



## **Completing Our Streets A Guide to Livable & Sustainable Communities**



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**January 2013**

## Table of Contents

	<b>Page</b>
<b>1. Introduction .....</b>	<b>3</b>
<b>2. Shortfalls with Subdivision Streets .....</b>	<b>3</b>
<b>3. Proposed Subdivision Street Section .....</b>	<b>4</b>
<b>4. Collector and Arterial Roads .....</b>	<b>8</b>
<b>5. The COMPLETE STREETS Movement .....</b>	<b>8</b>
<b>6. Recommendations .....</b>	<b>9</b>
<b>7. Summary .....</b>	<b>12</b>
<b>8. Appendices</b>	
<b>A. Example Residential Street Sections</b>	
<b>B. Complete Streets – Policy Basics (published by NCSC)</b>	
<b>C. Complete Streets – Fundamentals (published by NCSC)</b>	
<b>D. Complete Streets – Talking Points (published by PHLP)</b>	
<b>E. National Complete Streets Coalition – Workshop Proposal</b>	
<b>F. Safe and Complete Streets Act of 2011 (H.R. 1780)</b>	
<b>G. Safety Benefits of Raised Medians and Pedestrian Refuge         Areas (published by FHWA)</b>	
<b>H. Example Ordinance – Summary of Buffer, Landscape &amp; Tree         Ordinance (published by Gwinnett County, GA)</b>	
<b>I. ARTS Bicycle &amp; Pedestrian Plan 2012 – Executive Summary</b>	

## 1. Introduction

Our committee was formed to explore ways to improve our neighborhoods, particularly subdivision streets. The committee is comprised of planners, transportation designers, professional engineers, and traffic engineers, all who work for Columbia County. We are being challenged with exploring designs that result in safer, multi-functional streets that are in the best long-term interest of our community while maintaining our working relationship with the development community. Our committee believes better streets will:

- Bring our residents together by drawing them out to congregate with one another
- Make our residents feel safer, particularly for the young and old
- Improve our health and quality of life, help fight obesity, and raise our standard of living
- Make our neighborhoods more attractive, improve property values, maintain a healthy tax base, and help continue to make Columbia County the preferred location in the CSRA to live, work and play.

## 2. Short falls with our Subdivision Streets

We found that our existing subdivision streets address the functional needs of the automobile without sufficient consideration given to the needs of pedestrians and the aesthetics of the streetscape.

Neighborhoods designed without sidewalks force pedestrians into the streets with vehicles. This arrangement is uninviting to the non-motorists and as a result residents may opt to avoid walking and cycling in the neighborhood. Few residents trust drivers to make allowances for the safety of their children, elderly parents, or even themselves.

In our neighborhoods with sidewalks, we found that the presence of the sidewalk alone did not create an inviting environment to the non-motorists. Better design decisions can be made to create a lasting neighborhood amenity. Residents will not be inclined to use the sidewalks without addressing several design issues including: the speed of the cars on the road, the separation of pedestrians from the cars, and the overall appeal of the pedestrian corridor.



Speeding cars on our neighborhood streets is a serious concern. Almost 100 existing residential streets in Columbia County have had speed humps installed to improve the safety of our citizens. These speed humps are at the cost of the tax payer and diminish the beauty of our neighborhoods. Retrofitting traffic calming design features other than speed humps is even more costly; therefore, avoiding street designs that are sure to promote excessive speeds before they are constructed is paramount. Taking a proactive approach to traffic calming involves sound engineering decisions and local policy before the street is built.



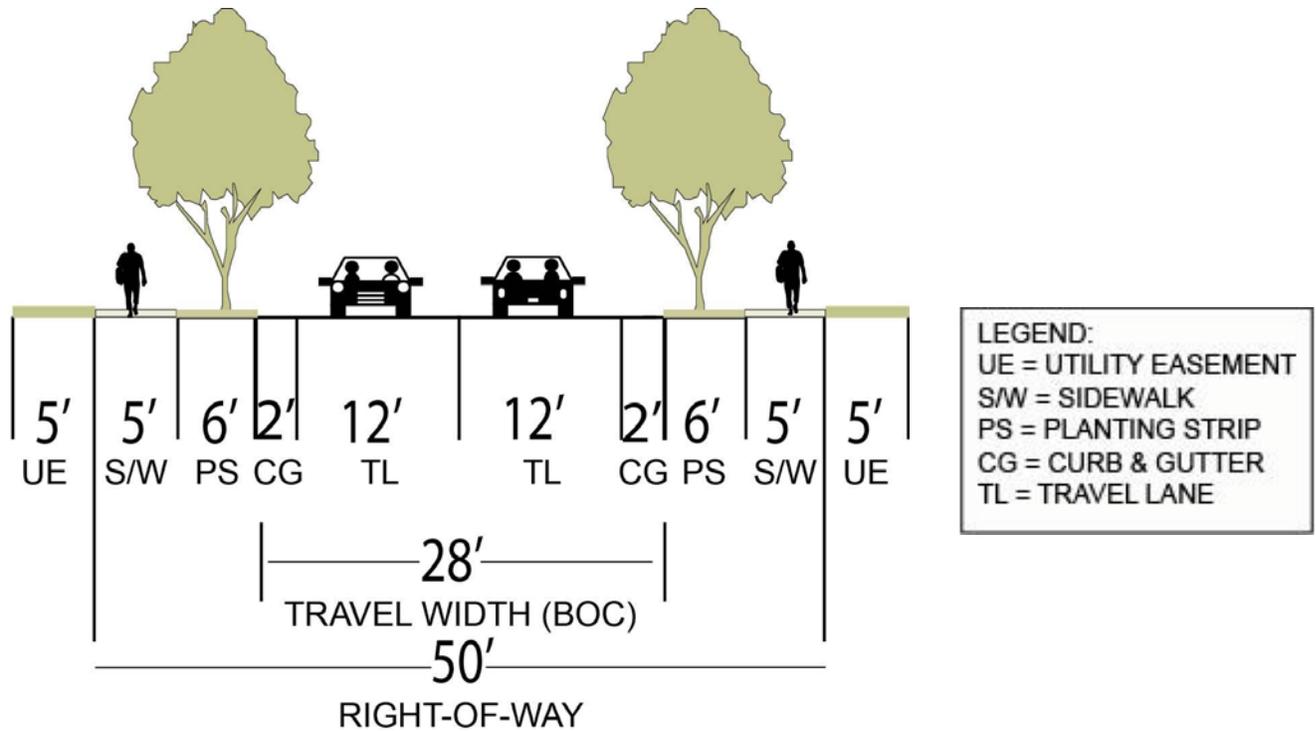
Shade trees can make a significant impact to the overall appeal of the streetscape. This is a photo of a neighborhood built 10 years ago. Had there been a requirement to plant street trees the community could be realizing increased benefits with each season of growth.

### 3. Proposed Subdivision Street Section

As we strive to encourage development of lasting quality in Columbia County, we believe we must address the needs of pedestrians currently missing from our neighborhood streets. Neighborhood streets should be designed not just for motorists but also for non-motorists, those of all ages and abilities. Considerations of pedestrians would include

adding sidewalks, installing street trees, addressing traffic calming, designing for interconnectivity, and improving the aesthetic impression of the road section as a whole. This in turn will introduce a distinctive sense of character to our neighborhoods. We would all benefit from the resulting protection of property values and, perhaps most importantly, the improved environment in which to live.

Our proposed road section for residential lots of 15,000 sf or less include the following elements:



**A travel lane with a maximum width of 28 feet (back of curb to back of curb).** While many factors contribute to encouraging cars to travel within the posted speed limit, none are as effective as narrowing the travel lane. We debated considerably on an allowable travel lane width for our neighborhood roads. We did not come to complete agreement but we all concur that wider than 28 feet is detrimental. Considering that many studies show even narrower travel lanes as being feasible, we recommend allowances be available to our developers who wish to further reduce the road width, particularly for streets with lower projected traffic volumes.

**Sidewalks required on both sides of the road.** Adding sidewalks to our requirements for neighborhood streets is long overdue. This addition is the first, most basic step toward protecting the safety of our citizens who are using the road system, outside of a car. Nationwide, sidewalks are increasingly incorporated into suburban neighborhood

design. As more home buyers are looking for sidewalks with their home purchase, we have seen our local developers responding. In 2012 over 75% of the medium density subdivision streets adopted by Columbia County had sidewalks vs. 35 % in 2002.

**A 6 foot wide planting strip with shade trees and street lighting.** Locating a buffer between the sidewalk and the roadway wide enough for planting trees and separating motorist from non-motorist will create a friendlier pedestrian corridor. This natural barrier separates the non-motorists from the motorists and creates a sense of removal and safety. It will encourage residents of all ages to use the sidewalk, whether to exercise or simply to connect with their community. Shade trees reduce ambient temperatures by up to 15 degrees. This is an important benefit to our residents considering the region's hot summer climate. Also, street trees aid in traffic calming, as the vertical mass introduces a vertical scale that creates an awareness of speed. Installing trees in our right-of-way will present minor issues such as maintenance, cost, and resolving utility conflicts. In the end, we believe the long-term positives outweigh the negatives. Communities all over the country have created tree programs that overcame these challenges and transformed neighborhoods into attractive, vibrant communities.

