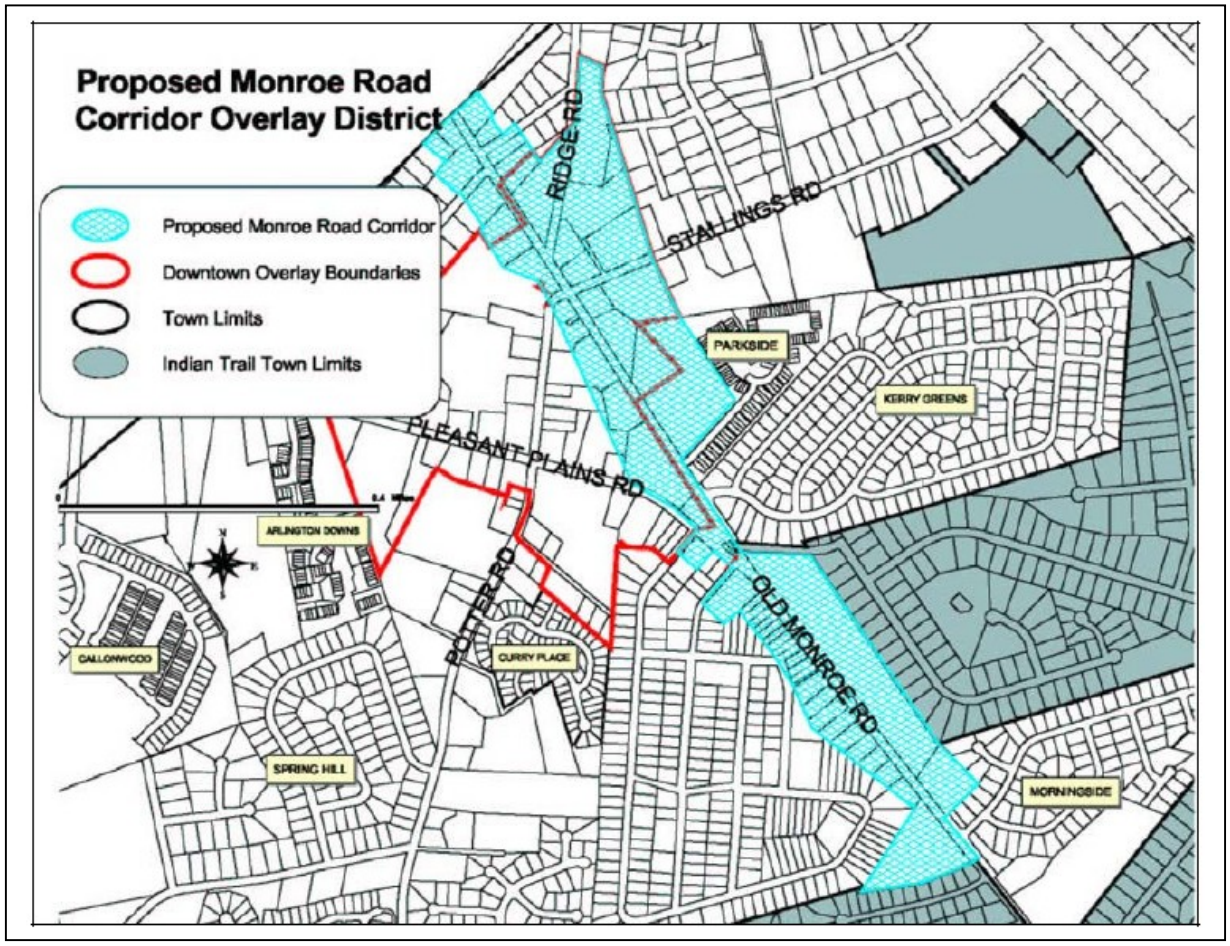
2. Land Development Map – Approved March 2006
Town of Stallings Future Land Use Plan, adopted July 24, 2006



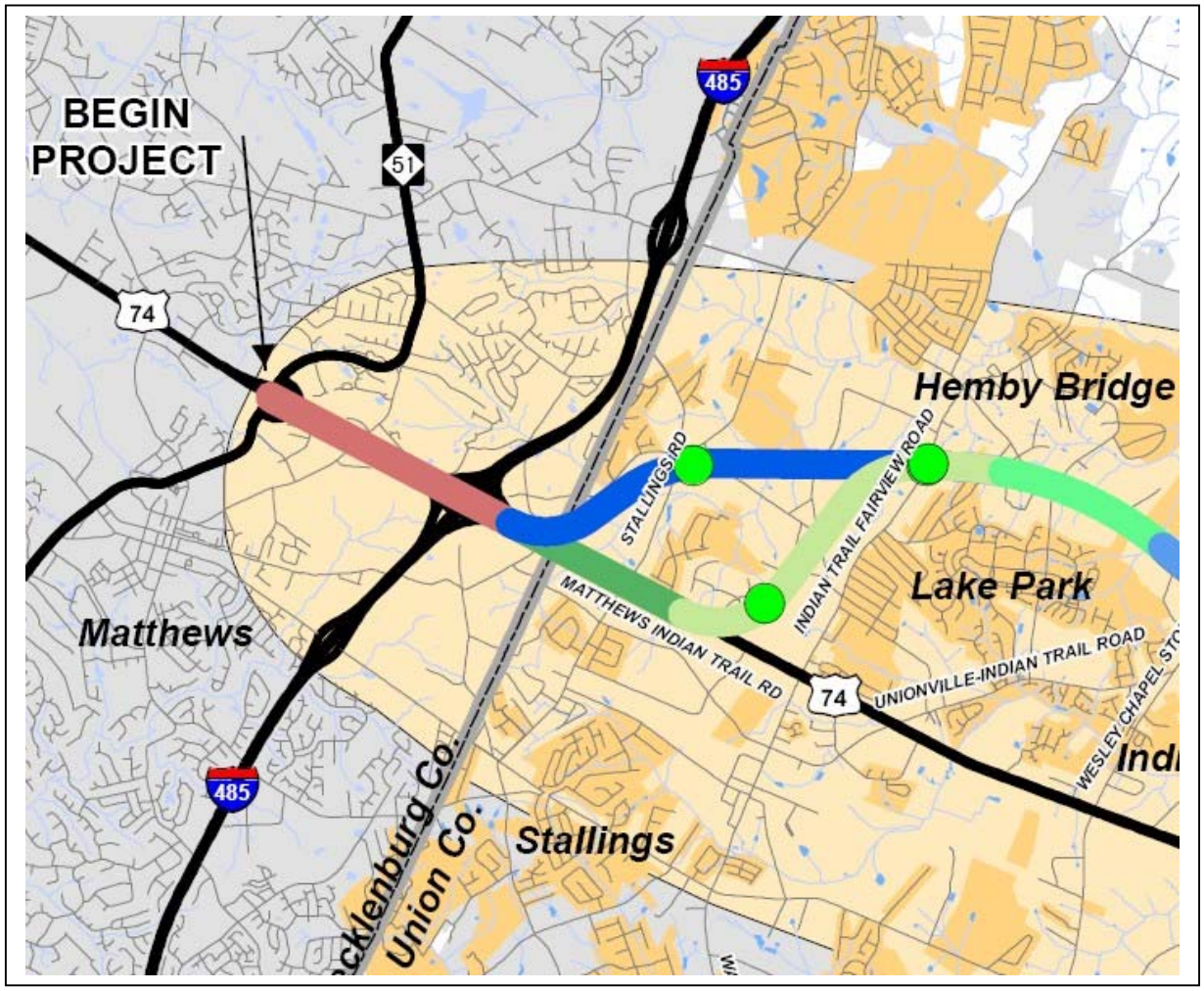
3. Zoning Map – Approved January 2007
Town of Stallings Zoning Ordinance adopted September 10, 1990



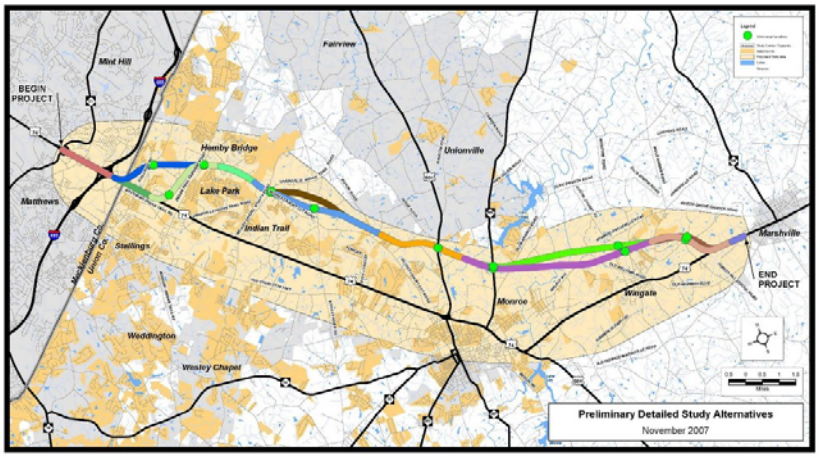
4. **Monroe Road Corridor Overlay District (COD)** and **Downtown Overlay District (DOD)** – Monroe Road Corridor Overlay Ordinance, Sections 152.089 and 152.089, adopted 2006



5. Monroe Bypass Alternatives – NC Turnpike Authority.
Detail from the Preliminary Detailed Study Alternatives Map, November 2007.



Map Detail

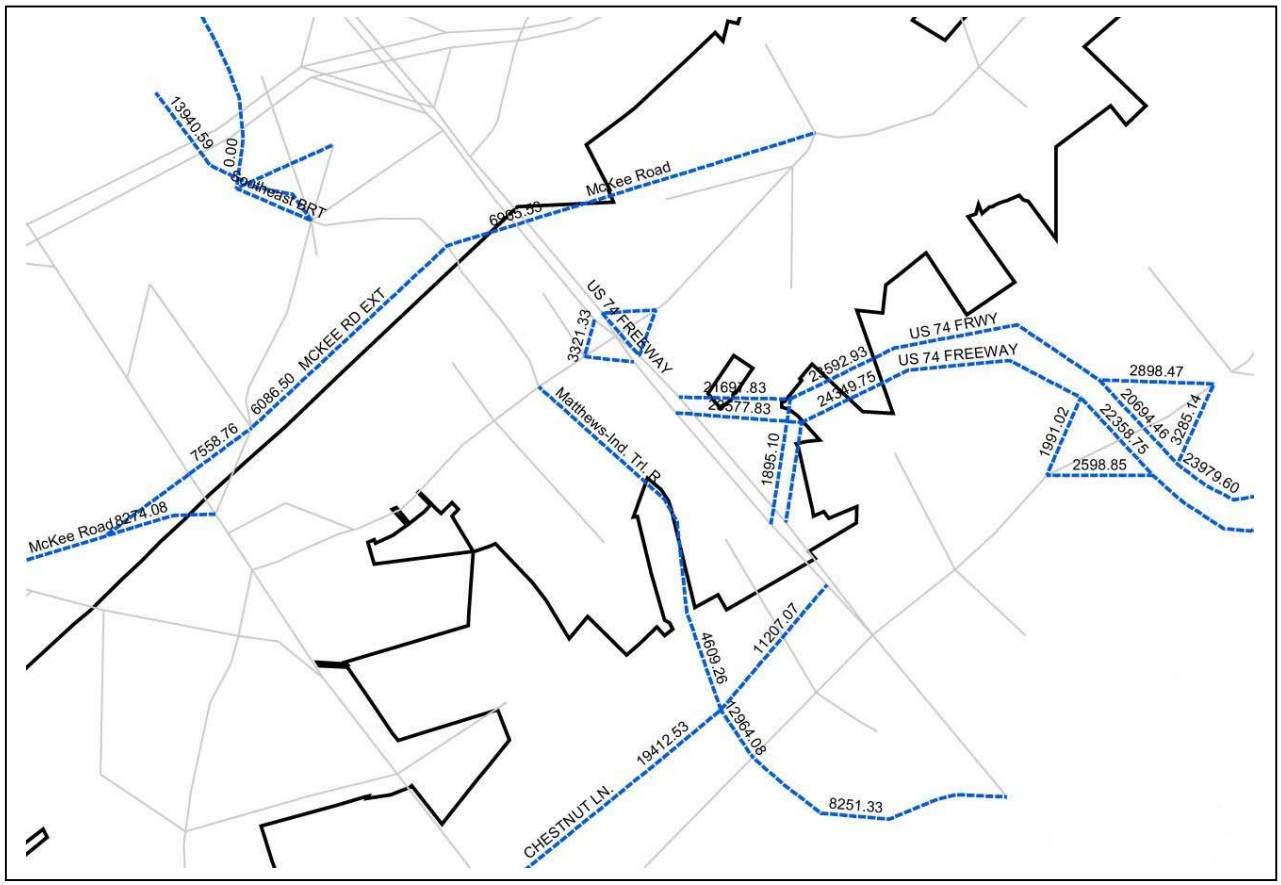


This map shows the study corridors that made it through the alternatives screening process and that NCTA recommends for detailed study.

NORTH CAROLINA Turnpike Authority

6. Proposed New Links Map

A Comprehensive Transportation Plan for the Town of Stallings, NC
Final Report, January 10, 2008.
Prepared by Srinivas S. Pulugurtha, Ph.D., P.E., et al.
Department of Civil & Environmental Engineering
University of North Carolina-Charlotte



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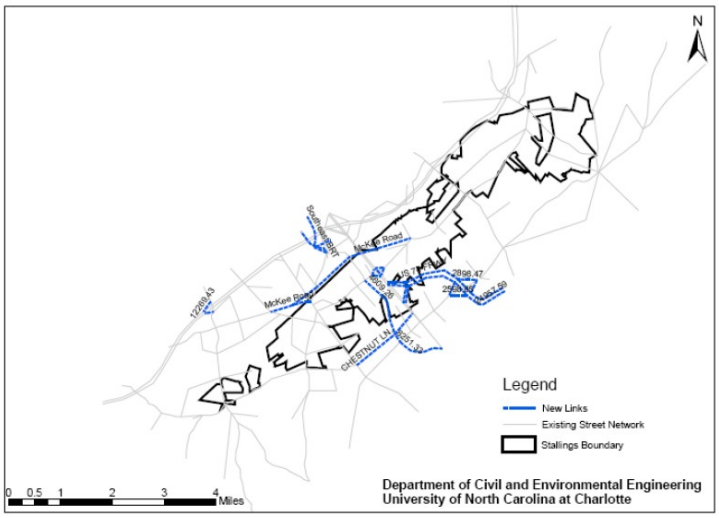
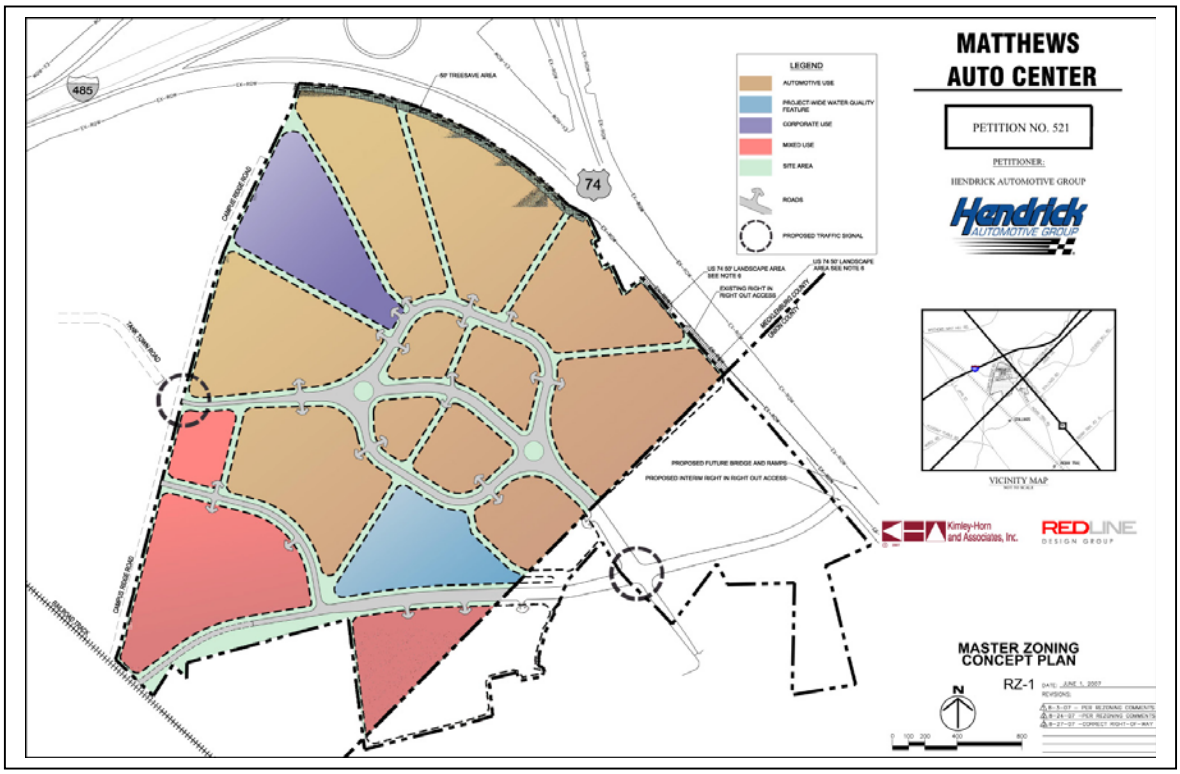


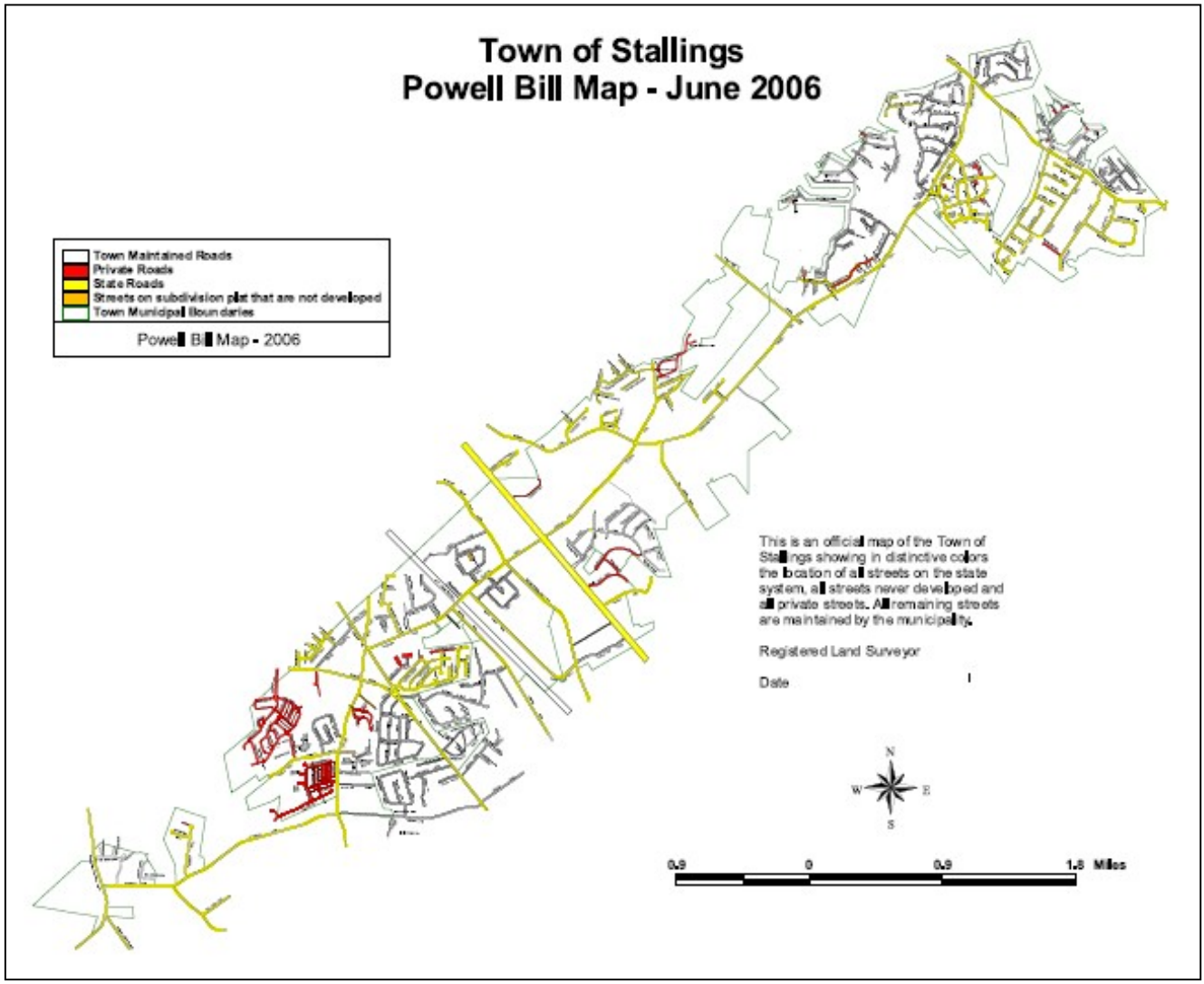
Figure 18. Spatial Distribution of Proposed New Links in Metrolina Regional Network Model

7. Matthews Auto Center

Zoning and Site Plan submittal approved September 10, 2007.



8. Powell Bill Map – June 2006



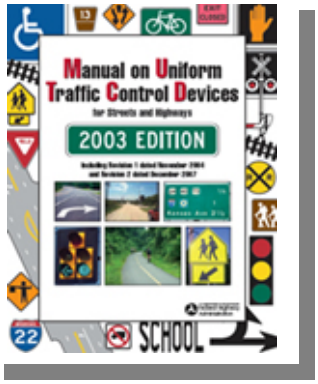
A.2 Facility Standards and Guidelines

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
  11. **PEDESTRIAN OVERPASSES/UNDERPASSES**
- **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 10. Contact the Division 10 Engineer before considering implementation of any improvements in the NCDOT right-of-way.

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

For crosswalk markings, dimensions and other standards, refer to the **Manual on Uniform Traffic Control Devices** (MUTCD). The MUTCD is published by the Federal Highway Administration (FHWA) and defines the standards used by road managers nationwide to install and maintain traffic control devices on all streets and highways. Visit: http://mutcd.fhwa.dot.gov/

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 methods, refer to the City's standard specifications and construction details.

Alternative paving should be considered for the following applications:

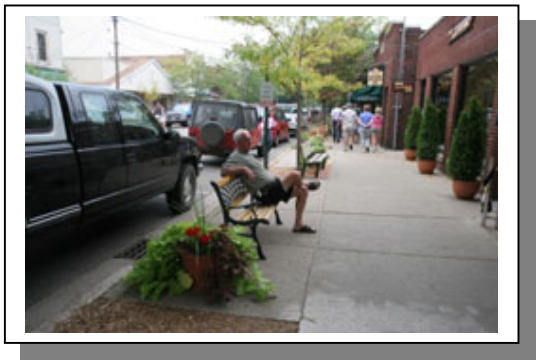
- A change in paving type can help distinguish the pedestrian buffer zone from the pedestrian travel path. Sand-set pavers are recommended in the buffer zone for ease of utility maintenance.
- Paving type should vary as a pedestrian path crosses a vehicular path in order to visually cue pedestrians (and 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 impart an increased sense of security to those on foot or in wheelchairs. They also help define the path and give it a more comfortable scale. Buffers also provide additional benefits depending on the type used.

A. Planting Strips of sufficient width provide a zone for street trees and other landscaping, creating a more comfortable and attractive environment for pedestrians and drivers. Street trees are most effective when placed between the walkway and the curb. When planting strips are properly engineered to provide storm water drainage, they can eliminate the need for curb and gutter, thereby vastly reducing the cost of road and sidewalk construction while providing an environmental benefit. Planting strips should not be less than 4-feet in width. The recommended planting width to permit healthy tree growth is 6 to 8 feet measured from the edge of pavement or back of curb. While planting strips are the preferred means of providing a buffer, they are not always feasible or appropriate. Areas of high foot traffic may preclude landscaping due to maintenance or space considerations. Additional information about street trees is provided on the following page.

B. Paved buffer zones are appropriate in more urbanized settings. This zone is located between the travel path of the sidewalk and the curb, though an additional buffer zone may also exist along the opposite side of the travel path, adjacent to buildings, open space, or off-street parking. 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 such as street furniture, trees planted in tree grates, streetlights, street signs, fire hydrants, parking meters, etc., are placed in the buffer zones so as not to restrict pedestrian flow in the travel path. The buffer zone may be a good location to use paver stones for easy and affordable access to underground utilities.



C. On-street parking provides another opportunity to physically shield pedestrians from vehicular traffic, making them feel safer and more comfortable. On-street parking allows pedestrians to clearly see into the street and allows drivers to clearly see pedestrians. See more about on-street parking further along in Facilities section 7.

3. STREET TREES

This Pedestrian Plan recommends adopting a Town Tree Ordinance to provide guidance for tree installation and maintenance. For more information about developing a Tree Ordinance and related policies 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 - To maintain visibility and provide shade for a comfortable pedestrian corridor, street trees should 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 problems with weak branches, aggressive roots, invasive spreading, or vulnerability to vehicular fumes, the following species are not recommended for street tree use:

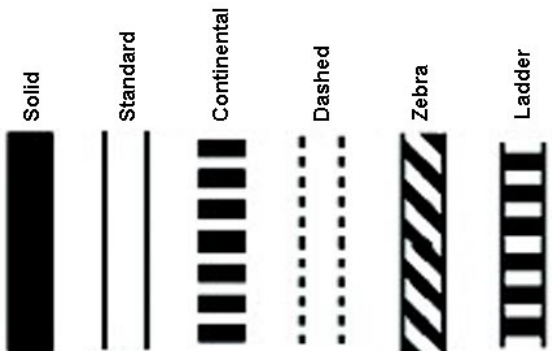
- Bradford Pear / Pyrus calleryana 'Bradford' Pin
- Eastern White Pine / Pinus strobus
- Silver Maple / Acer saccharinum
- Norway Maple / Acer platanoides
- Sweetgum / Liquidambar styraciflua
- Tree-of-Heaven / Ailanthus altissima

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.