We recommend the following modifications be considered to the design process, review process and final acceptance process:

**Final Plat acceptance contingent on completed landscaping and sidewalks.** Our current policy on timing of sidewalk installation does not allow our residents the ability to use the path system until all of the homes in the development are constructed. Rather than building the sidewalk during the construction of the street, sidewalk is added by each home builder. Because the sidewalk and street trees are interrelated with the road itself, the responsibility to construct a complete roadway should be a requirement of the developer and not the builder.



We recommend accepting a road when all of the essential street elements are installed or under surety, perhaps allowing a 2 year bond for sidewalks and street trees fronting individual lots. Sidewalks, curb ramps and street trees fronting common areas should be complete prior to acceptance of the road. Other communities comparable to Columbia County and in Georgia are implementing similar regulations and are reaping the benefits.

**Clear Requirements.** The street elements required for Columbia County to approve and eventually accept the road into our street inventory should be easily understood, clearly published, and universally defended. Clear, well-written regulations would remove the grey areas and provide a mutual understanding of our street requirements. Adding a significant number of illustrations and examples, of both good and bad designs, to our regulations would help communicate our intent rather than relying on worded descriptions. Every effort will be made to ensure there are no questions about the requirements for quality design before the Preliminary Plat is submitted for construction permit.

**Thoughtful layout of street network.** New street design regulations will require our engineering community to pay closer attention to the safety of non-motorists. The selection of any one typical section will not relieve the site designer from adequately addressing traffic calming, interconnectivity, and other site specific issues. This road section may also need to be adapted for high volume streets, subdivisions with larger lots, and townhouse applications. In short, the revised street design regulations must require plans designed using sound engineering judgment.

**Mandatory Pre-Design Submittal or Meeting.** A meeting with the developer and his/her engineer during the concept stage of design should become mandatory. This meeting can offer a chance for the staff to engage in detailed discussions with the designer and developer so that these many important street design issues can be worked out ahead of time. The onus will be placed on the developer and his/her engineer to demonstrate understanding of the regulations and requirements.

**Uniform Understanding and Enforcement.** To avoid setting a dangerous precedence, the requirements should be uniformly applied to all applicants by the planning and engineering staff, Planning Commission, traffic engineering staff, plan review team and the county administration as a whole. If the regulations reflect the county's true vision for our community, there will be no reason to waiver from this expected level of planning and traffic engineering design.

## 4. Collector and Arterial Roads

Prior to the last 3 years, our county road projects essentially were taking the same approach to our street designs as the private development community. Our widening projects were designed with motorists first and non-motorists last. Highest priority has been assigned to vehicles and keeping them moving as quickly as possible. The results are evident throughout our county. Vehicles clearly dominate our streets.

For the past few years, Columbia County has focused more on designing our streets with all users in mind. It may take decades to revitalize our streets to include non-motorists. But as long as we continue to focus on streets for all users, we can eventually connect our neighborhoods, employment centers, and commercial areas with safe facilities for all. Columbia County is taking steps to lead by example.

Our Metropolitan Planning Organization, or ARTS (Augusta Regional Transportation Study), exists to assist the state and federal government in programming and managing transportation projects in the Augusta metro area that receive funding from them. This includes most of Columbia County, generally from Uchee Creek to Augusta. Last year, ARTS updated their bicycle and pedestrian study. After a year of meetings, workshops, conference calls, and correspondences, the consultants completed the study and it was adopted by ARTS in September 2012. The study includes a road map of Columbia County with colored path designations representing the recommended routes for bicycle and pedestrian facilities. It also includes an excellent section on design guidelines. During our involvement in the study, we found an overwhelming demand from the public for more, better, and safer non-motorist facilities.

## 5. The COMPLETE STREETS Movement

Across the county there is a movement to incorporate the needs of all road users into the design of roadways. This concept of including the needs of bicyclists, public transportation vehicles and riders, and pedestrians of all ages and abilities is referred to as Complete Streets. Over 400 states, counties, cities, and towns have adopted Complete Streets policies including the State of Georgia and 8



local Georgia jurisdictions (Cobb County, Douglas County, City of Clarkston, City of Roswell, City of Suwanee, City of Dunwoody, City of Decatur and the Coastal Regional Metropolitan Planning Organization in Savannah). Cities and towns, large and small, are looking to Complete Streets as a way to manage growing demand for active transportation options and to support economic vitality.

We believe the most effective way to address all of our street designs in Columbia County is through the adoption of a Complete Streets policy. This type of policy would serve as an official commitment to a Complete Streets approach and can be tailored for our vision for Columbia County. It would apply to subdivision streets as well as collector roads and road widening projects. It is typically in the form of a resolution, ordinance, departmental policy, policy adopted by an elected board, a plan, or design guide.

Last year, the U.S. government passed a bill that requires any project lying within a MPO and receiving federal funds to comply with a Complete Streets policy. Our MPO (ARTS) has the adoption of a Complete Streets policy in its Long Range Plan and we expect adoption to occur within the next 2 years. The GA DOT adopted a Complete Streets policy in September 2012 that applies to all future state funded improvement projects.

Our committee held two conference calls with the National Complete Streets Coalition (NCSC), a group formed to change the tide in the history of bad policies in our country; policies that have focused too much on vehicles. Their goal is to return our streets to users of all ages. NCSC is a great resource we can turn to during our due diligence phase and they will be happy to share their ideas and experiences with Columbia County so that we can make the right decisions going forward.

## **6. Recommendations**

Columbia County has experienced an enormous rate of growth over the past 20 years. Like similar communities experiencing mass urban sprawl, our street policy has been to place priority of motorized modes over non-motorized modes of travel. We believe this is an unsustainable planning practice and, if continued, will have a lasting negative effect on the quality of life for our current and future citizens. A greater emphasis should be placed on creating safe and inviting infrastructure systems for pedestrians and bicyclists, particularly in our neighborhoods where these uses are predominantly located.

Transforming our streets will take time and require a clear path forward. This path can be defined in many ways, however the path with the best results are through clear and



uniformly applied policies and regulations. We also acknowledge that to upgrade and implement these changes, it will take concentrated effort from professionals beyond the resources of our staff. We recommend hiring a consultant who is an expert in planning & policy development on streets, someone who can assist us in managing the growth without compromising the safety and quality of life of our citizens deserve. These are

professionals in their field who have worked with numerous local governments similar to Columbia County, communities who have experienced a rapid rate of growth and are left struggling with its effects of suburban sprawl. We would rely on their expertise to help us with the code revisions and perhaps more importantly provide public workshops to involve all of those who would be affected by this refocus of our vision. Although we are confident in this staff's abilities to take a substantial role in moving our county in this direction, we feel the time and expertise is better left to a team of experts who help communities experiencing similar situations as us, a group who can help sharpen our focus, guide us to the clearest path forward, and do so with community buy-in.

Part of the regulation and code revisions would include a tree ordinance to include street trees (for all subdivisions with underground power), administrative changes to our permitting process, a traffic calming ordinance applying to all residential subdivision designs, and adopting a Complete Streets policy for all of Columbia County.

**Commercial driveways, turn lanes, and other improvements in County ROW.**

Columbia County has followed an internal policy of following Georgia DOT, AASHTO, and MUTCD guidelines for any improvements made within our county right-of-ways, mainly for streets with posted speed limits of 35 mph or greater. The county's reason for doing this is simple – why create new standards when existing standards already exist. The standards from these reputable departments & associations have evolved and strengthened over time. Our county-funded projects follow these standards in both design and construction. The county, however, has not formally adopted these standards and therefore, from time to time there is confusion from the private development

community as to what standard applies. It may be beneficial to either adopt these standards or simply reference them in our county code or development regulations.

**Roundabouts gaining popularity.** Roundabouts have many benefits over signalized intersections. Roundabouts keep traffic moving, reduce right angle collisions, and are safer for non-motorists. Another huge benefit to roundabouts is their appearance. They can be tastefully landscaped, each to its own individual character. In contrast to this, signalized intersections are large, open areas that grow outward as traffic increases. More lanes cause more delays. The overhead signal equipment is expensive, unsightly, and must be operated & maintained. Landscaping the outer edges of a signalized intersection does little to soften up the overall appearance of the area. In many instances, roundabouts mini-roundabouts, or traffic circles are the clear solution to solving certain intersection design goals. At times, a lesser intersection design is chosen over a roundabout simply because no policy exists to require a roundabout evaluation first. We believe a policy should be in place that requires all proposed or expanded county road intersections meeting warrants for a traffic signal to be evaluated for roundabouts first. We acknowledge that not every intersection is a candidate for a roundabout, so there should be no concern of a blind devotion to this type of intersection. However, in the somewhat rare cases where a roundabout is the better solution, we must have a policy in place that ensures the right decision is made.

**Making our existing communities safer.** We have discussed the degrading effects of speed humps to our communities and the costs we the county must absorb to maintain them. We believe there is a better option to solving the speed problems in our existing neighborhoods. We believe the opportunity is now here to create a traffic calming program. A traffic calming program allows our community residents to request for implementation of traffic calming measures in their existing neighborhoods. If the street qualifies, the county would design, fund, and install the most effective measure based on each individual condition, which will generally exclude speed humps. Traffic Engineering has, in the past, proposed a program similar to this yet the proposal was deemed unfeasible due to funding constraints. We believe TSPLOST discretionary funding could be a potential funding source for this program. We also believe our citizens will wholeheartedly view this program as a positive way to expend our regional sales tax dollars to address local, neighborhood street safety concerns.

## **7. Summary**

Our committee believes we can provide safe and appealing pedestrian corridors as well as connected pathways for cyclists without sacrificing the needs of vehicles. We believe the new policies will not add significant costs and we intend to follow the policies ourselves with our own roadway projects. Together, we will work with our development community to suit the needs of all forms of transportation taking place within our county streets.

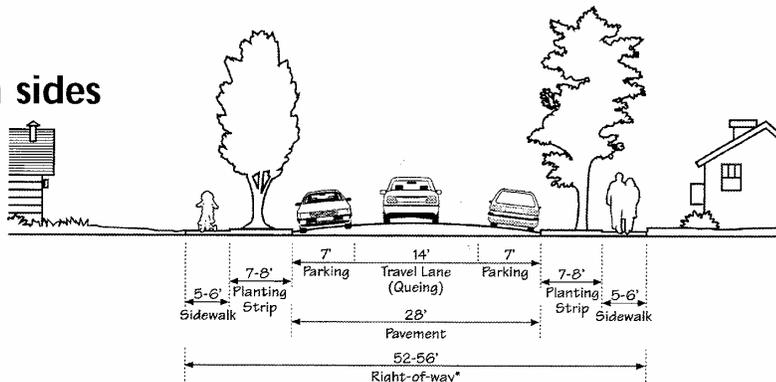
We believe these changes will ultimately benefit all those who live, work and invest in Columbia County and underscore our vision of a Community of Pride.

# **Appendix A**

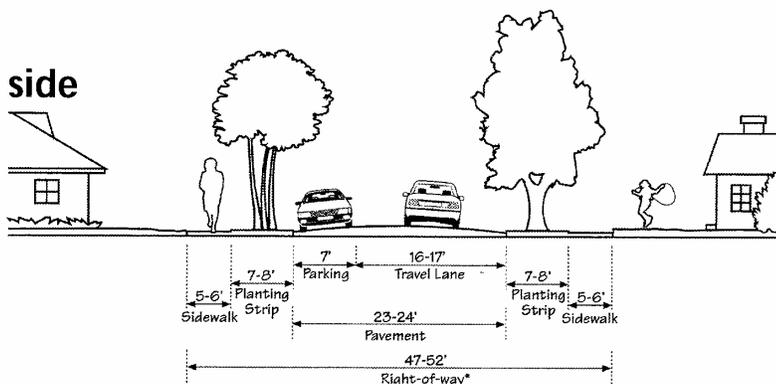
## **Example Residential Street Sections**

Figure 3.4.100F(5) Local Residential Street Sections

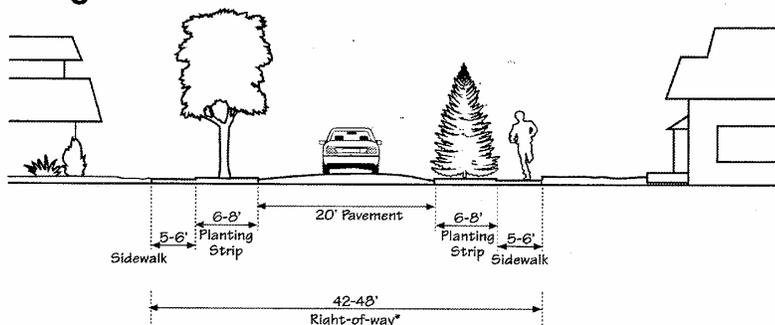
**28 Ft Street**  
**Parking on both sides**



**24 Ft Street**  
**Parking on one side**



**20 Ft Street**  
**No on-street parking allowed**



**Appendix B**  
**Complete Streets – Policy Basics**  
**(Published by NCSC)**

# COMPLETE STREETS:

## POLICY BASICS

The streets of our cities & towns are an important part of our communities. They allow children to get to school & parents to get to work. They bring together neighbors & draw visitors to neighborhood stores. These streets ought to be designed for everyone – whether young or old, on foot or on bicycle, in a car or in a bus – but too often they are designed only for speeding cars or creeping traffic jams.

Now, in communities across the country, a movement is growing to **complete the streets**. States, cities, & towns are asking their planners & engineers to build roads that are **safer, more accessible, & easier for everyone**. In the process, they are creating better communities for people to live, play, work, & shop.

### What are Complete Streets?

Complete Streets are designed & operated to enable safe access for all users: pedestrians, bicyclists, motorists, & public transportation users of all ages & abilities. Complete Streets make it easy to cross the street, walk to shops, & bicycle to work. They allow buses to run on time & make it safe for people to walk to & from train stations.

### What are Complete Streets policies?

By adopting a Complete Streets policy, communities direct their transportation planners & engineers to routinely design & operate the entire right of way to enable safe access for all users, regardless of age, ability, or mode of transportation. This means that every transportation project will make the street network better & safer for drivers, transit users, pedestrians, & bicyclists – making your town a better place to live.



### Why do we need Complete Streets policies?

#### Many of our streets are incomplete.

Incomplete streets – those designed with only cars in mind – limit transportation choices by making walking, bicycling, & taking public transportation **inconvenient, unattractive, & too often, dangerous**. These roadways often lack sidewalks, crosswalks, & space for people to safely ride bicycles. Roads often make no room for public transportation vehicles & riders & few accommodations for people with disabilities.

#### Americans want mobility.

Recent opinion polls found that **66% of Americans want more transportation options** & the freedom to choose how to get where they need to go. Yet **73% feel they have no choice but to drive** as much as they do. This is no surprise, as about one-quarter of walking trips take place on roads without sidewalks or shoulder, & bike lanes are available for only about 5% of bicycle trips. Changing policy so that our transportation system routinely includes the needs of people on foot, public transportation, & bicycles means that people of all ages & abilities will have more options when traveling to work, to school, to the grocery store, & to visit family.

#### Complete Streets foster strong communities.

Complete streets play an important role in livable communities, where all people – regardless of age, ability or mode of transportation – **feel safe & welcome** on the roadways. Complete streets provide benefits to the community in many ways, by improving public health, lowering transportation costs for families, encouraging local business, increasing capacity, & improving mobility for all.

#### Few states build complete transportation corridors.

In 2000, the US Department of Transportation advised states receiving federal funds that “bicycling & walking facilities will be incorporated into all transportation projects unless exceptional circumstances exist.” Unfortunately, fewer than half the states follow this federal guidance. Many highway projects add automobile capacity & increase vehicle speeds, but **do nothing** to mitigate the negative impact this can have on walking, biking, & taking public transportation.

### National Complete Streets Coalition

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202.955.5543 • [info@completestreets.org](mailto:info@completestreets.org)

[www.completestreets.org](http://www.completestreets.org)



## A comprehensive Complete Streets policy:

- Includes a vision for how & why the community wants to complete its streets.
- Specifies 'all users' to include pedestrians, bicyclists, & transit passengers of all ages & abilities, as well as trucks, buses, & automobiles.
- Applies to both new and retrofit projects, including design, planning, maintenance, & operations, for the entire right of way.
- Makes specific exceptions & sets a clear procedure that requires high-level approval of exceptions.
- Encourages street connectivity & aims to create a comprehensive, integrated, connected network for all modes.
- Is understood by all agencies to cover all roads.
- Directs the use of the latest & best design guidelines while recognizing the need for flexibility in balancing user needs.
- Directs that Complete Streets solutions will complement the context of the community.
- Establishes performance standards with measurable outcomes.
- Includes specific next steps for implementation of the policy.



## Implementing Complete Streets

Complete Streets policies end the project-by-project struggle for better facilities by requiring all road construction & improvement projects to begin with evaluating how the street serves all who use it – people of all ages & abilities, whether on foot or on bicycles, riding public transportation, or driving trucks & automobiles.

An effective Complete Streets policy should prompt transportation agencies to:

- Restructure procedures to accommodate all users on every project;
- Develop new design policies & guides;
- Offer training & education opportunities to planners, engineers, project managers, elected officials, & the general public; &
- Institute better ways to measure performance & collect data on how well the streets are serving all users.

### National Complete Streets Coalition Steering Committee:

AARP • Active Living by Design • Alliance for Biking & Walking • America Bikes • America Walks • American Council of the Blind • American Planning Association • American Public Transportation Association • American Society of Landscape Architects • Association of Pedestrian and Bicycle Professionals • City of Boulder • Institute of Transportation Engineers • League of American Bicyclists • National Association of Area Agencies on Aging • National Association of City Transportation Officials • National Association of REALTORS • National Center for Bicycling and Walking • Ryan Snyder Associates • Safe Route to School National Partnership • Smart Growth America • SvR Design Company • Transportation for America



## How do I write a Complete Streets policy?

Developing a Complete Streets policy means working with your neighbors, elected officials, transportation planners & engineers, transit agencies, and representatives from older adult, public health, disability, environment, & youth organizations. Bringing everyone to the table will build a robust community vision for Complete Streets & foster a broader understanding of why & how transportation decisions are made.