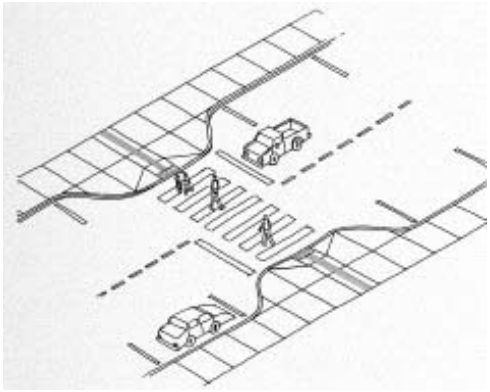


Types of Crosswalk Striping

Considerations for location and design:

- Crosswalk locations should be convenient for pedestrian access.
- Crosswalks should be used in conjunction with other measures that help reduce speeds and warn drivers to be prepared to stop, such as advance warning signs, warning signs, stop bars, median crossing islands and curb extensions (only where there is on-street parking), to improve the safety of a pedestrian crossing, particularly on multi-lane roads with average daily traffic (ADT) above about 10,000.
- Crossings with higher pedestrian volume require wider crosswalk paths.
- Marked crosswalks are particularly important for pedestrians who are visually impaired.
- Crosswalk markings must be placed to include the ramp so that a wheelchair does not have to leave the marked crosswalk to access the ramp.
- Pedestrians will generally wait only 30 seconds at crossings before looking for opportunities to cross, regardless of the walk indication and the crossing location.
- Pedestrian walking speeds generally range between 2.5 to 6.0 ft/s.

Curb extensions can enhance the effectiveness of crosswalks, either midblock or at intersections. Curb extensions 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. Curb extensions also provide opportunities to enhance the street through landscaping.



Midblock curb extension with striped crosswalk

Raised crosswalks, constructed 3-4 inches above the elevation of the street can be appropriate for midblock pedestrian crossings where vehicle speeds are excessive. Textured paving should be incorporated into the edges in order to provide visual and tactile cues.

For more information about curb extensions and raised crosswalks, see **Traffic Calming Devices** in Section 6. For crosswalk markings, dimensions and other standards, refer to the Manual on Uniform Traffic Control Devices (MUTCD).

5. SIGNAGE, SIGNALS & STRIPING

SIGNAGE can serve effectively to alert drivers to reduce speeds and to warn pedestrians to use extra caution. However, too much signage can produce visual "clutter" and can encourage complacency and noncompliance with signs in general. Signs, and the sign text, should be large enough to be seen from a distance. The distance is dependent upon the road speeds. It is imperative that all signs be properly located so as not to obstruct the pedestrian and visibility triangles of motorists.

Way-finding signage is intended to orient and communicate in a clear, concise and functional manner. It should enhance pedestrian circulation and direct visitors and residents to important destinations. In doing so, the goal is to increase the comfort of visitors and residents while helping to convey a local identity. Signage regulations should address the orientation, height, size, and style of signage to comply with a desired local aesthetic.

It is recommended that municipalities adopt consistent and descriptive graphics to identify pedestrian routes. This signage system would assure pedestrians that they are safe and will not encounter gaps in facilities along these routes. A map should be incorporated into each route illustrating the entire pedestrian system and their location. Bus stops, destinations, and mileage should also be identified on the signs.

Maintenance of signage is as important as walkway maintenance. Clean, graffiti free, and relevant signage enhances guidance, recognition, and safety for pedestrians.

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.

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

Sample Pedestrian Regulatory Signage

MUTCD Pedestrian-Related Signage

Regulatory Signs

R1-5 R1-5a R1-6 R1-6a R5-10b R5-10c R9-1 R9-2 R9-3a R9-4 R9-4a R9-6 R10-4b

School, Warning, and Informational Signs

S1-1 S3-1 W11-2 W15-1 I-4

Sign	MUTCD Code	MUTCD Section	Conventional Road	
Yield here to Peds	R1-5	2B.11	450x450 (18x18)	Regulatory
Yield here to Peds	R1-5a	2B.11	450x600 (18x24)	
In-Street Ped Crossing	R1-6, R1-6a	2B.12	300x900 (12x36)	
Peds and Bikes Prohibited	R5-10b	2B.36	750x450 (30x18)	
Peds Prohibited	R5-10c	2B.36	600x300 (24x12)	
Walk on Left Facing Traffic	R9-1	2B.43	450x600 (18x24)	
Cross only at Crosswalks	R9-2	2B.44	300x450 (12x18)	
No Ped Crossing	R9-3a	2B.44	450x450 (18x18)	
No Hitch Hiking	R9-4	2B.43	450x600 (18x24)	
No Hitch Hiking (symbol)	R9-4a	2B.43	450x450 (18x18)	
Bikes Yield to Peds	R9-6	9B.10	300x450 (12x18)	
Ped Traffic Symbol	R10-4b	2B.45	225x300 (9x12)	
School Advance Warning	S1-1	7B.08	900x900 (36x36)	School, Warning, Informational
School Bus Stop Ahead	S3-1	7B.10	750x750 (30x30)	
Pedestrian Traffic	W11-2	2C.41	750x750 (30x30)	
Playground	W15-1	2C.42	750x750 (30x30)	
Hiking Trail	I-4	--	600x600 (24x24)	

1. Larger signs may be used when appropriate.
2. Dimensions are shown in millimeters followed by inches in parentheses and are shown as width x height.
3. First dimension in millimeters; dimensions in parentheses are in inches.
4. All information in table taken directly from MUTCD.

SIGNALS, or traffic control devices, include those intended to direct vehicle drivers, such as traffic signals and flashing warning lights, and pedestrian signals, directing pedestrians to walk/don't walk.

Traffic signals create gaps in the traffic flow, providing intervals where pedestrians can cross streets safely. These intervals should allow adequate crossing time for pedestrians and based upon a maximum walking speed of 3.5 ft/s. Most traffic signals are installed based on vehicular traffic considerations, but some high-volume pedestrian circumstances warrant traffic signals themselves. Judgment must be used on a case-by-case basis. For example, a new facility being built, such as a park, recreational path, or school, will create a new demand. A new signal could be installed based upon the projected crossing demand. There may also be latent demand if a destination is not currently accessible, but could become so with new facilities or redesign. 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.

In downtown areas, signals are often closely spaced, sometimes every block. When high or regular pedestrian traffic exists during a majority of the day, fixed-time signals should be used to consistently allow crossing opportunities. Pedestrian activated signals should only be used when pedestrian crossings are intermittent and should be made accessible to all pedestrians, including those with disabilities. Signal cycles should be kept short (90 seconds maximum) to reduce pedestrian delay. Pedestrians are very sensitive to delays. Marked crosswalks at signals should always be installed at all four legs. They encourage pedestrians to cross at the signal and discourage motorists from encroaching into the crossing area.

Simply meeting certain MUTCD warrants for signalization, however, does not always justify installation of a traffic signal. Traffic signals can sometimes cause excessive delay for drivers and pedestrians alike, and may lead to an increase in certain accident types.

Pedestrian signal devices are recommend at all traffic signals, unless the signal is located on a highway where walking is prohibited. Pedestrian signals should be clearly visible to the pedestrian at all times when in the crosswalk or waiting on the far side of the street.

Overhead warning signals warn drivers of crossing pedestrians at midblock crosswalks, or at intersections that periodically see heavy pedestrian traffic but that do not otherwise warrant traffic signals. These signals are most effective when triggered directly by pedestrian activity, or when flashing only during peak pedestrian times, such as school commute times. **H**igh-intensity **A**ctivated Cross**W**al**K** or "HAWK" signal systems are one effective mid-block crossing strategy. Additional information about this system can be found at:

Pedestrian activated warning signals with signage at a midblock crosswalk

http://www.saferoutesinfo.org/guide/case_studies/case_study.cfm?CS_ID=CS651&CHAPTER_ID=C353

Countdown signals are pedestrian signals that show how many seconds the pedestrian has remaining to cross the street. The countdown can begin at the beginning of the WALK phase, perhaps flashing white or yellow, or at the beginning of the clearance, or DON'T WALK phase, flashing yellow as it counts down.

Audible signals - Audible cues can be used to pulse along with a countdown signal. The signals are used for visually and audibly impaired individuals. Audible pedestrian signals should be carefully placed to ensure that false readings of the signal are not presented where there is a free-right or "slip" lane, in the presence of complex signal phasing, or other conditions where background noise can interfere with the audible signal. Consideration should be paid to the noise impact on the surrounding neighborhoods when deciding to use audible signals.

Pedestrian detectors automatically activate the red traffic and WALK signals when pedestrians are detected. Since pedestrian pushbutton devices are not activated by about one-half of pedestrians (even fewer activate them where there are sufficient motor vehicle gaps), new "intelligent" microwave or infrared pedestrian detectors are now being considered in many locations. Detectors can also be used to extend the crossing time for slower moving pedestrians in the crosswalk. Automatic pedestrian detectors have been found to improve pedestrian signal compliance and also reduce pedestrian conflicts with motor vehicles. These devices, however, are still considered experimental and their reliability may vary under different environmental conditions. Motion activated warning systems are one example.

Motion activated warning systems present an option where trails intersect roads. When triggered by path activity, these devices flash warning beacons to signal approaching motorists of path users near the intersection, without altering the existing flow of traffic. This solution is ideal for mid-block crossings or intersections where crosswalks that stop traffic are not warranted. The system also flashes beacons to pathway users warning them to stop. Active warning systems are more effective than 24-hour flashes that motorists come to ignore over time. Such devices can be equipped with trail counters to provide data of trail use. Solar energy with battery backup systems can be used to power the signal. For an example of this system, visit www.crossalert.com.

Motion Activated Warning System

In-pavement flashing warning light systems consist of a series of high-intensity luminaries buried in the pavement on both sides of the crosswalk that direct light along the road towards oncoming traffic. When activated, either by a pedestrian pressing a signal button or by some form of automatic pedestrian detection system, the lamps in each luminary flash for a fixed time, effectively alerting drivers that the crosswalk is in use. These systems can be integrated with other traffic signal lights if required. The MUTCD contains language that makes the use of in-pavement flashing warning lights at crosswalks acceptable and gives guidance for their application.

In-pavement flashing warning light system

For more information, see http://www.walkinginfo.org/pedsmart/tlite.htm

STRIPING is a warning and directional feature that should always be used in conjunction with other devices. It can include crosswalk striping, stop bars, etc. One of the best materials for marking crosswalks is tape, which is installed on new or repaved streets. It is highly reflective, long lasting, slip-resistant, and does not require a high level of maintenance if installed properly. However, it does require a higher level of expertise to install well. Although initially more costly than paint, both inlay tape and thermoplastic are more cost-effective in the long run. Inlay tape is recommended for new and resurfaced pavement, while thermoplastic may be a better option on rougher pavement surfaces. Both inlay tape and thermoplastic are more visible and less slippery than paint when wet.

"An **advanced stop bar**, when used, should ordinarily be placed four feet in advance of and parallel to the nearest crosswalk line. In the absence of a marked crosswalk, the stop bar should be placed at the desired stopping point and in no case more than 30 feet or less than four feet from the nearest edge of the intersecting roadway. When a stop bar is used in conjunction with a STOP sign, it should be placed in line with the STOP sign. However, if the STOP sign cannot be located exactly where vehicles are expected to stop, the stop bar should be placed at the desired stopping point. Finally, the stop bar should be placed so that vehicles have optimum sight distance along the intersecting roadway."

-- **Institute of Transportation Engineers** Traffic Engineering Council
Traffic Information Program Series (TIPS)

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. Some TCDs can also provide greater refuge for pedestrians, reducing their exposure to at-grade traffic.

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. Raised cross walks are intended to reduce vehicle speeds specifically where pedestrians will be crossing a street. 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 Crosswalk

- **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 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.

- **Curb radius reduction** - Reconstructing turning radii to a tighter turns will reduce turning speeds, shorten the crossing distance for pedestrians, and also improve sight distance between pedestrians and motorists.
- **Curb extensions** – also referred to as bulb-outs, neckdowns, or chokers, extend the sidewalk or curb line out into the parking lane, which reduces the effective street width from curb to curb. Curb extensions significantly improve pedestrian crossings by reducing the pedestrian crossing distance, visually and physically narrowing the roadway, improving the ability of pedestrians and motorists to see each other, and reducing the time that pedestrians are in the street. Curb Extensions slow vehicles by alerting drivers to potential pedestrians, visually tightening the vehicular path, and physically reducing the turning radii. Curb extensions can provide adequate space on narrow sidewalks for curb ramps and landings. Curb extensions should only be used where there is a parking lane. Curb extensions can create additional space for curb ramps, landscaping, and street furniture that are sensitive to motorist and pedestrian sightlines; this is especially beneficial where sidewalks are otherwise too narrow. Care should be taken to ensure that street furniture and landscaping do not block motorists' views of pedestrians.

Intersection crosswalk with curb extension

- **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.

Raised median with crosswalk

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. One of the most effective means among them is on-street parking.

7. ON-STREET PARKING

On-street parking benefits both pedestrians and drivers in a variety of ways, as well as contributing to the economic viability of a street.

- On-street parking provides a 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.
   c. **Perpendicular parking** has many of the disadvantages of angled parking but requires the even more depth in right-of-way.

Learn more about parking management at: 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) as well as community identity.

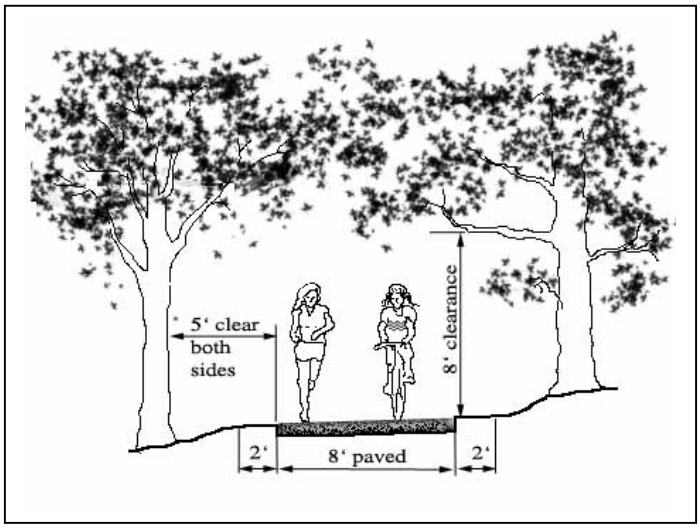
Water features

- 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

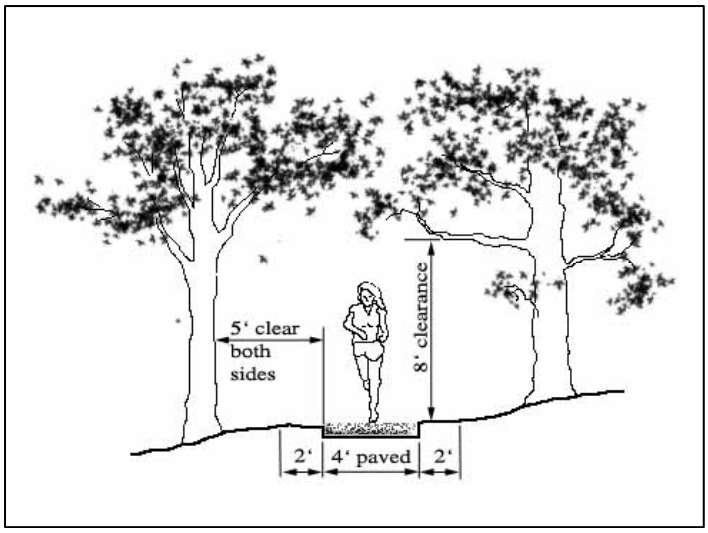
Trail types

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 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.



Foot Path

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.

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, accessibility and aesthetics. Various pavement types can be used to meet ADA standards, as long as the surface is "firm and stable." 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**.

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.americantrails.org/resources/accessible/ADASummFeb00.html

Multi-use

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

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.

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.

11. PEDESTRIAN OVERPASSES/UNDERPASSES

Pedestrian overpasses and underpasses are intended to allow for safe pedestrian movement across busy thoroughfares. Typically, these structures involve very high construction costs. These facilities can be problematic in many regards and should only be considered when no other solution is expected to be effective. Research shows that pedestrians will avoid using such a facility if they perceive the ability to cross at grade as taking about the same amount of time. ADA requirements for stairs, ramps, and elevators often require the construction of an enormous structure that is visually disruptive.

Attempting to separate pedestrians from the street is often problematic. As shown here, given the opportunity, many choose to cross at street level.

Overpasses and underpasses should be considered only in situations involving rail lines, high volume traffic areas such as freeways, and other high volume arteries. Volumes should exceed 20,000 vehicle trips per day with speeds 35 - 40 mph and over. Minimum widths for these structures should follow the guidelines for sidewalk width. Underpasses should have a daytime illumination minimum of 10 foot-candles achievable through artificial and/or natural light provided through an open gap to sky between the two sets of highway lanes, and a nighttime level of 4 foot-candles. In underpasses, where vertical clearance allows, the pedestrian walkway should be separated from the roadway by more than a standard curb height. Consider acoustics measures within underpasses to reduce noise impacts to pedestrians and bicyclists.

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

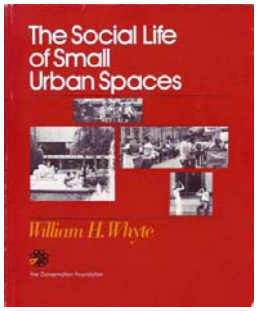
Walkinginfo.org

Trafficcalming.org

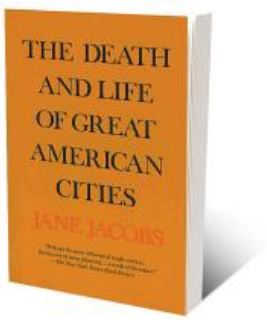
Federal Highway Administration
http://www.fhwa.dot.gov/environment/sidewalk2/contents.htm

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: IMPLEMENTATION.

A.5 Steps to the Carolina Thread Trail

The Carolina Thread Trail has mapped out a series of steps to help communities within its region develop greenways that can be part of the larger Thread Trail network. The chart below provides a general outline of who and what may be involved.

CAROLINA THREAD TRAIL
Weaving Communities Together

Steps to the Carolina Thread Trail

	Planning	Design	Acquisition	Construction
Objective	Create a countywide master plan including Thread Trail corridors that is adoptable by elected officials	Create actionable, detailed designs for specific legs of the Thread	Acquire land and easements for the Thread and open space along the Thread	Build segments of the Thread
Description	Plan incorporates GIS modeling, assessment of existing conditions, identification of connection points and corridors. Includes community meetings and implementation plan.	Counties & municipalities conduct detailed planning, including design, budgeting & route feasibility.	Practitioners and NGO's acquire parcels (outright or through easements) that will become the Thread and open space along the Thread.	Practitioners contract for construction drawings and construction of the Thread segments.
Grant Type	Planning Grants- Cash grants to lead organization: counties, municipalities and NGO's are partners.	Design Grants- Cash grants to counties and/or municipalities	Trail & Land Acquisition Grants- Cash grants and grants of donated land to counties, municipalities & NGO's	Construction Grants- Cash grants to counties & municipalities
Participants	TPL(manages local process, may include sub-contractors designated by Grantee), practitioners, Thread staff	Practitioners, consultants, Thread staff	Practitioners, consultants, NGO's, Thread staff	Practitioners, consultants, Thread staff
Start Dates	Pilot sites start late 2007 (Gaston and York)	Fall - 2008	Fall - 2008	Fall - 2008

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

Centralina Council of Governments

08.11.08

Sidewalk
Private trail
Trail

Main Roads
Longitudinal Roads
Transverse Roads

Pedestrian Injuries
Fatal
Disabling
Evident
Possible

Average Daily Traffic
10 - 5000
5001 - 12000
12001 - 37000

Streams
FEMA floodway
Ponds
Power ROW
Subdivisions

Zoning
B-2
B-4
B-6
HI
LI
OI
R-10
R-12
R-20

Neighboring Jurisdictions
Hemby Bridge
Indian Trail
Weddington
Union County

Town of Stallings Pedestrian Plan

EXISTING CONDITIONS MAP

PART 1: PLAN OVERVIEW

1.1 Realizing the Vision

THE NEED

The Town of Stallings used to enjoy a fairly peaceful suburban existence. In recent years, however, as the "Gateway to Union County", the area has seen an explosion of residential growth and commuter traffic. Union County is the fastest growing county in North Carolina. Its neighboring county to the west, for which Stallings serves as gateway, is Mecklenburg County, home of one of the fastest growing urban centers in the country. According to the U. S. Census Bureau and the Metrolina Regional Travel Demand Model, between the years 2000 and 2030, the population in Mecklenburg County is expected to increase by 80% and add approximately one half million new residents. In Union County population is expected to increase during that time by over 160% and its projected employment by almost 180%. As the population of the Charlotte metro region grows, more people are willing to live further away and make longer commutes. Stallings' location along Independence Boulevard and Monroe Road, as well as its proximity to I-485, Charlotte's Outer Belt, makes this commute that much more convenient.

Stallings Town Hall and Police Department on Stallings Road
Staggering growth in the region has created a serious traffic problem along Stallings Road, the Town's "Main Street". Much of this traffic comes from outside commuters making use of the "Gateway to Union County."

But aside from all the new homes being planned and built within the Town itself, Stallings must also accommodate non-residents traveling through the Town on their daily commute. North Carolina Department of Transportation (NCDOT) has been anticipating the increased traffic volume, particularly along Stallings Road, Old Monroe Road, and

Independence Boulevard (US 74). Proposed solutions include widening Stallings Road to allow for the increase in commuter volume. However, questions arise from those living along Stallings Road of how such changes will affect the character or their community.

In addition to the challenges presented by increased commuter traffic, the Town is faced with other challenges to its pedestrian character:

- **A town divided** – Independence Boulevard creates a barrier that divides the Town into two distinct halves. Crossing this barrier poses a formidable challenge for pedestrians.

- **Community identity** – The Town lacks a strong identity and a clear sense of arrival through coherent gateways. Its edges are ill defined. Its center lacks compelling and practical gathering points, where residents and visitors can meet and do business. There is no substantive downtown.

- **The configuration of the Town** – The shape of Stallings is extremely linear. Destination points are scattered along a lengthy distance of nearly ten miles.

- **Inadequate trail connections –** More pedestrian linkages are needed for a growing residential population to reach destinations about Town, particularly from and between subdivisions where street connections are minimal.

- **Impending road projects –** Numerous potential road projects, including widening Stallings Road, the Monroe Bypass, and other transportation projects in the vicinity will bring big changes for the Town, and particularly its pedestrians, to adjust to.

- **Inadequate sidewalk connections –** Many existing main roads do not offer sidewalks for continuous stretches.

- **Inadequate crosswalk connections –** With the steady increase in through traffic and the growing population within Stallings, the need for more crosswalks increases. Stallings' existing crosswalk facilities do not provide pedestrians the safety, opportunity and respect they deserve.

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 plan for pedestrian transportation improvements provides a systematic approach to the Town for taking on these challenges and others that threaten its pedestrian environment, and to do so with consensus and a coordinated effort.

THE VISION

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

1. **Encourage walking in Stallings as a safe and viable means of transportation and recreation.**

2. **Express a clear Stallings identity and mark the arrival into Town.**

3. **Enhance Stallings' small town charm and family friendly environment**

4. **Establish Stallings a destination stop for visitors.**

In order to see this four-fold vision through, an ongoing coordinated effort must be instituted. The charter for this effort is the Stallings Pedestrian Plan. This Plan is intended to serve the Town in the following ways:

- A compelling tool for **promotion** of the Town's pedestrian vision
- An effective source for the **education** of decision makers and the general public about the value and methods of shaping 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 **financial 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, the Town's Vision can be realized. This process will take place both through solving immediate concerns and achieving the Town's expressed long-term goals:

I. **Encourage the creation of concentrated nodes of activity,** as opposed to linear strip development, in order to cultivate walkable centers of pedestrian life at various strategic locations throughout Town, particularly at existing or planned business and civic areas. These nodes are intended to provide a healthy and sustainable economic and cultural environment with viable opportunities for more foot traffic businesses.

Nodes should feature choices for dining, shopping, and sitting outside to enjoy the locale. Amenities such as plazas and fountains should be provided as focal points.

II. **Accentuate Town identity** at the various points of arrival into the community through signature landscaping and signage. Make Stallings a clear and desirable destination, with small town charm for residents and visitors.

III. **Improve pedestrian connectivity throughout Town**. Connect significant destinations points and commercial nodes with convenient, comfortable and attractive walkable links and encourage their use as an alternative to driving where possible in the daily activities of citizens. Connect the local pedestrian system with neighboring municipal greenways and with county and regional networks where possible.

IV. **Create a safe and comfortable pedestrian system** that encourages walking as a desirable means of transportation and recreation. Start with making the Town's existing facilities safer and accessible to all members of the community. Improve pedestrian street crossing conditions. Ensure that pedestrian facilities such as sidewalks and trails are equipped with benches, water fountains, and other amenities to help make walking a more comfortable and attractive experience. Improve lighting for safety and security.

V. **Provide more outdoor recreational opportunities** in the form of trails and open space. Stallings needs a space for festivals and a farmers market, and could accommodate a larger regional park.