In developing language for each of the 10 elements of a comprehensive policy (listed at left), be sure to refer to the National Complete Streets Coalition's website for more information on each element ([www.completestreets.org/policyelements](http://www.completestreets.org/policyelements)). Check out examples of existing strong policy language in the annual policy analysis report at [www.completestreets.org/policyanalysis](http://www.completestreets.org/policyanalysis)

The National Complete Streets Coalition offers interactive full-day workshops led by national experts to help communities develop a Complete Streets policy that builds on local expertise & implement that policy by identifying ways to change the transportation decision-making process: [www.completestreets.org/workshops](http://www.completestreets.org/workshops)

Need transportation planning & engineering professionals who are ready to help design & construct complete streets? Our Complete Streets Partner firms can offer the expertise & dedication you need: [www.completestreets.org/help](http://www.completestreets.org/help)

## What about the costs of Complete Streets?

Complete Streets are sound financial investments in our communities that provide long-term benefits from investments. An existing transportation budget can incorporate Complete Streets projects with little to no additional funding, accomplished through re-prioritizing projects & allocating funds to projects that improve overall mobility. Many of the ways to create more complete roadways are low cost, fast to implement, and high impact. Building sidewalks striping bike lanes have been shown to create more jobs than traditional car-focused transportation projects.

**Appendix C**  
**Complete Streets – Fundamentals**  
**(Published by NCSC)**

# COMPLETE STREETS:

## FUNDAMENTALS

The streets of our cities & towns are an important part of our communities. They allow children to get to school & parents to get to work. They bring together neighbors & draw visitors to neighborhood stores. These streets ought to be designed for everyone – whether young or old, on foot or on bicycle, in a car or in a bus – but too often they are designed only for speeding cars or creeping traffic jams.

Now, in communities across the country, a movement is growing to **complete the streets**. States, cities, & towns are asking their planners & engineers to build roads that are **safer, more accessible, & easier for everyone**. In the process, they are creating better communities for people to live, play, work, & shop.

### What are Complete Streets?

Complete Streets are streets for everyone. They are designed & operated to enable safe access for all users. Pedestrians, bicyclists, motorists, & public transportation users of all ages & abilities are able to safely move along & across a complete street. Complete Streets make it easy to cross the street, walk to shops, & bicycle to work. They allow buses to run on time & make it safe for people to walk to & from train stations.

### What do Complete Streets policies do?

Creating complete streets means transportation agencies change their approach to community roads. By adopting a Complete Streets policy, communities direct their transportation planners & engineers to routinely design & operate the entire right of way to enable safe access for all users, regardless of age, ability, or mode of transportation. This means that every transportation project will make the street network better & safer for drivers, transit users, pedestrians, & bicyclists – making your town a better place to live. The National Complete Streets Coalition has identified the elements of an ideal Complete Streets policy to help you write one for your town: [www.completestreets.org/elements](http://www.completestreets.org/elements)

### What does a “complete” street look like?

There is no singular design prescription for Complete Streets; each one is unique & responds to its community context. A complete street may include: sidewalks, bike lanes (or wide paved shoulders), special bus lanes, comfortable & accessible public transportation stops, frequent & safe crossing opportunities, median islands, accessible pedestrian signals, curb extensions, narrower travel lanes, roundabouts, & more. A complete street in a rural area will look quite different from a complete street in an urban area, but both are designed to balance safety & convenience for everyone using the road: [www.completestreets.org/manytypes](http://www.completestreets.org/manytypes)



### Why do we need Complete Streets policies?

Incomplete streets – those designed with only cars in mind – **limit transportation choices** by making walking, bicycling, & taking public transportation inconvenient, unattractive, & too often, dangerous. Changing policy so that our transportation system routinely includes the needs of people on foot, public transportation, & bicycles means that walking, riding bikes, & riding buses & trains will be **safer & easier**. People of all ages & abilities will have more options when traveling to work, to school, to the grocery store, & to visit family.

Making these travel choices more convenient, attractive, & safe means people do not need to rely solely on automobiles. They can replace congestion-clogged trips in their cars with swift bus rides or heart-healthy bicycle trips. Complete Streets **improve the efficiency & capacity** of existing roads too, by moving people in the same amount of space – just think of all the people who can fit on a bus or streetcar versus the same amount of people each driving their own car. Getting more productivity out of the existing road & public transportation systems is vital to **reducing congestion**.

Complete Streets are particularly prudent when communities are tightening their budgets & looking to ensure long-term benefits from investments. A well-balanced transportation budget can incorporate Complete Streets projects with little to no additional funding, accomplished through re-prioritizing projects & allocating funds to projects that improve overall mobility. Many of the ways to create more complete roadways are **low cost, fast to implement, & high impact**. Building more sidewalks & striping bike lanes has been shown to create more jobs than traditional car-focused transportation projects.

**National Complete Streets Coalition**

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[www.completestreets.org](http://www.completestreets.org)



## What are some of the benefits of Complete Streets?

Complete streets can offer many benefits in all communities, regardless of size or location. The National Complete Streets Coalition has developed a number of fact sheets: [www.completestreets.org/factsheets](http://www.completestreets.org/factsheets)

**Complete Streets improve safety.** A Federal Highways Administration safety review found that streets designed with sidewalks, raised medians, better bus stop placement, traffic-calming measures, & treatments for disabled travelers improve pedestrian safety. Some features, such as medians, improve safety for all users: they enable pedestrians to cross busy roads in two stages, reduce left-turning motorist crashes to zero, & improve bicycle safety.

**Complete streets encourage walking & bicycling for health.** The Centers for Disease Control & Prevention recently named adoption of Complete Streets policies as a recommended strategy to prevent obesity. One study found that 43% of people with safe places to walk within 10 minutes of home met recommended activity levels; among individuals without safe place to walk, just 27% were active enough. Easy access to transit can also contribute to healthy physical activity: nearly one third of transit users meet the Surgeon General's recommendations for minimum daily exercise through their daily travels.



Don Burden, Walkable and Livable Communities Institute



Don Burden, Walkable and Livable Communities Institute

**Complete Streets can lower transportation costs for families.** Americans spent an average of 18 cents of every dollar on transportation, with the poorest fifth of families spending more than double that figure. In fact, most families spend far more on transportation than on food. When residents have the opportunity to walk, bike, or take transit, they have more control over their expenses by replacing car trips with these inexpensive options. Taking public transportation, for example, saves individuals \$9,581 each year.

**Complete Streets foster strong communities.** Complete streets play an important role in livable communities, where all people – regardless of age, ability or mode of transportation – feel safe & welcome on the streets. A safe walking & bicycling environment is an essential part of improving public transportation & creating friendly, walkable communities. A recent study found that people who live in walkable communities are more likely to be socially engaged & trusting than residents of less walkable neighborhoods. Additionally, they reported being in better health & happier more often.

## How can I get a Complete Streets policy adopted in my community?

Advocating for Complete Streets means working with your neighbors & local policymakers, including elected officials & government staff. Ways to start the conversation include talking about:

- schools that have no sidewalks out front,
- bus stops that are not accessible for people in wheelchairs,
- missing crosswalks by the grocery store,
- no safe routes to bicycle to work, &
- other particularly problematic & unsafe streets.

Work together to identify ways to make these places safer & more attractive & present your ideas to others. Make your case & show examples of what your streets could like.

The National Complete Streets Coalition's website has many resources to help. Modify & use the introductory presentation in your community, show it at PTA & neighborhood association meetings & to your local chamber of commerce. The website also has information on finding other local advocates, developing a good policy, & effectively implementing that policy. Check them out at [www.completestreets.org](http://www.completestreets.org)

The National Complete Streets Coalition offers **interactive full-day workshops** led by national experts to help communities establish a common vision for their streets; develop a Complete Streets policy that builds on local expertise; & implement Complete Streets policies by identifying ways to change the transportation decision-making process: [www.completestreets.org/workshops](http://www.completestreets.org/workshops)

Need transportation planning & engineering professionals who are ready to help design & construct complete streets? Our Complete Streets Partner firms can offer the expertise & dedication you need: [www.completestreets.org/help](http://www.completestreets.org/help)

### National Complete Streets Coalition Steering Committee:

AARP • Active Living by Design • Alliance for Biking & Walking • America Bikes • America Walks • American Council of the Blind • American Planning Association • American Public Transportation Association • American Society of Landscape Architects • Association of Pedestrian and Bicycle Professionals • City of Boulder • Institute of Transportation Engineers • League of American Bicyclists • National Association of Area Agencies on Aging • National Association of City Transportation Officials • National Association of REALTORS • National Center for Bicycling and Walking • Ryan Snyder Associates • Safe Route to School National Partnership • Smart Growth America • SvR Design Company • Transportation for America

Over 200 communities have adopted Complete Streets policies, & at an accelerating pace. Policies are in place in states like Minnesota, North Carolina, & California & in communities like Seattle, Washington, Nashville, Tennessee, & Las Cruces, New Mexico. Keep track by checking out our Complete Streets Atlas: [www.completestreets.org/atlas](http://www.completestreets.org/atlas)

**Appendix D**  
**Complete Streets – Talking Points**  
**(Published by PHLP)**

# Complete Streets

## Talking Points



www.pedbikeimages.org / Dan Burden

*Complete streets are designed and operated to enable safe access for all users. Pedestrians, bicyclists, motorists, and transit riders of all ages and abilities must be able to safely move along and across a complete street.*

**For more information and resources on the relationship between the built environment and public health:**



Planning for Healthy Places  
A program of Public Health Law & Policy  
2201 Broadway, Suite 502  
Oakland, CA 94612  
(510) 302-3308  
www.healthyplanning.org

### Primary message:

*Complete streets provide people with a range of safe choices for moving around their communities, including walking and biking. Complete streets are people-friendly and support good health.*

### Health problems include:

**Obesity.** According to the Centers for Disease Control and Prevention (CDC), 30 percent of U.S. adults age 20 and older are obese, and approximately 65 percent of Americans weigh more than is healthful. Today, one in five children and one in three teens is overweight or at risk of becoming overweight.