VI. **Use the Pedestrian Plan to guide decisions** for ordinances changes, transportation planning, and improvements to the Town's pedestrian facilities, to achieve the aforementioned goals in a sustainable, fiscally responsible manner. The Town must have the continual source of funds dedicated to maintenance of existing and future facilities.

THE SCOPE

In order to meet these goals, this Stallings 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. 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:

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

Task 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

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

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

Task 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.

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

Task 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.

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

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

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

Task 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.

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

Task 13: Submit the Plan to the Town Commission and to the Planning Board for review. Additionally, submit the Plan to the Mecklenburg-Union MPO for endorsement.

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

THE PROCESS

In 2006, The Town of Stallings applied for the NCDOT Bicycle and Pedestrian Planning Grant. The Town was awarded the $16,000 matching grant in 2007 to create a comprehensive pedestrian plan. Centralina Council of Governments was then selected by the Town to develop the plan. Working with Town Manager Brian Matthews, Centralina guided the Town through a thorough, public-input driven planning process, involving a steering committee composed of various stakeholder groups to oversee the elements of the plan. The steering committee members represented a variety of local interests groups including:

- Police department
- Industry
- Health and medical fields
- Town government
- Students
- Resident pedestrian citizens

1.2 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 Stallings may already possess many pedestrian-friendly qualities, those attributes can be improved upon in substantial ways. Such improvements would help make the Stallings 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 Stallings, this will yield healthier lifestyles 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 Stallings 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. Stallings has the potential to develop a series of pedestrian-friendly centers of activity within walkable proximity of each of its residential communities.

9. Transportation

Pedestrian-friendly communities make full use of the most affordable and efficient transportation system available: walking. As various concentrated centers of development occur throughout Stallings, these locations will provide further transit options in the future. Such transportation hubs will allow Stallings citizens, commuters and non-commuters alike, to access work, shopping and recreational opportunities without need of a car.

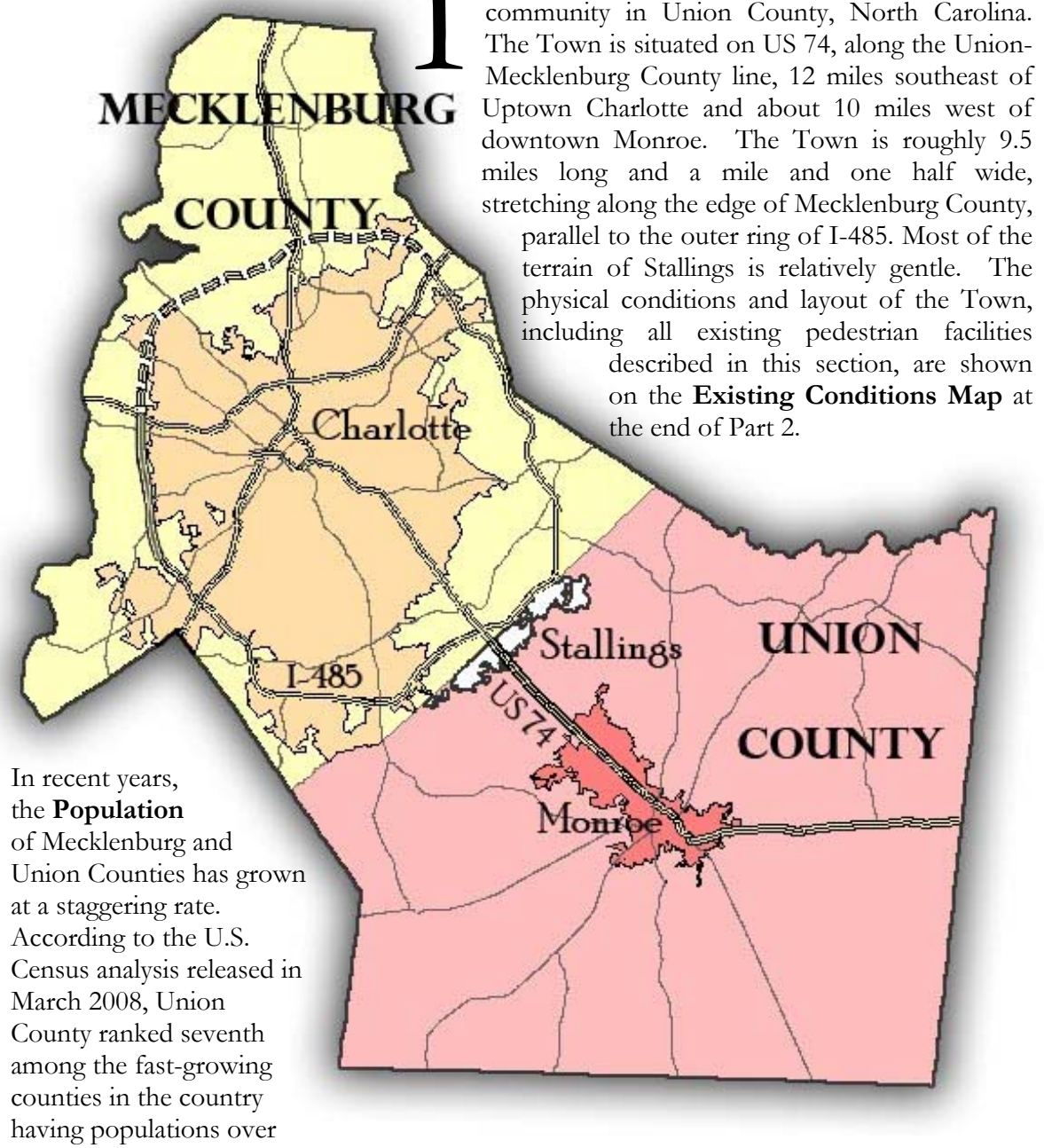
A surprising number of people, when asked to recall or identify venues that make them feel comfortable or in which they would like to live, work, and play, will identify tree-lined streets with sidewalks, and pedestrians of all ages using them. While it would be true to say that "pedestrian friendliness" 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 citizens by allowing them greater freedom from their cars, is an important part of the remedy.

PART 2: CURRENT CONDITIONS

2.1 Existing Conditions and Trends

1. CONDITIONS & TRENDS IN GENERAL

The **Town of Stallings** is a small suburban community in Union County, North Carolina. The Town is situated on US 74, along the Union-Mecklenburg County line, 12 miles southeast of Uptown Charlotte and about 10 miles west of downtown Monroe. The Town is roughly 9.5 miles long and a mile and one half wide, stretching along the edge of Mecklenburg County, parallel to the outer ring of I-485. Most of the terrain of Stallings 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.



In recent years, the **Population** of Mecklenburg and Union Counties has grown at a staggering rate. According to the U.S. Census analysis released in March 2008, Union County ranked seventh among the fast-growing counties in the country having populations over 10,000. Union is the fastest growing county in the state. Between 2000 and 2007, it experienced a nearly 50% growth rate. In 2007, Mecklenburg was ranked 10th in absolute

number of people gained in the year. Nearly 32,000 people swelled its population to 867,000. It is by far the region's most populated county.

Situated at the border of these two counties, Stallings has seen its own explosion of growth. Within the former 1990 Stallings Town boundary, the population from 1990 to the year 2000 has risen from 2,132 to 3,289, an increase just shy of 50%. However, within that time, Stallings has annexed land, one of the effects of which has been a total population increase for the Town. In 2007, the incorporated area of Stallings has grown to 6.5 square miles. The NC State Demographics Data of 2006 estimates Stalling's population at 9,893. The Town estimates its population increased almost another 1000 in 2007.

At the time of the year 2000 data, over 23% of Stallings' population was below legal driving age. 8.5% were 65 years and older. Stallings's average age was 34, much younger then most of its neighboring towns and below the state and national averages by 2 years.

Most **employment centers** within Stallings consists of small businesses, primarily located along Stallings Road and Potter Road. But additionally, Stallings has an industrial area located at the junction of its rail corridor and Stallings Road. Three of the Town's four major employment centers are located within this industrial park, along with the McGee Corporation on Independence Boulevard. These industries and their approximate number of employees are:

- AEP Industries - 200
- CEM – 150
- McGee Corporation - 75
- Davis Steel - 50

AEP Industries
Located in the Stallings' Industrial Park

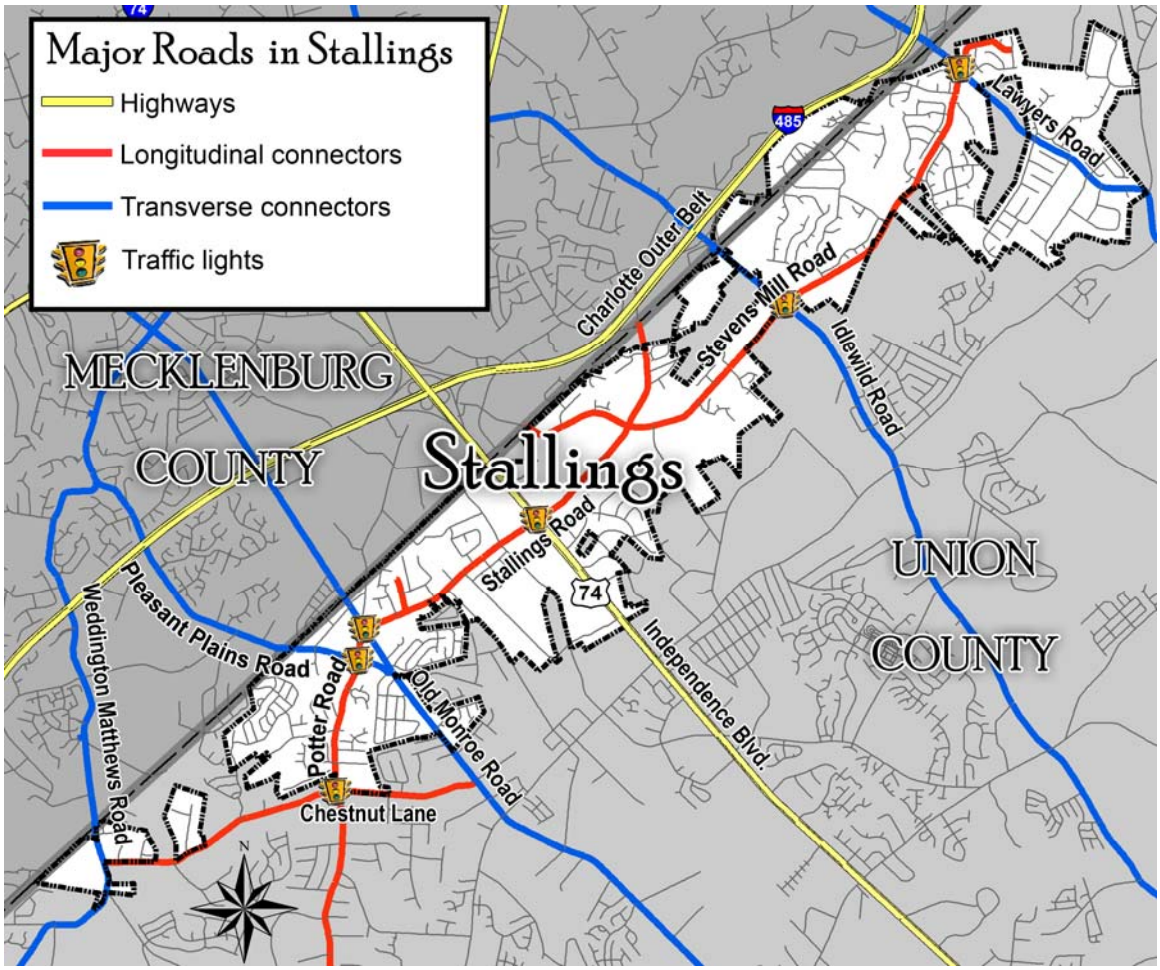
Recent Residential Development in Stallings

Town residents primarily rely upon personal vehicles to reach these job locations and others. Currently less than 1% walks or rides a bus to work, and about 4% report as working at home. But the large volume of **commuter traffic** Stallings sees every workday is not so much a matter of local driving habits, but more a factor of the Town's location, as a "gateway" within the populous region, for those traveling from Union to Mecklenburg County to work in the Charlotte area.

Residential development pressure continues to rise in Stallings. Since 2002, there have been four new

communities added to the Town. Callonwood Subdivision has 365 residential units. Woodbridge was annexed into Stallings and has 160 units. Fairhaven has 550 units planned. The Callonwood and Woodbridge communities are now almost built out, but sewer issues slow Fairhaven's progress. Currently it has only 100+ of its units constructed. Wendover at Curry Place has 98 town home units. It is 75% completed.

As more people relocate to the region to work in or near Charlotte, Mecklenburg and Union County are seeing substantial increases in commuter traffic. Many of those new residents have chosen to build new homes in one of the eleven municipalities that lie between Charlotte and Monroe. Of the major corridors that link these communities to Charlotte, five of them pass through Stallings. These "transverse connectors" are shown here in blue on the "Primary Roads" map. They include Lawyers Road, Idlewild Road, Independence Boulevard, Old Monroe Road, and Weddington-Matthews Road.



Primary Roads in Stallings

By virtue of its long, narrow configuration, Stallings' **street network** is predominantly linear. Stallings' local traffic (and quite a few through commuters) relies heavily upon its "longitudinal connectors", those being the main northeast-southwest running roads shown

above in red. Most of the Town lies within a few blocks of these longitudinal connectors, which include Stevens Mill Road, Stallings Road, and Potter Road, with Chestnut Lane bridging the short distance to Stallings' southern satellite annexations. With the exception of the five transverse connectors, most of the remaining streets in Town branch off of these main spine roads and are relatively short. Few roads run parallel to the main spine roads within Stallings' town limits. There is little room left for them to do so.

Sidewalks line portions of the main roads of Stallings, as well as some secondary streets in the newer subdivisions. The longest of these sidewalk segments reaches nearly 1.5 miles in length. The table below lists Stallings' main road current sidewalk locations and their approximate length. The list runs from north to south.

STREET	LOCATION	LENGTH
Lawyers Road	Stevens Mill Rd. to Town limit	870 LF
Stevens Mill Road	Lawyers Rd. to Fairfield Dr.	2690 LF
Stevens Mill Road	1300' south of Idlewild Rd. to N. Fork Stream	4220 LF
Stallings Road	Independence Blvd. to Old Monroe Rd.	7350 LF
Old Monroe Road	Aurora Blvd. to Potter Rd.	890 LF
Old Monroe Road	Potter Rd. to Town Limit	5400 LF
Aurora Blvd.	Old Monroe Rd. to Pleasant Plains Rd.	1990 LF
Potter Road	Old Monroe Rd. to 340' north of Pleasant Plains Rd.	800 LF
Pleasant Plains Road	Potter Rd. to Old Monroe Rd.	1400 LF

The Town Zoning Ordinance has required sidewalks in all of Stallings' new residential subdivision construction since 1998. The Town itself has initiated and completed five new sidewalk projects since that time, primarily along its major roads, including Monroe Road, Pleasant Plains, and Stallings Road.

Stevens Mill Road at Fairhaven Park

In addition to these primary road locations, sidewalks also line one side of all the streets within the Morningside community (3810 LF), one side of almost all of the streets within the Chestnut Oaks community (3155 LF) and along both sides of Callonwood's two main streets, Hammond Drive and Sarandon Drive (10,200 LF). Together with these communities, the combined length of all existing sidewalks in Stallings is nearly 8¾ miles.

The sidewalk system of Stallings suffers from a number of disconnections The primary sidewalk network runs from the main intersection of Town – Stallings Road and Old Monroe Road – and continues outward to Independence Boulevard, and the southern and southeastern limits of Town. The Morningside community, along Old Monroe, is connected to this network, but the Chestnut Oaks and Callonwood communities are not. Two other disconnected segments of sidewalk exist north of Independence Boulevard; one at the

Stevens Mill shopping area, the other along Stevens Mill Road in the Fairhaven Park area. To view all sidewalk locations, see the **Existing Conditions Map** at the end of Part 2.

The majority of existing sidewalks remain in fairly good condition. The sidewalks are generally four feet in width but vary throughout Town in levels of compliance with current ADA standards.

In addition to the traffic signal on Independence at Stallings Road, there are five other traffic lights in Stallings. They are located at the following intersections:

- Stevens Mill & Lawyers Roads
- Stevens Mill & Idlewild Roads
- Stallings & Old Monroe Roads
- Potter & Pleasant Plains Roads
- Potter Road and Chestnut Lane

Potter Road at Pleasant Plains

There are currently no pedestrian **crosswalk facilities** in Stallings.

Currently there are no public **trails** in Stallings, but a few private community trails do exist. (See the **Existing Conditions Map** at the end of Part 2). One of them runs through Fairfield Plantation Park to connect the Fairfield community with the Country Woods subdivision. These two adjacent residential communities have no other pedestrian or vehicular linkage to the other, despite streets in each that end only 500 feet apart from one another. This private unpaved path runs about 1500 feet, from Lake Drive through the park, and along Goose Creek to houses at the end of Hawthorne Drive. Besides offering beautiful woodland scenery, the trail also features a raised wooden pedestrian bridge and boardwalk.

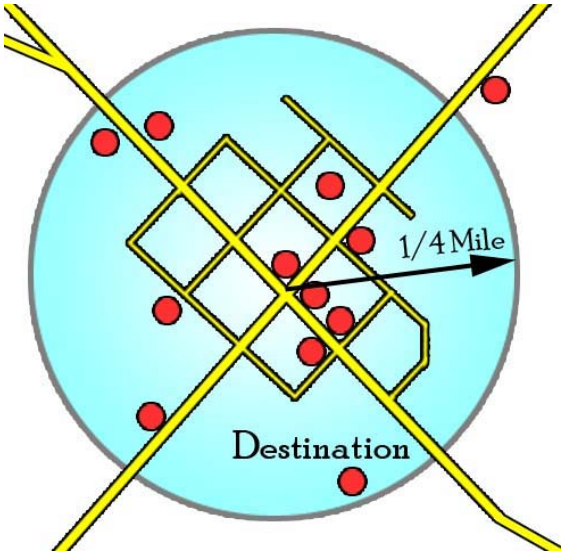
Fairfield Trail & Boardwalk

The CEM Corporation, located along Stallings Road, provides a loop trail for their employees. The exercise loop is approximately 1200 feet in length and runs along the adjacent railroad beside the CEM facility and behind the 1020 Stallings business suite.

Another trail lies in Callonwood subdivision. The trail runs a short distance from Callonwood Town Park, located at the intersection of Hammond Drive and Sarandon Drive, to cross the West Fork Twelve-Mile Creek on a footbridge and connect to a ball field. A parallel trail fords the Creek.

Callonwood Park

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



Typical pedestrian node

Nodes offer a concentration of destination points, creating a walkable center of activity. Various destinations are all within an easy 5-minute (1/4 mile) walking distance from the node center. In American urban centers, nodes most often occur at prominent street intersections.

2. ORIGIN-DESTINATION POINTS

Many of the most visited destination points within Stallings are clustered within a quarter mile radius – or five-minute walking distance - of a small number of major intersections. Such a clustering of desirable destinations can create hubs of pedestrian activity known as pedestrian "nodes". Though Stallings has not yet reached a point of development where all of these potential nodes currently exhibits a strong draw on the areas around them, much development is planned that could eventually reinforce these intersections as centers of pedestrian activity. As the Town continues to develop, these potential nodes could provide viable pedestrian-friendly centers of activity.

The following is a description of the various potential nodes for Stallings, in the order of north to south. Each node is designated by a name, and the roads that intersect in or near

its center. A brief description of the area is provided along with prominent existing and proposed destination points within that area.

- **Stevens Mill Node** - Stevens Mill Road at Lawyers Road

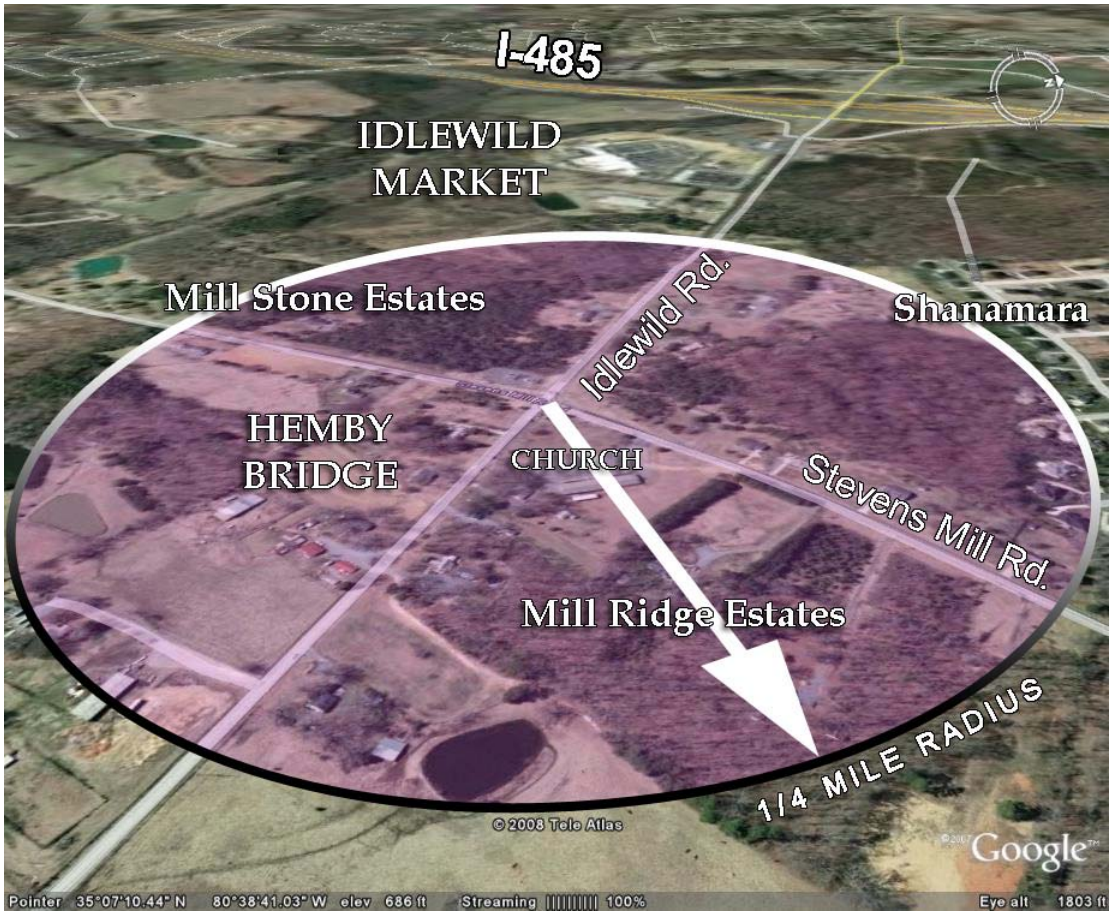
Stevens Mill Crossing Shopping Center

This intersection features Stallings' largest retail center. The Stevens Mill Shopping Center features a variety of shopping venues. It is anchored by a grocery store, and also features a bank, a drug store, a video store, and various eating establishments. The shopping center is within convenient walking distance of a number of residential neighborhoods, including the Stevens Mill subdivision across Lawyers Road. The Hunley Creek community is located just across Stevens Mill Road. Within a half mile, one can reach Stevens Mill Crossing from the communities of Fairfield, Country Woods and Emerald Lake.

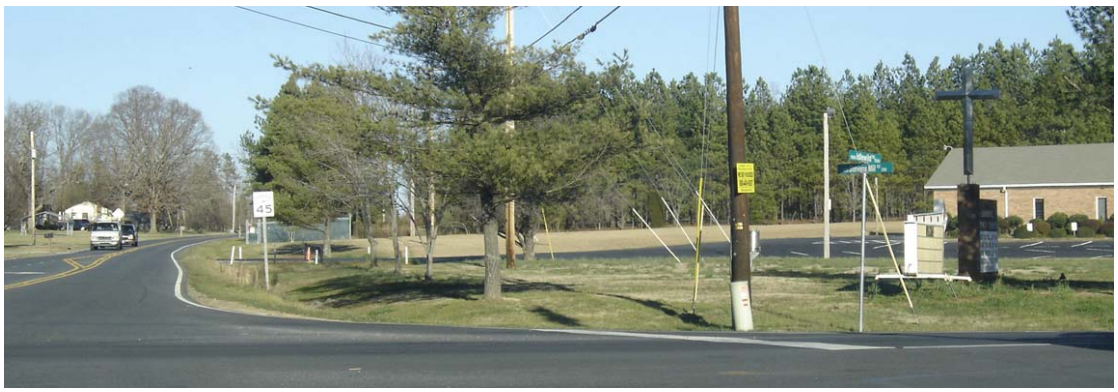
Stevens Mill Node

⌖ **Idlewild Node** - Stevens Mill Road at Idlewild Road

A little over two miles south of Lawyers Road, Stevens Mill intersects with Stallings' next transverse connector, Idlewild Road. Currently this intersection remains sparsely developed. One corner features a church, though that property, as well as the southern quarter across Idlewild, is located within one of Stallings' neighboring towns, Hemby Bridge. Both residential and commercial retail development is expected at this busy intersection, that sees on average about 18,000 vehicles per day traveling along Idlewild Road. Currently a large retail development, known as Idlewild Market, lies along the county line, just west of the Node radius.



Idlewild Node



⌖ **Stallings School Node** - Stallings Road at Stevens Mill Road

About 1.4 miles south of Idlewild, Steven's Mill Road intersects with the Town's' other primary longitudinal connector road, Stallings Road. Here the new Stallings Elementary School, now under construction, is scheduled to open for the 2008 school year. The School is designed to accommodate six hundred students. School staff estimates that one third of the student body will be driven to school by their parents. Of the number remaining, the number expected to walk in is zero, based upon current pedestrian facilities. The remaining land at the other corners of the intersection is all undeveloped and up for sale.

Stallings School Node

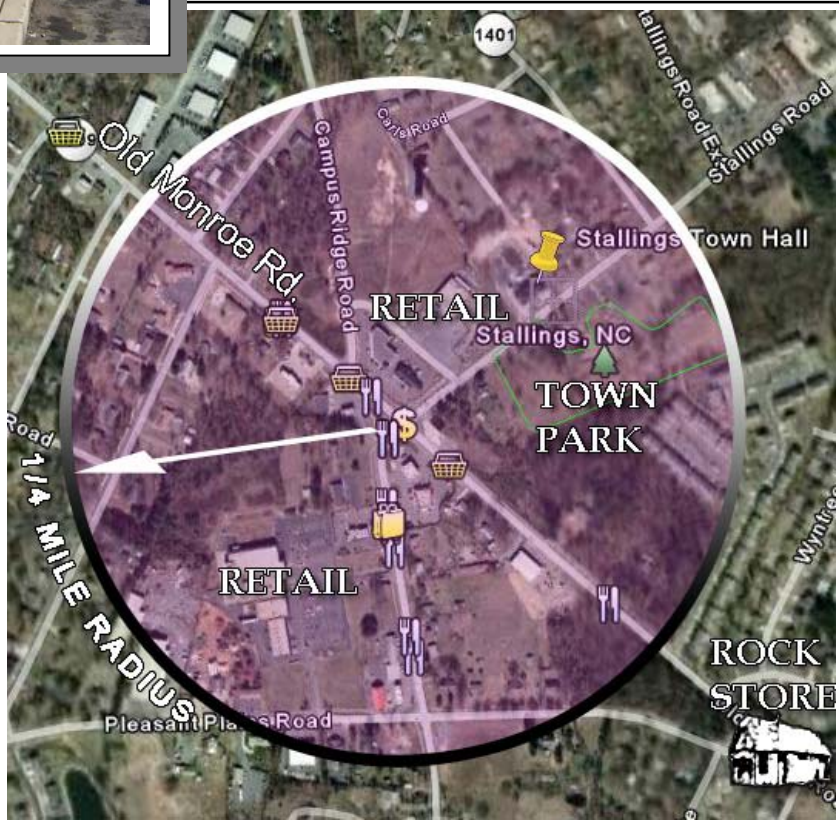
⌖ **Downtown Node** - Stallings Road at Old Monroe Road

The ¼ mile radius around this busy intersection currently features more points of destination than any other area of this size in Stallings. The area includes the Central Business District designated on the Stalling's Future Land Use Map of March 19, 2007 (see **Appendix A.1 Map 1**) and falls within both the Downtown Overlay District (DOD) and the Monroe Road Corridor Overlay District (COD) described in **Section 2.2 Current Policies, Ordinances & Plans** (see **Appendix A.1 Map 4**). The area is effectively the town center. Some of the more popular destination points currently located within this conveniently walkable distance include:

- Town Hall
- Police HQ
- Municipal Park
- Citizens South Bank
- Various retail
- Numerous restaurants, diners and fast food establishments

Stalling's landmark Rock Store is located just southeast of the Node perimeter.

No other area in Town currently offers such a concentrated variety of significant destination points.

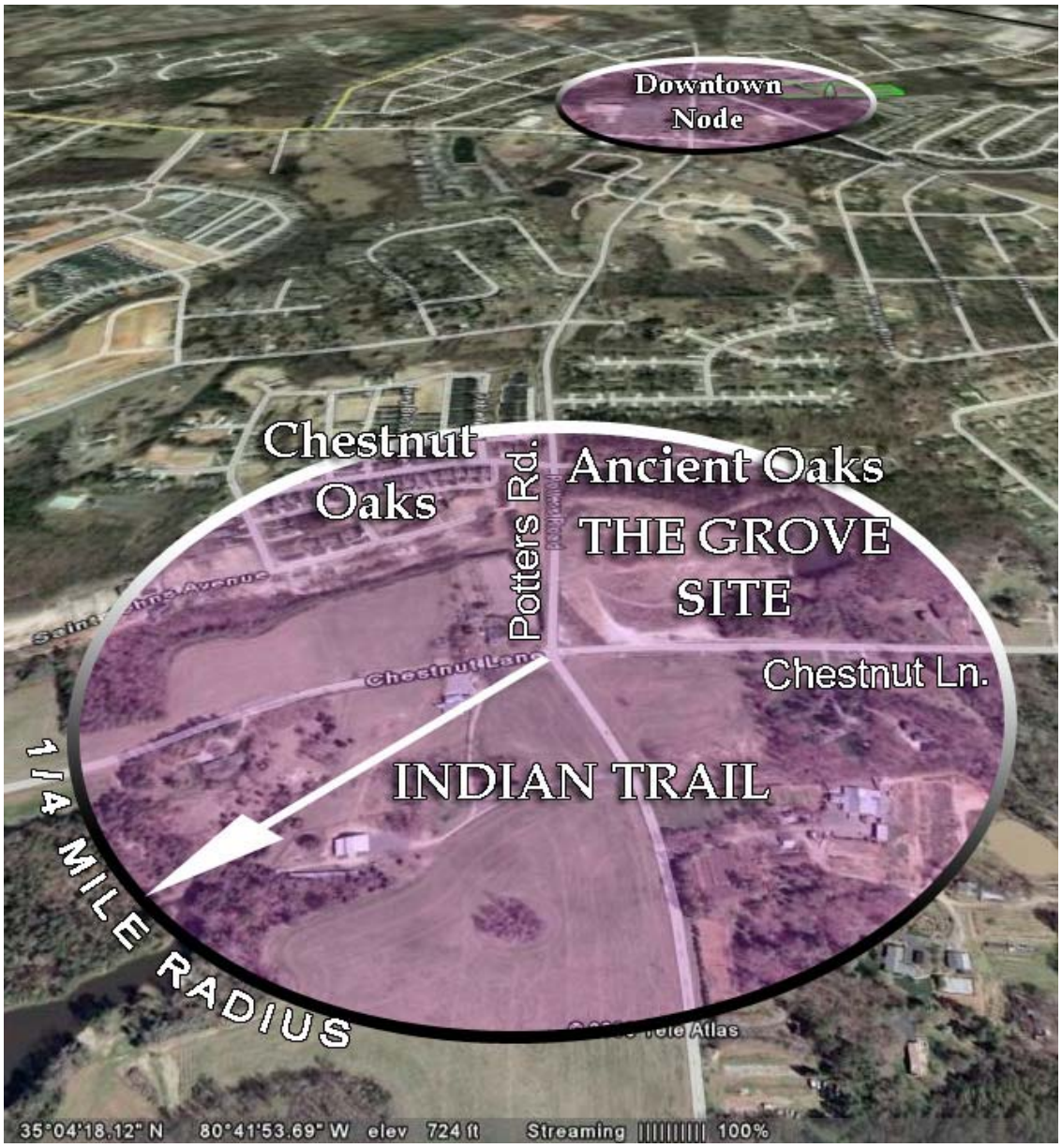


Downtown Node

Despite the fact that the Downtown Node is one of the Town's more densely developed vicinities, substantial opportunities exist for further growth within it. The Stallings Development Map (2006) designates the majority of this area as "Redevelopable Acreage" (see **Appendix A.1 Map 2**).

- **Chestnut Node** - Stallings Road at Chestnut Lane

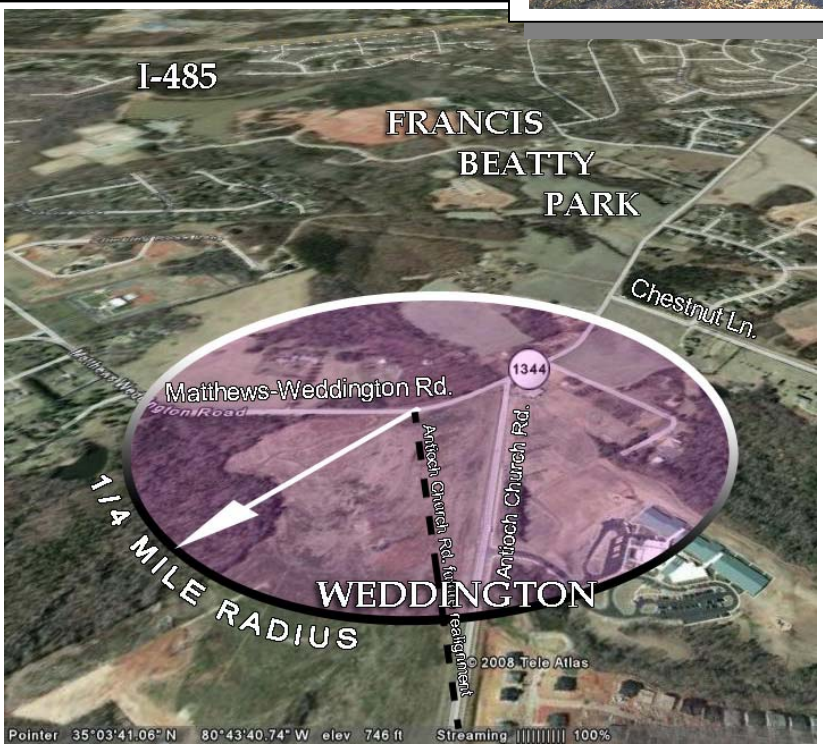
The center of this node is located just one mile from the center of Stallings' Downtown Node. A proposed mixed-use development, known as The Grove is slated for the northeast corner of the intersection, but the project is expected to spur development all around the intersection. Stallings and the Town of Indian Trail share this intersection.



Chestnut Node

- **Antioch Node** – Matthews-Weddington Road and re-aligned Antioch Church Road.

This southern-most node located around an intersection shared by Stallings and the Town of Weddington, is planned for re-alignment. The new intersection will be the focal point of future retail development. Francis Beatty Community Park lies close by.



Antioch Node

Additional destination points that lie outside the ¼ mile radius of the aforementioned nodes but to be considered in the pedestrian planning process include:

- Fairhaven Park
- Callonwood Park
- Fairfield Plantation Park
- Francis Beatty Community Park – located just outside but adjacent to the Town limits
- Retail Center coming to Idlewild road just west of the Stevens Mill node
- The Industrial Park area located on Stallings Road along the railroad line
- The Rock Store – a Stallings landmark located just outside the 5-minute walk radius of the "Downtown" node that centers on Stallings Road and Old Monroe Road.
- GW's Pantry, also located just outside of the Stallings Road and Old Monroe Road node.

To view the location of all nodes and destination points listed in this Plan, refer to the **Existing Conditions Map** at the end of Part 2.

3. Specific Pedestrian Barriers and Constraints

Though a number of general conditions in Town, to some degree, inhibit a more active pedestrian lifestyle in Stallings, there are particular barriers that pose a tremendous challenge to those wanting to safely and practically reach destinations on foot or to walk for recreation and exercise. The following is a list of those most challenging specific barriers.

Independence Boulevard

Particularly at peak commuting times, the volume of cars streaming through this intersection to pass into Union or Mecklenburg County is substantial. According to NCDOT's Average Annual Daily Traffic count, 58,000 vehicle trips are made through this stretch of US 74 everyday. While this road serves to connect the two counties, it quite effectively divides the Town. Consequently, many citizens of Stallings think of their town as two distinct communities. Most drivers passing through Stallings travel Independence Boulevard (US 74). Many of them perhaps know little more of what the Town has to offer than what they see at this busy intersection. In fact most may not even be aware they are driving through a town at all.

"The Gateway to Union County"
Independence Boulevard at Stallings Road

Stallings Road

Commuter traffic in southern Stallings, presents a hazard and impediment to pedestrians all along Stallings Road from Independence Boulevard to Pleasant Plains Road. A large volume of the traffic is held up at the Old Monroe Road intersection. Traffic conditions may change greatly on Stallings in the near future when Stallings Road is widened. Traffic volume will likely also be affected when the Monroe Bypass is constructed, depending upon the alignment selected. For more information about these projects, see **Section 2.3** and **Appendix A.1 Map 5**.

Poor lighting conditions between Old Monroe and Pleasant Plains

Pedestrians interested in traversing Stallings Road in the evening or early morning to reach the many destinations between these two primary roads must do so in limited lighting conditions.

4. GENERAL ANTI-PEDESTRIAN CONDITIONS AND ISSUES:

The specific factors that contribute to the overall pedestrian quality of life for a community are numerous and interwoven. 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 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, from making the effort on foot.

1. **Heavy traffic**
   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 Stallings' pedestrians is the barrier created by the heavy volume of commuting traffic traveling through Town. Stretching over nine miles along the border of Mecklenburg County, Stallings earns its name daily as the "Gateway to Union County" as it greets over 120,000 commuting vehicles between the two counties along its five connectors traversing the Town. Residents must compete with thousands of commuters traveling daily through Town. Many of these commuters also travel lengthwise through portions of Stallings, particularly between Independence and Old Monroe Road. This portion of Stallings Road sees over 11,000 vehicles per day. The volume of commuting traffic through Stallings has considerable effects upon the character and quality of life in the Town.

2. **A town divided**
   The single greatest barrier to pedestrian mobility across Stallings is perhaps US 74. The highway physically and psychologically divides the Town into two distinct geographic communities. But perhaps a more profound polarization exists in the Town between residents who have grown up in the area, and those who have recently settled among the newer residential subdivisions. The opportunities for these two groups to mingle and interact with each other within the Town are limited so that there persists a decidedly "Old Stallings" and a "New Stallings."

3. **Inadequate crosswalk facilities**
   The challenge to pedestrians posed by the high traffic volume is compounded by the total lack of functioning crosswalks in Town to help mitigate the problem. Existing crosswalks are in total disrepair and inadequately visible to drivers. This presents particular difficulties at the Town's most heavily trafficked intersections where Stallings and Stevens Mill Roads are crossed by the major transverse roads that connect Union County to Mecklenburg County. Additional crosswalks are needed at select locations.

4. **Generally low connectivity**
   Many of Stallings' subdivisions follow the modern paradigm of lengthy cul-de-sacs and few cross streets. Getting around Stallings, whether on foot or in a

vehicle, often requires trips along and across the highly trafficked Stallings Road and Stevens Mill Road.

5. **Minimal trail connections**
   Aside from two, short private trails described earlier, there are no off-road transportation facilities for Stallings citizens. In order to reach most destinations of interest, pedestrians must use the streets, and many of those streets are not equipped with sidewalks.

6. **Under-developed sidewalk system**
   Stallings possesses some considerable stretches of sidewalk, but there are major gaps in the system, particularly north of Independence Boulevard. A gap of 1.3-miles separates the sidewalk network in South Stallings and the next length of sidewalk in North Stallings along Stevens Mill Road. An even longer gap (1.9 miles) lies between this Stevens Mill segment and the length that runs adjacent to Stevens Mill Shopping Center. There is no sidewalk to connect this shopping center to the large residential community just east of it. More sidewalks are needed to accommodate pedestrian traffic in many corridors throughout Town where there are currently none available.

Potter Road near Pleasant Plains

7. **Explosive growth**
   Stallings' location in western Union County is expected to draw new residents for years to come. Current development pressures emphasize the need for more focused planning.

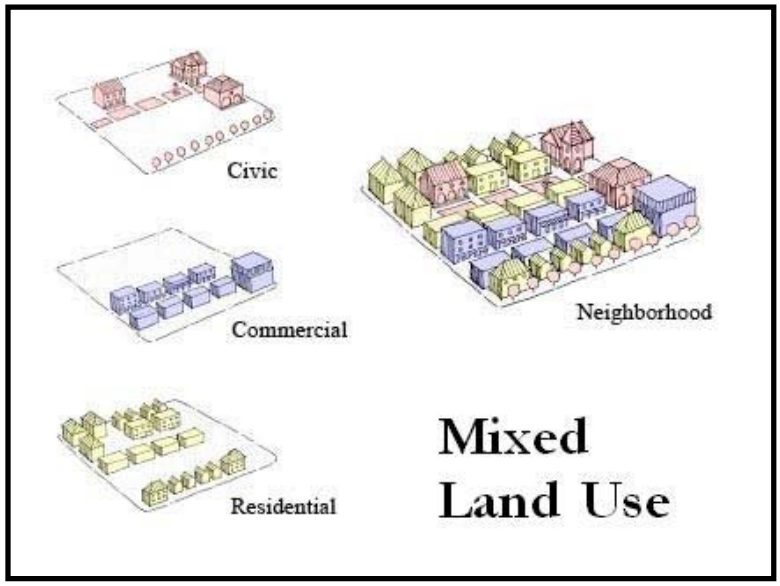
The existing conditions described above that contribute to the difficulties of walking about Stallings are, to varying degrees, the result of the ordinances that guided the original development of the Town. Some of those ordinances have been changed over the years, and those changes are apparent in the more walkable quality of the Town's newer developments. However, for Stallings to better fulfill its pedestrian vision, a thorough review of its existing land use ordinances, and other policies and plans guiding the Town's growth, is essential.

2.2 Current Policies, Ordinances & Plans

TOWN OF STALLINGS LAND USAGE ORDINANCE
(INCLUDES SUBDIVISION REGULATIONS)

Title XV of Stallings's Official Zoning Ordinance addresses Land Usage. This section of the Stallings Ordinance was recently updated in June 2007. It is comprised of four chapters, including Flood Hazard Regulations, Subdivision Regulations, the Zoning Table of Uses, and the Minimum Housing Code. Title XV is the most binding legal document affecting the contemporary form of Stallings and its future development patterns. The degree to which the Town 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. Title XV addresses and directs a wide variety of pedestrian-related issues.

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 to the corner store, for instance.) There are twenty zoning districts described in chapter 152 of Stallings' Land Use Ordinance. As their names imply, each district is designed to permit a specific range of uses. These permitted uses are enumerated in the Appendix of the Ordinance, but a summary of the intended uses for each zone is provided in Section 152.015. Refer to **Appendix A.1 Map 3** to see a distribution of the land use zones. Each of the several residential and business zones is accompanied by a corresponding conditional use (CU) zone. These CU zones permit a more flexible collection of uses within that zone contingent upon the outcome of the conditional use permitting process.

There are two areas designated within Stallings, however, that allow a greater use of mixes by right. They include the **Downtown Overlay District** (DOD) and the **Monroe Road Corridor Overly District** (COD). These districts vary somewhat in purpose and location, but both promote a more intense mix of use than the Town's typical zoning. See **Appendix A.1 Map 4** for map of both Districts.

The intention of the DOD is described in section **152.088 (A):**

(A) It shall be the purpose of the downtown overlay district to make the downtown business district the focal point of the town, encouraging private and public investment which will preserve the downtown area as the primary office, institutional, cultural and entertainment center of the town, and protect property values. It is further the purpose of this district to encourage a strong supportive retail center in the downtown overlay district, which will complement other downtown uses and the surrounding neighborhoods, and promote the community's character and integrity. It is the intent of this district to place a high priority on the quality of design, integrating new uses with existing structures in a cohesive and attractive manner that promotes a traditional architectural and visual environment. Development should facilitate the transportation needs of individuals and businesses, and a well balanced transportation system should also recognize the importance of all forms of movements, be it pedestrian, bicycling, transit, automobile or truck in nature. The intent of the downtown overlay district regulations is to provide a mechanism for implementing the above referenced goals by directing the desired character of the development in the downtown overlay district.

There are many features listed above that favor pedestrian activity, including:

- The creation of a node of development with a close-knit variety of destination types that may be of particular interest to pedestrians
- Its location within close reach of surrounding residential areas
- An emphasis on attractive, interesting design
- Reuse of existing structures for aesthetic reasons, but also to encourage the location of businesses with a variety of profit margins: jewelry stores to shoe repair.
- A consideration of various modes of transportation

Section **152.088 (C)** states explicitly that "mixed use" and a "combination of residential and commercial development" is permitted within the DOD "subject to obtaining a special use permit."

The location and extent of the DOD is described in section **152.088 (B):**

(B) *Definition of downtown overlay district.* An area which is located in the heart of the town bounded by Old Monroe Road, Potters Road and Pleasant Plains, and other properties along the south side of Stallings Road. The overlay area includes 29 parcels as shown on the official zoning map. This property is zoned as an overlay district.

Eleven pages of site and architectural detail standards are enumerated for the DOD in Section 152.088 (E). The standards make many references to pedestrian use and state that they are "designed to encourage and complement pedestrian-scale activity." Standards address setbacks, sidewalk widths, windows, walls, etc.

The **Monroe Road Corridor Overlay District** (COD) is described in **Section 152.089**. It follows the Monroe Road corridor completely through town. Its area overlaps a substantial percentage of the DOD. According to the Ordinance, the COD was established in order to accomplish the following:

a) Energize a commercial corridor so as to serve the needs of the community, including the adjacent communities;

b) Provide commercial and employment opportunities which are easily accessible to neighborhood residents;

c) Create a corridor with a distinct sense of place and character;

d) Encourage high quality building and site design;

Though not as pedestrian-focused as the DOD, the COD does include a number of pedestrian-friendly statements, and explicitly encourages a mix of uses, as section 152.088 (A) (10) states:

a) Mixed uses of commercial, retail, office and residential are promoted and encouraged in the Overlay District.

Land use is addressed in Goal 1 of Section 3.1

Issue 2: Street Connectivity

"Connectivity" means being able to get from one place to another without having to go long distances out of the way. Connectivity promotes walking by putting more destinations within easier reach and by providing more choices of routes. A connected network of streets also gives drivers more choices of vehicular routes to any destination. When streets interconnect, local vehicular and pedestrian traffic can avoid busy arterial roads. This is particularly important in communities, like Stallings, where through-commuter traffic is substantial.

The linear shape of Stallings necessitates a heavy reliance upon its primary longitudinal connectors, Stallings and Stevens Mill Roads, along with Chestnut Lane. Most of the Town's secondary roads feed directly into one of these main spines. However, alternative connections are often scarce. There is little choice for getting around by car or by foot without reliance on these main roads, even between adjacent neighborhoods. For example: Glamorgan Lane of the Shannamara community runs parallel to Mill House Lane of Hunley Creek. Though these streets are only one block distance from one another, a travel distance of nearly two miles is required for one neighbor to reach the other; a considerable stretch on

foot. From the west end of Hawthorne Drive in Country Woods, to Fieldstone Drive in Fairfield, the distance required to travel on existing roads is 2.5 miles, from the point where the streets are again only one block apart. Street connections may not be desirable everywhere, particularly where existing creeks and floodways divide neighborhoods. However, linear lowlands, floodways and other properties with severely limited development capacity provide ideal opportunities for trail connections.

Stalling's Land Usage Ordinance promotes street connectivity, addressing the issue in **Section 151.061**:

• 151.061 STREETS.

(A) The proposed street layout within a subdivision shall be coordinated with the existing street system of the surrounding area, and where possible, existing principal streets shall be extended. No street shall be created which does not provide continuous connection to the existing public street system.

(B) Where, in the opinion of the Planning Board, it is necessary to provide for street access to an adjoining property, proposed streets shall be extended by dedication to the boundary of the property and a temporary turnaround shall be provided.

Most of Stallings' newer residential subdivisions north of Independence Boulevard were annexed into the Town after construction and, therefore, do not reflect the Ordinance's direction toward connecting neighborhoods. However, the code itself permits deviation from its clear intent on a case-by-case basis. The Planning Board determines these cases, but no parameters are provided in the Ordinance by which the Board should base its determination of whether the connections are "possible" or not. With no written authority on which to rest their decisions for requiring connecting roads, the Board's rulings could be labeled as indiscriminant by the subdivision developer, who may opt to sue the Town over the issue.
The Stallings Ordinance also makes no requirement for multiple means of ingress/egress into and out of residential subdivisions.

Street connectivity is addressed in Goal 3 of Section 3.1

Issue 3: Cul-de-sac Length

Connectivity has been sacrificed in many subdivisions, developed over the last few decades, in favor of incorporating more cul-de-sacs into the design. Cul-de-sacs were initially used to avoid terrain that would prohibit streets from connecting. However, development practices over the last few decades grew to rely upon them, even on flat land, as a way of discouraging traffic in front of individual

homes, turning public throughways into semi-private drives. Many of these cul-de-sac neighborhoods were made with only one way in and one way out, and streets within these neighborhood were often dead-ends. While this did reduce non-residents cutting through the neighborhood, it also gave residents very limited options. Traffic could back up into the neighborhood during rush hour, as everyone tried to get out the same street onto busy arterial roads. Emergency vehicle access was also severely limited. Kids wanting to visit their friends in neighboring subdivisions would have to walk or bike much greater distances, often upon busy main thoroughfares, or be driven by a parent.

One way to curtail the overuse of cul-de-sac design while still permitting the occasional cul-de-sac, when necessary, is to limit their allowable lengths. As cul-de-sacs lengths increase, connectivity decreases. Properties accessible from only one direction become more isolated and difficult to reach. And vehicular traffic on these cul-de-sacs increase in speed and volume.

Section 151.061(M) of the Stallings Ordinance limits the length of permanent dead-end streets (cul-de-sacs) to 500 feet. With a minimum required lot width of 80' for R-10 and R-12, a total of 13 lots can occupy a single cul-de-sac. The ordinance does not place an actual limit on the use of cul-de-sacs by way of a connectivity ratio or other objective means.

Cul-de-sac length is addressed in Goal 3 of Section 3.1

Issue 4: Block Length

Shorter blocks benefit pedestrians by providing more opportunities for choice in travel path for a given distance. More choices mean a greater variety in the walking experience, an increase in walk-in customer exposure for businesses, and more chances for new neighbors to meet and interact. Short blocks and frequent cross streets create more direct routes. A dense network of streets disperses traffic, making streets more pleasant to walk along and easier to cross. There is also a psychological benefit of short blocks: pedestrians do not have a sense of having to walk "forever" to get to a crossing. Blocks of 300' or less are desirable.