**Heart Disease.** The leading cause of death for women and men in the United States is heart disease, according to the American Heart Association. In 2003, a total of 685,089 people died of heart disease, accounting for 28 percent of all U.S. deaths.

**Diabetes.** One of every ten health care dollars spent in the United States goes toward diabetes and its complications. Between 1994 and 2004, the prevalence of diabetes increased more than 50 percent.

### All of these health problems are linked to environmental factors.

- Research conducted by UCLA has correlated **the walkability of a neighborhood** with increased walking by residents and found that the neighborhood environment – including the availability of parks – influences individual health behaviors. In California’s San Joaquin and San Bernadino counties (regions characterized by sprawl development), 34 percent of residents reported that they do not walk at least once for ten minutes in a week, while only 13 percent of San Franciscans (who reside in a dense, walkable environment) walk that little.
- **Fear of crime** also can be a significant impediment to walking: One survey found that 13 percent of respondents would walk more if crime were not such a problem in their neighborhood.

### How does street design contribute to these problems?

- Conventional street design—which relies on local streets leading to collector arterials—present an environment that is inhospitable, unattractive, and often dangerous to pedestrians. Traditional streets—which feature shorter, connected blocks and more gridlike patterns—offer a **friendlier environment for pedestrians.**

- Research indicates that **narrower streets slow traffic**, and a study of traffic accident reports in Longmont, Colorado, found that street width had the highest correlation to accidents. The safest streets were 24 feet wide, while the most dangerous were 36 feet wide (which is typical of new subdivisions).
- **Speed kills pedestrians.** According to one study, a pedestrian hit by a car traveling 15 mph has a 4 percent chance of dying, while a pedestrian hit by a car traveling 44 mph has an 83 percent chance of dying.
- **Automobile-oriented infrastructure** imposes many costs to people other than the driver. These costs, known as “external costs” or “externalities,” include deaths and illnesses due to air pollution caused by vehicles, and deaths and damages due to accidents.

### How can complete streets improve health?

**Complete streets reduce injuries.** One study found that designing for pedestrian travel by installing raised medians and redesigning intersections and sidewalks reduced pedestrian risk by 28 percent.

**More people are encouraged to bike and walk on complete streets.** Residents are 65 percent more likely to walk in a neighborhood with sidewalks. In Portland, Oregon, a complete streets approach resulted in a 74 percent increase in bicycle commuting in the 1990s. Complete streets also improve safety indirectly by increasing the number of people bicycling and walking: One study found that as the number of people bicycling and walking increases, deaths and injuries decline.

**Complete streets are child-friendly.** Streets that provide safe opportunities for bicycling and walking encourage children to get physical activity and gain independence. More children walk to school where there are sidewalks. Safe Routes to School programs will also benefit from complete streets policies that help turn all routes into safe routes.

**Complete streets can improve air quality** by providing alternatives to car trips. If each resident of an American community of 100,000 replaced one car trip with one bike trip just once a month, it would cut carbon dioxide emissions by 3,764 tons of per year in the community.



www.pedbikemages.org / ITE Pedestrian Bicycle Council

### STREET DESIGN: A Tale of Two Cities



Irvine, CA



Philadelphia, PA

These illustrations depict one square mile of two very different street designs. Irvine’s *conventional* street design (top) lacks connectivity and relies on local streets leading to collector arterials. Contrast the points of connectivity to those in Philadelphia (below), where *traditional* street design offers a safer and friendlier environment for pedestrians.

Illustrations reprinted with permission from *Great Streets*, by Allan B. Jacobs (MIT Press, 1993)

### What can decision makers do to promote complete streets?

State and local officials can create environments that improve the built environment by revising laws, ordinances, and practices in the following ways:

- **Promote street designs** that incorporate such features as narrow vehicular travel lanes, sidewalks, bike lanes, wide shoulders, medians, bus pullouts, special bus lanes, raised crosswalks, audible pedestrian signals, and sidewalk bulb-outs
- Require that **transportation agencies change** their orientation toward building primarily for cars, and instead design and operate the entire right of way to enable safe access for all users
- Ensure that their **streets and roads work** for drivers, transit users, pedestrians, and bicyclists, as well as for older people, children, and people with disabilities
- **Integrate sidewalks, bike lanes, transit amenities, and safe crossings** into the initial design of a project (and spare the expense of retrofits later)

### Closing Message:

*Complete streets mean that an eight-year-old and an 80-year-old can move around our community as easily and safely as anyone else. Complete streets allow everyone to make healthier choices.*

Complete the Streets ([www.completestreets.org](http://www.completestreets.org)) was a primary source for the information in this fact sheet.

**Appendix E**  
**National Complete Streets Coalition**  
**Workshop Proposal**



## National Complete Streets Coalition

### Laying the Foundation, Policy Development and

### Policy Implementation Workshops

Effectively implemented complete streets policies help communities routinely create safe, comfortable and convenient networks for everyone to travel regardless of age or ability—motorists, pedestrians, bicyclists, and public transportation riders. The National Complete Streets Coalition, founder of the complete streets movement, designed this workshop series to help agencies learn how to better balance the needs of all users, and develop and implement effective policies that create complete street networks.

The full-day, highly interactive workshops are customized to help 30 of your agency professionals, key decision makers, and other stakeholders learn how to more effectively balance the needs of all users and routinely create and maintain complete streets. Two national complete streets design and policy experts lead each full-day workshop to help participants learn:

- Why complete streets are important; what they are—and are not.
- The many avenues to complete streets; and
- How complete streets can help achieve multiple transportation, health and community goals.

These workshops take participants far beyond on design specifics, to an understanding of how to transform the decision-making process itself. We offer three types of hands-on workshops tailored to each client's jurisdiction or state:

#### **Laying the Foundation for Complete Streets - Key stakeholders will:**

- Build a common understanding of complete streets and their benefits
- Examine several types of successful complete streets policies and best practices
- Compare how complete streets designs use existing right-of-way
- Apply complete streets tools and approaches to local examples

#### **Complete Streets Policy Development - In a collaborative process, participants will:**

- Contrast the ten elements of effective complete streets policies with existing policies and internal processes
- Consider policy types and the ten elements of effective complete streets policies
- Identify local complete streets goals and performance measures
- Begin creating language for a complete streets policy to meet local needs

#### **Complete Streets Policy Implementation - Through hands-on exercises, participants will:**

- Assess existing complete streets policy and decision-making process outcomes
- Identify perceived and real barriers to complete streets implementation and discuss solutions
- Consider policy implementation strategies to strengthen and streamline current processes
- Identify specific next steps to achieve complete streets goals through more effective policy and implementation.

The fee for one workshop, \$8,500, is adjusted for multiple workshops. The fee includes initial consultation with the instructors, their preparation time, travel, and a post-workshop consultation conference call. We provide detailed planning guidance for the workshop as well as participant packets with extensive information about complete streets. We can also work with you to provide additional services such as presentations to larger audiences or special briefings for elected officials or agency staff.

For further information or to schedule a workshop or series of workshops, please contact Linda Tracy at 406/880-3880 or [linda@apbp.org](mailto:linda@apbp.org). We look forward to helping your community, region or state achieve its goals through complete streets networks that serve everyone.

**Appendix F**  
**Safe and Complete Streets Act of 2011**  
**(H.R. 1780)**

**SAFE AND COMPLETE STREETS ACT OF 2011**  
**H.R. 1780**  
**SECTION BY SECTION**

**SECTION 1. SHORT TITLE**

Names the legislation the “Safe and Complete Streets Act of 2011.”

**SEC. 2. DEFINITIONS**

Defines “complete streets policy” and “complete streets principles” to be transportation laws, policies, or principles which ensure that the needs of all users of the transportation system (including pedestrians, transit users and vehicles, children, older adults, bicyclists, people with disabilities, freight and motorists) are accommodated in all phases of transportation project planning and development.