The Stallings Ordinance allows flexible limits on block length by regulating only the overall block perimeter.

> • **151.062 BLOCK LENGTH AND WIDTH.**
>
> (A) Blocks shall not exceed a perimeter length of 5,000 feet, perimeter length being the shortest perimeter measurement along the abutting right-of-way line.
>
> (B) Blocks shall be at least wide enough to allow two tiers of lots of minimum depth, except where prevented by topographical conditions or the size of the property. A single tier of lots may be used adjoining a major thoroughfare where access is provided from a minor interior street.
>
> (Ord. passed 9-10-90; Am. Ord. passed 11-9-98; Am. Ord. passed 6-29-99)

Considering a standard four-sided block, the average length permitted for each street comes to 1250 feet (greater than four football fields in length). For rectangular shaped blocks, this

length could be considerably greater, easily surpassing a ¼ of a mile. This imposing distance does not lend itself to a pedestrian-friendly environment for the following reasons:

1. People tend to judge such a 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.

Block lengths are addressed in Goal 3 of Section 3.1

Issue 5: Crosswalks

Intersection and 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.

The Stallings Ordinance does not require crosswalks or provide any guidance or criteria concerning their placement or characteristics. Requirements of developers are limited, in **Section 151.078**, to traffic control signage as determined by NCDOT. There are no requirements for electric signaling devices. The Ordinance also makes no reference to any larger guiding plan or policy of the Town for such facilities. While some crosswalks do exist within Stallings, their condition and number are inadequate for current or projected pedestrian needs.

Crosswalks are addressed in Goal 4 of Section 3.1

Issue 6: Sidewalks

Sidewalks form the backbone of a pedestrian system in urban and suburban environments. They can provide highly visible, accessible and practical pedestrian connections to common destinations points. They can also serve as vital public space in themselves, particularly in front of retail shops, restaurants, and civic buildings. For many pedestrians, sidewalks provide the primary opportunity for public interaction.

Stallings' Land Usage Ordinance briefly addresses sidewalks in Section **152.113**, providing requirements for their minimum width, and the specific streets where their construction is required as development occurs.

• 152.113 CURB, GUTTER AND SIDEWALK REQUIREMENTS.

(A) All new development(s) except for a single-family or duplex structure shall be required to provide a standard two to six-foot concrete curb and gutter, and a minimum five-foot concrete sidewalk along the following thoroughfares and/or streets as a condition of ▬ 94.15 through 94.19 of this code and/or obtaining a curb cut permit: Stallings Road, Old Monroe Road, Potter Road, Pleasant Plains Road, Campus Ridge Road and Hwy 74. However, all new development(s), except for single-family or duplex structures, located within the downtown overlay district shall meet the same requirements, but the concrete sidewalk shall be 12 feet in width and located at the edge of the proposed Mecklenburg-Union MPO Thoroughfare Plan. The sidewalks and curb and gutter shall be built to NCDOT and/or town standards, whichever is most restrictive.

This section further alludes to more stringent sidewalk requirements within the DOD. The Downtown Overlay District sidewalk requirements are provided in section **152.088(E)(5)(b) and (c**).

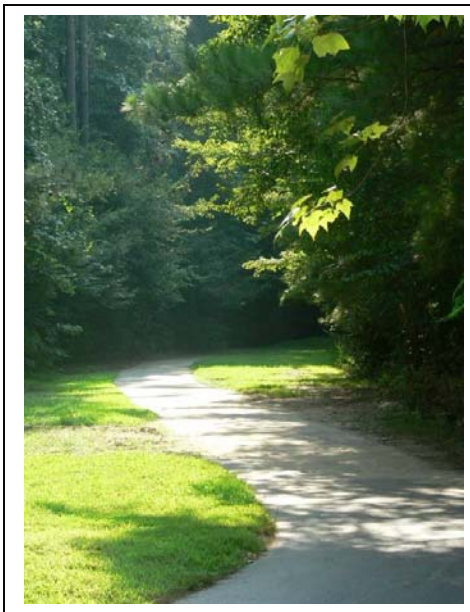
(b) A 12-foot wide, handicap accessible concrete sidewalk shall be constructed by the applicant/owner in the proposed right-of-way, adjacent to the property line, as shown on the most recently adopted version of the Mecklenburg-Union MPO Thoroughfare Plan to promote high levels of pedestrian activity and added opportunity for outdoor dining, displays, planters and the like. A 12-foot sidewalk also allows pairs of pedestrians to walk side by side, or to pass each other comfortably. It generally provides enough width for window shopping, some street furniture, trees and places for people to stop walking and converse. The building facades shall be constructed at the edge of the 12-foot sidewalk, at the property line or build-to line.

(c) The 12-foot sidewalk shall be located along all public streets and shall consist of two zones: a street tree/street furniture zone and a clear zone. The street tree/street furniture area shall have a minimum width of five feet. The zone shall be located immediately adjacent to the curb and shall be continuous. Curb and gutter will be determined on a case-by-case basis and depend upon whether road improvements are required as part of the development. Curb and gutter requirements may be waived by the Board of Adjustment in certain situations. If road widening will occur in the future, based on the most recently adopted version of the Mecklenburg-Union MPO Thoroughfare Plan, then the sidewalk shall be installed without curb and gutter.

Section 152.113 requires sidewalks along only six of Stallings' streets. Most of those streets fall within the DOD and COD, where the additional width of sidewalk is required to serve pedestrians in the downtown business area. The Ordinance makes no reference to any additional plan or policy that takes into account destinations, or current or future land use issues.

Though reference is made to Stallings' Ordinance **Title IX: General Regulations Chapter 94 Streets and Sidewalks**, no additional rulings or guidelines for sidewalks are provided in that section of the Ordinance.

Sidewalks are addressed in Goals 2 & 4 of Section 3.1



Issue 7: Greenways, Trails and Open Space

While parks and other open space are intended to accommodate a community's recreational needs, they also provide vital public space and accommodate public functions that help give a town its identity. Greenways and other trails also serve a dual role. In addition to providing opportunities for recreation and exercise, they are also intended to link common destinations points, functioning as a transportation resource for pedestrians. Within municipalities, parks and greenways are often located in otherwise undevelopable land, such as streams and floodways, utility right-of-ways or abandoned railroad corridors.

Section **151.081** of the Ordinance requires a dedication of open space for new developments. The area set aside is proportional to the number of residential units in the subdivision. This dedicated land is required to meet criteria described in **151.081(A)(4)**:

> (a) The dedicated land shall form a single parcel of land, except where the Town Council determines that two or more parcels would be in the best interest of the public, given the type and distribution of open spaces needed to adequately serve the proposed development. In these cases, the Town Council may require that the parcels be connected by a dedicated strip of land at least 30 feet in width.
>
> (b) Two-thirds of the dedicated land shall be useable for active recreation. Furthermore, lakes and other bodies of water may not be included in computing any of the dedicated land area. Land dedicated only for greenways need not follow the requirements of this division.

Parameters the dedicated land must meet listed below in **151.081 (A)(4)(d)** do not explicitly include pedestrian transportation:

> (d) The dedicated land shall be located so as to reasonably serve the recreation and open space needs of residents of the subdivision.

However, provided the Town has an adopted pedestrian plan that includes greenways (There is one greenway corridor indicated schematically in the adopted Future Land Use Map, see **Appendix A.1 Map 1**), the Ordinance provides an incentive to developers to provide for such trails in **151.081 (F)**:

> (F) Greenways may be credited against the requirements of this section, provided that the greenways are part of the town's greenway plan and dedicated to public use.

According to **152.108.11 (B)(2)**, trails and other recreational elements may be located in required bufferyards:

> 2) Bufferyards may be used for passive recreation, such as pedestrian, bicycle, or equestrian trails, subject to the following limitations:
>
> (a) No plant material shall be eliminated;
>
> (b) The total width of the bufferyard shall be maintained; and,
>
> (c) All other requirements of this Ordinance shall be met.

Section **152.108.9 (B)(5)**, allows a reduction of required bufferyard width through the use of a fence or wall:

> 5. Fence or Wall Option. An opaque fence or wall may be used in lieu of not more than fifty percent (50%) of the required evergreen bufferyard plantings with the approval of the Zoning Officer and providing the following conditions are met, where applicable:

The Ordinance makes provision for preventing an obstruction by such walls of existing or future trails or greenways in **152.108.2(D)**:

> **D) Obstruction of Pedestrian Routes**
>
> Required landscaping shall not obstruct or impede public pedestrian routes including sidewalks and greenway trails.

Pedestrian connections are also provided for in **151.081 (A)(4)(e)**:

> (e) Public access to the dedicated land shall be provided either by adjoining public street frontage or by a dedicated public easement, at least 30 feet wide, which connects the dedicated land to a public street or right-of-way. Gradients adjacent to existing and proposed streets shall allow for reasonable access to the dedicated land. Where the dedicated land is located adjacent to a street, the developer or subdivider shall remain responsible for the installation of utilities, sidewalks, and other improvements required along that street segment. Public access or dedicated walkways to greenway dedications only shall be at least 20 feet wide.

However, despite the provision for connected open space, overall pedestrian connectivity through the Town is potentially jeopardized by open space that does not permit public access, such as described in **151.081 (E)**:

(E) The town encourages neighborhood or homeowner associations or management to construct, operate and maintain private parks and recreation. The construction, operation or maintenance of the private facilities shall not, however, diminish or eliminate the responsibility and obligations of the subdivider under this section.

Such parks are likely to be located in land that is needed for public pedestrian routes. Such non-public spaces could potentially block greenway connections.

The Stallings Ordinance states that bufferyards are intended to provide a "visual and functional" separation between adjacent unlike land uses (**Section 152.108.8**). These requirements are relaxed in the case of schools. **152.108.9(D)**:

D) Alternative Compliance for Schools

The bufferyard requirements of this section otherwise required for development of public or private schools in certain zones may be met by the submittal and approval of a landscaping plan according to the provisions of this Section .

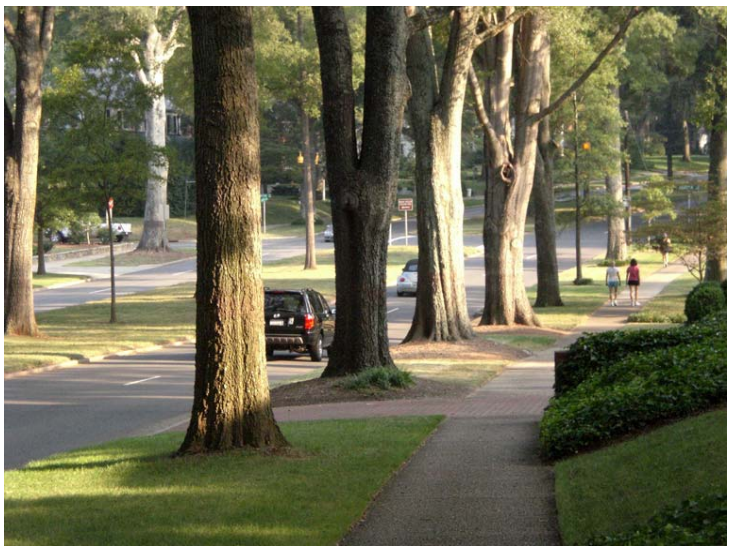
Schools are a primary destination point for many pedestrians. By relaxing buffer requirements, the Stallings Ordinance strengthens the connection of schools to adjacent neighborhoods and encourages pedestrian access.

Despite the amount of language devoted to open space in the Ordinance, its requirements apply only to new residential subdivisions. Besides a reference to a possible greenway plan in **151.081(F)** shown above, the Ordinance cites no plan or policy that takes into account destinations, current or future land use issues, or transportation or recreation master plans.

Greenways and open space is addressed in Goals 2, 3, 4 & 5 of Section 3.1

Issue 8: Street Trees

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



General provisions for required trees are made throughout **Section 152.108 Screening and**

Landscaping. Section 152.108.3(B) provides requirements for street yards and street trees:

> 3. Number and Spacing of Trees. Each streetyard shall contain a minimum of two (2) deciduous or evergreen trees per one hundred (100) linear feet, excluding points of motor vehicle ingress or egress. In no case shall any streetyard contain less than one tree. Required trees must be a minimum of eight (8) feet in height at installation and shall be at least two (2) inches in diameter measured six (6) inches above ground level. Where two (2) or more streetyard trees are required, all trees shall be planted with the center of the main trunks twenty (20) to seventy-five (75) feet apart. Existing deciduous trees located in the abutting street right-of-way may be used to satisfy the distribution requirements above.

The DOD includes many additional requirements regarding street trees, such as:

- Preservation of significant existing street trees - **152.088(E)(1)(b)**
- Provision of a street tree/street furniture zone - **152.088(E)(5)(c)**
- Provision of tree wells - **152.088(E)(6)(i)(1)**
- Provision of an irrigation system - **152.088(E)(6)(i)(2)**
- Parking lot trees - **152.088(E)(6)(k)**

Special landscaping requirements for the COD are given in **Section 152.089(3)**. Street planting yards for Monroe Road:

> iii) Shall have the following planting rates:
>
> aa) Four (4) understory trees for every one hundred (100) linear feet;
>
> bb) Thirty-three (33) shrubs for every one hundred (100) linear feet; and
>
> cc) There shall be at least one (1) canopy tree for every fifty (50) linear feet or one for each individual parcel if developed as separate parcels regardless of separation distance.

Street trees are addressed in Goals 2 & 4 of Section 3.1

Issue 9: Building Setbacks

Excessive building setbacks are disadvantageous and even problematic to communities for reasons of safety, economic vitality, and general pedestrian friendliness. 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 built close to the street 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 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 found with strip development.

Setback requirements are set for each standard zoning district in **Sections 152.032 – 152.041**.

Particular attention is given to this issue in the DOD. **Section 152.088(E)** states:

(1) (a) Uniform building build-to lines (setbacks) are key to establishing a pedestrian oriented downtown. In order to accomplish this, the build-to line for all properties within the downtown development overlay district shall be zero feet, or at the edge of the proposed right-of-way, as shown on the most recent, adopted Mecklenburg-Union MPO Thoroughfare Plan.

Placing critical importance on the pedestrian zone, the DOD includes additional rules about how buildings relate to the street.

(5) (a) Buildings must be oriented to face the street, and designed to be pedestrian friendly, not located so as to separate the existing and/or proposed public sidewalks system by paved parking lots, or large expanses of non-required yards.

Building setbacks are addressed in Goal 1 of Section 3.1

Issue 10: Off-Street Parking

Although parking lots provide a convenience to motorists, they can significantly diminish the pedestrian quality of a community, creating a landscape that is barren, uncomfortable, unsafe and inconvenient to pedestrians. Property owners with expansive impervious areas also incur substantial maintenance costs to maintain valuable land that is yielding a less-than-profitable use. Parking lots (like other impervious surfaces) also negatively impact the local environment, particularly with respect to water supplies and water quality.

Parking Lots and Community Water Management Issues

~ Water Quantity Issues ~

Impervious parking lots do not permit rainwater to soak into the ground. So as large areas of vegetative cover are cleared and replaced with impervious surfaces, two water management problems occur:

1. Water that was formerly available to recharge local groundwater aquifers is now lost. This can turn into a problem for communities that depend on groundwater for their drinking water, as they are more likely to face shortages.
2. Instead of recharging the aquifer, or being absorbed by vegetation, this rainfall now has to be managed as storm water runoff.

Storm water that was formerly an asset has now become a liability.

~ Water Quality Issues ~

In the first few minutes of a rainstorm, the things that normally end up in parking lots (dripping oil, anti-freeze, grease, gas, trash, etc.) get flushed into stormwater catchments leading to streams that empty into nearby water basins. These "non-point source" pollutants (NPS), and the high-velocity, heated runoff waters that carry them, degrade streams and water basins, as well as the living environment within them.

NPS accounts for at least half of the water pollution problem nationwide and poses a major threat to water supplies.

Section 152.150 of the Ordinance determines maximum requirements for off-street parking by use for areas outside of the overlay districts. **Section 152.150(B)(3)** states the following:

> (3) The following off-street parking space requirements shall be the maximum required except where it can be demonstrated through a documented parking study that the demand for parking exceeds the maximum requirement. The special exception to the parking requirements may be granted by the Town Council. Approved number of parking spaces may be less than the maximum allowed:

The section then provides a table of uses with an associated means of determining the maximum number. By setting a maximum requirement rather than a minimum, the Stallings Ordinance helps to minimize the degenerative effects of expansive parking lots and relieves part of the burden on property owners and developers. Where the ordinance requires no minimum number of parking spaces, it allows property owners even greater flexibility.

The Ordinance does set minimum parking requirements, however, within the COD. **Section 152.089(4)** sets the minimum based on underlying zoning and gross floor area. Parking maximums are then set at a certain percentage of that minimum, though exceptions may be granted by the Board of Adjustment.

The DOD also places some additional requirements on parking. **Section 152.088(E)(6)(j)**:

> (j) Off-street parking and loading standards and requirements can be found in •• 152.150 through 152.152 with the following exceptions:
>
> 1. Parking lots shall be placed in the rear yard. They may be placed in a side yard with approval of the Board of Adjustment, if the spirit and intent of this chapter have been met. All handicap parking spaces shall be located as close as possible to entrances.
>
> 2. Parking lots shall be designed to connect to adjacent existing or future parking lots in order to reduce vehicular traffic on the public rights-of-way and encourage interconnectivity of parking lots in the same block.

The first exception allows buildings in the DOD to directly meet the sidewalk in a manner convenient and comfortable to pedestrians. The intention of the second exception is stated and agrees with earlier observations about the value of connectivity.

For areas outside of the overlay districts, the Ordinance also permits some shared usage of parking lots. **Section 152.150(B)(4)** states:

> (4) One-half of the required parking spaces for churches, theaters or assembly halls whose peak attendance is at night or sundays may be assigned to a use which will be closed at night or Sundays.

The COD also permits some offsite and shared parking.

Allowing landowners 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.

Off-street parking in areas intended to serve as a "downtown" inadvertently conflicts with the pedestrian nature of such an area. 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 permitted in a downtown setting, or give credit for on-street spaces. 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 parking spaces permitted for retail uses.

Off-street parking is addressed in Goal 1 of Section 3.1

STALLINGS LAND USE PLAN – GOALS, OBJECTIVES AND POLICIES

The Town adopted the Stallings Land Use Plan on July 24, 2006. Key goals outlined in the Plan included: pedestrian-friendly, mixed-use development, a definitive downtown area with other concentrated centers of development, and greater connectivity. A number of objectives addressed these concerns. Among them:

- Quality infill development
- Higher density residential developments
- Residential developments geared to older adults
- Reducing the number of cul-de-sacs in new developments and increasing the number of ingress and egress points, and other connectivity measures
- Limiting curb cuts and taking other measures to reduce sprawl
- Increase pedestrian access in commercial developments
- Greater attention to building façade features including window placement and limited setbacks
- Delineation of specific areas (nodes) for commercial development, including regional shopping facilities and local business centers.
- Shared parking facilities
- A more "urban" downtown
- A greenway network and open space plan
- More sidewalks, with planting strips

To view the associated Land Use Map, refer to **Appendix A.1 Map 1**.

UNION COUNTY COMPREHENSIVE PLAN

Though the County Plan does not have any jurisdictional authority within Stallings, it contains a number of land use values that are in harmony with those of the pedestrian vision of Stallings. A "Symposium of Ideas" presented December 11, 2006 as part of the County Plan included the following:

- Creating and preserving a clear distinction between urban and rural areas
- Building quality places – neighborhoods and business districts, not just subdivisions and developments
- Mixed-use town centers with infill design, and traditional neighborhood development

Union County also lists various growth management tools on the Comprehensive Plan page of its website. Presentations included on the site remind municipalities of the broad authority they are invested with to plan.

Some of the tools listed that support the Stallings pedestrian vision include:

- Do not segregate commercial and residential uses
- Connectivity between developments
- Sidewalks, greenways and bike paths

COMPREHENSIVE TRANSPORTATION PLAN

A CTP for the Town of Stallings was prepared by the Department of Civil and Environmental Engineering of the University of North Carolina at Charlotte, November 2007, with revisions in January 2008. The CTP assessed traffic and road conditions in the area, with emphasis on key intersections.

Among the recommendations for transportation improvements, the CTP suggests additional travel lanes for particular high-volume streets and improving connectivity overall to help meet increasing travel demand. To increase pedestrian safety and encourage walking, the CTP specified crosswalks and sidewalks at key intersections, including:

- Stallings Road / US 74
- Monroe Road / Stallings Road
- Idlewild Road / Stevens Mill Road
- Stevens Mill Road / Lawyers Road
- Stallings Road / Stevens Mill Road
- Chestnut Lane / Weddington Road

The CTP also notes that substantial growth is expected within Stallings over the next twenty years, which will have a significant impact on local travel demand. This fact reinforces the argument for better internal street connectivity. See **Appendix A.1 Map 6** for a view of the proposed links recommended in the CTP.

2.3 Current Projects

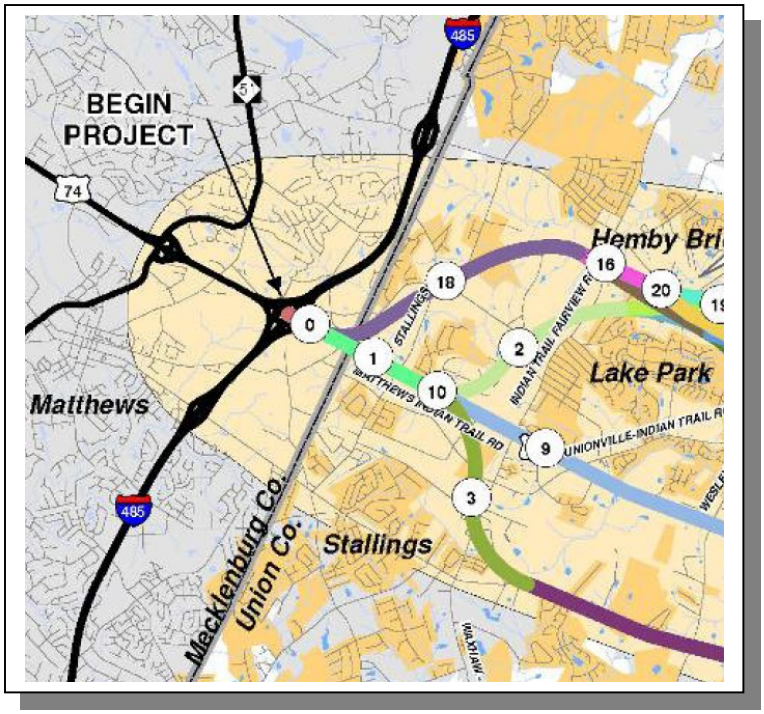
STALLINGS ROAD WIDENING PROJECT

NCDOT is currently planning the widening of Stallings Road (SR 1365) from US 74 to Old Monroe Road, a length of approximately 1.4 miles. The stated purpose of this TIP project (U-3825) is to improve safety and traffic flow along the roadway, which currently experiences bumper-to-bumper traffic during peak hours. According to the June 2007 TIP Project Development report, this section of Stallings Road carries roughly 11,400 vehicles per day and experiences an accident rate 30% higher than the statewide average for roadways of this type. Currently there is sidewalk only along the south side of the road. The grade drops off sharply on the shoulder along the north side of the road within the downtown area, leaving no opportunity for walking along this side. The plan includes widening the Stallings Road from an undivided two lanes to primarily four lanes with a dividing median and sidewalks along both sides of the road. The median will provide a pedestrian refuge at crosswalks. It is expected that the project will feature a reduced number of curb cuts than currently exists.

Stallings Road at Town Hall

MONROE BYPASS PROJECT

The North Carolina Turnpike Authority (NCTA) is studying ways to improve east-west travel in the US 74 corridor from I-485 to eastern Union County. Starting from the 165 alignments previously under consideration by NCDOT, the NCTA has narrowed down the number of possible routes. Of those remaining potential alignments, one merges with existing US 74 at a point west of Stallings. This alignment of the Monroe Bypass would traverse the Town, crossing Stallings Road near the intersection of Stevens Mill Road.



This alignment of the Monroe Bypass would have a number of significant consequences upon the Town. Besides the drastic affects upon the properties it traversed, it would also present a significant physical and/or psychological barrier to local residents, much like US 74 does. Also, the location of the bypass terminus on the Charlotte side of Stallings would likely decrease the amount of commuter traffic along Stallings Road. This may have both positive and negative effects upon local businesses. See **Appendix A.1 Map 5** for more detailed view of the Bypass alternatives.

MATTHEWS AUTO CENTER

A 193-acre development is underway adjacent to the Town along the south side US 74. In addition to automotive sales and service, the Matthews Auto Center project will include a 14-acre corporate center, a large wooded pond area that will border Stallings, and a percentage of mixed-use development. The project is being coordinated with a proposed McKee Road extension, which is planned to interchange with US 74. The McKee Road extension is shown on the UNCC CTP map in **Appendix A.1 Map 6**. The Matthews Auto Center development plan can be seen in **Appendix A.1 Map 7**.

2.4 Current Programs & Events

The Carolina Thread Trail is a regional greenway network in the conceptual stage that will eventually reach 15 counties and over 2 million people with a series of multi-purpose trails. The Thread Trail will link municipalities and attractions throughout the region by connecting smaller trail systems throughout its bi-state area. Stallings is located along the Thread's conceptual alignment (See **Appendix A.5**).

CAROLINA THREAD TRAIL
Weaving Communities Together

As a member government of the **Mecklenburg-Union Metropolitan Planning Organization** (MUMPO), Stallings participates in transportation planning initiatives for the region, and enjoys the benefits and resources available through MUMPO.

Homeowners Associations throughout Town meet to discuss and plan lighting and landscaping that will encourage pedestrian outdoor activity in their communities.

CEM Corporation has a 1/5th mile trail loop used regularly by many of its employees. The company provides rewards for the number of miles walked.