**SEC. 3. COMPLETE STREETS POLICY**

- Requires that States and Metropolitan Planning Organizations (MPOs) adopt and implement complete streets policies.
- Two years after enactment, States and MPOs must have in effect a law or MPO policy that accommodates the safety and convenience of all users of the transportation system in accordance with complete streets principles.
- Clarifies policy elements, including policy application to new road construction and road improvement projects, including design, planning, construction, reconstruction, rehabilitation, maintenance, and operations.
- Requires that complete streets-acceptable projects fit within the local community context.
- Clarifies that the complete streets policy requirements apply only to projects that receive Federal funding and exempts projects significantly underway at the time of bill passage.
- Sets out a clear procedure for exempting a project from compliance with complete streets principles and requires approval by a senior manager for project exemptions. Identifies causes for individual projects to be exempted, including in cases where:
  - Affected roadways prohibit specified users, such as on freeways;
  - The cost of applying complete streets principles would be excessively disproportionate to the need or probable use of a given complete street;
  - The number of people who live and work (or who will likely live and work) in a particular area is so low that expected users of the roadway do not include pedestrians, public transportation, freight vehicles or bicyclists.

#### SEC. 4. CERTIFICATION

- Requires the U.S. Department of Transportation to determine a method of ensuring state Departments of Transportation and Metropolitan Planning Organizations are in compliance with the bill.
- Requires USDOT to report to Congress on the status of compliance for DOTs and MPOs and the resources USDOT is supplying to assist with policy adoption and implementation.

#### SEC. 5. ACCESSIBILITY STANDARDS

- Requires the U.S. Access Board to issue accessibility standards for pedestrian facilities within the public right-of-way.
- Until the U.S. Access Board issues the above standards, instructs States and MPOs to apply existing Department of Transportation Standards for Accessible Transportation Facilities (available at 49 CFR 37.9).

#### SEC. 6. RESEARCH, TECHNICAL GUIDANCE, AND IMPLEMENTATION ASSISTANCE

- Requires the Secretary of Transportation to provide a report to transportation agencies across the country on best practices for implementing complete streets principles.
- Requires U.S. Department of Transportation to collect data on non-motorized transportation and transit use and develop a survey tool for State Departments of Transportation to identify multi-modal capacity of state and local road networks.

**Appendix G**  
**Safety Benefits of Raised Medians**  
**& Pedestrian Refuge Areas**  
**(Published by FHWA)**

## Case Study:

### Sunken Gardens, St. Petersburg, Florida

*Improving Safety and Access to Local Establishments and a Popular Tourist Destination*

Sunken Gardens, in St. Petersburg, Florida, is a popular tourist destination. Across the street are a number of local dining establishments with no safe way for pedestrians to cross the street.



Photo Credit: Michael Frederick, City of St. Petersburg, FL

Sunken Gardens is located on the east side of 4th Street North (US 92). The road averages 31,500 vehicles per day with speeds averaging more than 10 mph above the legal limit. To aid pedestrians in crossing 4th Street, the City of St. Petersburg installed a raised pedestrian refuge area in front of Sunken Gardens.



Photo Credit: Michael Frederick, City of St. Petersburg, FL

The raised pedestrian refuge area made it possible to install a supplemental traffic control device — a Rectangular Rapid Flashing Beacon (RRFB). Installed on roadside poles, the RRFB remains dark until a pedestrian activates the system by pressing a push button. Once the system is activated, rapidly flashing amber beacon (rectangular strobe) lights provide a bright warning to motorists.<sup>6</sup> In the first week after the raised pedestrian refuge area and RRFB were installed, over 900 crossings were reported with over 85 percent of motorists yielding to pedestrians.

### Sources

- <sup>1</sup> Wilson, Petritsch, *Quantifying Countermeasure Effectiveness — Orlando, FL*, PBIC, November 2008.
- <sup>2</sup> NHTSA, *Traffic Safety Facts 2008 Pedestrians*, NHTSA, Washington, DC, 2009.
- <sup>3</sup> Lindley, J., *Guidance Memorandum on Consideration and Implementation of Proven Safety Countermeasures* FHWA, Washington, DC, July 2008.
- <sup>4</sup> FHWA, *Desktop Reference for Crash Reduction Factors*, FHWA, Washington, DC, September 2007.
- <sup>5</sup> TRB *Access Management Manual*, TRB, Washington, DC, August 2004.
- <sup>6</sup> King, M., *Pedestrian Safety through a Raised Median and Redesigned Intersections*, TRR 1445, TRB, Washington, DC, 2004.
- <sup>7</sup> Florida Department of Transportation, *Florida Pedestrian Planning and Design Handbook*, FDOT, Tallahassee, FL, 1996.
- <sup>8</sup> Spot Devices, *Rectangular Rapid Flashing Pedestrian Safety System*, Retrieved February 18, 2010 from: <http://www.spotdevices.com/system-rrfb.html>

### For More Information:

For more information, visit [http://safety.fhwa.dot.gov/ped\\_bike](http://safety.fhwa.dot.gov/ped_bike)

### FHWA, Office of Safety

Tamara Redmon  
tamara.redmon@dot.gov  
202-366-4077

FHWA-SA-10-031

## Safety Benefits of Raised Medians and Pedestrian Refuge Areas



## FHWA Safety Program



U.S. Department of Transportation  
Federal Highway Administration



<http://.safety.fhwa.dot.gov>

There's a signal up the block, but looking left — there's a gap in traffic. Looking right — there should be enough time to make it all the way. Midway across she picks up the pace as some vehicles have changed lanes and are closer than she thought — now traffic is coming towards her from both directions.

She is stuck in the middle of the road, keeping her feet on the yellow lines while waiting for traffic to pass so she can make



it across the rest of the way. That's when it happens...a truck passing by clips her while she stands in the middle of the road. He slams on the brakes once he realizes what happened — but it is too late.

Photo Credit: [www.pedbikemages.org](http://www.pedbikemages.org) / Libby Thomas (<http://www.pedbikemages.org/pubdetail.cfm?picid=825>)

The resulting crash is all too common. It was also preventable by providing a median or pedestrian refuge area. Crossing roadways that do not have medians can be dangerous. In fact, the pedestrian crash risk for crossing the arterial without a median was 6.48 times higher than for crossing the arterial with a median.<sup>1</sup>

## Raised Medians and Pedestrian Refuge Areas

Pedestrian crashes account for about 12 percent of all traffic fatalities annually. Over 75 percent of these fatalities occur at non-intersection locations. On average, a pedestrian is killed in a motor vehicle crash every 120 minutes and one is injured every 8 minutes.<sup>2</sup> Many of these crashes are preventable. By providing raised medians and pedestrian refuge islands, we can bring these crash numbers down, prevent injuries, and save lives.

The *median* is the area between opposing lanes of traffic — a median can either be open (pavement markings only) or they can be channelized (raised medians or islands) to separate various road users.



Photo Credit: Mike Cynecki

Providing raised medians or pedestrian refuge areas at pedestrian crossings at marked crosswalks has demonstrated a 46 percent reduction in pedestrian crashes. At unmarked crosswalk locations, pedestrian crashes have been reduced by 39 percent.<sup>3</sup> Installing raised pedestrian refuge islands on the approaches to unsignalized intersections has had the most impact reducing pedestrian crashes.

## Safety Benefits of Raised Medians and Pedestrian Refuge Areas

Crossing the street can be a complex task for pedestrians. Pedestrians must estimate vehicle speeds, adjust their own walking speeds, determine adequacy of gaps, predict vehicle paths, and time their crossings appropriately. Drivers must see pedestrians, estimate vehicle and pedestrian speeds, determine the need for action, and react. At night, darkness and headlamp glare make the crossing task even more complex for both pedestrians and drivers.

Raised medians and pedestrian refuge islands allow pedestrians to cross one direction of traffic at a time. This significantly reduces the complexity of the crossing. They also provide a space to install improved lighting at pedestrian crossing locations. Improved lighting has been shown to reduce nighttime pedestrian fatalities at crossings by 78 percent.<sup>4</sup>

## Additional Benefits of Raised Medians

Raised medians provide additional benefits above and beyond reducing pedestrian crashes, including:

- Reducing motor vehicle crashes by 15 percent.<sup>4</sup>
- Decreasing delays (>30 percent) for motorists.<sup>5</sup>
- Increasing capacity (>30 percent) of roadways.<sup>5</sup>
- Reducing vehicle speeds on the roadway.<sup>6</sup>
- Providing space for landscaping within the right-of-way.
- Providing space to install additional roadway lighting, further improving the safety of the roadway.
- Providing space to allow for supplemental signage on multi lane roadways.
- Costing less to build and maintain than paved medians.<sup>7</sup>

## Getting Pedestrians Safely Across the Street

The Federal Highway Administration (FHWA) strongly encourages the use of raised medians (or refuge areas) in curbed sections of multi-lane roadways in urban and suburban areas, particularly in areas where there are mixtures of a significant number of pedestrians, high volumes of traffic (more than 12,000 vehicles per day) and intermediate or high travel speeds.<sup>3</sup>

FHWA guidance further states that medians/refuge islands should be at least 4 feet wide (preferably 8 feet wide for accommodation of pedestrian comfort and safety) and of adequate length to allow the anticipated number of pedestrians to stand and wait for gaps in traffic before crossing the second half of the street.<sup>3</sup>

On refuges 6 feet or wider that serve designated pedestrian crossings, detectable warning strips complying with the requirements of the Americans with Disabilities Act must be installed.