Stallings is home to a number of events that draw crowds of participants on foot, or provide assistance to pedestrians. Here are some examples:

- **Family Night in the Park** is an annual free event hosted by the Stallings' Fire Department. Food is provided, along with rides and other activities primarily for children. Thousands of people attend, including many from outside Stallings. The event takes place in Stallings Municipal Park across from Town Hall.

- **Movie Nights in the Park** occurs during the summer months. Many show goers from the community bring their dinners and settle down for an evening of outdoor entertainment.

- **The YMCA Siskey Family Branch** offers after school programs with shuttle services to schools in the Stallings vicinity.

- **Earth Day** is recognized annually at Stallings Park with live concerts, onsite radiobroadcasts, food, organizational booths, recycling collection, political campaigning, and various kid activities. Neighborhoods compete for best participation and display in the sidewalk parade. Associated events include environmental documentary films, an essay contest on environmental issues with cash prizes, and a T-shirt design contest.

- The **Stallings Police Department** conducts various safety-related programs, such as **National Night Out**, a program that focuses on crime prevention.

2.5 Unique Opportunities

As it exists today, Stallings offers a number of features that make the Town an inviting place for pedestrians. Each of these features deserves a 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.

1. **Explosive growth in the area**
   Stallings is located in western Union County, the fastest growing county in the state. Its phenomenal rate of growth 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 might wish to see could be accomplished through private development as it occurs. Through Ordinance requirements, 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.

2. **Existing sidewalk network**
   Many of the Town's retail, civic and recreational destinations are connected with sidewalks that line the main streets. Newer subdivisions feature sidewalks on all their streets. This established centralized network provides a substantial core for a pedestrian system that could branch out to serve even more destinations.

3. **Additional greenway opportunities**
   The area has a network of creek beds and utility corridors that could provide opportunity for a system of greenways. This branching network could reach all parts of the community to form a viable system of alternative transportation to destination points throughout Town.

PART 3: RECOMMENDATIONS

Communities can employ a number of differing strategies in implementing pedestrian improvements depending on the philosophy of its leadership. They 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 the second two require. But Stallings has indicated a commitment to finding ways to integrate pedestrian needs into its comprehensive planning efforts through this Pedestrian Plan process, so that both current and future pedestrian needs are addressed. Additionally, policy tools are put 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 Stallings 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 "best" pedestrian facilities actually ever get used.

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 Stallings, 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 Stallings will find serving pedestrian needs easier if its policies, plans, and ordinances 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.**
   The PNC should represent a wide variety of pedestrian interests and populations in the Town. Members should include representatives of the business community, long-time residents, 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 also ensure that citizens are alerted of planning efforts, changes in facilities, and upcoming construction.

   Implementation Strategy: The Stallings Town Council shall appoint PNC members and invest them with the authority and charge to pursue the Pedestrian Plan strategies.

2. **Develop a Comprehensive Transportation Plan to meet Town planning goals.**
   Coordinate with NCDOT and the Mecklenburg-Union MPO to ensure that the CTP – as well as all future roadway plans, projects, and priorities for Stallings – account for the effects of the various scenarios of the Monroe Bypass alignment, and are consistent with the adopted Pedestrian Plan (or that the Pedestrian Plan is amended if needed).

   Implementation Strategy: The PNC shall ensure adequate distribution and reference to the Pedestrian Plan in decision-making processes by Town Staff, Council Members, Planning Board, MUMPO and NCDOT.

3. **Implement the Stallings Land Use Plan.**
   A clear vision for a community was adopted July 24, 2006 in the form of the Town's Land Use Plan. The Plan describes how and where the community should grow and develop in

the future. In the Plan, goals and the specific strategies for achieving them are clearly stated. Many of those goals have direct bearing on improving the walkability of the Town.

NC planning law now calls for 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:** Begin the process of making the recommended amendments to the Town Ordinance. Evaluate the nodes designated in the Pedestrian Plan's **Comprehensive System Plan** as areas called for in the Land Use Plan for concentrated centers of development. Determine the geographic boundaries of each node and define those boundaries on a revised land use map. Follow additional implementation strategies prescribed in the Land Use Plan.

4. **Work with neighboring municipalities and Union County on areas outside of Stallings's incorporated limits.**
   Stallings can directly determine what happens within its corporate limits, but not what happens just over the line. Union County's Land Use Plan discourages strip commercial 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. The County Plan also expresses the desire to see subdivision Ordinances within Union County provide more local access opportunities for residents to local shopping without reliance upon main collector roads. The County's vision meshes well with Stallings', 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.

   > **Implementation Strategy:** The PNC shall continue to monitor land development near Stallings, and coordinate with the neighboring municipalities, the Union County Planning Department, and the Carolina Thread Trail.

5. **Develop greenway trails:** Many of the links recommended in the Pedestrian Plan are by way of proposed greenways. Opportunities for such off-road trails abound in Stallings. Creek lands, particularly those classified as floodways, and properties within utility right-of-ways and existing parks can be most readily utilized.

   > **Implementation Strategy:** The Town shall ensure that all new development respects designated corridors for greenways. The PNC shall work with the Carolina Thread Trail organization to develop greenways within Stallings that can eventually serve as part of this larger regional network. Steps for such greenway development have been outlined and are located in **Appendix A.5** of the Pedestrian Plan.

6. Enact Ordinance changes

Though the Stallings Ordinance reflects a heightened sensitivity to pedestrian-oriented development, specific revisions to the Stallings Ordinance could help achieve the expressed pedestrian vision of the Town.

Implementation Strategy: Examine the following list of recommended ordinance modifications (in addition to those recommended in the 2006 Land Use Plan) that would positively impact the pedestrian quality of the Town. Then select a qualified planning consultant to guide the Town through the ordinance revision process.

RECOMMENDED PEDESTRIAN-ORIENTED ORDINANCE MODIFICATIONS:

The following recommendations are specifically intended to meet the stated goals of the Pedestrian Plan (Section 1.3). These procedures and ordinance modifications are in keeping with the strategies described in the Stallings 2006 Land Use Plan, that were intended to meet similar objectives.

GOAL 1: Establish concentrated nodes of mixed-use development.
(See Section 2.2 Issue 1, 9 & 10)

STRATEGY:

1. Develop a map of the nodes with the boundaries of each node clearly defined. Ideally, each node should be based upon a ¼ mile radius (= 5 minute walking distance). For Node description and locations, see the Pedestrian Plan **Section 2.1 2. ORIGIN-DESTINATION POINTS** and the **Comprehensive System Plan**.
2. Adopt the node map and establish it in the ordinance under Title XV: Land Usage, as has been done for the Monroe Road Corridor Overlay District in **Section 152.089(A).** Create a new ordinance section addressing nodes.
3. Apply Downtown Overlay District (DOD) in **Section 152.088**, and Monroe Road Corridor Overlay District (COD) standards in **Section 152.089** to all nodes and make appropriate related revisions to the DOD and COD sections. Consider the standards outlined in *The 13 Points of Pedestrian Oriented Development* in **Appendix A.3**.

GOAL 2: Accentuate Town Identity
(See Section 2.2 Issue 6, 7 & 8)

STRATEGY A:

1. Select a qualified landscape architect to design a signature landscape to be used in the central intersection of each node, and at the intersection of US 74 with Stallings Road. Design should include signature planting palette and design, pavement palette and design, signage and monumentation.
2. Adopt the landscape design with provisions for minor adaptive changes to be made to the generic design to fit the individual constraints of each node's central intersection. The Downtown node signature landscape should have additional, accentuated features to impart visual hierarchy. The signature landscape at the

intersection of US 74 should be exaggerated to fit the scale and designated speed of the highway corridor, and incorporate features appropriate to that setting.

3. Designate the central intersection of each node, and the intersection of US 74 intersection, as a special landscape zone in the Land Usage Ordinance node section, citing the adopted landscape plan.
4. The ordinance shall require any new development on affected land to include the signature landscape features. The Town may implement the signature landscape plan on parcels it considers will not be developed or re-developed within the preferred timeframe. The Town shall be responsible for permitting and constructing improvements within the NCDOT right-of-way.

STRATEGY B:
Create a "gateway" feature with the proposed McKee Road extension flyover at Independence Boulevard. The gateway should feature prominent visual elements associated with the Town of Stallings. Coordinate improvements with Hendrick Automotive Group and the Town of Matthews. See Matthews Auto Center Site Illustrative Plan, **Appendix A.1.7**.

GOAL 3: Improve pedestrian connectivity throughout Town.

STRATEGY A: Limit the use of cul-de-sacs in new subdivision design.
(See Section 2.2 Issues 2 & 3)

1. Decrease maximum cul-de-sac length. Tighter restrictions upon length will help to diminish reliance upon cul-de-sacs in residential subdivision design while still allowing their use where necessary. Revise **Section 151.061(M)** to decrease the maximum length of dead-end streets from 500 feet in length to 300 feet. The revised maximum will allow seven lots to occupy a single cul-de-sac in a R-12 and R-15 zone.
2. Limit the percentage of total street length within a subdivision that can be within cul-de-sacs.
3. Institute a connectivity ratio for all new subdivisions that uses an established mathematical standard for street connections both within the subdivision and connections to other streets and properties at the subdivision periphery.

STRATEGY B: Decrease maximum block length.
(See Section 2.2 Issue 4)
Shorter blocks will increase opportunities for route selection and decrease vehicular speeds. Revise **Section 151.062(A).** Set the maximum block length at 800'. The revised maximum will permit 10 lots to occupy one side of a block in an R-12 or R-15 zone. Limit individual block lengths rather than overall block perimeter.

STRATEGY C: Provide pedestrian transportation links through trails.
(See Section 2.2 Issue 7)
In **Section 151.081 (A)(4)(d)** require that land dedicated for trails in subdivisions, in addition to serving recreation and open space needs of residents of the subdivision, help meet transportation goals of the Town by following the specific alignments or intent described in the adopted Pedestrian Plan with its **Comprehensive System Plan**. State

further that local trails should connect with local streets, as well as with neighboring greenways and with county and regional networks where possible.

STRATEGY D:
Provide pedestrian connection to and across the proposed McKee Road extension flyover at Independence Boulevard. Coordinate improvements with Hendrick Automotive Group and the Town of Matthews. See Matthews Auto Center Site Illustrative Plan, **Appendix A.1.7**

GOAL 4: Create a safe and comfortable pedestrian system.
(See Section 2.2 Issues 5, 6, 7 &8)
STRATEGY: Locate pedestrian facilities according to the Pedestrian Plan.

1. Require DOD and COD standards for pedestrian facilities within nodes.
2. Revise **Section 152.113** to require sidewalks, trails and associated facilities with minimum deviation from alignments shown in the **Comprehensive System Plan**, to be built according to the **Facility Standards and Guidelines**.

GOAL 5: Provide more outdoor recreational opportunities.
(See Section 2.2 Issue 7)
STRATEGY: Increase opportunities to access existing and future recreational facilities. Amend the Ordinance as described above and according to the 2006 Land Use Plan to aid access to and promote the use of existing parks and future open space, and to develop new trails for walkers, runners, and cyclists.

GOAL 6: Use the Pedestrian Plan to guide decisions.

STRATEGY: Reference the adopted Pedestrian Plan with its **Comprehensive System Plan** throughout the Ordinance where crosswalk, sidewalk, greenway and other pedestrian amenities are described or required.

3.2 Recommended Programs

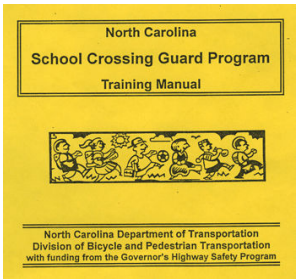
Pedestrian facilities, old or new, will receive greater use if certain programs are in place to promote and encourage pedestrian activity, especially for people who are not accustomed to walking much. In addition to current events and programs hosted within the Town, the following programs are recommended.

The Stallings Striders
When the proposed trails are complete, they will provide opportunities for the community to meet, socialize and exercise. As part of initial promotions for particular trails, the "Stallings Striders" would provide an organized opportunity for 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 also be available to initial participants, along with area retail coupons. The Stallings Striders could also hold events like Special Olympics and charity relay races, walkathons and marathons. 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.

NCDOT's Crossing Guard Training
NCDOT's Division of Bicycle and Pedestrian Transportation (DBPT) has developed a program to train local law enforcement officers who are responsible for training school crossing guards in their respective jurisdictions. Funded by the Governor's Highway Safety Program, this initiative arose from the need to reduce crashes in school zones. The one-day course includes a



morning session devoted to understanding laws about pedestrians and school crossing guards and examining the Instructor's Manual, which contains everything a person will need to conduct a training course for guards themselves. The afternoon session involves actual practice crossing students at a simulated intersection.

Law enforcement agencies interested in participating in the School Crossing Guard Training Program should contact the Division of Bicycle and Pedestrian Transportation by phone, (919) 807-0777 or by email, at bikeped_transportation@ncdot.gov. To view the Instructor's Manual, see:

http://www.ncdot.org/transit/bicycle/safety/programs_initiatives/crossing_manual.html

The AAA School Safety Patrol program

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. Under North Carolina law (NCGS 20-114.1), crossing guards are considered traffic control officers and are, therefore, subject to the same training requirements as other traffic control officers. 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, 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 Stallings, contact the DBPT at 919/733-2804 or bikeped_transportation@ncdot.gov.

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 need. 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 Stallings Municipal Park, area restaurants, or open spaces provided within new communities. By offering free Internet service, the Town could attract more tourists. 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 Stallings 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. Properly designed crosswalks will facilitate safer street crossing opportunities for pedestrians, and provide a secondary pedestrian benefit of calming traffic. In this Plan, crosswalk improvements are proposed at strategic locations where increased pedestrian activity, linked to existing or proposed sidewalks and destinations, encounters the greatest potential conflict with vehicular traffic.

Each proposed crosswalk location should be evaluated individually in order to determine the most appropriate set of improvements for that location. In this Plan, proposed crosswalks have been grouped into two categories: *Enhanced Intersections* and *Crossings*. Both types are described below with a list of potential improvements to be evaluated for each location on a site-by-site basis. Each of the listed facilities is described in the **Facility Standards and Guidelines** section of the Plan Appendix.

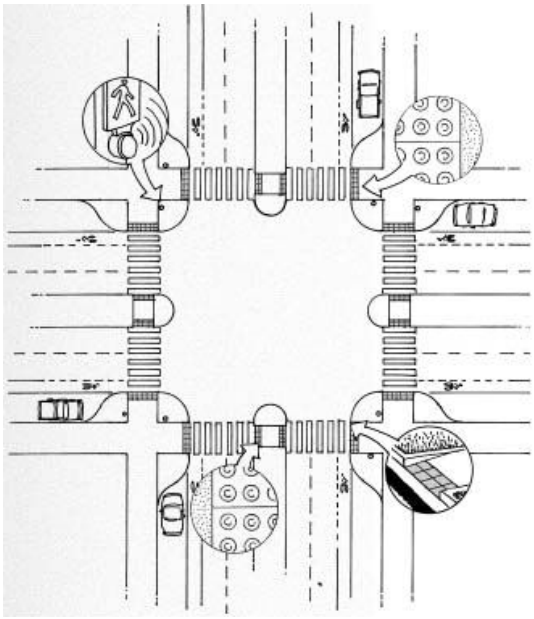
1.) "Enhanced Intersections" are existing or proposed intersections of major streets (shown as Longitudinal or Transverse Roads on the **Existing Conditions Map**). In addition to traffic signal lights, each of these intersections should be equipped with striped crosswalks on all four legs of the intersection, countdown pedestrian signals and adequate pedestrian warning signage.

Additional improvements to consider for each Enhanced Intersection include the following:

- ❑ Audible signals
- ❑ Center raised medians or other pedestrian refuge islands
- ❑ Advanced stop bars
- ❑ Restrict right turns on red

2.) "Crossings" are indicated in this Plan at specific locations throughout the street network. These crosswalks should be striped at all legs of each intersection or midblock crossing, and provided with adequate pedestrian warning signage. Additional improvements recommended for consideration for each crosswalk include the following:

- ❑ Accessible pedestrian–activated crossing signals
- ❑ Overhead warning signals
- ❑ Countdown signals
- ❑ Audible signals
- ❑ In-pavement flashing warning light systems
- ❑ Motion activated warning systems or other pedestrian detectors
- ❑ Center raised medians or other refuge islands
- ❑ Raised crosswalks
- ❑ Curb radius reductions
- ❑ Curb extensions
- ❑ Advanced stop bars
- ❑ Restrict right turns on red
- ❑ Reduce traffic speed



Typical crosswalk improvements

Contact NCDOT Division 10 and formerly request a site visit to all recommended crosswalk locations and request evaluation of these crosswalk sites with respect to each of the improvements listed above.

Spot improvements to existing sidewalks in accordance with the Plan's priorities. Sidewalk conditions to be considered for improvements may include:

a. Pavement condition and type
b. Path width
c. Lighting
d. Drainage
e. Removal of 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. Many of the Pedestrian Plan's recommended sidewalk projects that are to be constructed as road improvements are implemented by NCDOT, such as the Stallings Road widening plan (TIP # U-3825), or the McKee Road Extension. As such new roads and accompanying sidewalks are developed, utilize opportunities to link the sidewalks to nearby existing or proposed sidewalks or trails to improve overall connectivity.

IMPLEMENTATION STRATEGIES

Each of the specific strategies listed below are interdependent steps. Each will help put the pieces in place necessary for effectively building pedestrian projects and meeting the vision set forth in the Pedestrian Plan. These strategies should be addressed simultaneously to the greatest degree possible.

- **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 Ordinance 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 Stallings develop as a more walkable community as a whole.

- **Initiate right-of-way agreements for sidewalks, trails and other improvements.** Contact NCDOT Division 10, utility companies, and individual parcel owners to initiate acquisition of right-of-way required to initiate arrangements for greenway and trail development indicated in the **Comprehensive System Plan**. Projects are described in the **Individual Project Identification and Priority List**. 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 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.

- **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 changing traffic demands, individual parcel sales, development trends, and employment opportunities. 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**, previously stated in PART I but repeated here in shortened form:

1. Create concentrated nodes of activity
2. Accentuate Town identity
3. Improve pedestrian connectivity
4. Create a safe and comfortable pedestrian system
5. Provide more outdoor recreational opportunities

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 the above goals and criteria. The public rated the projects during the second public input event, April 19, 2008. The steering committee reviewed the public response and the 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 10 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, trash cans, etc. All trail projects shall include sufficient trail lighting, any necessary landscaping, appropriately placed pedestrian facilities, signage and trailheads.

PRIORITY LIST OF STALLINGS 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

CROSSWALK PROJECTS

Coordinate all projects with NCDOT. Contact NCDOT Division 10 and request assessment for project improvements. See General Project Recommendations in **Section 3.3** for a list of facility elements to be considered in each project.

C-1 Enhanced Intersection at Stallings Rd., Old Monroe Rd., and Potter Rd.
Improve pedestrian safety and accessibility at the Town's central intersection at the center of the Downtown Node. Include four "porkchop" style crossing islands, or medians. Coordinate improvements with Stallings Rd. widening (TIP# U-3825).

C-2 Enhanced Intersection at Potter Rd. and Pleasant Plains Rd.
Improve pedestrian crossing opportunities at this prominent intersection within the Downtown Overlay District. Requires additional sidewalk, curb and gutter, and minor road repair. Coordinate with **Pleasant Plains Road sidewalk project S-2**.

C-3 Crossing at Stevens Mill Rd. and Mill House Ln.
Provide pedestrian-activated crossing, within the Stevens Mill Node, to connect Stevens Mill Shopping Center to neighborhoods north of Stevens Mill Rd. Provide sidewalk connection from crossing to existing sidewalk on south side of Stevens Mill Road.

C-4 Enhanced Intersection at Idlewild Rd. and Stevens Mill Rd.
Provide safe pedestrian crossing opportunities at the center of the Idlewild Node. Coordinate improvements with development of neighboring parcels.

C-5 Enhanced Intersection at Stallings Rd. and Stevens Mill Rd.
Provide safe pedestrian crossing opportunities at the center of the Stallings School Node. Coordinate improvements with Stallings Elementary School and the Monroe Bypass project.

C-6 Enhanced Intersection at Potter Rd. and Chestnut Ln.
Provide safe pedestrian crossing opportunities at the center of the Chestnut Node. Coordinate improvements with development of the Grove and neighboring parcels.

C-7 Enhanced Intersection at Stallings Rd. and US 74.
Provide safe pedestrian crossing opportunities to improve the pedestrian connection of the north and south sides of Town. Coordinate improvements with Monroe Bypass project.

C-8 Crossing at Stallings Rd. and Community Park Dr.
Provide a safe pedestrian crossing within the Downtown Node to connect Stallings Community Park to the downtown area north of Stallings Rd. Coordinate improvements with Stallings Rd. widening (TIP# U-3825).

C-9 Crossing at Francis Beatty State Park entrance on Weddington Rd.
Provide a safe pedestrian connection from Stallings to Francis Beatty State Park.

C-10 Crossing at Antioch Church Rd. on Weddington-Matthews Rd.
Provide a safe pedestrian crossing at the center of the Antioch Node. Improvements at proposed intersection are to be concurrent with realignment of Antioch Church Road.

C-11 Crossing at Lawyers Rd., Hawthorne Dr. and Emerald Lake Dr.
Provide a safe pedestrian crossing for the communities near Stevens Mill Node.

C-12 Enhanced Intersection at Lawyers Rd. and Stevens Mill Rd.
Improve pedestrian safety and accessibility at the primary intersection of the Stevens Mill Node.

C-13 Crossing at Stallings Rd. and Rail Road
Provide a safe pedestrian crossing along Stallings Rd. to serve the primary industrial employment destinations and adjacent businesses. Coordinate improvements with Stallings Rd. widening (TIP# U-3825).

C-14 Crossing at Potters Rd., Gainsborough Dr. and Whetstone Dr.
Provide a safe pedestrian crossing to serve communities in the Chestnut Node.

C-15 Crossing at Stevens Mill Rd. and Whetstone Dr.
Provide a safe pedestrian crossing at a prominent intersection of the Stallings School Node.

C-16 Crossing at Weddington Rd. and Chestnut Ln.
Provide a safe pedestrian crossing at a prominent intersection of the Antioch Node. Coordinate crosswalk improvements with other intersection improvements.

C-17 Crossing of Stallings Rd. at North Fork Creek (North branch)
Provide a safe pedestrian crossing for the **North Fork Trail** (**project T-3**) at Stallings Road near Scarlet Street within the north end of Stallings School Node.

C-18 Crossing of Stallings Rd. at North Fork Creek (South branch)
Provide a safe pedestrian crossing for the **North Fork Trail** (**project T-3**) at Stallings Road at the south end of the Stallings School Node.

C-19 Crossing at Stevens Mill Rd. and Willowbrook Dr.
Provide safe pedestrian crossing opportunities within the Stevens Mill Node to connect Stevens Mill Shopping Center to neighborhoods north of Stevens Mill Rd.

SIDEWALK PROJECTS

All projects in NCDOT right-of-way should be coordinated with NCDOT. Contact NCDOT Division 10 and request assessment for project improvements. Projects involving private land will require right-of-way or easement acquisition from individual parcel owners to be identified. Coordinate improvements with development of neighboring parcels. Provide appropriate lighting for all sidewalks and associated striping and warning signage where necessary. Sidewalks adjacent to roads will require a planting strip according to **Facility Standards**. In some cases, curb and gutter and minor road repair will also be necessary.

S-1 **Ridge Rd.** (800' sidewalk facilities)
Extend pedestrian linkage in the Downtown Node and the Downtown Overlay District (DOD). Continue existing sidewalk improvements, including planting strip, lighting, street trees and curb and gutter, along east side of Ridge Rd. to Anne St.

S-2 **Pleasant Plains Rd.** (380' sidewalk facilities with curb and gutter)
Improve pedestrian and vehicular safety conditions along Pleasant Plains Drive westward along the north side of Pleasant Plains Rd. within the Downtown Node and the DOD.

1.) Install curb and gutter, planting strips, sidewalks and associated landscaping along the south and east sides of Stallings Quick Stop retail complex circulation area with single entranceways (curb cuts) to Pleasant Plains Rd. and Potter Rd. at maximum offsets from the intersection.
2.) Relocate obstructions to sidewalks as required.

S-3 **Stevens Mill Rd., part 1** (8,200' sidewalk facilities, including bridge widening)
Connect existing sidewalks along south side of Stevens Mill Road, from Greenway Court to Idlewild Road to existing sidewalk at Fairhaven Park. This will create a continuous sidewalk link from Fairhaven Park to Stevens Mill Shopping Center and link the Stevens Mill Node to Idlewild Node.

S-4 **Idlewild Rd., south side** (2,740' sidewalk facilities)
Provide sidewalk link from Idlewild Node at Stevens Mill Rd. to Idlewild Market Shopping Center complex, along south side of Idlewild Rd. Terminate sidewalk at adjacent gas station.

S-5 **Stallings Rd., part 1** (4,700' sidewalk facilities)
Connect existing sidewalk along Stallings Road south of US 74 (at **project C-7**), and **North Fork Trail** (**project T-3**) to Stevens Mill Rd., along east side of Stallings Rd. This will create a continuous sidewalk link from Stevens Mill Rd. to St Johns Road and connect the Stallings School Node to the Downtown Node.

S-6 **Weddington Rd.** (2,700' sidewalk facilities)
Connect Antioch Node to the Francis Beatty Park entrance, the Strawberry community, and **Twelve-Mile Creek Trail** (**project T-1**). Provide pedestrian link along Matthews-Weddington Rd. from proposed realignment of Antioch Church Rd. (at **project C-10**), to crosswalk at Chestnut Ln. (**project C-16**), and connect to existing sidewalk on Matthews Weddington Rd. Provide additional sidewalk connection along Chestnut Ln. to meet existing sidewalk. Coordinate project with Town of Weddington, and Union County in unincorporated areas.