Medians are especially important at transit stop locations. Transit stops are frequently located along busy arterials at uncontrolled crossing locations. Providing medians can make these crossings safer and more appealing to existing and potential transit users.

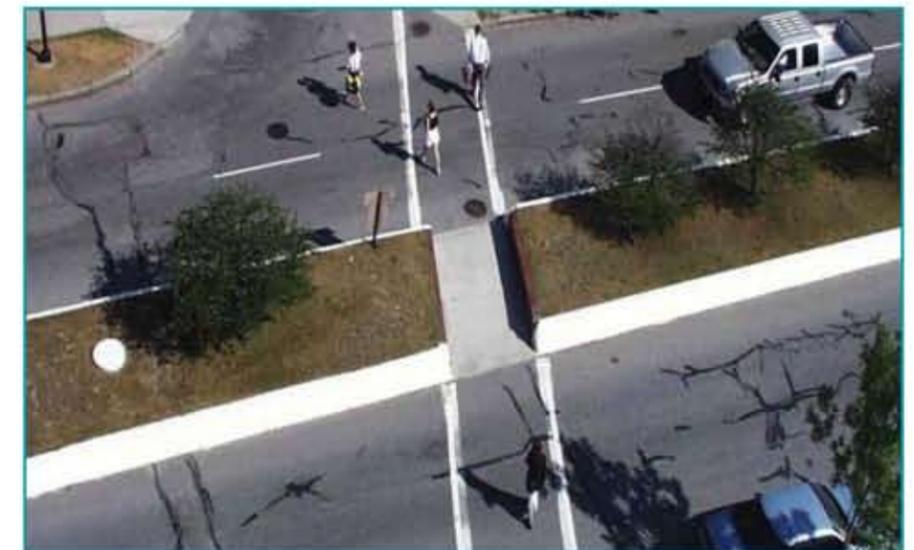


Photo Credit: Michael Ronkin

**Appendix H**  
**Example Ordinance – Summary of Buffer,**  
**Landscape & Tree Ordinance**  
**(Published by Gwinnett County, GA)**

## *Summary of Buffer, Landscape, and Tree Ordinance*

### **Introduction**

Planning & Development staff prepared this document to assist with the administration of this ordinance. Its purpose is to provide the user with the legal interpretative language in a plain, easy to understand comparative format. The legal text is found on the left side of each page and the interpretive text is found on the right side. We hope that you find this document helpful. The staff appreciates any comments or suggestions you may have concerning this document. Comments can be forwarded to staff at 678.518.6000.

### **Single Family Detached Residence Zoning Districts**

In the single family detached residence zoning districts (RA-200, R-140, R-LL, R-100, R-100M, R-100 CSO, R-75, R-75M, R-75CSO, R-60, R-L, and R-ZT), there are three (3) requirements. All three (3) requirements must be met prior to approval of a final plat. Street trees may be counted toward meeting the overall tree density unit requirement. Trees may be either preserved or planted. Preserved trees are measured at 4.5 feet from the ground. Newly planted trees are measured 6 inches from the ground.

#### Requirement. Two Trees Per Each Lot

- Minimum size – 2 inches in diameter.
- Located anywhere on lot.
- Planted trees must be selected from Tree Species List. (Appendix A).
- Preserved trees must have protective fencing at the dripline.

#### Requirement. Street Trees

- Trees must be 3 inches in diameter (measured at 6 inches from ground level).
- Plan required which indicates species, placement, size, and number of trees.
- Trees planted three (3) feet from curb and within right-of-way.
- One tree is required for every 50 feet of street frontage. Twice the length of street in feet calculates number of required trees, but trees can be spaced differently for best placement.
- Planting required along both sides of new streets.
- Developer/subdivider plants trees and provides warranty for one (1) year.
- Planting done when construction is complete.
- Property owners association responsible for care & maintenance.
- Street trees must be selected from Parking Lot and Street Tree list.(A.2)

### Requirement. 16 Tree Density Units (TDU) per acre

- Tree Preservation and Replacement Plan (TPRP) required.
- Planted trees must be selected from Tree Species List.
- Preserved trees must be in groups of three (3) or more to obtain credit.
- Street trees may be counted toward meeting the TDU credit.

### **Multifamily and Non-Residential Developments**

Office, commercial, industrial, multifamily, and other non-residential developments (such as churches) have landscaping requirements as follows:

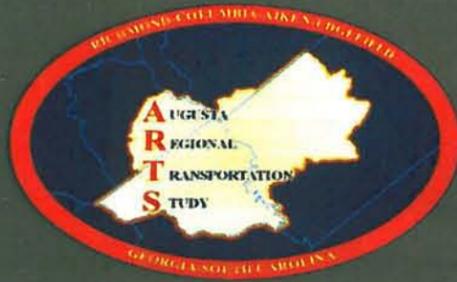
#### Overall Site

- Tree Preservation and Replacement Plan (TPRP) required.
- Sixteen (16) Tree Density Units per acre.  
(Exception: Activity Center/Corridor Overlay District requires 20 Tree Density Units per acre).
- Irrigation is not required but recommended.
- A ten (10) foot wide landscape strip is required along road frontage(s). Ratio is one (1) Tree per 25 feet and one (1) shrub per 25 feet of strip length.
- Where required, 5-foot wide landscape strips required with one (1) tree and one (1) shrub for each 50 linear feet.
- Plants in landscape strips may be grouped or clustered.
- Compliance with Tree Preservation and Replacement Plan (TPRP) prior to obtaining a Certificate of Occupancy (CO). Land Disturbance Permits (LDP) for clearing, clearing and grubbing, and grading only also requires compliance with the TPRP.

#### Parking Lots

- One (1) tree per every 7 parking spaces.
- Every parking space within 60 feet of the trunk of a tree.
- For canopy trees, the planting island size is at least 200 square feet. If shared with other trees, 80 square feet for each additional tree is required.
- For understory trees, planting island size is at least 100 square feet. If shared with other trees, 40 square feet for each additional tree is required.
- Minimum sizes:
  - Deciduous trees-2 inch diameter. (Deciduous trees lose their leaves each fall.)
  - Evergreen trees-6 feet high.
  - Trees are measured:
    - 6 inches from ground for newly planted trees.
    - 4.5 feet for existing trees.
- Painted or striped islands larger than 50 square feet not allowed.
- Areas within islands must have vegetated or mulched ground covers.
- Trees must be selected from Parking Lot and Street Tree list. (A-2)

**Appendix I**  
**ARTS Bicycle & Pedestrian Plan 2012**  
**Executive Summary**



# Executive Summary

## Augusta Regional Transportation Study Bicycle and Pedestrian Plan - 2012

"Nationally, such issues as unstable gas prices, environmental concerns, and a growing interest in health and wellness are demonstrating the need for bicycle and pedestrian-friendly communities. On a local level, this Plan represents a strong commitment to take on such issues, transforming them into new opportunities for biking and walking: affordable personal mobility, carbon-free transportation, and healthy, active lifestyles for ARTS area residents."

### The Augusta Regional Transportation Study Bicycle and Pedestrian Plan:

- Sets region-wide goals and benchmarks for improving biking and walking (**chapter 2**)
- Thoroughly examines existing conditions for bicyclists and pedestrians in the region through studies of existing planning documents, public surveys and outreach, GIS analysis, and field observations (**chapters 3-5**)
- Investigates safety issues, future demand, and potential benefits of increased bicycle and pedestrian use (**chapter 4**)
- Recommends programs, policies, and partner organizations to help support and grow walking and bicycling in the region (**chapter 6**)
- Presents the region-wide plan for a comprehensive bicycling and walking transportation network (**chapter 7**)
- Identifies potential funding sources and strategies for implementation including prioritization of network projects (**chapter 8 and appendix F**)
- Provides region-specific design guidelines for improving bicycle and pedestrian facilities in the region (**appendix E**)



### Project Overview

The Augusta Regional Transportation Study (ARTS) commissioned this regional Bicycle and Pedestrian Plan with an intent to improve the area's bicycling and pedestrian environment. **The chief outcome of the Plan is an integrated, seamless framework to facilitate walking and biking as viable transportation choices throughout the entire region.** A vision, goals, and objectives were formed for the ARTS Bicycle and Pedestrian Plan based on goals and objectives of existing local and regional plans, stakeholder input, the project purpose, and relevant project examples in the US. The Plan provides program, policy, and infrastructure recommendations.

### Program Recommendation Examples

**Education and Enforcement:** police training programs, professional driver training, Safe Streets Save Lives Programs

**Encouragement:** Safe Routes to School, car-free street events, weekend walkabouts, bike month activities

**Evaluation:** regional bicycle and pedestrian committee, regional plan for bicycle and pedestrian collision reduction, dedicated funding source, annual bicycle and pedestrian count program

### Policy Recommendations Summary

Policy recommendations of the ARTS Bicycle and Pedestrian Plan are based on a review and assessment of development requirements related to bicycle and pedestrian facilities for five jurisdictions within the ARTS study area. In evaluating the existing policies, it is evident that ARTS could provide guidance and direction to its member municipalities to significantly strengthen policy related to **a) complete streets, b) bicycle parking, c) and pedestrian facility requirements and enhancements within the context of development ordinances.** Additional guidance geared toward retrofit of existing facilities is also recommended. The full policy review is provided in Appendix B.