S-7 **Lawyers Rd.** (4,650' sidewalk facilities)
Connect residential neighborhoods to Stevens Mill Node. Provide sidewalk facilities along south side of Lawyers Rd. from Goldcrest Dr and Castlemain Dr. to crosswalk at Hawthorne Dr. and Emerald Lake Dr. (**project C-11**), to existing sidewalk on Lawyers Rd. Coordinate project with Union County in unincorporated area.

S-8 **Stallings Rd., part 2** (2,650' sidewalk facilities)
Connect Stallings School Node to nearby neighborhoods, **North Fork Trail** (**project T-3**) and **Crooked Creek Trail** (**project T-4**). Provide sidewalk facilities along east side of Stallings Rd. from crosswalk at Stevens Mill Rd. (**project C-5**), crossing the north branch of North Fork Creek (at **project C-17**) to Brook Path Dr.

S-9 **Stevens Mill Rd., part 2** (2,100' sidewalk facilities)
Connect the Stallings School Node to Fairhaven Park, the **North Fork Trail** (**project T-3**), adjacent residential areas, and the existing Stevens Mill sidewalk. Provide sidewalk facilities along the north side of Stevens Mill Rd. from Blackberry Ln. to crosswalk at Stallings Rd. (**project C-5**). Continue sidewalk along the south side of Stevens Mill Rd. to crosswalk at Oak Spring Rd. (**project C-9**), crossing the north branch of North Fork Creek and **North Fork Trail** to existing sidewalk at Fairhaven Park. This sidewalk will complete the link from the Stallings School Node to Idlewild Node.

S-10 **Crooked Creek Crossing** (450' sidewalk facilities and pedestrian bridge)
Connect existing sidewalk facilities along the south side of Stevens Mill Rd. at Fairhaven Park.

S-11 **Idlewild Rd., north side** (3,100' sidewalk facilities)
Provide pedestrian link from Idlewild Node at Stevens Mill Rd. to Boyd Funderburk Dr. at county line, along north side of Idlewild Rd.

S-12 **Potter Rd. and Chestnut Ln., north side** (1,100' sidewalk facilities)
Continue existing Potters Rd. sidewalk around to Chestnut Ln. to connect to **Twelve-Mile Creek Trail** (**project T-1**), serve the Chestnut Node, and connect to adjacent community.

S-13 **Smith Farm Rd., north side** (4,600' sidewalk facilities)
Provide pedestrian link from sidewalk at Stallings Rd. to Town limit near Matthews-Indian Trail Rd. with the goal of connecting to Indian Trail sidewalk system.

TRAIL PROJECTS

Projects involving private land will require acquisition of right-of-way from individual parcel owners to be identified. Coordinate with new development, neighboring municipalities and Union County where trails leave Stallings municipal limits, with Union Power Company within their right-of-way, and with NCDOT road projects. Provide trailheads and warning signage at all road crossings, lighting, additional signage and other trail facilities where appropriate. Meet all local ordinance buffer requirements and state wetlands requirements. Construct all facilities in accordance with **Facility Standards**.

T-1 **Twelve-Mile Creek Trail** (16,100'/3.0 miles trail facilities)

Connect the Downtown Node to residential neighborhoods, Callonwood Park, Francis Beatty Park and the Antioch Node, and the Chestnut Node. Begin trail at Pleasant Plains Rd. on corner parcel across from Stallings Quick Stop. Head south following Davis Mine Creek, past retention ponds. Head west, crossing West Fork Creek, and pass between Arlington Downs and Springhill subdivisions. Follow Twelve-Mile Creek Trail – West Fork into Callonwood subdivision to Callonwood Park and enter floodway. Provide trailheads to Springhill Rd. at point where creek intersects, and at Woodglen Ln.

1.) Continue trail, following floodway southward into Callonwood South subdivision and Indian Trail (running east of and parallel to Airnghill Ln. and Revelwood Dr.) to Chestnut Ln. Follow floodway on north side of Chestnut Ln. through Revelwood subdivision. Provide trailhead onto Revelwood Dr. Cross into Union County and head north along floodway around Fair Forest subdivision, remaining in Union County. Provide trailhead onto Fairforest Dr. Enter Union Power right-of-way and turn south. Cross the creek and re-enter Stallings to meet existing sidewalk crossing from Strawberry Rd. to Yarrow St. Provide trailhead at sidewalk. Continue trail south to meet existing sidewalk on Chestnut Ln. with trailhead.

2.) Provide branch south of Callonwood Park, along branch at Stallings town limit, eastward to terminus of Gainsborough Drive at Craftsman Ridge. Place trailhead at T-intersection.

3.) Provide additional branch at point where town limit turns south from creek branch, then east again to parallel Chestnut Ln. Cross St. Johns Ave. and then turn south at creek to meet Chestnut Ln. and provide trailhead.

T-2 **Goose Creek Trail** (6000'/1.1 miles trail facilities)

Connect the Stevens Mill Node to residential neighborhoods and Fairfield Plantation Park. Begin trail in island of Union County jurisdiction where Lawyers Rd. crosses Goose Creek. Provide trailhead at Lawyers Rd. Follow creek south into Stallings and Fairfield subdivision. Enter floodway and cross Lake Dr., providing trailhead. Upgrade existing private trail to **Facility Standards**. Follow existing trail route along Goose Creek into Fairfield Plantation Park and on to Country Woods subdivision. Provide trailhead at Hawthorne Dr. Provide additional trailheads at Brookgreen Terrace, Briarwood Ct., un-named cul-de-sac in-between, and from additional future streets constructed adjacent to trail and Goose Creek tributaries.

T-3 **North Fork Trail** (20,500'/3.9 total miles trail facilities)
Connect the Stallings School Node to residential neighborhoods and Fairhaven Park, existing sidewalks, and areas south of US 74. Begin trail in Madison Ridge subdivision with trailheads at Barnard Castle Ln. and Lexington Pointe Pl. Follow creek eastward to Stallings Rd. Provide trailheads at crossing (**project C-17**). Continue eastward along creek to floodway and Stevens Mill Rd. Provide trailheads at Stevens Mill Rd. along with warning signage, pavement striping and "Cross Alert"-type system (see **Facility Standards**). Provide trailhead at Fairhaven Park. Continue east to North Fork main branch and turn south (upstream). Exit and immediately re-enter Stallings town limits heading northwest to intersect Stallings road at crosswalk (**project C-18**). Provide trailheads at Stallings Rd. and "Cross Alert"-type system. Continue westward in floodway to US 74. Coordinate US 74 crossing with McKee Road extension project. South of US 74, follow both tributaries and terminate trails at Stallings Rd. near water tower, and at Matthews-Indian Trail Rd. Provide trailheads at both termini. Provide additional trail spurs:

1.) Eastward along floodway in Fairfield subdivision to Crooked Creek, terminating at Yellow Daisy Drive. Provide trailhead (2000').
2.) Just north of US 74 from main trail at branch approximately 1000' north of US 74, to Stallings Rd., 600' north of US 74. Provide trailhead at Stallings Rd. and "Cross Alert"-type system to reach sidewalk on east side (1300').

T-4 **Crooked Creek Trail** (7,200'/1.4 total miles trail facilities)
Connect major retail center with residential neighborhoods, Stallings School Node, and existing and proposed sidewalks.

1.) Begin trail at Idlewild Market. Provide signage from primary pedestrian circulation routes within retail center to trailhead. Connect trail to Crooked Creek. Head southward to floodway. Pass into Union County jurisdiction and continue back into Stallings town limit. Continue to Stevens Mill Road. Provide trailhead at Stevens Mill Rd. and "Cross Alert"-type system to reach sidewalk on east side (3300').
2.) Begin branch trail across street from terminus of proposed sidewalk on Stallings Rd. (**project S-8**). Follow Stallings Rd. north to Union County jurisdiction. Follow line to floodway of Crooked Creek. Follow creek downstream to trail (3600'). Provide trailhead at terminus of Lawrence Daniel Dr.

T-5 **Francis Beatty Trail** (6,200'/1.2 total miles trail facilities)
Provide connections within the Antioch Node to existing Francis Beatty Park trails and proposed Matthews-Weddington Rd. sidewalk (**project C-16**), thereby linking the Antioch Node to the Chestnut Node and the Downtown Node. Begin trail at proposed realigned intersection of Antioch Church Rd. and Weddington-Matthews Rd. (**project C-10**) in Town of Weddington. Follow creek northwestward into Stallings to edge of Francis Beatty Park. Follow creek along park edge and southeastward to crosswalk at Chestnut Ln. (**project C-16**). Loop trail back along west side of Matthews-Weddington Rd. to starting point.

3.5 Sample Project Cost Estimates

The price of completing facilities is a moving target, involving many variables, which may include land purchase, site preparation, design, materials, and labor. The cost of each of these elements may vary widely over time. General costs for facility elements are listed in **Section 4.1**. Utilizing those cost estimates, the total cost of a sampling of five of the top priority projects for Stallings, listed in **Section 3.4**, are provided below.

Stallings Sample Project Cost Estimates

Project	Elements	Unit Cost	Unit	Qty.	Total Cost
C-1	Countdown ped. signals	$750	each	8	$6,000
	ped. islands	$10,000	each	4	$40,000
	ladder striping	$300	each	4	$1,200
	warning signage	$250	each	4	$1,000
					$48,200
C-3	Ped. activated warning system	$30,000	each	1	$30,000
	ladder striping	$300	each	1	$300
	warning signage	$250	each	2	$500
	sidewalk	$130	LF	36	$4,680
					$35,480
S-1	5' sidewalk	$130	LF	800	$104,000
	large street trees at 50' O.C.	$350	each	15	$5,250
	curb & gutter	$15	LF	800	$12,000
	TOTAL				**$121,250**
S-2	5' sidewalk	$130	LF	380	$49,400
	curb & gutter (around islands)	$15	LF	800	$12,000
	large street trees at 50' O.C.	$350	each	3	$1,050
	small street trees at 35' O.C.	$300	each	4	$1,200
	TOTAL				**$63,650**
T-1	10' wide crushed stone walkway	$25	LF	16,100	$402,500
	furniture	$600	each	16	$9,600
	signage	$250	each	20	$5,000
	trailheads	$1,000	each	8	$8,000
	TOTAL				**$425,100**

3.6 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.

3.7 Recommended Evaluation Process

As the Stallings 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 with the development of the Monroe Bypass, other road projects, and as more growth in the area occurs. 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: IMPLEMENTATION

4.1 General 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. Sidewalk and trail projects might also include changes to existing grades and necessitate alterations to drainage structures. Together these items are considered "project costs." In addition to the project costs, there are also ongoing expenses associated with the new facility, such as maintenance, security, promotion and other programs necessary for the initial and continued success of the facility.

The cost estimates provided below are provided only as a guide and are approximate. Prices are current for the time of this publication. Costs will vary with demand, fluctuating interest rates and inflation. Design, administration, materials, minor site preparation, labor and other project costs are factored in. Installation costs do not include right-of-way purchase, grading or utility relocation.

Trails

Surface Material (width)	**Costs per LF/per mile**	**Longevity**
Asphalt (10')	$135 / $700,000	7-20 years
2" w/6" base and 2' shoulders.		
Crushed stone walkway (10')	$15 - $25 / $80,000 - $130,000	7-10 years
Wood chips (10')	$14 - $20 / $ 75,000 - $105,000	1-3 years
Soil cement (10')	$14 - $22 / $ 75,000 - $115,000	5-7 years
Native soil (10')	$12 - $15 / $ 55,000 - $75,000	variable
Boardwalk (6' – 8')	$225 - $250 / $1.1 – $1.3 million	10-15 years
wood or recycled material		
Polyurethane track (8')	$22 / $110,000	13-15 years
or Rubberized running track		
Pedestrian Bridge (10')	$1200 per LF	variable

Total Cost of Resurfacing Trails

Concrete	$ 35 LF
Asphalt	$ 15 LF (per linear foot) ($ 8 LF to overlay w/ top coat)
Crushed Stone	$ 8 LF
Polyurethane track	$70,000/mile to re-spray after 6 years

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

Sidewalks

Surface Material (width)	**Costs per LF/per mile**	**Longevity**
Concrete sidewalk (5')	$130 / $685,000	20 years +

Includes grass strip and incidental obstacle removal.

Crosswalk Facility Sets

Components	**Cost Range**	**Typical Price**
"Enhanced" Intersection (4-way)		**$ 8,200 total**
▪ Countdown pedestrian signals	$5,200 - $6,200	$ 6,000
▪ Striping (4-way)	$400 - $1,200	$ 1,200
▪ Pedestrian warning signage	$800 - $1,200	$ 1,000
Minor 4-way "Crossings"		**$ 2,200 total**
▪ Striping (4-way)	$400 - $1,200	$ 1,200
▪ Pedestrian warning signage	$800 - $1,200	$ 1,000
Mid-block crossing		**$50,900 total**
▪ Midblock curb extensions	$5,000 - $30,000	$20,000
▪ Ped. activated warning system	$30,000 - $40,000	$30,000
▪ Striping (single)	$100 - $300	$ 300
▪ Pedestrian warning signage	$400 - $600	$ 600
Trail crossing (at street)		**$21,900 total**
▪ Motion activated warning	$18,400	$18,400
▪ Striping (single)	$100 - $300	$ 300
▪ Warning signage	$800 - $1,200	$ 1,200
▪ Trail head (both sides)	$2,000 - $3,000	$ 2,000

Cost estimates for typical Crosswalk Facility Sets do not include vehicular signalization, or other optional facilities recommended in **Section 3.3 – General Project Recommendations** and described further in **Appendix A.2.**

Crosswalk Facility Items

Crosswalks: approximate costs by paving style:		
Regular striped		$ 100
Ladder crosswalk		$ 300
Patterned concrete		$3,000
Raised		$3,000 - $10,000
Striping:	12-inch:	$1 per linear yard (LY)
	4-inch:	$10 K per mile, or $2 LF
		Maintenance costs vary with materials used.
Warning signage:		$200 to $300 per sign
Vehicular traffic signals		$40,000 to $200,000 per signalized intersection
Pedestrian countdown signals		$660 - $820 per signal
		$5,200 - $6,500 per intersection (4-way)
Pedestrian activated signals		
Cross Alert System		$18,400 for two-pole intersection
"HAWK" system, or similar		$40,000 per signal
In-pavement flashing warning light		$30,000 - $40,000 per crossing
Crossing Islands/Medians:		$10,000 to $30,000 for a raised curbed island with minimal landscaping.
Curb extensions:		$5,000 - 30,000 per corner or midblock section.

Costs vary with design and site conditions, particularly utilities, control boxes and drainage considerations. Special pavement, street furnishings and landscaping are recommended but contribute to costs.

Additional Facility Items

Concrete curb and gutter:	$15/LF
Curb inlets	$2000 per unit

Speed humps:	$2,000 per unit
Bike Racks:	$700 (10-12 bikes), includes installation
Bike Locker:	$2,000, includes installation
Trees:	$350/ large maturing tree, installed ($300 small)
Lighting:	$ 45/LF frontage
Street Furniture:	$600/bench and up.

Prices vary greatly according type of facility, brand, and level of customization.

General park facilities $ 25/SF

Construction of park or open space facilities on previously undeveloped land, with some furniture and amenities.

Cost Estimate Sources:

- **American Trails** - National Trails Training Partnership
  http://www.americantrails.org/resources/trailbuilding/AsphaltCO.html
- **Charlotte Department of Transportation**
  http://www.charmeck.org/Departments/Transportation/About+Us/Speed+Humps.htm
- **Fehr & Peers**
  http://www.trafficcalming.org/measures2.html
- **Jim Growney, FHWA**
  Emerging Technologies for Pedestrian Crosswalks
  http://www.nysphysicalactivity.org/site_beactiveenv/nybc/source_files/3_pedfac_improve/FHA_EmergTechPedXWalk.pdf
- **Town of Mooresville**
- **NCDOT Division of Bicycle and Pedestrian Transportation**
- **Pedestrian & Bicycle Information Center**
  walkinginfo.org & bicyclinginfo.org
- **Rails-To-Trails Conservancy** - "Trails For The 21st Century", 2001

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 usually provide only a portion of overall funding needs. The most successful strategy for a municipality to develop and improve its pedestrian system will involve an appropriate combination of all possible sources, public and private.

Local, state, federal, and private funding is available to support the planning, construction, right of way acquisition and maintenance of bicycle and pedestrian facilities. Available funding sources are related to a variety of purposes including transportation, water quality, hazard mitigation, recreation, air quality, wildlife protection, community health, and economic development. This section identifies a list of some of the bicycle and pedestrian facility funding opportunities available through federal, state, nonprofit and corporate sources. An important key to obtaining funding is for local governments to have adopted plans for greenway, bicycle, pedestrian or trail systems in place prior to making an application for funding.

Funding Allocated by State Agencies

Funding Opportunities Through NCDOT:

Bicycle and Pedestrian Independent Projects Funded Through the Transportation Improvement Program (TIP):
In North Carolina, the Department of Transportation, Division of Bicycle and Pedestrian Transportation (DBPT) manages the Transportation Improvement Program (TIP) selection process for bicycle and pedestrian projects.

Projects programmed into the TIP are independent projects – those that are not related to a scheduled highway project. Incidental projects – those related to a scheduled highway project – are handled through other funding sources described in this section.

A total of $6 million is annually set aside for the construction of bicycle improvements that are independent of scheduled highway projects in communities throughout the state. Eighty percent of these funds are from STP-Enhancement funds, while the State Highway Trust provides the remaining 20 percent of the funding.

Each year, the DBPT regularly sets aside a total of $200,000 of TIP funding for the department to fund projects such as training workshops, pedestrian safety and research projects, and other pedestrian needs statewide. Those interested in learning about training workshops, research and other opportunities should contact the DBPT for information.

A total of $5.3 million dollars of TIP funding is available for funding various bicycle and pedestrian independent projects, including the construction of multi-use trails, the striping of bicycle lanes, and the construction of paved shoulders, among other facilities. Prospective applicants are encouraged to contact the DBPT regarding funding assistance for bicycle and pedestrian projects.
For a detailed description of the TIP project selection process, visit:
http://www.ncdot.org/transit/bicycle/funding/funding_TIP.html.

Incidental Projects – Bicycle and pedestrian accommodations such as bike lanes, widened paved shoulders, sidewalks and bicycle-safe bridge design are frequently included as incidental features of highway projects. In addition, bicycle-safe drainage grates are a standard feature of all highway construction. Most bicycle and pedestrian safety accommodations built by NCDOT are included as part of scheduled highway improvement projects funded with a combination of National Highway System funds and State Highway Trust Funds.

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

Governor's Highway Safety Program (GHSP) – The mission of the GHSP is to promote highway safety awareness and reduce the number of traffic crashes in the state of North Carolina through the planning and execution of safety programs. GHSP funding is provided through an annual program, upon approval of specific project requests. Amounts of GHSP funds vary from year to year, according to the specific amounts requested. Communities may apply for a GHSP grant to be used as seed money to start a program to enhance highway safety. Once a grant is awarded, funding is provided on a reimbursement basis. Evidence of reductions in crashes, injuries, and fatalities is required. For information on applying for GHSP funding, visit: www.ncdot.org/programs/ghsp/.

Powell Bill Program

Annually, State street-aid (Powell Bill) allocations are made to municipalities that establish their eligibility and qualify as provided by statute. This program is designed to help municipalities maintain, repair, construct, reconstruct or widen local streets within their jurisdiction, or to plan, construct, and maintain bikeways or sidewalks along public streets and highways. Funding for this program is collected from fuel taxes. Funding amounts are based on population and mileage of town-maintained streets. For more information, visit www.ncdot.org/financial/fiscal/ExtAuditBranch/Powell_Bill/powellbill.html.

Transportation Enhancement Call for Projects, EU, NCDOT

The Enhancement Unit administers a portion of the enhancement funding set-aside through the Call for Projects process. In North Carolina the Enhancement Program is a federally

funded cost reimbursement program with a focus upon improving the transportation experience in and through local North Carolina communities either culturally, aesthetically, or environmentally. The program seeks to encourage diverse modes of travel, increase benefits to communities and to encourage citizen involvement. This is accomplished through the following twelve qualifying activities:

1. Bicycle and Pedestrian Facilities
2. Bicycle and Pedestrian Safety
3. Acquisition of Scenic Easements, Scenic or Historic Sites
4. Scenic or Historic Highway Programs (including tourist or welcome centers)
5. Landscaping and other Scenic Beautification
6. Historic Preservation
7. Rehabilitation of Historic Transportation Facilities
8. Preservation of Abandoned Rail Corridors
9. Control of Outdoor Advertising
10. Archaeological Planning and Research
11. Environmental Mitigation
12. Transportation Museums

Funds are allocated based on an equity formula approved by the Board of Transportation. The formula is applied at the county level and aggregated to the regional level. Available fund amount varies. In previous Calls, the funds available ranged from $10 million to $22 million.

The Call process has typically taken place on even numbered years or as specified by the Secretary of Transportation. However, in recent years, federal funding for the program has not been available. Find out more at: www.ncdot.org/financial/fiscal/Enhancement/

Bicycle and Pedestrian Planning Grant Initiative, managed by NCDOT, DBPT

To encourage the development of comprehensive local bicycle plans and pedestrian plans, the NCDOT Division of Bicycle and Pedestrian Transportation (DBPT) and the Transportation Planning Branch (TPB) have created a matching grant program to fund plan development. This program was initiated through a special allocation of funding approved by the North Carolina General Assembly in 2003 along with federal funds earmarked specifically for bicycle and pedestrian planning by the TPB. The planning grant program was launched in January 2004, and it is currently administered through NCDOT-DBPT and the Institute for Transportation Research and Education (ITRE) at NC State University. Over the past three grant cycles, 48 municipal plans have been selected and funded from 123 applicants. A total of $ 1,175,718 has been allocated. Funding was secured for 2007 at $400,000. Additional annual allocations will be sought for subsequent years. For more information, visit: www.itre.ncsu.edu/ptg/bikeped/ncdot/index.html

Safe Routes to School Program, managed by NCDOT, DBPT

The NCDOT Safe Routes to School Program is a federally funded program that was initiated by the passing of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) in 2005, which establishes a national SRTS program to distribute funding and institutional support to implement SRTS programs in

states and communities across the country. SRTS programs facilitate the planning, development, and implementation of projects and activities that will improve safety and reduce traffic, fuel consumption, and air pollution in the vicinity of schools. The Division of Bicycle and Pedestrian Transportation at NCDOT is charged with disseminating SRTS funding.

The state of North Carolina has been allocated $15 million in Safe Routes to School funding for fiscal years 2005 through 2009 for infrastructure or non-infrastructure projects. All proposed projects must relate to increasing walking or biking to and from an elementary or middle school. A typical non-infrastructure project could be an education or encouragement program to improve rates of walking and biking to school. An example of an infrastructure project is construction of sidewalks around a school. Infrastructure improvements under this program must be made within 2 miles of an elementary or middle school. The state requires the completion of a competitive application to apply for funding. For more information, visit www.ncdot.org/programs/safeRoutes/ or contact:

Leza Wright Mundt, AICP
Safe Routes to School Coordinator
Division of Bicycle and Pedestrian Transportation
1552 Mail Service Center
Raleigh, NC, 27699
Email: lwmundt@dot.state.nc.us
Phone: 919.807.0774
Fax: 919.807.076

The North Carolina Conservation Tax Credit (managed by NCDENR)

This program, managed by the North Carolina Department of Environment and Natural Resources (NCDENR), provides an incentive (in the form of an income tax credit) for landowners that donate interests in real property for conservation purposes. Property donations can be fee simple or in the form of conservation easements or bargain sale. The goal of this program is to manage stormwater, protect water supply watersheds, retain working farms and forests, and set-aside greenways for ecological communities, public trails, and wildlife corridors. Visit: www.enr.state.nc.us/conservationtaxcredit/

Land and Water Conservation Fund (LWCF)

The Land and Water Conservation Fund (LWCF) program is a reimbursable, 50/50 matching grants program to states for conservation and recreation purposes, and through the states to local governments to address "close to home" outdoor recreation needs. LWCF grants can be used by communities to build a trail within one park site, if the local government has fee-simple title to the park site. Grants for a maximum of $250,000 in LWCF assistance are awarded yearly to county governments, incorporated municipalities, public authorities and federally recognized Indian tribes. The local match may be provided with in-kind services or cash. The program's funding comes primarily from offshore oil and gas drilling receipts, with an authorized expenditure of $900 million each year. However, Congress generally appropriates only a small fraction of this amount. The allotted money for the year 2007 was $632,846.

The Land and Water Conservation Fund (LWCF) has historically been a primary funding source of the US Department of the Interior for outdoor recreation development and land acquisition by local governments and state agencies. In North Carolina, the program is administered by NCDENR. Since 1965, the LWCF program has built a permanent park legacy for present and future generations. In North Carolina alone, the LWCF program has provided more than $63 million in matching grants to protect land and support more than 800 state and local park projects. More than 37,000 acres have been acquired with LWCF assistance to establish a park legacy in our state. For more information, visit: http://ils.unc.edu/parkproject/lwcf/home1.html

NC Adopt-A-Trail Grant Program

This program, operated by the Trails Section of the NC Division of State Parks, offers annual grants to local governments to build, renovate, maintain, sign and map and create brochures for pedestrian trails. Grants are generally capped at about $5,000 per project and do not require a match. A total of $108,000 in Adopt-A-Trail money is awarded annually to government agencies. Applications are due during the month of February. For more information, go to: http://ils.unc.edu/parkproject/trails/grant.html.

Recreational Trails Program

The Recreational Trails Program (RTP) is a grant program funded by Congress with money from the federal gas taxes paid on fuel used by off-highway vehicles. This program's intent is to meet the trail and trail-related recreational needs identified by the Statewide Comprehensive Outdoor Recreation Plan. Grant applicants must be able contribute 20% of the project cost with cash or in-kind contributions. The program is managed by the State Trails Program, which is a section of the N.C. Division of Parks and Recreation.

The grant application is available and instruction handbook is available through the State Trails Program website at http://ils.unc.edu/parkproject/trails/home.html. Applications are due during the month of February. For more information, call (919) 715-8699.

North Carolina Parks and Recreation Trust Fund (PARTF)

This fund was established in 1994 by the North Carolina General Assembly and is administered by the Parks and Recreation Authority. Through this program, several million dollars each year are available to local governments to fund the acquisition, development and renovation of recreational areas. Applicable projects require a 50/50 match from the local government. Grants for a maximum of $500,000 are awarded yearly to county or municipal governments. The fund is fueled by money from the state's portion of the real estate deed transfer tax for property sold in North Carolina.

The trust fund is allocated three ways:

- **65%** to the state parks through the N.C. Division of Parks and Recreation
- **30%** as dollar-for dollar matching grants to local governments for parks and recreation
- **5%** for the Coastal and Estuarine Water Access Program

For information on how to apply, visit: www.partf.net/learn.html

Clean Water Management Trust Fund

North Carolina's Clean Water Management Trust Fund (CWMTF) was established in 1996 and has become one of the largest sources of money in North Carolina for land and water protection. At the end of each fiscal year, 6.5 percent of the unreserved credit balance in North Carolina's General Fund, or a minimum of $30 million, is placed in the CWMTF. The revenue of this fund is allocated as grants to local governments, state agencies and conservation non-profits to help finance projects that specifically address water pollution problems. CWMTF funds may be used to establish a network of riparian buffers and greenways for environmental, educational, and recreational benefits. The Fund has provided money for land acquisition of numerous greenway projects featuring trails, both paved and unpaved. For a history of awarded grants in North Carolina and more information about this fund and applications, visit www.cwmtf.net/, or contact Bern Shumack at (336) 366-3801.

Natural Heritage Trust Fund

This trust fund, managed by the NC Natural Heritage Program, has contributed millions of dollars to support the conservation of North Carolina's most significant natural areas and cultural heritage sites. The NHTF is used to acquire and protect land that has significant habitat value. Some large wetland areas may also qualify, depending on their biological integrity and characteristics. Only certain state agencies are eligible to apply for this fund, including the Department of Environment and Natural Resources, the Wildlife Resources Commission, the Department of Cultural Resources and the Department of Agriculture and Consumer Services. Therefore, municipalities must work with State level partners to access this fund. Additional information is available from the NC Natural Heritage Program. Visit www.ncnhtf.org/.

North Carolina Conservation Tax Credit Program

North Carolina has a unique incentive program to help landowners protect the environment and quality of life. A credit is allowed against individual and corporate income taxes when real property is donated for conservation purposes. Interests in property that promote specific public benefits may be donated to a qualified recipient. Such conservation donations qualify for a substantial tax credit. For more information, visit: www.enr.state.nc.us/conservationtaxcredit/.

Urban and Community Forestry Assistance Program

This program offers small grants that can be used to plant urban trees, establish a community arboretum, or other programs that promote tree canopy in urban areas. The program operates as a cooperative partnership between the NC Division of Forest Resources (NCDFR) and the USDA Forest Service, Southern Region. To qualify for this program, a community must pledge to develop a street-tree inventory, a municipal tree ordinance, a tree commission, and an urban forestry-management plan. All of these can be funded through the program. For more information and a grant application, contact NCDFR and/or visit: http://www.dfr.state.nc.us/urban/urban_grantprogram.htm.

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

Ecosystem Enhancement Program

Developed in 2003 as a new mechanism to facilitate improved mitigation projects for NC highways, this program offers funding for restoration projects and for protection projects that serve to enhance water quality and wildlife habitat in North Carolina. Information on the program is available by contacting the Natural Heritage Program of NCDENR. For more information, visit www.nceep.net/pages/partners.html or call 919-715-0476.

Agriculture Cost Share Program

Established in 1984, this program assists farmers with the cost of installing best management practices (BMPs) that benefit water quality. The program covers as much as 75 percent of the costs to implement BMPs. The NC Division of Soil and Water Conservation within the NC Department of Environment and Natural
Resources administers this program through local Soil and Water Conservation Districts (SWCD). Visit www.enr.state.nc.us/DSWC/pages/agcostshareprogram.html or call 919-733-2302.

Water Resources Development Grant Program

The NC Division of Water Resources offers cost-sharing grants to local governments on projects related to water resources. Of the seven project application categories available, the category that relates to the establishment of greenways is "Land Acquisition and Facility Development for Water-Based Recreation Projects." Applicants may apply for funding for a greenway as long as the greenway is in close proximity to a water body. For more information, see: www.ncwater.org/Financial_Assistance or call 919-733-4064.

Small Cities Community Development Block Grants

State level funds are allocated through the NC Department of Commerce, Division of Community Assistance to be used to promote economic development and to serve low-income and moderate-income neighborhoods. Greenways that are part of a community's economic development plans may qualify for assistance under this program. Recreational areas that serve to improve the quality of life in lower income areas may also qualify. Approximately $50 million is available statewide to fund a variety of projects. Visit: www.hud.gov/offices/cpd/communitydevelopment/programs/stateadmin/
or call 919-733-2853.

North Carolina Health and Wellness Trust Fund

The NC Health and Wellness Trust Fund was created by the General Assembly as one of 3 entities to invest North Carolina's portion of the Tobacco Master Settlement Agreement. HWTF receives one-fourth of the state's tobacco settlement funds, which are paid in annual installments over a 25-year period. Fit Together, a partnership of the NC Health and

Wellness Trust Fund (HWTF) and Blue Cross and Blue Shield of North Carolina (BCBSNC) announces the establishment of Fit Community, a designation and grant program that recognizes and rewards North Carolina communities' efforts to support physical activity and healthy eating initiatives, as well as tobacco-free school environments. Fit Community is one component of the jointly sponsored Fit Together initiative, a statewide prevention campaign designed to raise awareness about obesity and to equip individuals, families and communities with the tools they need to address this important issue.

All North Carolina municipalities and counties are eligible to apply for a Fit Community designation, which will be awarded to those that have excelled in supporting the following:

- Physical activity in the community, schools, and workplaces
- Healthy eating in the community, schools, and workplaces
- Tobacco use prevention efforts in schools

Designations will be valid for two years, and designated communities may have the opportunity to reapply for subsequent two-year extensions. The benefits of being a Fit Community include:

- Heightened statewide attention that can help bolster local community development and/or economic investment initiatives (highway signage and a plaque for the Mayor's or County Commission Chair's office will be provided)
- Reinvigoration of a community's sense of civic pride (each Fit Community will serve as a model for other communities that are trying to achieve similar goals)
- Use of the Fit Community designation logo for promotional and communication purposes.

The application for Fit Community designation is available on the Fit Together Web site: www.FitTogetherNC.org/FitCommunity.aspx.

Fit Community grants are designed to support innovative strategies that help a community meet its goal to becoming a Fit Community. Eight to nine, two-year grants of up to $30,000 annually will be awarded to applicants that have a demonstrated need, proven capacity, and opportunity for positive change in addressing physical activity and/or healthy eating. For more information, visit: www.healthwellnc.com/

Funding Allocated by Federal Agencies

Wetlands Reserve Program

This federal funding source is a voluntary program offering technical and financial assistance to landowners who want to restore and protect wetland areas for water quality and wildlife habitat. The US Department of Agriculture's Natural Resource Conservation Service (USDA-NRCS) administers the program and 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 thereby assist with trail/greenway funding efforts. For more information, visit http://www.nrcs.usda.gov/PROGRAMS/wrp/.

The Community Development Block Grant (HUD-CDBG)

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, including the Boulding Branch Greenway in High Point, North Carolina. 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. Visit: www.hud.gov/offices/cpd/communitydevelopment/programs/.

USDA Business Enterprise Grants

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 and may be used for sidewalk and other community facilities. For more information from the local USDA Service Center, visit: http://www.rurdev.usda.gov/rbs/busp/rbeg.htm

Rivers Trails and Conservation Assistance Program (RTCA)

The Rivers, Trails, and Conservation Assistance Program, also known as the Rivers & Trails Program or RTCA, is the community assistance arm of the National Park Service. RTCA staff provide technical assistance to community groups and local, State, and federal government agencies so they can conserve rivers, preserve open space, and develop trails and greenways. The RTCA program implements the natural resource conservation and outdoor recreation mission of the National Park Service in communities across America

Although the program does not provide funding for projects, it does provide valuable on-the-ground technical assistance, from strategic consultation and partnership development to serving as liaison with other government agencies. Communities must apply for assistance. For more information, visit: www.nps.gov/ncrc/programs/rtca/ or call Chris Abbett, Program Leader, at 404-562-3175 ext. 522.

Public Lands Highways Discretionary Fund

The Federal Highway Administration administers discretionary funding for projects that will reduce congestion and improve air quality. The FHWA issues a call for projects to disseminate this funding. In the past, Congress has earmarked a portion of the total available funding for projects. For information on how to apply, visit: http://www.fhwa.dot.gov/discretionary/

FHWA Recreational Trails Program

The Recreational Trails Program is 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. In FY 2006 states shared in $60 million. This amount is expected to increase to $85 million by FY 2009.

Contact the Recreational Trails Program North Carolina Administrator:

Darrell L McBane - State Trails Coordinator
NC Division of Parks & Recreation
12700 Bayleaf Church Road
Raleigh NC 27614-9633
phone: 919-846-9995
email: darrell.mcbane@ncmail.net
http://www.ils.unc.edu/parkproject/trails/home.html

Local Funding Sources

Local Land Use Ordinance

As shown earlier in this Plan, improving the pedestrian qualities of the community may have more to do with guiding its growth patterns than it has with building individual sidewalks or trails. These patterns of development are guided by the land use ordinances governing the municipality. If these documents are guiding and 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 ordinances 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 community 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 community to accomplish mutual goals.

Capital Improvement Programs

Municipalities often plan for the funding of pedestrian facilities or improvements through development of Capital Improvement Programs. CIPs should include all types of capital improvements (water, sewer, buildings, streets, etc.) versus programs for single purposes. This allows municipal decision-makers to balance all capital needs. Typical capital funding mechanisms include the following: capital reserve fund, capital protection ordinances, municipal service district, tax increment financing, taxes, fees, and bonds. Each of these categories is described below.

> **Capital Reserve Fund** - Municipalities have statutory authority to create capital reserve funds for any capital purpose, including pedestrian facilities. The reserve fund must be created through ordinance or resolution that states the purpose of the fund, the duration of the fund, the approximate amount of the fund, and the source of revenue for the fund. Sources of revenue can include general fund allocations, fund balance allocations, grants and donations for the specified use.
>
> **Capital Project Ordinances** - Municipalities can pass Capital Project Ordinances that are project specific. The ordinance identifies and makes appropriations for the project.

Municipal Service District - Municipalities have statutory authority to establish municipal service districts, to levy a property tax in the district additional to the citywide property tax, and to use the proceeds to provide services in the district. Downtown revitalization projects are one of the eligible uses of service districts.

Tax increment financing

Tax increment financing is a tool to use future gains in taxes to finance the current improvements that will create those gains. When a public project, such as the construction of a greenway, is carried out, there is an increase in the value of surrounding real estate. Oftentimes, new investment in the area follows such a project. This increase in value and investment creates more taxable property, which increases tax revenues. These increased revenues can be referred to as the "tax increment." Tax Increment Financing dedicates that increased revenue to finance debt issued to pay for the project. TIF is designed to channel funding toward improvements in distressed or underdeveloped areas where development would not otherwise occur. TIF creates funding for public projects that may otherwise be unaffordable to localities. The large majority of states have enabling legislation for tax increment financing.

Installment Purchase Financing

As an alternative to debt financing of capital improvements, communities can execute installment/lease purchase contracts for improvements. This type of financing is typically used for relatively small projects that the seller or a financial institution is willing to finance or when up-front funds are unavailable. In a lease purchase contract the community leases the property or improvement from the seller or financial institution. The lease is paid in installments that include principal, interest, and associated costs. Upon completion of the lease period, the community owns the property or improvement. While lease purchase contracts are similar to a bond, this arrangement allows the community to acquire the property or improvement without issuing debt. These instruments, however, are more costly than issuing debt.

Taxes

Many communities raise money through self-imposed increases in taxes and bonds. For example, Pinellas County residents in Florida voted to adopt a one-cent sales tax increase, which provided an additional $5 million for the development of the overwhelmingly popular Pinellas Trail. Sales taxes have also been used in Allegheny County, Pennsylvania, and in Boulder, Colorado to fund open space projects. A gas tax is another method used by some municipalities to fund public improvements. A number of taxes provide direct or indirect funding for the operations of local governments. Some of them are:

Sales Tax

In North Carolina, the state has authorized a sales tax at the state and county levels. Local governments that choose to exercise the local option sales tax (all counties currently do), use the tax revenues to provide funding for a wide variety of projects and activities. Any increase in the sales tax, even if applying to a single county, must gain approval of the state legislature. In 1998, Mecklenburg County was granted authority to institute a one-half cent sales tax increase for mass transit.

Property Tax
Property taxes generally support a significant portion of a municipality's activities. However, the revenues from property taxes can also be used to pay debt service on general obligation bonds issued to finance greenway system acquisitions. Because of limits imposed on tax rates, use of property taxes to fund greenways could limit the municipality's ability to raise funds for other activities. Property taxes can provide a steady stream of financing while broadly distributing the tax burden. In other parts of the country, this mechanism has been popular with voters as long as the increase is restricted to parks and open space. Note, other public agencies compete vigorously for these funds, and taxpayers are generally concerned about high property tax rates.

Excise Taxes
Excise taxes are taxes on specific goods and services. These taxes require special legislation and the use of the funds generated through the tax are limited to specific uses. Examples include lodging, food, and beverage taxes that generate funds for promotion of tourism, and the gas tax that generates revenues for transportation related activities.

Occupancy Tax
The NC General Assembly may grant towns the authority to levy occupancy tax on hotel and motel rooms. The act granting the taxing authority limits the use of the proceeds, usually for tourism-promotion purposes.

Fees
Three fee options that have been used by local governments to assist in funding pedestrian and bicycle facilities are listed here:

Stormwater Utility Fees
Greenway sections may be purchased with stormwater fees, if the property in question is used to mitigate floodwater or filter pollutants. Stormwater charges are typically based on an estimate of the amount of impervious surface on a user's property. Impervious surfaces (such as rooftops and paved areas) increase both the amount and rate of stormwater runoff compared to natural conditions. Such surfaces cause runoff that directly or indirectly discharge into public storm drainage facilities and create a need for stormwater management services. Thus, users with more impervious surface are charged more for stormwater service than users with less impervious surface. The rates, fees, and charges collected for stormwater management services may not exceed the costs incurred to provide these services. The costs that may be recovered through the stormwater rates, fees, and charges includes any costs necessary to assure that all aspects of stormwater quality and quantity are managed in accordance with federal and state laws, regulations, and rules.

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.

Impact Fees

Developers can be required to provide greenway impact fees through local enabling legislation. Impact fees, which are also known as capital contributions, facilities fees, or system development charges, are typically collected from developers or property owners at the time of building permit issuance to pay for capital improvements that provide capacity to serve new growth. The intent of these fees is to avoid burdening existing customers with the costs of providing capacity to serve new growth ("growth pays its own way"). Greenway impact fees are designed to reflect the costs incurred to provide sufficient capacity in the system to meet the additional needs of a growing community. These charges are set in a fee schedule applied uniformly to all new development. Communities that institute impact fees must develop a sound financial model that enables policy makers to justify fee levels for different user groups, and to ensure that revenues generated meet (but do not exceed) the needs of development. Factors used to determine an appropriate impact fee amount can include: lot size, number of occupants, and types of subdivision improvements. If Holly Springs is interested in pursuing open space impact fees, it will require enabling legislation to authorize the collection of the fees.

Exactions

Exactions are similar to impact fees in that they both provide facilities to growing communities. The difference is that through exactions it can be established that it is the responsibility of the developer to build the greenway or pedestrian facility that crosses through the property, or adjacent to the property being developed.

In-Lieu-Of Fees

As an alternative to requiring developers to dedicate on-site greenway sections that would serve their development, some communities provide a choice of paying a front-end charge for off-site protection of pieces of the larger system. Payment is generally a condition of development approval and recovers the cost of the off-site land acquisition or the development's proportionate share of the cost of a regional facility serving a larger area. Some communities prefer in-lieu-of fees. This alternative allows community staff to purchase land worthy of protection rather than accept marginal land that meets the quantitative requirements of a developer dedication but falls a bit short of qualitative interests.

Bonds and Loans

Bonds have been a very popular way for communities across the country to finance their pedestrian and greenway projects. A number of bond options are listed below. Contracting with a private consultant to assist with this program may be advisable. Since bonds rely on the support of the voting population, an education and awareness program should be implemented prior to any vote. Billings, Montana used the issuance of a bond in the amount

of $599,000 to provide the matching funds for several of their TEA-21 enhancement dollars. Austin, Texas has also used bond issues to fund a portion of their bicycle and trail system.

Revenue Bonds

Revenue bonds are bonds that are secured by a pledge of the revenues from a certain local government activity. The entity issuing bonds, pledges to generate sufficient revenue annually to cover the program's operating costs, plus meet the annual debt service requirements (principal and interest payment). Revenue bonds are not constrained by the debt ceilings of general obligation bonds, but they are generally more expensive than general obligation bonds.

General Obligation Bonds

Cities, counties, and service districts generally are able to issue general obligation (G.O.) bonds that are secured by the full faith and credit of the entity. In this case, the local government issuing the bonds pledges to raise its property taxes, or use any other sources of revenue, to generate sufficient revenues to make the debt service payments on the bonds. A general obligation pledge is stronger than a revenue pledge, and thus may carry a lower interest rate than a revenue bond. Frequently, when local governments issue G.O. bonds for public enterprise improvements, the public enterprise will make the debt service payments on the G.O. bonds with revenues generated through the public entity's rates and charges. However, if those rate revenues are insufficient to make the debt payment, the local government is obligated to raise taxes or use other sources of revenue to make the payments. G.O. bonds distribute the costs of land acquisition and greenway development and make funds available for immediate purchases and projects. Voter approval is required.

Special Assessment Bonds

Special assessment bonds are secured by a lien on the property that benefits by the improvements funded with the special assessment bond proceeds. Debt service payments on these bonds are funded through annual assessments to the property owners in the assessment area.

State Revolving Fund (SRF) Loans

Initially funded with federal and state money, and continued by funds generated by repayment of earlier loans, State Revolving Funds (SRFs) provide low interest loans for local governments to fund water pollution control and water supply related projects including many watershed management activities. These loans typically require a revenue pledge, like a revenue bond, but carry a below market interest rate and limited term for debt repayment (20 years).

Other Local Options

Facility Maintenance Districts

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 of off road trail improvements. The municipality can initiate public outreach efforts to merchants, the 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 municipality can manage maintenance responsibilities either through its own staff or through private contractors. The public, particularly those within the FMD, should be periodically informed about whom to contact about maintenance issues.

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.

Partnerships engender a spirit of cooperation, civic pride and community participation. The key to the involvement of private partners is to make a compelling argument for their participation. Major employers and developers should be identified and provided with a "Benefits of Walking"-type handout for themselves and their employees. Very specific routes that make critical connections to place of business would be targeted for private partners' monetary support following a successful master planning effort. Potential partners include major employers that are located along or accessible to pedestrian facilities such as multi-use paths or greenways. Name recognition for corporate partnerships would be accomplished through signage trailheads or interpretive signage along greenway systems. Utilities often make good partners and many trails now share corridors with them. Money raised from providing an easement to utilities can help defray the costs of maintenance. It is important to have a lawyer review the legal agreement and verify ownership of the subsurface, surface or air rights in order to enter into an agreement.

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

Local Trail Sponsors

A sponsorship program for trail amenities allows smaller donations to be received from both individuals and businesses. Cash donations could be placed into a trust fund to be accessed for certain construction or acquisition projects associated with the greenways and open

space system. Some recognition of the donors is appropriate and can be accomplished through the placement of a plaque, the naming of a trail segment, and/or special recognition at an opening ceremony. Types of gifts other than cash could include donations of services, equipment, labor, or reduced costs for supplies.

Volunteer Work

It is expected that many citizens will be excited about the development of a greenway corridor. Individual volunteers from the community can be brought together with groups of volunteers form church groups, civic groups, scout troops and environmental groups to work on greenway development on special community workdays. Volunteers can also be used for fund-raising, maintenance, and programming needs.

Private Foundations and Organizations

Many communities have solicited greenway funding assistance from private foundations and other conservation-minded benefactors. Below are a few examples of private funding opportunities available in North Carolina.

The Carolina Thread Trail

Planning grants have recently been awarded to two counties in the region by the Carolina Thread Trail organization, amounting to $50,000 each. More awards are planned for counties and communities that show a strong commitment toward building greenways. Refer to **Appendix A.5 - Steps to the Carolina Thread Trail**.

Also, visit http://www.carolinathreadtrail.org/
and contact:
Carolina Thread Trail
1200 E. Morehead Street, Suite 290
Charlotte, NC 28204
(704) 376-2714
colleen@carolinathreadtrail.org

Land for Tomorrow Campaign

Land for Tomorrow is a diverse partnership of businesses, conservationists, farmers, environmental groups, health professionals and community groups committed to securing support from the public and General Assembly for protecting land, water and historic places. The campaign is asking the North Carolina General Assembly to support issuance of a bond for $200 million a year for five years to preserve and protect its special land and water resources. Land for Tomorrow will enable North Carolina to reach a goal of ensuring that working farms and forests; sanctuaries for wildlife; land bordering streams, parks and greenways; land that helps strengthen communities and promotes job growth; historic downtowns and neighborhoods; and more, will be there to enhance the quality of life for generations to come. For more information, visit http://www.landfortomorrow.org/

The Trust for Public Land

Land conservation is central to the mission of the Trust for Public Land (TPL). Founded in 1972, the Trust for Public Land is the only national nonprofit working exclusively to protect land for human enjoyment and well being. TPL helps conserve land for recreation and spiritual nourishment and to improve the health and quality of life of American communities. TPL's legal and real estate specialists work with landowners, government agencies, and community groups to:

- Create urban parks, gardens, greenways, and riverways
- Build livable communities by setting aside open space in the path of growth
- Conserve land for watershed protection, scenic beauty, and close-to home recreation safeguard the character of communities by preserving historic landmarks and landscapes.

The following are TPL's Conservation Services:

- Conservation Vision: TPL helps agencies and communities define conservation priorities, identify lands to be protected, and plan networks of conserved land that meet public need.
- Conservation Finance: TPL helps agencies and communities identify and raise funds for conservation from federal, state, local, and philanthropic sources.
- Conservation Transactions: TPL helps structure, negotiate, and complete land transactions that create parks, playgrounds, and protected natural areas.
- Research & Education: TPL acquires and shares knowledge of conservation issues and techniques to improve the practice of conservation and promote its public benefits.

Since 1972, TPL has worked with willing landowners, community groups, and national, state, and local agencies to complete more than 3,000 land conservation projects in 46 states, protecting more than 2 million acres. Since 1994, TPL has helped states and communities craft and pass over 330 ballot measures, generating almost $25 billion in new conservation-related funding. For more information, visit: http://www.tpl.org/.

Z. Smith Reynolds Foundation

This Winston-Salem based Foundation has been assisting the environmental projects of local governments and non-profits in North Carolina for many years. The foundation has two grant cycles per year and generally does not fund land acquisition. However, the foundation may be able to support municipalities in other areas of greenways development. More information is available at www.zsr.org.

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

North Carolina Community Foundation

The North Carolina Community Foundation, established in 1988, is a statewide foundation seeking gifts from individuals, corporations, and other foundations to build endowments and ensure financial security for nonprofit organizations and institutions throughout the state. Based in Raleigh, North Carolina, the foundation also manages a number of community affiliates throughout North Carolina that make grants in the areas of human services, education, health, arts, religion, civic affairs, and the conservation and preservation of historical, cultural, and environmental resources. In addition, the foundation manages various scholarship programs statewide. Web site: http://nccommunityfoundation.org/

National Trails Fund

In 1998, the American Hiking Society created the National Trails Fund, the only privately supported national grants program providing funding to grassroots organizations working toward establishing, protecting and maintaining foot trails in America. Each year, 73 million people enjoy foot trails, yet many of our favorite trails need major repairs due to a $200 million in badly needed maintenance. National Trails Fund grants give local organizations the resources they need to secure access, volunteers, tools and materials to protect America's cherished public trails. For 2005, American Hiking distributed over $40,000 in grants thanks to the generous support of Cascade Designs and L.L.Bean, the program's Charter Sponsors. To date, American Hiking has granted more than $240,000 to 56 different trail projects across the U.S. for land acquisition, constituency building campaigns, and traditional trail work projects. Awards range from $500 to $10,000 per project.

What types of projects will American Hiking Society consider? Securing trail lands, including acquisition of trails and trail corridors, and the costs associated with acquiring conservation easements. Building and maintaining trails which will result in visible and substantial ease of access, improved hiker safety, and/or avoidance of environmental damage. Constituency building surrounding specific trail projects - including volunteer recruitment and support. Web site: www.americanhiking.org/alliance/fund.html.

For additional information about funding sources and procedures, see **Appendices:**

A.4 - How-to Build a Sidewalk (and other pedestrian facilities)
A.5 - The Bicycle and Pedestrian TIP Process

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 Mecklenburg-Union Metropolitan Planning Organization (MUMPO) 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.