### Engineering Recommendations

The Plan assesses existing conditions for bicyclists and pedestrians and recommends a network of infrastructure improvements, including:

**On-Road Bicycle Facilities (below):** shared lane markings (sharrows), bike lanes, signed bicycle routes, and paved shoulders

**Off-Road Bicycle and Pedestrian Facilities:** multi-use paths, greenways, and sidewalks

**Ancillary Improvements:** bicycle parking, speed limit reductions, access to transit, and intersections



The Plan also prioritizes proposed projects based on numerous factors identified as priorities by local stakeholders. Planning-level cost estimates were calculated for fifty highly ranked projects. High priority areas for pedestrian improvements (right) were identified as well as priority bikeway and greenway projects (shown on map).



Priority Walkway Network Improvement Zones	
County	Priority Zone
Augusta-Richmond County	W.S. Hornsby School Zone
	South Central Augusta
	Wrightsboro Road Corridor
	West Central Augusta
	Hephzibah School Zones
Columbia County	Westmont Elementary Zone
	Columbia Road Corridor
	Furys Ferry Road
	Southeast Grovetown
	Flowing Wells Road
Aiken County	Washington Road Corridor
	York Street - Rutland Crossing
	Northwest Aiken School Zone
	Virginia Acres Park Zone
	South Aiken
	West Central North Augusta
	Burnettown Central

### Project Stakeholders:



### Project Contact:

Marya Moultrie  
Transportation Planner  
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### Consultant Team:

**alta** PLANNING + DESIGN  
With:  
- CDM Smith  
- Fuss & O'Neill  
- MPH and Associates Inc.



**ARTS Region Recommended Network**

**2012 ARTS Recommended Bicycle Facilities**

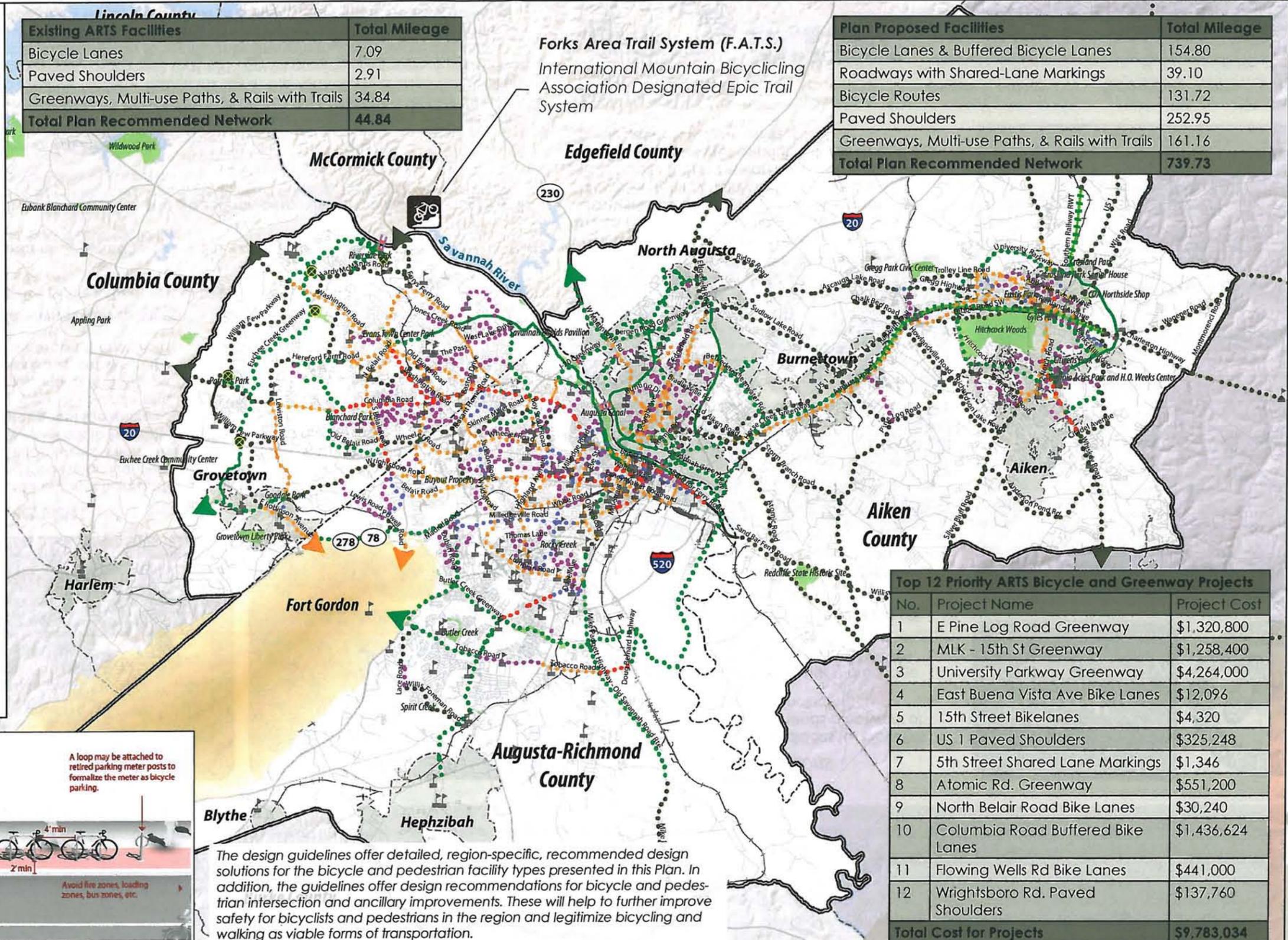
- ..... Greenway/Multi-Use Path
- ..... Rail with Trail
- ..... Buffered Bike Lane
- ..... Striped Bike Lane
- ..... Paved Shoulder
- ..... Shared-Lane Marking
- ..... Bike Route
- ..... Bike/Pedestrian Bridge

**Existing Bicycle Facilities**

- ..... Greenway
- ..... Striped Bike Lane
- ..... Paved Shoulder
- ..... Bike Route
- ..... Railroads
- ..... Trail Heads
- ..... Schools
- ..... Parks
- ..... ARTS MPO Boundary
- ..... LSCOG MPO Boundary
- ..... Fort Gordon
- ..... Savannah River Site
- ..... County Boundary

Existing ARTS Facilities	Total Mileage
Bicycle Lanes	7.09
Paved Shoulders	2.91
Greenways, Multi-use Paths, & Rails with Trails	34.84
<b>Total Plan Recommended Network</b>	<b>44.84</b>

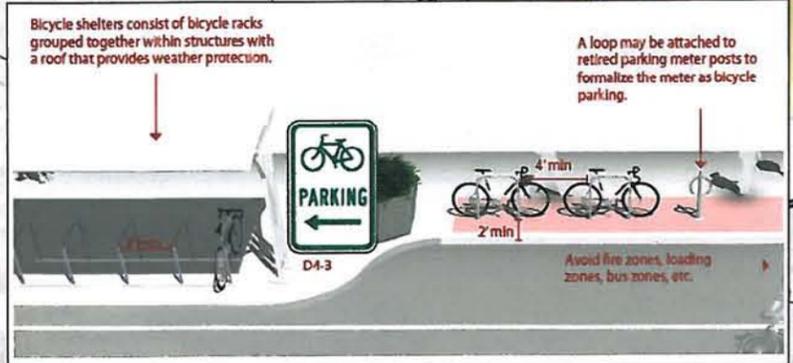
Plan Proposed Facilities	Total Mileage
Bicycle Lanes & Buffered Bicycle Lanes	154.80
Roadways with Shared-Lane Markings	39.10
Bicycle Routes	131.72
Paved Shoulders	252.95
Greenways, Multi-use Paths, & Rails with Trails	161.16
<b>Total Plan Recommended Network</b>	<b>739.73</b>



**Forks Area Trail System (F.A.T.S.)**  
International Mountain Bicycling Association Designated Epic Trail System

**Top 12 Priority ARTS Bicycle and Greenway Projects**

No.	Project Name	Project Cost
1	E Pine Log Road Greenway	\$1,320,800
2	MLK - 15th St Greenway	\$1,258,400
3	University Parkway Greenway	\$4,264,000
4	East Buena Vista Ave Bike Lanes	\$12,096
5	15th Street Bikelanes	\$4,320
6	US 1 Paved Shoulders	\$325,248
7	5th Street Shared Lane Markings	\$1,346
8	Atomic Rd. Greenway	\$551,200
9	North Belair Road Bike Lanes	\$30,240
10	Columbia Road Buffered Bike Lanes	\$1,436,624
11	Flowing Wells Rd Bike Lanes	\$441,000
12	Wrightsboro Rd. Paved Shoulders	\$137,760
<b>Total Cost for Projects</b>		<b>\$9,783,034</b>



The design guidelines offer detailed, region-specific, recommended design solutions for the bicycle and pedestrian facility types presented in this Plan. In addition, the guidelines offer design recommendations for bicycle and pedestrian intersection and ancillary improvements. These will help to further improve safety for bicyclists and pedestrians in the region and legitimize bicycling and walking as viable forms of transportation.